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BLYTHE SOLAR POWER PROJECT

Staff Assessment - Part B

Amendment to the Blythe Solar Power Project

CALIFORNIA
ENERGY COMMISSION
Edmund G. Brown, Jr., Governor

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BLYTHE SOLAR POWER PROJECT (09-AFC-6C)
STAFF ASSESSMENT – Part B
Amendment to the Blythe Solar Power Project

EXECUTIVE SUMMARY

Testimony of Mary Dyas

INTRODUCTION

This Staff Assessment (SA) Part B is being published by California Energy Commission (Energy Commission) staff for the proposed revised petition to amend for the Blythe Solar Power Project (BSPP). The modified project, owned by NextEra Blythe Solar Energy Center, LLC (NextEra Blythe Solar), proposes to change the solar thermal power-generating technology of the approved project from parabolic trough technology to photovoltaic (PV) generating technology.

This SA Part B contains staff's independent, objective evaluation of NextEra Blythe Solar's Revised Petition to Amend (09-AFC-6C) for Biological Resources, Cultural Resources, Land Use, Traffic and Transportation, Visual Resources, and Alternatives. The staff analyses in the SA are similar to those normally contained in an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA) except they also include an engineering assessment.

The SA Part A was published on September 23, 2013 and contains the Project Description; Air Quality; Hazardous Materials Management; Noise and Vibration; Public Health; Socioeconomics; Soil and Water Resources; Transmission Line Safety and Nuisance; Waste Management; Worker Safety and Fire Protection; Facility Design; Geology and Paleontology; Power Plant Efficiency; Power Plant Reliability; and Transmission System Engineering. The SA Part A is available on the Energy Commission website at http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-06C/TN200629_20130927T120253_Blythe_Solar_Power_Project_Staff_Assessment__Part_A_Corrected.pdf

Section 25500.1 of the Public Resources Code authorizes the Energy Commission to review amendments to convert proposed solar thermal power plants, approved by the Energy Commission, and which is on federal land, to the use of photovoltaic (PV) technology. Section 25500.1 only applies to projects such as BSPP that meet certain requirements. Section 25500.1(d), requires the Commission to utilize its amendment process under Section 1769 of Title 20 of the California Code of Regulations.

For an amendment for an existing power plant over which it has regulatory oversight, the Energy Commission is the lead state agency under CEQA. The Energy Commission's certified regulatory program provides the environmental analysis that satisfies CEQA requirements. In fulfilling this responsibility, Energy Commission staff provides an independent assessment of the amendment's engineering design, evaluates its potential effects on the environment and on public health and safety, and determines whether the project, if modified, would remain in conformance with all applicable local, state, and federal laws, ordinances, regulations and standards (LORS). Energy Commission staff also recommends any needed modifications to existing mitigation measures required by the conditions of certification in the Energy

Commission Final Decision and proposes additional conditions of certification to mitigate any significant adverse environmental effects of the proposed modifications.

For the ease of the reader, this SA provides a description of the environmental setting of the entire project. However, because this is an amendment to an existing Energy Commission license, staff's analysis focuses on the technology change proposed for the BSPP in the Revised Petition to Amend. These specific changes are explained in detail in the **Project Description** section provided in the SA Part A. A summary of the BSPP project is provided below.

This SA is not the decision document for these proceedings, nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local, state, and federal LORS. This document will serve as staff's testimony in evidentiary hearings to be held by the assigned Committee of two Commissioners. In the evidentiary hearings, the Committee will consider the recommendations presented by staff, the applicant, intervenors, governmental agencies, tribes, and the public prior to submitting its proposed decision (Presiding Member's Proposed Decision [PMPD]) to the full Commission. Following a 30-day comment period and a public hearing(s), the full Energy Commission will make a final decision on the PMPD.

The amendment process and purpose of the Staff Assessment are outlined in the **Introduction** section provided in the SA Part A.

PROPOSED PROJECT LOCATION AND DESCRIPTION

The BSPP, as licensed by the Energy Commission on September 15, 2010, is a 1,000-megawatt (MW) solar thermal power-generating facility utilizing parabolic trough technology on approximately 7,043 acres. The project site is located approximately 8 miles west of the City of Blythe and 2 miles north of the Interstate-10 freeway, on land managed by the Bureau of Land Management (BLM) in Riverside County, California.

The modifications proposed in the revised Petition to Amend include replacing the parabolic trough solar collection system, associated heat transfer fluid and steam turbine with PV modules. The PV modules will consist of a tracker system, fixed tilt system, or combination of the two systems. NextEra Blythe Solar is requesting the Decision be amended to allow the specific combination of PV technologies to be selected prior to construction without the need for filing another amendment.

The modified BSPP would be comprised of four phases designed to generate a total of approximately 485 MW (nominal) of electricity when completed. The first three units (phases) would consist of approximately 125 MW alternating current (AC) each. The fourth unit would generate approximately 110 MW AC. All four units would share an operations and maintenance facility, one on-site switchyard, access and maintenance roads, perimeter fencing and other ancillary security facilities, and a 230-kV gen-tie line. The transmission corridor is located in the center of the site with the exact alignment within the corridor to be determined during final design.

PURPOSE AND NEED FOR AN AMENDMENT

Palo Verde Solar I, LLC originally proposed the use of concentrating solar technology for the BSPP site. Well after the Commission issued its Final Decision in 2010, Solar Millennium AG, owner of PVSI, filed insolvency proceedings in Germany. The Energy Commission approved a change in ownership of the BSPP from PVSI to NextEra Blythe Solar, on July 11, 2012. NextEra Blythe Solar desires to convert the solar generation technology from concentrated solar troughs to PV technology. The change in ownership and the change in technology could not be anticipated in September of 2010 when the BSPP was certified by the Energy Commission.

ORGANIZATION OF THE STAFF ASSESSMENT

The sections in this SA Part B include an Executive Summary and Alternatives analysis, as well as the following Environmental Assessment sections: 1) Biological Resources; 2) Cultural Resources; 3) Land Use; 4) Traffic and Transportation; and 5) Visual Resources. The Environmental Assessment sections are followed by staff's declarations and resumes and a list of the staff that prepared this report.

All of the sections under the Environmental Assessment include a discussion of: laws, ordinances, regulations and standards (LORS); the regional and site-specific setting; the modified project direct and cumulative impacts; proposed mitigation measures; conclusions and recommendations; and modified and/or new conditions of certification for both construction and operation (if applicable).

U.S. BUREAU OF LAND MANAGEMENT COORDINATION

The approved BSPP site is located entirely on land managed by the BLM. During the original BSPP proceeding in 2009 and 2010, Energy Commission staff and BLM staff worked closely together on the review and analysis of the project. The Energy Commission and BLM issued separate final documents for compliance with CEQA and NEPA, respectively. The Energy Commission issued its Final Decision on September 15, 2010. The BLM published the Plan Amendment/Record of Decision (PA/ROD) on October 22, 2010, and issued the ROW Grant on November 4, 2010. For the modified BSPP to be constructed, a revised ROW grant from BLM will be required in addition to the amended certification from the Energy Commission. NextEra Blythe Solar is currently working with the BLM on moving forward to produce BLM's new environmental document. The BLM published a Notice of Intent to Prepare an Environmental Impact Statement (EIS) for the Blythe Solar Power Project in the Federal Register (Vol. 78, No. 169) on August 30, 2013. Energy Commission staff will continue to work cooperatively with BLM staff to review the modified BSPP. A scoping meeting for the Modified Blythe Solar Power Project was held on Tuesday, September 17, 2013 in Blythe, CA.

A Reclamation & Decommissioning Plan is required per the conditions of certification in the SA Part A. This plan in conjunction with the **General Conditions** provided in SA Part A, outlines the requirements for facility closure of BSPP.

Although the Energy Commission and BLM are not publishing a joint document for the BSPP, the Energy Commission and the BLM continue to share staff expertise, information, and documentation in order to promote intergovernmental coordination at the state and federal levels.

CUMULATIVE IMPACTS

Information on cumulative Impacts can be found in the SA Part A and in the technical sections in the SA Part B.

ENVIRONMENTAL JUSTICE

Environmental justice communities are commonly identified as those where residents are predominantly minorities or low-income; where residents have been excluded from the environmental policy setting or decision-making process; where they are subject to a disproportionate impact from one or more environmental hazards; and where residents experience disparate implementation of environmental regulations, requirements, practices, and activities in their communities. Environmental justice efforts attempt to address the inequities of environmental protection in these communities.

An environmental justice analysis is composed of three parts:

1. identification of areas potentially affected by various emissions or impacts from a proposed project;
2. a determination of whether there is a significant population of minority persons or persons below the poverty level living in an area potentially affected by the proposed project; and
3. a determination of whether there may be a significant adverse impact on a population of minority persons or persons below the poverty level caused by the proposed project alone, or in combination with other existing and/or planned projects in the area.

NATIVE AMERICAN ENVIRONMENTAL JUSTICE

Federal Environmental Justice (EJ) guidance directs agencies to consider to the extent practicable whether there is or will be an impact on the natural or physical environment that significantly (as employed by the National Environmental Policy Act) and adversely affects Indian tribes. Such effects may include ecological, cultural or social impacts on Indian tribes when those impacts are interrelated to impacts to the natural or physical environment. Agencies must also consider whether environmental effects are significant (as employed by the National Environmental Policy Act) and are or may be having an adverse impact on Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group.

It is precisely because Indian tribes maintain long-standing ancestral and traditional use practices and concepts connected to the environment and to their identities as Indian

people, unlike other populations that do not have territories linked to their collective identities.

Information on Environmental Justice can be found in the SA Part A. Environmental Justice as it relates to the Native American population is provided in the Cultural Resources section below.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION

Below is a summary (**Executive Summary Table 1**) of environmental consequences and mitigation proposed in this SA Part B.

Executive Summary Table 1
Environmental and Engineering Assessment

Technical Area	Original Final Decision		Revised Petition to Amend	
	Complies with LORS	Impacts Mitigated	Complies with LORS	Impacts Mitigated
Environmental Assessment				
Air Quality/Greenhouse gases	Yes	Yes	Provided in Part A	Provided in Part A
Biological Resources	Yes	Yes	Yes	No
Cultural Resources	Yes	No	Yes	No
Hazardous Materials	Yes	Yes	Provided in Part A	Provided in Part A
Land Use	No	No	Yes	No
Noise and Vibration	Yes	Yes	Provided in Part A	Provided in Part A
Public Health	Yes	Yes	Provided in Part A	Provided in Part A
Socioeconomics	Yes	N/A	Provided in Part A	Provided in Part A
Soil and Water Resources	Yes	Yes	Provided in Part A	Provided in Part A
Traffic & Transportation	Yes	No	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes	Provided in Part A	Provided in Part A
Visual Resources	Yes	No	Yes	No
Waste Management	Yes	Yes	Provided in Part A	Provided in Part A
Worker Safety and Fire Protection	Yes	Yes	Provided in Part A	Provided in Part A
Engineering Assessment				
Facility Design	Yes	Yes	Provided in Part A	Provided in Part A
Geology & Paleontology	Yes	Yes	Provided in Part A	Provided in Part A
Power Plant Efficiency	N/A	N/A	N/A	N/A
Power Plant Reliability	N/A	N/A	N/A	N/A
Transmission System Engineering	Yes	Yes	Provided in Part A	Provided in Part A
Alternatives	N/A	N/A	N/A	N/A

ENVIRONMENTAL ASSESSMENT

BIOLOGICAL RESOURCES

Staff has determined that cumulative impacts to most biological resources from existing and foreseeable future projects within the Northern and Eastern Colorado Desert Coordinated Management Plan planning area are significant. Of particular concern are the cumulative effects on desert washes within the Palo Verde watershed. Development of future projects north of BSPP would eliminate habitat and degrade connectivity and regional hydrologic function. The BSPP would contribute to these cumulative effects. Staff has concluded that with implementation of proposed Condition of Certification **BIO-22**, which specifies acquisition and enhancement of 1,320 acres of desert washes within or adjacent to the Palo Verde watershed, the BSPP's contribution to this cumulative effect is not cumulatively considerable.

Although the BSPP is not located near any Desert Wildlife Management Areas or critical habitat units and contains habitat of low-to-moderate quality, it nevertheless contributes incrementally to cumulative impacts to desert tortoise habitat and loss of population connectivity. BSPP's contribution to the cumulative effect of desert tortoise habitat loss is not cumulatively considerable with the incorporation of conditions of certification **BIO-12**, which specifies that habitat acquisitions and enhancement measures occur within the Colorado Desert Recovery Unit in areas that have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve land; and avoidance and minimization measures in **BIO-1** through **BIO-8**.

Regarding other special-status species and sensitive biological resources (e.g., Mojave fringe-toed lizard, golden eagle, American badger, desert kit fox, LeConte's thrasher, burro deer, Couch's spadefoot toad, wildlife movement and connectivity, natural communities, and special-status plants), staff has concluded that with the implementation of conditions of certification for compensatory mitigation of habitat loss, and the avoidance and minimization measures, including raven and weed control plans, revegetation plans, and other measures designed to minimize direct and indirect effects, the BSPP's contribution to cumulative impacts is less than cumulatively considerable. Staff considers the project's effects to special status avian species to be significant after implementation of mitigation.

Although project-specific mitigation measures of the BSPP and all other foreseeable future projects would reduce project impacts to a level that is not significant, with the exception of avian species, there are still minor residual impacts that contribute to cumulative impacts. These residual cumulative effects can only be addressed through a regional and coordinated planning effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between wildlife management areas and other movement corridors. Ongoing collaborative efforts by federal and state agencies to develop a Desert Renewable Energy Conservation Plan and BLM's Solar Energy Development Programmatic Environmental Impact Statement offer an appropriate forum for such planning.

Staff recommends avoidance, minimization, and compensatory mitigation measures to offset direct, indirect, and cumulative impacts to desert tortoise and other special-status species, and to assure compliance with state and federal laws such as the federal and state endangered species acts and regulations protecting waters of the state.

CULTURAL RESOURCES

Energy Commission cultural resources staff has analyzed cultural resources data currently available for the proposed BSPP and has concluded that the modified project would have significant direct physical impacts on known archaeological and built-environment resources eligible or assumed eligible for listing in the California Register of Historical Resources. Staff has also concluded that the BSPP, in conjunction with the Genesis Solar Energy Project and the Palen Solar Power Project, would have a cumulatively considerable impact on two cultural landscapes, the Prehistoric Trails Network Cultural Landscape, encompassing region-wide prehistoric trails and the resources and destinations they connected, and the Desert Training Center California-Arizona Maneuver Area Cultural Landscape, comprised of the archaeological remains of the U.S. Army's WWII Desert Training Center. The further recommendation to eliminate **CUL-19** is a function of what staff perceives would be more efficient administration of the conditions as a whole.

Energy Commission staff's recommended Conditions of Certification **CUL-1** through **CUL-18** reflect staff's assessment of what constitutes appropriate mitigation, under the California Environmental Quality Act, for BSPP's identified impacts to register-eligible cultural resources and any subsequent amendments made in response to the amended project.

With the adoption and implementation of Conditions of Certification **CUL-1** through **CUL-18**, the BSPP would be in conformity with all applicable laws, ordinances, regulations, and standards. **CUL-1** and **CUL-2** would reduce the significance of the project's cumulative impacts to the greatest extent possible, but those impacts would still be cumulatively considerable. **CUL-3** through **CUL-18** would reduce the significance of the project's direct impacts to less than significant.

The Final Decision acknowledged that the original project would result in significant cumulative impacts to cultural resources that could not be mitigated to less than significant levels. The Final Decision concurred with staff's recommendation that substantial evidence existed that project benefits outweigh the significant impacts and that it is appropriate to approve the BSPP despite its remaining significant impacts to cultural resources. The modified BSPP would also result in cumulative impacts to cultural resources but not greater than those identified in the originally licensed project. The modified BSPP will continue to provide similar benefits as identified in the final decision. Therefore, the override findings made in the original decision would also be applicable to the modified BSPP.

LAND USE

Staff concludes that with the implementation of Conditions of Certification **BIO-9** through **BIO-11** the BSPP would be compatible with the Northern and Eastern Colorado Desert Coordinated Management Plan and that with the implementation of Conditions of Certification **TRANS-11**, **TRANS-12**, **TRANS-13,** and **TLSN-2**, the modified BSPP would be consistent with the Palo Verde Valley Plan and the Riverside County Airport Land Use Compatibility Plan.

Staff concludes the modifications proposed for the BSPP:

- would not disrupt or divide an established community;
- would not convert farmland to non-agricultural use;
- would not conflict with existing county zoning for agricultural use, or a Williamson Act contract;
- is not located within a habitat conservation plan approved by the U.S. Fish and Wildlife Service, or a natural community conservation plan approved by the California Department of Fish and Wildlife;
- does not conflict with zoning for or cause rezoning of forest land, timberland or timberland zoned Timberland Production. The project does not result in the loss of forest land or conversion of forest land to non-forest use;
- would have no direct impacts to the Riverside County Airport Land Use Compatibility Plan and would not contribute to cumulative impacts to the Blythe airport.

However, staff did conclude that the BSPP would contribute to cumulative impacts to multiple use lands.

The Final Decision acknowledged that the original project would result in significant cumulative impacts to land use that could not be mitigated to less than significant levels. The Final Decision concurred with staff's recommendation that substantial evidence existed that project benefits outweigh the significant impacts and that it is appropriate to approve the BSPP despite its remaining significant impacts to land use. The modified BSPP would also result in cumulative impacts to land use but not greater than those identified in the originally licensed project. The modified BSPP will continue to provide similar benefits as identified in the final decision. Therefore, the override findings made in the original decision would also be applicable to the modified BSPP.

TRAFFIC & TRANSPORTATION

Energy Commission staff concludes that with the adoption and implementation of proposed conditions of certification **TRANS-1** through **TRANS-13**, the proposed modified BSPP would comply with all applicable laws, ordinances, regulations, and standards and would not result in any significant CEQA air quality impacts.

VISUAL RESOURCES

Staff has concluded that the proposed electrical generation technology change from solar thermal to PV would not require deletion or modification of a visual resources condition of certification in the Commission Decision, or require a new condition of certification to address impacts that were not previously analyzed for the approved project. The modified project, like the approved project, would create a substantial adverse visual impact. The existing conditions of certification will reduce the visual impact, but like the approved project, these mitigation measures would not reduce impacts to a less than significant level.

Staff identified no new federal, state or local government LORS pertaining to the preservation and protection of visual resources that were not previously analyzed in the Commission Decision that would be affected by the proposed technology modification. Like the approved project, the modified project would comply with federal LORS. Because the modified BSPP would be located entirely on land managed by the BLM, the project would not be subject to Riverside County's LORS.

The Final Decision acknowledged that the original project would result in significant cumulative impacts to visual resources that could not be mitigated to less than significant levels. The Final Decision concurred with staff's recommendation that substantial evidence existed that project benefits outweigh the significant impacts and that it is appropriate to approve the BSPP despite its remaining significant impacts to visual resources. The modified BSPP would also result in cumulative impacts to visual resources but not greater than those identified in the originally licensed project. The modified BSPP will continue to provide similar benefits as identified in the final decision. Therefore, the override findings made in the original decision would also be applicable to the modified BSPP.

ALTERNATIVES

With the exception of the impacts to soil erosion as discussed in the Soils, Surface Water, and Water Supply section in the SA Part A, all other impacts that would be produced by the Approved BSPP would be either greater or similar to those anticipated for the Modified BSPP.

Because of its larger project footprint, the Approved BSPP would result in a broader scale of impacts, as compared with the Modified BSPP. For resource areas Geology and Paleontology, Noise and Vibration, Public Health, Waste Management, and Soils, Surface Water, and Water Supply, the Approved BSPP would cause more severe impacts than the Modified BSPP.

Staff concludes that the larger project footprint of the Approved BSPP accounts for the difference in impacts between the two projects, but also that its project footprint does not avoid the biologically sensitive southwest area of the project site, thereby creating impacts to biological and water resources in that area. Also, solar parabolic trough technology results in greater impacts relative to solar PV technology. For instance, the former would produce greater impacts to water quality because it involves the use of

heat transfer fluid, and it would produce greater impacts to visual resources because it produces more glint and glare due to its higher reflection characteristics. The larger project footprint, development in the southwest area of the project site, and the characteristics of solar parabolic trough technology are the main factors in determining that the Approved BSPP is not the environmentally superior project.

The Modified BSPP, although it would still produce significant and potentially significant impacts to most of the environmental resources, as discussed in Staff Assessments Part A and Part B, would create those impacts on a smaller scale, and it would avoid development in the biologically sensitive southwest area of the project site, thereby avoiding impacts to biological and water resources in that area. As it is proposed, the Modified BSPP is environmentally superior to the Approved BSPP.

REFERENCES

OPR 2013—The Governor's Office of Planning and Research (OPR), CEQAnet Database. Accessed May, 2013. On-line http://www.ceqanet.ca.gov/

Riverside County 2013—Riverside County Planning Department. Accessed May, 2013. On-line http://www.tlma.co.riverside.ca.us/planning/

PVSI2009a. Palo Verde Solar I, LLC (TN 52937). Blythe Solar Power Project Application for Certification Volumes 1 & 2. Submitted to the CEC on August 24, 2009.

Environmental Assessment

BIOLOGICAL RESOURCES

Testimony of Andrea Martine, Carol Watson, and Heather Blair

SUMMARY OF CONCLUSIONS

OVERVIEW OF IMPACTS TO BIOLOGICAL RESOURCES

The modified Blythe Solar Power Project (BSPP) reduces many terrestrial impacts from the approved project, by reducing onsite grading and other disturbances. The modified project would feature minimal grading, and use infrequent mowing to manage remaining vegetation. The modified BSPP would also eliminate development of the engineered channels and most of the natural onsite drainage features will be maintained and any grading required will be designed to promote sheet flow where possible; with the exception of limited mowing and placement of pylons within some drainages. These impacts, in conjunction with fencing the site, are considered by staff and acknowledged by the project owner (NextEra), to result in the functional loss of native plant and wildlife communities that occur within the approximately 4,003-acre site. Habitat types impacted by the BSPP include upland habitat types such as Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes, as well as desert dry wash woodlands and vegetated ephemeral swales. These habitats provide foraging, cover, and/or breeding habitat for a variety of resident wildlife, including the state and federally-listed desert tortoise, American badger, desert kit fox, golden eagle, various migratory birds, burrowing owl, and Mojave fringe-toed lizard. Perimeter fencing around the project site will exclude many terrestrial animals, and ongoing disturbance, noise, and other anthropogenic activities at the site may continue to degrade vegetation and habitat functions and values within the perimeter fencing. Plants and wildlife species tolerant to disturbance may continue to reoccupy the site. However, staff does not consider leaving the vegetation on site a benefit to these species due to ongoing risk of injury or mortality by construction equipment or other project construction or operation work efforts including loss of viability of rare plant populations.

The BSPP would result in loss of habitat for desert tortoise and would degrade and fragment adjacent native plant and wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. Additionally, the BSPP is likely to promote the spread of invasive non-native plants, and subsidize desert tortoise predators such as common raven, coyotes, and feral dogs. These impacts would be less than those associated with the approved project, although staff cannot quantify the degree of reduction.

Staff recommends avoidance, minimization, and compensatory mitigation measures to offset direct, indirect, and cumulative impacts to desert tortoise and other special-status species, and to assure compliance with state and federal laws such as the federal and state endangered species acts and regulations protecting waters of the state. With the exception of avian impacts, staff has concluded that with implementation of recommended conditions of certification all impacts to biological resources would be mitigated to less than significant levels. Impacts to avian species may be significant after implementation of mitigation.

Mitigation for Desert Tortoise

The measures in Conditions of Certification **BIO-9** through **BIO-11** from the Commission Decision (as modified by staff in this staff assessment) would avoid and minimize potential take of desert tortoise during BSPP construction and operation. Condition of Certification **BIO-13** requires implementation of a Raven Management and Monitoring Plan to address BSPP-related increases in ravens, a desert tortoise predator, as well as contributions to the U.S. Fish and Wildlife Service (USFWS) Regional Raven Management Program. To offset the loss of 3,976 acres of desert tortoise habitat, Condition of Certification **BIO-12** requires habitat compensation at a 1:1 ratio for desert tortoise through habitat acquisition. Acquisition would occur within the Colorado Desert Recovery Unit, and would contribute to desert tortoise habitat connectivity and build linkages between desert tortoise populations and designated critical habitat. Mitigation of 769 acres of desert tortoise habitat has been completed (REAT 2011). Implementation of these conditions of certification would satisfy the California Department of Fish and Wildlife's (CDFW) requirements under Section 2081 of the California Fish and Game Code.

In 2010, USFWS issued a biological opinion (BO) for the approved project (USFWS 2010). Because the BSPP project would still impact the federally-listed desert tortoise and its habitat and the area affected by the proposed project has changed, the Bureau of Land Management (BLM) reinitiated consultation to amend the original BO. Following review of the revised project description with updated acreage impacts, the USFWS is expected to issue an amended BO, which will specify terms and conditions that must be implemented to minimize take of the species. The BLM will not issue a Record of Decision prior to receiving the approved BO. At the time of publication of this SA, the BLM has entered formal consultation with the USFWS, the revised BO is expected in December 2013 or as late as January 2014.

State Waters

The BSPP would directly and indirectly affect an extensive network of desert washes comprising 253 acres. These areas have been deemed the jurisdiction of the state. The larger Desert Dry Wash Woodland drainages would mostly be avoided with the reduction of the BSPP footprint. However the majority of the Creosote bush –Big Galleta Association will be affected along with some Unvegetated Ephemeral Dry Wash. Because the project owner has yet to choose a particular photovoltaic (PV) technology type, staff cannot quantify acreages of waters to be impacted. This information will be gathered prior to the start of construction. Condition of Certification **BIO-22** (as modified herein by staff) describes avoidance and minimization measures as well as compensatory mitigation for impacts to desert dry wash woodland, vegetated ephemeral swales, and unvegetated desert washes, all of which are considered waters of the state, and based on final project build-out impacts. To offset impacts to these biologically and hydrologically valuable ephemeral washes, the project owner would need to acquire a total of 410 acres of similar desert wash habitat within the immediate or adjacent watersheds, or as corrected by the final project footprint. Seventy-three acres of state waters including 57 acres of dry desert wash woodland mitigation has already been acquired by the project owner (REAT 2011). Implementation of this condition would fulfill requirements of CDFW Lake and Streambed Alteration Agreement program. For

the purpose of this assessment, staff has assumed that all onsite waters would be impacted.

Special-Status Plants

No federal- or state-listed plant species occur within the Project Disturbance Area, but seven species of special-status plants (California Native Plant Society Rare Plant Rank 1B, 2, or 4 species) were detected there, including ribbed cryptantha, Utah milkvine, desert unicorn plant, Las Animas colubrina, Harwood's milk-vetch, Harwood's eriastrum, and Abram's spurge. Harwood's eriastrum is a California endemic and BLM Sensitive species with a global distribution restricted to the southeast corner of California. It is documented from only 14 occurrences, several of which are historic records that have not been verified. Surveys for late season annuals were conducted in fall of 2012 and Abram's spurge was found as a result of those surveys. Several thousand individuals were found in the Project Disturbance Area and along the linears (Figure 5.1-1 of NEBS 2013a). Although the vast majority of ephemeral drainages would be left within the boundary of the perimeter fence, vegetation would be mowed or trimmed, development of the project would still be considered a significant impact to three rare plants Harwood's milk-vetch, Harwood's eriastrum, and Abram's spurge. Condition of Certification **BIO-19** (as modified) describes impact avoidance and minimization measures for these special-status plants as well as compensatory mitigation for direct impacts to special-status plant species.

Impacts to American Badger and Kit Fox

Desert dry wash woodland, Sonoran creosote bush scrub, and other habitat within the BSPP area provides foraging, cover, and/or breeding habitat for American badgers and kit fox occurring at the site. Construction and operation of the project could result in death or injury of these species.

American badgers and desert kit fox occur throughout the BSPP area, and construction activities could crush or entomb kit fox and American badger. Staff's proposed Condition of Certification **BIO-17** (which would replace the version of BIO-17 in the Commission Decision), requires development of an American Badger and Desert Kit Fox Mitigation and Monitoring Plan that includes, but is not limited to, procedures and impact avoidance measures for conducting pre-construction surveys and avoidance measures to protect badgers and kit fox during construction and operation, would avoid this potential impact. This condition has been updated to reflect management recommendations by the Renewable Energy Action Team (REAT) agency representatives. The REAT agencies include the Bureau of Land Management (BLM), the USFWS, the former California Department of Fish Game, now titled Department of Fish and Wildlife (CDFW), and the Energy Commission.

Avian Impacts

Desert dry wash woodland, vegetated ephemeral swales, Sonoran creosote bush scrub, and other habitat within the BSPP area provides foraging, cover, and/or breeding habitat for a number of resident and migratory birds, including a number of special-status bird species potentially occurring at the site.

It is possible for this project to attract birds from a great distance, including those not typically detected in an arid environment. Based on preliminary monitoring data from other commercial-scale solar projects, staff believes that the construction and operation of the proposed project could result in the death or injury of these birds by posing the risk of collision, and other poorly understood anthropogenic sources of injury or mortality such as overheating. Other commercial-scale projects in the area have experienced injury and mortality of special status migratory species, such as the state-threatened California brown pelican, as well as other non-listed species. However, staff is unable to quantify these impacts or predict the extent of the potential impacts, as the impacts of large-scale renewable projects have not been studied in a scientifically robust manner, and site-specific conditions, such as proximity to agricultural operations, has the potential to attract birds. Staff has requested that the project owner continue to collect data on avian use of the project site, their migration timing and patterns, and species of birds likely to encounter the BSPP facility. This information will be used by the project owner for developing the Bird and Bat Conservation Strategy (BBCS) as required per staff's proposed Condition of Certification **BIO-15** (which would replace the version of BIO-15 in the Commission Decision), as well as refining the avoidance, mitigation and adaptive management strategies. The data will be collected during spring and fall migratory seasons, and will incorporate survey methods sufficient to inform staff as to the presence, foraging, nesting and migration patterns and behaviors of resident birds, migrants, raptors, and other special status birds.

Staff notes that virtually all birds native to the United States are covered under the Migratory Bird Treaty Act (MBTA). Staff cannot quantify the risks of injury or death of special status species, nor the exact species list. The following discussions group at-risk bird species in terms of state and federal laws. Because nesting birds are afforded legal protections as well, a separate discussion is provided for this group of birds. Please note that birds that nest on the site may also be discussed under headings of "Habitat Conversion and Nesting Birds", "Fully Protected Species", or "Other Special Status Species".

Habitat Conversion and Nesting Birds

The large-scale conversion of the site from relatively intact native habitat to an operating solar field has the potential to impact nesting birds. Conditions of Certification **BIO-1** through **BIO-8** from the Commission Decision (and modified herein by staff) would require a project Biologist, and prescribe a variety of minimization measures and best management practices to protect nesting birds, control fugitive dust, reduce the potential for wildfires, require worker training to minimize disturbances, require biological monitoring and reporting of project disturbances, and compensate for habitat loss through the acquisition and management of offsite lands. Condition of Certification **BIO-14**, Weed Management, requires preparation and implementation of a Weed Management Plan to prevent the loss or ongoing degradation of habitat values, and measures to protect wildlife from weed management activities. In addition, staff's recommended Condition of Certification **BIO-15** would require avian surveys and avoidance measures to prevent destruction of active bird nests during construction and operation. Condition of Certification **BIO-15** also provides for ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures that would benefit nesting birds. Taken together, staff concludes that these conditions of

certification would minimize impacts to these species during project construction and operation, and would mitigate impacts to their habitat to a level less than significant according to CEQA. The project owner proposes to build two 4-acre evaporation ponds, which would pose a risk to waterfowl, shorebirds, and other resident or migratory birds. These ponds could contain selenium or hyper-saline conditions resulting from high total-dissolved-solids concentrations in water. While netted ponds minimize the risk of birds (or other wildlife) accessing the ponds, ongoing issues with ponds at other solar sites lead staff to conclude that the ponds serve as an attractant to all wildlife, especially birds. While netted ponds exclude birds it is likely that some birds will still occasionally enter the ponds through tears or other means, and some birds will likely come tangled in the netting and perish. Condition of Certification **BIO-25** from the Commission Decision reduces this potential impact to less than significant levels by requiring the ponds to be netted and monitored, and provides flexibility for adaptive management, if determined necessary. Take of a special-status species would violate state and/or federal law.

Fully Protected Avian Species (Yuma Clapper Rail and Bald and Golden Eagle

Several fully protected species have a potential to be impacted by the project. Bald and golden eagles are protected by the federal Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA) and are fully protected under the California Fish and Game Code. Both bald and golden eagles are also BLM sensitive species. The list of species which may be present at the project site could include other fully protected species such as American peregrine falcon and Yuma clapper rail; this list is not meant to be comprehensive, however, this discussion is generally applicable to all fully protected species.

There is no suitable bald or golden eagle nesting habitat on the proposed project site. However; the entire project site is suitable foraging habitat for golden eagle and American peregrine falcon, and provides foraging habitat for migratory bald eagle. Conditions of Certification **BIO-1** through **BIO-8** (as modified) would serve to mitigate many of the project's impacts to native vegetation and wildlife habitat, including eagle foraging habitat. Consistent with the original Commission decision, staff believes that all compensation land meeting the selection criteria as desert tortoise habitat (**BIO-12**) and desert dry wash habitat (**BIO-21**) would also serve as suitable eagle foraging habitat. Staff concludes that the project's impacts to eagles and their foraging habitat would be less than significant with implementation of these required conditions of certification.

The project would present long-term operational hazards to the bald and golden eagles and other fully protected species. Operation of the project may result in avian collisions with panels, power lines, or other project features. Aside from a risk of collision with power lines or project features, fully protected species associated with the site have the potential for risk of overheating, disorientation, and other anthropogenic forms of injury or mortality. Currently, the exact source of injury or mortality to birds on renewable energy sites is unclear, yet the risks are certain. Staff recommends Condition of Certification **BIO-15** to address impacts on bald and golden eagles. Condition of certification **BIO-15** provides for development of an Eagle Conservation Plan, ongoing project monitoring and implementation of a suite of habitat restoration and enhancement

measures that would benefit golden eagles and would mitigate and avoid potential electrocutions both on and offsite.

Staff concludes that any take of a bald or golden eagle, or any fully protected species, would be significant according to CEQA, violate Fish and Game codes, and would violate federal law unless an Eagle Take Permit is acquired by the project owner. An eagle permit has not been applied for at this time. Effects may remain significant after implementation of recommended conditions of certification.

Other Special Status Avian Species

Special status avian species includes federally and state listed threatened, endangered, or candidate species, species considered sensitive by the BLM, and species identified by the CDFW as being of concern. The list of special status species which may be present at the project site include gilded flicker, elf owl, ferruginous hawk, burrowing owl, northern harrier, prairie falcon, American peregrine falcon, Swainson's hawk, Vaux's swift, and short-eared owl. This list is not meant to be comprehensive; however, this discussion is generally applicable to any special status species.

Birds in this category may be expected to be found in the region seasonally, especially during winter, or as year-around residents, and have the potential to be adversely affected by the project during operation. Commercial-scale renewable projects in the region are experiencing onsite mortality and latent mortality of a variety of birds, including rare migrants and special status species. These adverse effects are occurring during both construction and operation. Aside from a risk of collision with power lines or project features, special status species associated with the site have the potential for risk of overheating, disorientation, and other anthropogenic forms of injury or mortality. Currently, the exact source of injury or mortality to birds on renewable energy sites is unclear, yet the risks are certain. Staff concludes that for migratory species, the project would not affect nest sites, and the project's adverse impacts to foraging habitat for wintering and migratory species would be less than significant Conditions of Certification **BIO-1** through **BIO-8** and **BIO-12** (as modified) would minimize or compensate for project impacts to special status birds. In addition, staff's recommended Condition of Certification **BIO-15** provides for ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures that would benefit special status birds. Staff is unable to quantify the risk to each species of threatened or endangered bird that may be impacted by the proposed project. However, the risk is predictable and unavoidable. Take of a special status bird, in the absence of appropriate permits (a federal Incidental Take Statement under Section 7 or a state Incidental Take Permit under Section 2081) may be considered significant under CEQA. Effects to special status birds would remain significant after the implementation of recommended conditions of certification.

Impacts to Burrowing Owl

Burrowing owls have been detected on the BSPP site. Construction and operation of the project would result in disturbance and habitat loss for this species. Potential impacts to burrowing owls would be mitigated by implementation of Condition of Certification **BIO-18** (as modified herein by staff). This condition involves passive relocation of burrowing owls, as well as acquisition of 39 acres of off-site lands suitable

for burrowing owl. This offset may be nested within Condition of Certification **BIO-12**, Desert Tortoise Compensatory Mitigation, if selection criteria are met. PV panels, perimeter fencing, and other project structures pose a risk of collision for burrowing owls, and indirect impacts to burrowing owl include collisions with these project features, glare, and electrocution. Staff's proposed Condition of Certification **BIO-15** provides measures to protect onsite burrowing owl injury or death due to collision with project features, and would establish adaptive management and mitigation for these impacts.

Special Status Bats

Documented roosting areas for several special-status bats, including caves and mines, are known to occur in mountains surrounding the project site, and ground roosting onsite may also occur. Conditions of Certification **BIO-1** through **BIO-8** would minimize or compensate for habitat loss, including offset for dry desert washes at a 3:1 ratio. Staff concludes that these measures would effectively mitigate habitat impacts for special-status bats. Bats may also experience collision impacts as described above under "Avian Impacts", above, or suffer from overheating when attempting to roost under conductive man-made materials onsite. These impacts are largely unavoidable, yet are typically sporadic, and based on monitoring at other project sites it would affectionly a small number of bats,**.** Conditions of Certification **BIO-15** would benefit bats by requiring ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures, and adaptive management strategies based on results of project monitoring. Take of special status bats on the project site would be considered significant under CEQA, as it would violate CESA and/or FESA, depending on the species taken.

Impacts to Stabilized and Partially Stabilized Sand Dunes/Mojave Fringe-toed Lizards

Mojave fringe-toed lizards, a BLM sensitive species which are restricted to sand dunes and other habitats with fine, wind-blown sand, occur along the BSPP's proposed transmission line alignment. The transmission line construction would result in permanent impacts to 50 acres of sand dune habitat. Condition of Certification **BIO-20** from the Commission Decision would mitigate for the loss of 50 acres with acquisition of sand dune habitat at a 3:1 ratio, as required by the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO).

Cumulative Effects

Cumulative impacts to most biological resources from existing and foreseeable future projects within NECO are significant. The direct effects of habitat loss from existing impacts and future projects are compounded by the indirect effects of fragmentation, impaired connectivity, an increase in invasive plants and predators, impaired sand and sediment transport systems (which help maintain dune and other ecosystems), and increased human disturbance and vehicular mortalities. With the exception of avian and bat impacts, implementation of conditions of certification that require compensatory mitigation for habitat loss, the avoidance and minimization measures, including raven and weed control plans, revegetation plans, and other measures designed to minimize direct and indirect effects, the modified BSPP's contribution to cumulative impacts would be less than cumulatively considerable. The project's effects on special status avian and

bat species are considered to be cumulatively considerable, and may remain significant after implementation of mitigation. This includes impacts of potential collision, attraction to the site leading to disorientation or fatigue, or other anthropogenic sources of injury or mortality.

INTRODUCTION

This section of the Staff Assessment provides the California Energy Commission's (Energy Commission's) staff analysis of potential impacts to biological resources from the construction and operation of the modified BSPP. This analysis describes the biological resources at the BSPP site (including ancillary facilities) and addresses potential impacts to special-status species, sensitive natural communities and other significant biological resources. This section discusses the need for mitigation, evaluates the adequacy of mitigation measures proposed by the project owner, and specifies additional mitigation measures recommended by staff to reduce impacts. It also describes compliance with applicable laws, ordinances, regulations, and standards (LORS).

The modified BSPP lies fully within the footprint analyzed for the approved project and offsite alignment of the generation tie-line. The Revised Staff Assessment for the approved project provides the basis for this staff assessment (SA) and this SA provides an analysis of potential new or revised impacts from the approved BSPP to biological resources and, where necessary, specifies new or modified mitigation measures (conditions of certification) to reduce potential impacts to less than significant levels.

The present analysis is based, in part, upon information from the following sources: the Application for Certification (AFC) (Solar Millennium 2009a) and Supplement to the AFC (Solar Millennium 2009b); responses to staff data requests (AECOM 2010a); staff workshops held on December 9 and 18, 2009, January 7, 10, 14 and 25, 2010, and April 28, 2010; site visits by staff on October 7, 2009, November 3, 2009 and January 25, 2010; and the Revised Staff Assessment (CEC 2010b) and Supplemental Staff Assessment (CEC 2010c).

This staff assessment is also based on analysis performed by the project owner in support of the Revised Petition for Amendment (NEBS 2013a); data responses set 1(NEBS 2013e) and data responses set 2 (NEBS 2013j); communications with representatives from CDFW, BLM, and USFWS; and information contained within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO).

CHANGES FROM BLYTHE REVISED STAFF ASSESSMENT

Information included in this SA is based in part on the previously published Revised Staff Assessment (RSA) (CEC 2010b).The SA includes new data where available to reflect changes in the project design or footprint; or where new analysis is required to disclose impacts from the modified BSPP.

New Project Features and Modifications: These changes are described below and staff has provided analyses of new BSPP features that could affect biological resources:

Fall 2012 Survey Results: This SA incorporates fall 2012 survey results (NEBS 2013a; Appendix F) of special-status plant species conducted in the Project Disturbance Area and linears. The 2012 fall surveys were conducted after the RSA for Blythe was published and were required per Condition of Certification **BIO-19** for compliance. Fall 2012 surveys were conducted when summer/fall annual plant species were in bloom and/or fruit within and in the vicinity of the BSPP. Abram's spurge was the only new species detected during surveys.

Desert Bighorn Sheep: The Commission Decision for the approved project contained Condition of Certification **BIO-21** for impacts to Nelson's bighorn sheep. The modified BSPP reduces the footprint by 2,908 acres and shifts the site to the east, away from the McCoy Mountains. This eliminates the approved project's impacts to corridor habitat. Therefore, desert bighorn sheep has been eliminated from further consideration and staff recommends deleting Condition of Certification **BIO-21**. However, 27 acres of Nelson's bighorn sheep habitat has been mitigated from the approved project.

Changes to Conditions of Certification: Staff has made revisions to several conditions of certification based on new information not available during the licensing of the original facility and suggestions made by the project owner (NEBS 2013a). Some of the changes reflect recent information from the time the conditions were originally written, lessons learned during compliance of solar projects, and to provide more detailed guidance for management plans, and other changes are more minor, such as changing "CDFG" to "CDFW". Conditions that have been changed rather substantially are **BIO-2 (**Designated Biologist Duties); **BIO-6** (Worker Environmental Awareness Program); **BIO-8 (**Impact Avoidance and Minimization Measures); **BIO-14 (**Weed Management Plan); **BIO-15 (**Avian and Bat Protection Plan); and **BIO-17** (American Badger and Desert Kit Fox Impact Avoidance and Minimization). Condition of Certification **BIO-24** (Golden Eagle Inventory and Monitoring) has been deleted, and the provisions of this condition are now included in **BIO-15**. Condition of Certification **BIO-21** (Mitigation for Impacts to Bighorn Sheep) has been deleted, as the modified project eliminated impacts to this species.

New Terms and Definitions for General Conditions: Compliance responsibilities carried out on recent large solar projects including Ivanpah, and Genesis, have highlighted the need to revise and/or modify several conditions. The modifications are comparatively minor in nature; however, the General Conditions contain several modified and/or refined definitions, terms, protocols, and new conditions of certification that are critical to effective compliance enforcement. A detailed description of the changes is provided in the **General Conditions** section of this SA. The bulleted list below summarizes the revisions/modifications contained in the Compliance Plan:

- Definitions for specific terms utilized during compliance monitoring, including "Start of Construction", "Start of Commercial Operation", "Non-Operation and Closure", "Site Assessment and Pre-Construction Activities", and "Site Mobilization and Construction", among others;
- A new sub-section and expanded discussion of "Roles and Responsibilities", and new sections for "Pre-Construction and Pre-Operation Compliance Meeting", and "Energy Commission Record";

- New conditions of certification addressing “Non-Operation” and “Facility Closure Plans”.

These new terms have been incorporated in this SA and the Biological Resources conditions of certification.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of BSPP effects must comply with CEQA which requires that the significance of individual effects be determined by the California Energy Commission as the Lead Agency.

CEQA requires a list of criteria that are used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines section 15382).

Thresholds for determining CEQA significance in this section are based on Appendix G of the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.) and performance standards or thresholds identified by the Energy Commission staff. The determination of whether a project has a significant effect on biological resources is based on the best scientific and factual data that staff could review for the project. In this analysis the following impacts to biological resources are considered significant if the project would result in:

- a substantial adverse effects to plant species considered by the California Native Plant Society (CNPS), CDFW, or USFWS to be rare, threatened, or endangered in California or with strict habitat requirements and narrow distributions; a substantial impact to a sensitive natural community (i.e., a community that is especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies);
- a substantial adverse effect to wildlife species that are federally-listed or state-listed or proposed to be listed; a substantial adverse effect to wildlife species of special concern to CDFW, candidates for state listing, or animals fully protected in California;
- substantial adverse effects on habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations;
- substantially interferes with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- substantial adverse effect on important riparian habitats or wetlands and any other “Waters of the U.S.” or state jurisdictional waters; and
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The BSPP project owner would need to comply with the following laws, ordinances, regulations, and standards (LORS) during construction and operation, as listed in **Biological Resources Table 1**.

Biological Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Federal Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitats.
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.
Eagle Act (Title 50, Code of Federal Regulations, section 22.26)	Would authorize limited take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) under the Eagle Act, where the taking is associated with, but not the purpose of activity, and cannot practicably be avoided.
Eagle Act (Title 50, Code of Federal Regulations, section 22.27)	Would provide for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human–engineered structure, or the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	A regional amendment to the CDCA Plan approved in 2002, NECO protects and conserves natural resources while simultaneously balancing human uses in the northern and eastern portion of the Colorado Desert.
California Desert Protection Act of 1994 (CDPA)	An Act of Congress which established 69 wilderness areas, the Mojave National Preserve, expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks. Lands transferred to the National Park Service were formerly administered by the BLM and included substantial portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas.
Migratory Bird Treaty (Title 16, United States Code, sections 703	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act.

Applicable LORS	Description
through 711)	
Executive Order 11312	Prevent and control invasive species.
Wild Free-Roaming Horse and Burro Act (Public Law 92-195)	Wild horses and burros are protected from capture, branding, harassment, and death, and managed with the intent to achieve and preserve the natural ecological balance on public lands.
California Desert Conservation Area Plan	The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.
Desert Tortoise (Mojave Population) Recovery Plan (USFWS 2011)	Describes a strategy for recovery and delisting of the desert tortoise.
State	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species.
Protected furbearing mammals (California Code of Regulations, Title 14, section 460)	Fisher, marten, river otter, desert kit fox and red fox may not be taken at any time.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, section 670.7).
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey (Fish and Game Code section 3503.5	Unlawful to take, possess, or destroy any birds in the orders Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.
Nongame mammals (Fish and Game Code section 4150)	Makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the commission.
Significant Natural Areas (Fish and Game Code section 1930 and following)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.
California Environmental Quality Act (CEQA), CEQA Guidelines section 15380	CEQA defines rare species more broadly than the definitions for species listed under the state and federal Endangered Species Acts. Under section 15830, species not protected through state or federal listing but nonetheless demonstrable as "endangered" or "rare" under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFW's Special Animals List.
Streambed Alteration	Regulates activities that may divert, obstruct, or change the natural flow or the

Applicable LORS	Description
Agreement (Fish and Game Code sections 1600 and following)	bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.
California Native Plant Protection Act of 1977 (Fish and Game Code section 1900 and following)	Designates state rare, threatened, and endangered plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 and following and California Fish and Game Code sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
Porter-Cologne Water Quality Control Act	Regulates discharges of waste and fill material to waters of the State, including "isolated" waters and wetlands.
Local	
Riverside County General Plan	Protection and preservation of wildlife for the maintenance of the balance of nature.

DESERT RENEWABLE ENERGY CONSERVATION PLAN – INTERIM PLANNING

In addition to the federal, state, and local LORS summarized above, federal and state agencies are currently collaborating to establish joint policies and plans to expedite development of California's utility scale renewable energy projects. On October 12, 2009, the State of California and the U.S. Department of Interior entered into a Memorandum of Understanding (MOU) on renewable energy, building on existing efforts by California and its federal partners to facilitate renewable energy development in the state. The MOU stems from California and Department of Interior energy policy directives, and California's legislative mandate to reduce greenhouse gases to 1990 levels by 2020, and meet the goal of 33 percent of California's electricity production from renewable energy sources by 2020.

The California-Department of Interior MOU expands on several MOUs issued in 2008 to establish the activities of the California Renewable Energy Action Team (REAT) agencies. The REAT was established with California Executive Order S-14-08 (issued November 18, 2008), to "*establish a more cohesive and integrated statewide strategy, including greater coordination and streamlining of the siting, permitting, and procurement processes for renewable generation*…."

The Energy Commission and CDFW are the primary state collaborators in the REAT, operating under a November 18, 2008 MOU between the two agencies to create a "one-stop process" for permitting renewable energy projects under their joint permitting authority. The BLM and the USFWS also participate in the REAT under a separate MOU signed in November 2008, which outlines the state and federal cooperation of the group. The October 12, 2009 MOU between California and the Department of Interior

reiterates several tasks of the REAT provided for in S-14-08 and the Energy Commission-Fish and Wildlife MOU.

In October 2011, two MOUs were issued that outlined the participation and engagement of the REAT agencies in the Desert Renewable Energy Conservation Plan (DRECP) One MOU was between CDFW, Energy Commission, BLM, USFWS and the California State Land Commission and the other was between CDFW, Energy Commission, BLM, USFWS and the US Department of Interior.

The MOU between California and the Department of Interior was amended and reissued on January 13, 2012. The primary change to the MOU included the inclusion of additional participating agencies including the California Public Utilities Commission, the California State Lands Commission, and the California Independent System Operator. The updated MOU was based on SBX2 (2011). Modifications to the objectives of this MOU included an extension of the timeline to complete the draft DRECP from June 2012 to the second quarter 2013.

The REAT agencies primary mission is to streamline and expedite the permitting processes for renewable energy projects in the Mojave and Colorado Desert ecoregions within the State of California, while conserving endangered species and natural communities at the ecosystem scale. To accomplish this goal the REAT agencies are developing a Desert Renewable Energy Conservation Plan (DRECP), a science-based process for reviewing, approving, and permitting renewable energy applications in California. Once the DRECP is complete, the plan will be a state Natural Communities Conservation Plan (NCCP) and a federal Habitat Conservation Plan (HCP) that will provide tools to expedite coordination of federal and state endangered species act permitting. Last year the Legislature gave the CDFW authorization to allow take of fully-protected golden eagle as a covered species in a NCCP. The DRECP will also offer a unified framework for state and federal agencies to oversee mitigation actions, including land acquisitions, for listed species. Since 2010 when the approved project was licensed, major DRECP milestones reached include the release of the Description and Comparative Evaluation of Draft DRECP Alternatives for public review and comment in December 2012.

The REAT agencies recognize that some renewable energy projects are scheduled to be approved prior to completion of the DRECP. Section 8.9 of the May 2010 Draft Planning Agreement for the DRECP <http://www.energy.ca.gov/2009publications/REAT-1000-2009-034/REAT-1000-2009-034-F.PDF> provides explicit guidance for such interim projects, and directs the REAT agencies to ensure that permitting for these projects:

- be consistent with the preliminary conservation objectives for the DRECP;
- not compromise successful completion and implementation of the DRECP;
- facilitate Federal Endangered Species Act, California Endangered Species Act, National Environmental Policy Act, and California Environmental Quality Act compliance; and
- not be unduly delayed during preparation of the DRECP.

REAT Account and SBX8 34

The REAT agencies signed a Memorandum of Agreement (MOA) in May 2010 to establish a REAT Account that may be used by project developers to deposit funding for specified mitigation for approved renewable energy projects in the Mojave and Colorado Desert region of southern California (the MOA is available at <www.energy.ca.gov/33by2020>). For each project using the REAT Account an individual subaccount would be established for project specific tracking, compliance and accounting purposes. The subaccount would include a list of the specific mitigation actions, the cost, a timeframe for carrying out the actions, and identify which of the REAT agencies would be responsible for requiring and coordinating the mitigation actions. The National Fish and Wildlife Foundation (NFWF) or any other approved agency could manage the subaccount on behalf of the REAT agencies, and at their direction would disburse mitigation funding to satisfy mitigation requirements for impacts to biological resources. NFWF is a charitable non-profit corporation established in 1984 by the federal government to accept and administer funds to further the conservation and management of fish, wildlife, plants and other natural resources <hwww.nfwf.org>.

Senate Bill 1094 amended on June 19, 2012 provides guidance on the use of endowments and the designation of the authorized entity to oversee the long-term management of mitigation lands. The bill clarifies the role of the authorized entity regarding the selection, monitoring, and management of the lands and endowment. Except under specific conditions described in Gov. Codes § 65965-65968 NFWF may be precluded from holding project related endowments. Alternatively the project owner may select another authorized entity to manage any required mitigation endowments.

Use of the REAT Account would not change any of the requirements a project proponent must fulfill in order to comply with applicable State and Federal environmental laws governing the permitting of the projects. The REAT Account will also aid project proponents in carrying out contracting and construction activities in a timely manner per requirements for American Recovery and Reinvestment Act of 2009 (ARRA) funding.

The SBX8 34 legislation that was signed into law by the Governor created a $10 million loan that provides for advanced mitigation habitat purchases. This advanced mitigation can be used by a qualifying solar renewable energy project to receive credit for implemented mitigation after a project proponent pays into the Renewable Energy Development Fee Trust Fund that was created by the SBX8 34 legislation (SBX8 34 Trust Fund). Funds in the MOA REAT Account and the SBX8 34 Trust Fund are similar in that renewable energy project proponents pay into accounts set up to receive project-specific mitigation funds, and a third party entity implements the mitigation actions. Condition of Certification **BIO-27** provides an opportunity for the project owner to fulfill their mitigation obligations by depositing funds into the SBX8 34 Trust Fund.

The REAT agencies have developed a total cost accounting method for calculating acquisition or conservation easement costs for mitigation lands, including costs associated with the purchase transaction, appraisal, escrow, and title insurance including mineral, oil, and gas rights (REAT 2010). The estimate also addresses costs of initial enhancement (e.g., signs, fencing, and boundary/property line surveys; or

restoration actions such as removal of exotic species, roads), management for ongoing activities such as public access and enforcement; and monitoring the implementation, effectiveness, and compliance of conservation measures with the goals and objectives. For those projects using the REAT Mitigation Account for implementing mitigation actions the budget includes administration of contracts and reporting. These cost estimates are used for purposes of establishing an appropriate security amount in conditions of certification, but renewable energy developers are not required to use the REAT Mitigation Account to fulfill their obligations for securing compensation lands and are free to undertake mitigation on their own.

SETTING AND EXISTING CONDITIONS

REGIONAL SETTING

The BSPP is located in the eastern Colorado Desert. The Colorado Desert is a sub-section of the Sonoran Desert, an expansive southwestern desert region that encircles the Gulf of California and covers portions of northwestern Mexico, southwestern Arizona, southeastern California, and Baja California. The Colorado Desert is referred to as California's "Low Desert." This desert experiences more summer precipitation than the northern deserts and although yearly precipitation remains low overall, a significant portion of it falls during August and September, usually as flashy thunderstorms (Schoenherr 1992).

Approximately three miles east of the BSPP boundary the Palo Verde Mesa forms a sharp break in topography between the mesa and the Palo Verde Valley. This break is approximately 100 feet below the mesa on the eastern side towards the City of Blythe and Colorado River. In this area, the Palo Verde Valley is roughly equivalent to the historic floodplain of the Colorado River. The Palo Verde Mesa supports a substantial growth of mesquite at the mesa's edge providing substantial habitat values for many species of wildlife including resident and migrating birds, reptiles, small mammals, bighorn sheep and burro deer among many diverse plant assemblages (HCG 2007).

The BSPP is located in the alluvial-filled basin of the Palo Verde Mesa and the Palo Verde Mesa Groundwater Basin. This basin is bound by the McCoy Mountains to the west, the Little Maria Mountains to the northwest, and the Big Maria Mountains to the northeast. The BSPP is located northeast of the Chuckwalla Valley and Chuckwalla Bench. Surface water, which originates from the flanks of the McCoy Mountains, flows eastward through the area where surface waters either combine to form a larger dry wash or disperse where they enter a sandier alluvial plane, ultimately draining eastward towards the Colorado River. The McCoy Wash, a tributary to the Colorado River, is the largest surface water feature in this area. Ephemeral washes within the Project Disturbance Area flow from the McCoy Mountains in a west to east orientation and abate into the landscape prior to any surface hydrological connection with the McCoy Wash (Solar Millennium 2009a).

Vegetation and Wildlife

Natural Communities

Five vegetation communities occur within the Biological Resources Study Area (Study Area), a 23,359-acre area that encompasses the 4,169-acre Project Disturbance Area (including the Transmission Disturbance Area) for the BSPP, and a surrounding buffer area. On the proposed solar facility, located approximately one-half to one mile north of I-10 on the Palo Verde Mesa, the communities present include Sonoran creosote bush scrub, desert dry wash woodland, vegetated ephemeral swales (supporting a desert wash scrub of creosote bush and big galleta grass), unvegetated ephemeral dry wash, and broad expanses of desert pavement, a distinctive but largely unvegetated habitat. Three other cover types occur in the Study Area in the eastern portion, including agriculture, disturbed, and developed. The transmission line alignment crosses I-10 and terminates at the southeast end of Chuckwalla Valley at the Colorado River Substation. This area includes stabilized and partially stabilized desert dunes associated with the Chuckwalla-Palen dune system. No dunes or sand fields occur on the proposed solar plant site. Several desert washes of varying hydrologic capacity and size drain out of the McCoy Mountains from the west to east in the BSPP site. The majority of these washes support woody, riparian vegetation while drier, flashy washes located in the center of the BSPP site support a desert wash scrub of creosote bush and big galleta grass, with only widely scattered riparian trees. Active and fallow agriculture, developed, and disturbed areas also occur within the surrounding buffer area of the BSPP site in addition to the communities already mentioned **Biological Resources Figure 1**. Three of the five natural communities, desert dry wash woodland, creosote bush-big galleta, and stabilized and partially stabilized desert dunes are considered sensitive as indicated by the California Natural Diversity Database (CNDDB) (Solar Millennium 2009a, AECOM 2010a. Desert dry wash woodland, unvegetated ephemeral dry wash, and vegetated ephemeral swales (creosote bush-big galleta association) are considered state jurisdictional waters. These communities are discussed in more detail below. Vegetation communities were first classified by Holland and then cross-referenced with *A Manual of California Vegetation* (Sawyer and Keeler-Wolfe 1995), where appropriate. **Biological Resources Table 2** summarizes the acreage of natural communities that occurs within the Study Area (Solar Millennium 2009a, AECOM 2010a).

Biological Resources Table 2
Natural Communities/Cover Types

Vegetation Communities/Cover Type within Biological Resources Study Area [1]	Modified Project Disturbance Area	Approved Project Disturbance Area
Riparian		
Desert dry wash woodland	21.0	175
Unvegetated ephemeral dry wash	3.3	3.3
Vegetated ephemeral swales (creosote bush-big galleta association)	228.8	228.8
Subtotal Riparian	*253.2*	*550*

[1] The Study Area encompasses the Project Disturbance Area (area inside and outside the facility fence that will be disturbed by the project), the solar facility footprint area inside the facility fence including solar fields and other support structures and facilities, a 1-mile buffer area, and entire transmission line route and substation site footprint and 1-mile buffer area.

Upland		
Sonoran creosote bush scrub	3,722.7	6,488
Stabilized and partially stabilized desert dunes	25.3	37
Subtotal Upland	*3,748.0*	*6,525*
Other Cover Types		
Agricultural Land	2.3	1
Developed/Disturbed	165.9	0
Subtotal Other Cover Types	*168.2*	*1*
Total Acres	**4,169.3**	**7,0774**

Source: AECOM 2010q, NEBS2013a

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote scrub species of the Colorado Desert (Holland 1986). Within the Study Area, this community dominates and is characterized by sandy soils with a shallow clay pan and is the dominant vegetation community throughout the entire Study Area. The indicator plant species within this community are creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), ocotillo (*Fouqueria splendens*), and cheesebush (*Hymenoclea salsola*) (Solar Millennium 2009a).

Stabilized and Partially Stabilized Desert Dunes

These dune systems are described as 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*) (Holland 1986).

The western section of the transmission line route are exclusively within this habitat. The dunes within the Study Area are an important habitat type for the Mojave fringe-toed lizard, Harwood's phlox, western burrowing, American badger, desert kit fox, as well as a variety of common plant and wildlife species.

Agriculture

In fallow agricultural areas, ruderal vegetation is recolonizing previously farmed areas including Russian thistle (*Salsola tragus*), Sahara mustard (*Brassica tourneforteii*), and other exotic plant species interspersed with native vegetation from past agricultural disturbance and activities (Solar Millennium 2009a). Fallow and active agriculture fields provide habitat value to local and migratory wildlife in the form of food, cover, and shelter habitat, especially if fields are actively irrigated.

Developed

Developed areas consist of paved and unpaved areas associated with I-10, dirt access roads, a large concrete military runway and cleared land within the Study Area (Solar

Millennium 2009a). Paved roadways are often times used by mammals and cold-blooded species as movement corridors and/or as heat sources during cooler months or periods of the day in order to increase body temperatures.

Disturbed

Disturbed cover type consists of roads within the buffer area of the substation site (Solar Millennium 2009b).

Noxious Weeds

Noxious weeds are species of non-native plants included on the weed lists of the California Department of Food and Agriculture (CDFA) (CDFA 2007), the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the Bureau of Land Management (BLM). They are of particular concern in wild lands because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC 2006). Specifically, noxious weeds can alter habitat structure, increase fire frequency and intensity, decrease forage (including for special-status species, such as desert tortoise), exclude native plants, and decrease water availability for both plants and wildlife. Soil disturbance and gathering and channeling water create conditions favorable to the introduction of new noxious weeds or the spread of existing populations. Construction equipment, fill, and mulch can act as vectors introducing noxious weeds into an area.

Non-natives species were recorded as a part of Blythe BSPP surveys, but their locations and densities will not be mapped until spring and fall 2010 surveys. Six non-native species were observed within the study area: Sahara mustard, Russian thistle, salt cedar, Mediterranean grass, red brome, and brome fescue. Of these, all but brome fescue are noxious weeds and are identified on a list of the region's worst weeds compiled by the Low Desert Management (NRCS 2005). Noxious weeds found in the study area are discussed further below.

Sahara mustard (*Brassica tournefortii*) was found in disturbed areas throughout the study area (AECOM 2010a). This species is of high concern; it is a BLM weed of special concern and Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and recommends that it should be eradicated whenever encountered. This species is associated with impacts to habitat for native wildlife as well as for native plants. It promotes the spread of fire by increasing fuel load and competes with native plants for moisture and nutrients. In addition, it increases cover and works to stabilize sand, thereby affecting wildlife species dependent on open sandy habitat (Brossard et al. 2000; Barrows and Allen 2007).

Russian thistle (*Salsola* sp.) was found in disturbed areas throughout the study area (AECOM 2010a). Although all invasive plants share the trait of being adapted to disturbed habitat, Russian thistle or tumbleweed particularly tends to be restricted to roadway shoulders and other sites where the soil has been recently disturbed. However, once an area is disturbed this species competes readily and can affect native plant ecosystems and increase fire hazard (Orloff et al. 2008; Lovich 1999).Dune habitat is particularly vulnerable to non-native species, which can stabilize sand or block sand movement, and Russian thistle is considered an invasive species of primary concern in

this habitat (CDFG 2007). There is a high potential that Russian thistle could become established in the construction area and this species should be eradicated if observed. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006) and the CDFA has given it a “C” rating.

Mediterranean tamarisk or salt cedar (*Tamarix ramosissima*) is a riparian plant and is therefore restricted to habitats where there is perennial saturation such as springs and seeps, or runoff from poorly maintained water pipelines or well pumps. It was observed interspersed throughout desert dry wash woodland within the study area. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and it is a CDFA “B” rated species. Salt cedar is associated with many ecological impacts including impacts to channel geomorphology, groundwater availability, plant species diversity, and fire frequency (Lovich 1999). Salt cedar is associated with many ecological impacts including impacts to channel geomorphology, groundwater availability, plant species diversity, and fire frequency (Lovich 1999). Salt cedar can also affect sand dunes by blocking sand movement, a vital part of the natural function of these habitats (CDFG 2007).

Mediterranean grass (*Schismus arabicus, S. barbatus*) is prevalent throughout Sonoran creosote bush scrub within the study area. Mediterranean grass is an annual that reproduces by seed, and is widespread in arid and semi-arid California landscapes. This species competes effectively with native plants for nutrients and water and can provide cover that prevents native annuals from sprouting (VanDevender et al. 1997; Brossard et al. 2000) and contributes to dune stabilization (CDFG 2007). Fire, historically, was rare in the Colorado Desert. The presence of Mediterranean grass on other annual non-native grasses has provided a continuous and increased fuel load, influencing the extent, frequency, and intensity of fire in these ecosystems (Brooks and Pyke 2001; Brooks et al. 2004). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to eradicate.

Red brome (*Bromus madritensis* ssp. *rubens*) is an introduced Eurasian grass adapted to microhabitats that can be frequently found at the base of desert shrubs. It can also form carpet cover in pockets of fine grained soils in rough terrain off the bajada. It is found throughout California, especially in southern California, and is spreading rapidly in many vegetation communities including desert scrub. Seeds from this species can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread distribution, red brome is not considered feasible for general control.

Sensitive Vegetation Communities and Waters of the State

Ephemeral Drainages/Waters of the State

Virtually all surface hydrology within the Project Disturbance Area is from stormwater runoff originating in unnamed ephemeral washes west of the BSPP site from the McCoy Mountains and flowing eastward to the Palo Verde Mesa. These washes are a component of a large alluvial fan that generally comprises the Palo Verde Mesa (Galati & Blek 2009a). The closest major watercourse to the BSPP area is the McCoy Wash, a large ephemeral wash that drains to the Colorado River. The McCoy Wash is located outside the Project Disturbance Area and the ephemeral washes that flow eastward

from the McCoy Mountains abate into the landscape prior to any surface hydrological connection with the McCoy Wash.

The ephemeral washes within the Project Disturbance Area are generally microfloodplains with compound channels, is a common arid stream system (USACE 2008). With any compound/anastomosing ephemeral stream system in arid regions, the riparian corridor can be populated and lined with xeric riparian vegetation and unvegetated areas such as recently created swales and terraces (interfluves), or a mosaic of these types (Bendix and Hupp 2000). While the bed and bank topography in arid region stream systems are subtle, evidence of channelized flow fundamentally defines the presence of a stream. Swales are depressions or hollows, oftentimes vegetated but not necessarily so, where runoff from the surrounding uplands accumulates. Swales that yield channel flow are important sources of water, sediment, nutrients, and other materials during rainstorm and snowmelt runoff, and are considered integral parts of streams and jurisdictional under California Department of Fish and Game codes. The three types of jurisdictional waters of the state that were delineated within the Project Disturbance Area are described below.

Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community by the California Natural Diversity Data Base (CNDDB), BLM, and is also designated as state waters by CDFW. This vegetation community corresponds to CDFW's Blue Palo Verde-Ironwood-Smoke Tree Woodland habitat type (AECOM 2010a). This community is described by Holland as an open to densely covered, drought-deciduous, microphyll riparian scrub woodland. These habitat types often support braided wash channels that change patterns and flow directions following every surface flow event (Holland 1986). Typical indicator plant species of this community include but are not limited to blue palo verde (*Parkinsonia florida*), cheesebush, smoke tree (*Psorothamnus spinosus*), sweetbush (*Bebbia juncea* var. *aspera*), tamarisk (*Tamarisk* spp.), and catclaw acacia (*Acacia gregii*).

This community is dominated by an open tree layer of blue palo verde, honey mesquite, ironwood, and smoke tree with an understory of big galleta grass (*Pleuraphis rigida*), desert starvine (*Brandegea bigelovii*), and intermixed creosote scrub (*Larrea tridentata*) and Russian thistle (*Salsola tragus*) (Solar Millennium 2009a, AECOM 2010a). Desert dry wash woodland habitat was surveyed for wildlife use during December 2009 and various signs of coyote (*Canis latrans*), fox (either kit fox or gray fox) and bobcat (*Lynx rufus*) were observed. This habitat provides value to various species of wildlife in the form as food, cover, dispersal, and refuge habitat (AECOM 2010a).

Vegetated Ephemeral Washes of Creosote Bush-Big Galleta Grass Association

This vegetation community is relatively uncommon in California deserts (AECOM 2010a, Preliminary Habitat Mitigation and Monitoring Plan); it is not defined by Holland but was mapped and documented under the recent detailed mapping of the Mojave Desert region (Thomas et al. 2004; Sawyer, Keeler-Wolf & Evans 2009) and is defined by CDFW as a rare natural community, with a CNDDB State (NatureServe) Rank of G3 S2.2 (CDFW considers natural communities with a State Rank 3 or less to be rare). Communities with a State Rank of 3 have less than 100 documented occurrences or are represented by fewer than 50,000 acres statewide. Within the Study Area, the creosote

bush – big galleta grass community occurs as an understory component in the washes within the desert dry wash woodland and continues along the drier reaches of ephemeral desert washes where sandy fluvium collects. Dominant and indicator plants of this community include creosote bush, big galleta grass, and cheesebush, another characteristic perennial of ephemeral desert washes. Occasional associates found within this community include brownplume wirelettuce (*Stephanomeria pauciflora* var. *pauciflora*), Utah cynanchum (*Cynanchum utahense*), Hartweg's twinevine (*Sarcostemma cynanchoides* ssp. *hartwegii*), and trailing townula (*Sarcostemma hirtellum*) (AECOM 2010 a, Preliminary Habitat Mitigation and Monitoring Plan). This desert wash community often occurs as the only vegetated habitat in broad expanses of desert pavement, which increases its value to wildlife.

Unvegetated Ephemeral Dry Wash

This habitat community occurs within the transition zone between desert dry wash woodland in higher elevation areas and creosote bush-big galleta grass communities in flatter areas. Unvegetated dry washes provide movement corridors for small and large mammals and provide a seasonal water source not available in the surrounding dry uplands. Even the smaller washes have been shown to support a higher density of spring and summer annuals than the surrounding uplands and thus provide important habitat value.

Unvegetated ephemeral dry washes are defined by shelving and/or scour resulting in an established bed, bank, and channel. In areas where evidence of distinct shelving and/or scour were absent, but some indication of past surface water flow could be observed, it was ascertained that these features were either swales (that support low volume and duration surface flow and/or were low lying undefined relatively linear features in the landscape that are unvegetated or primarily populated exclusively by Sonoran creosote bush scrub) or eroded relictual washes (that support sheet flow) during rain events.

The ephemeral washes in the Project Disturbance Area generally linear features collectively composed of multiple, sinuous subchannels of varying sizes, resulting in anastomosed morphology. By virtue of the anastomosed morphology occurring within the washes, there are interfluves that have been formed by these multiple subchannels. Within the unvegetated ephemeral dry wash, there are interfluves of Sonoran creosote bush scrub habitat between the channels of the dry washes. These interfluves are upland features, encompassed by unvegetated ephemeral dry wash, and are not considered jurisdictional.

Functions and Values of Ephemeral Drainages/Waters of the State

The ephemeral washes within the Project Disturbance Area provide significant hydrologic, biogeochemical, plant and wildlife functions, which are discussed in detail in the project owner's data responses (pages BIO-59 through BIO-71, AECOM 2010a) and project owner's responses (NEBS 2013e).

Hydrologic Function: The established washes and ancillary drainage features are the primary fluvial systems within the survey area, and these provided a significant potential for aquifer recharge during storm events. The vegetated swales are the secondary fluvial system which does not present a significant potential for aquifer recharge.

However, the vegetated swales present high functions and values for surface water quality (USACE 1979). The ephemeral washes are not sufficiently developed to abate flooding in severe storms. However, the unvegetated portions of the ephemeral washes, and swale features and networks can intercept runoff and slow down the velocity of surface water and potentially remove or transform pollutants through physical, chemical, and biological processes improving water quality.

Biogeochemical Function: The xeric riparian areas potentially provide a sink for nutrients, organic compounds, metals, and components of organic matter. The desert dry wash woodland may also act as filters of sediments and organic matter. The xeric riparian areas may be a permanent sink for these substances. The inputs of detritus within the wash presents basic energy inputs at an ecosystem level for biochemical processes, nutrient cycling, and elemental import/export processes, which for desert dry wash woodland, are also functioning at a relatively high value level in comparison with the surrounding upland areas. Lacking established wash obligate vegetation for additional organic and inorganic inputs and uptake the unvegetated ephemeral dry washes are likely functioning at a relatively moderate to low level. The vegetated swale features and networks supporting low volume and short duration flow presents a moderate to low function and value for biogeochemical function and a high function and value for the retention of particulates during storm events (USACE 1979).

Plant Habitat Function: The ephemeral washes and vegetated swale networks provide habitat for establishment of more developed plant diversity and developed spatial structure because of access to water relative to upland areas. The diversity of plants also provides habitat to special-status species, discussed below. Desert dry wash woodland and vegetated swales offer high functions and value for plant habitat function and unvegetated ephemeral dry wash would present a moderate to low functions and values for plant habitat function.

Animal Habitat Function: The xeric riparian areas and unvegetated ephemeral dry washes are integral to the ecological function of the watershed. The ephemeral washes, both vegetated and unvegetated, and vegetated swale networks provide unique wildlife habitat with a diversity of vegetative and topography. Ephemeral washes provide foraging habitat, opportunities for burrowing and nesting, and corridor for wildlife movement.

Waters of the United States

The project owner concluded in their Jurisdictional Delineation Report (Galati & Blek 2009a) that the ephemeral desert washes within the Project Disturbance Area are isolated waters, and therefore are not waters of the United States under jurisdiction of the US Army Corps of Engineers (USACE). This conclusion was based in part on the observations that the ephemeral washes abated into the landscape with no direct connections to the McCoy Wash or any traditional navigable water bodies. A jurisdictional delineation report was submitted on August 24, 2009, then revised and updated in October 23, 2009 and November 25, 2009. In an August 2, 2010 letter, the Army Corps of Engineers made the determination that there are no waters of the United States on the BSPP site (NEBS 2013a, Appendix G).

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:

1. Listed as threatened or endangered or candidates for future listing as threatened or endangered under CESA or FESA;
2. Protected under other regulations (e.g. Migratory Bird Treaty Act);
3. Listed as species of concern by CDFW;
4. A plant species considered by the CNPS to be "rare, threatened, or endangered in California" (CRPR 1A, 1B, 2A, and 2B) as well as CRPR 3 and 4[2] plant species;
5. A plant listed as rare under the California Native Plant Protection Act[3];
6. 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
7. Any other species receiving consideration during environmental review under CEQA.

The BLM designates Sensitive species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species which were so designated within the last 5 years, and CRPR 1B species that occur on BLM lands. For the purposes of this analysis, Energy Commission staff considers all BLM Sensitive species as special-status species.

Biological Resources Table 3 lists all special-status species evaluated during the analysis that are known to occur or could potentially occur in the BSPP area and vicinity. Special-status species detected within the BSPP area are discussed in more detail below. Special-status species observed during the 2009, 2011, and 2012 field surveys are indicated by **bold-face type** (Solar Millennium 2009a, PVSI 2011a, NEBS 2013a).

[2] List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. CRPR 3 and 4 may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CRPR 3 and 4 plants should be included in the field surveys. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) Special Plants, Bryophytes, and Lichens List. [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking (CDFG 2009).

[3] As defined by the California Native Plant Protection Act, a plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901) (CDFG 2009).

Biological Resources Table 3
Special-Status Species Known to or With Potential to Occur in the BSPP Biological Resources Study Area

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1Sensitive/G5T3T4/S2
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2S3[4]
Harwood's milk-vetch	***Astragalus insularis var. harwoodii***	**__/__/2.2/__/G5T3/S2**
Coachella Valley milk-vetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2./Sensitive/G5T2/S2
California ayenia	*Ayenia compacta*	SE/__/2.3/__/G4/S3?
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2S3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4?/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G3/S2S3
Abram's spurge	***Chamaesyce abramsiana***	**__/__/2.2/__/G4/S2S3**
Arizona spurge	*Chamaesyce arizonica*	SR/__/2.3/__/G5/S2
Flat-seeded spurge	*Chamaesyce platysperma*	__/__/1B.2/Sensitive/G3/S1
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
Utah milkvine	***Cynanchum utahense***	**__/__/4.2/__/G4/S3.2**
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1
California ditaxis	*Ditaxis serrata var. californica*	__/__/3.2/__/G5T2T3/S2
Harwood's eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/BLM/G2/S3**
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[5]	*Mentzelia puberula*	__/__/2.2/__/G4/S2
Slender woolly-heads	*Nemacaulis denudata var. gracilis*	__/__/2.2/__/G3G4T3?/S2
White-margined penstemon	*Penstemon albomarginatus*	__/_ /1B.1/Sensitive/G2/S1
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S2
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	***Proboscidea althaeifolia***	**__/__/4.3/__/G5/S3.3**
Orocopia sage	*Salvia greatae*	__/__/1B.3./Sensitive/G2/S2

[5] Proposed new addition to the CNPS Inventory (Andre, pers comm)

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2?
Cove's cassia	*Senna covesii*	__/__/2.2/__/G5?/S2
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
Palmer's jackass clover[6]	*Wislizenia refracta ssp. palmeri*	__/__/2.2/__/G5T2T4/S1

WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal/BLM**
Reptiles/Amphibians		
Desert tortoise	***Gopherus agassizii***	**ST/FT**
Couch's spadefoot toad	*Scaphiopus couchii*	SSC/__/ Sensitive
Mojave fringe-toed lizard	***Uma scoparia***	**SSC/__/ Sensitive**
Desert rosy boa	*Charina (Lichanura) trivirgata*	__/__
Chuckwalla	***Sauromalus obesus***	**__/__**
Birds*staff has provided expanded avian species lists		
Yuma clapper rail***	***Rallus longirostris yumanensis***	**FP, T/E/__**
Bufflehead**	*Bucephala albeola*	__/__/__
Western grebe**	*Aechmophorus occidentalis*	__/__/__
Pied-billed grebe**	*Podilymbus podiceps*	__/__/__
Eared grebe	*Podiceps nigricolis*	__/__/__
American coot**	*Fulica americana*	__/__/__
Bullock's oriole**	*Icterus bullockii*	__/__/__
Lesser goldfinch**	*Carduelis psaltria*	__/__/__
Black-throated grey warbler**	*Dendroica nigrescens*	__/__/__
Orange-crowned warbler**	*Vermivora celata*	__/__/__
Wilsons' warbler**	*Cardellina pusilla*	__/__/__
California brown pelican (Nesting colonies and communal roosts)	***Pelecanus occidentalis***	**FP/delisted/delisted**
Black vulture	*Coragyps atratus*	__/__/__
Turkey vulture	*Cathartes aura*	__/__/__
Red-tailed hawk	*Buteo jamaicensis*	_/__/__
American kestrel**	*Falco sparvius*	__/__/__
Gambel's quail	*Callipepla gambelii*	_/__/__
Yuma clapper rail	***Rallus longirostris yumanensis***	**FP, T/E/__**
Vaux's swift	***Chaetura vauxi***	**SSC/__/__**
Killdeer**	*Charadrius vociferus*	_/__/__
White-throated swift	*Aeronautes saxatalis*	__/__/__
Ash-throated flycatcher	*Myiarchus cinerascens*	__/__/__

[6] Proposed new addition to the CNPS Inventory (Silverman, pers comm)

WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal/BLM**
Yellow warbler	***Dendroica petechia sonorana***	**SSC/BCC/__**
Northern rough-winged swallow	*Stelgidopteryx serripenis*	__/__/__
Barn swallow	*Hirundo rustica*	__/__/__
Brewer's sparrow	***Spizella breweri***	**__/BCC/__**
Barn owl**	*Tyto alba*	__/__/__
Great horned owl	*Bubo virginianus*	__/__/__
Long-eared owl	*Asio otus*	SSC/__/__
Western burrowing owl	*Athene cunicularia hypugaea*	SSC/BCC/ Sensitive
Golden eagle	*Aquila chrysaetos*	FP/__/ Sensitive
Bald eagle	*Haliaeetus leucocephalus*	FP/ BCC /Sensitive
Short-eared owl	*Asio flammeus*	SSC/__/__
Elf owl	Micrathene whitneyi	SE/BCC/__
Ferruginous hawk	*Buteo regalis*	WL/ Sensitive
Swainson's hawk	*Buteo swainsoni*	ST/__/__
Harris' hawk	*Parabuteo unicinctus*	WL/__/__
Merlin	*Falco columbarius*	WL/__/__
Prairie falcon	***Falco mexicanus***	**WL/BCC/__**
American peregrine falcon	***Falco peregrinus anatum***	**FP/BCC/__**
Vaux's swift	*Chaetura vauxi*	SSC/__/__
Mountain plover	***Charadrius montanus***	**SSC/__/ Sensitive**
Northern harrier	*Circus cyaneus*	SSC/__/__
Gilded flicker	***Colaptes chrysoides***	**SE/BCC/__**
Yellow warbler	***Dendroica petechia sonorana***	**SSC/BCC/__**
California horned lark	*Eremophila alpestris actia*	WL/__/__
Yellow-breasted chat	*Icteria virens*	SSC/__/__
Loggerhead shrike	***Lanius ludovicianus***	**SSC/BCC/__**
Gila woodpecker	***Melanerpes uropygialis***	**SE/BCC/Sensitive**
Black-tailed gnatcatcher	***Polioptila melanura***	**__/__/__**
Purple martin	*Progne subis*	SSC/__/__
Vermilion flycatcher	*Pyrocephalus rubinus*	SSC
Bendire's thrasher	***Toxostoma bendirei***	**SSC/BCC/Sensitive**
Crissal thrasher	*Toxostoma crissale*	SSC/__/__
Le Conte's thrasher	***Toxostoma lecontei***	**WL/BCC/Sensitive**
Mammals		
Pallid bat	*Antrozous pallidus*	SSC/__ / Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC/__/ Sensitive
Burro	*Equus asinus*	__/__/__
Spotted bat	*Euderma maculatum*	SSC/__/ Sensitive
Western mastiff bat	*Eumops perotis californicus*	SSC/__/ Sensitive
Hoary bat	*Lasiurus cinereus*	__/__/__
California leaf-nosed bat	*Macrotus californicus*	SSC/__/ Sensitive
Arizona myotis	*Myotis occultus*	SSC

WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal/BLM**
Cave myotis	*Myotis velifer*	SSC/__/ Sensitive
Yuma myotis	*Myotis yumanensis*	__/__/ Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__/__
Pocket free-tailed bat	*Nyctinomops femorosaccus*	SSC/__/__
Big free-tailed bat	*Nyctinomops macrotis*	SSC/__/_
Burro deer *	*Odocoileus hemionus eremicus*	__/__/__
Nelson's bighorn sheep*	*Ovis canadensis nelson*	__/ Sensitive
Yuma mountain lion	*Puma concolor browni*	SSC/__/__
American badger	***Taxidea taxus***	**SSC/__/__**
Desert kit fox	***Vulpes macrotis arsipus***	**__/__/__**

* Potential deer or bighorn scat was found during 2009 field survey but could not be differentiated to species. Staff concluded that scat was more likely to be deer.
**These species have been found injured or dead at the Genesis Solar Energy Project Site, located just several miles to the west of the BSPP project.
***This species has been found dead at the Desert Sunlight Solar Farm.
Sources: CNDDB 2009

Status Codes:

Federal FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities <www.fws.gov/migratorybirds/reports/BCC2002.pdf>

State SSC = California Species of Special Concern Species of concern to CDFW because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE = State listed as endangered
ST = State listed as threatened
FP = State fully protected
WL = State watch list

California Rare Plant Rank
List 1A = Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2A = Plants Presumed Extirpated in California, But More Common Elsewhere

List 2B = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Bureau of Land Management
BLM Sensitive = Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. BLM Sensitive species also include all Federal Candidate species and Federal Delisted species which were so designated within the last 5 years and CNPS List 1B plant species that occur on BLM lands.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf.

Global Rank/State Rank
Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values
G1 or S1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals
G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals
G3 or S3 = 21-100 EOs OR 3,000-10,000 individuals
G4 or S4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 or S5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical
.1 = very threatened
.2 = threatened
.3 = no current threats known

Special-status Plants

In order to better define and categorize rarity in California's flora, the CNPS Rare Plant Program and Rare Plant Program Committee developed the new California Rare Plant Ranks (CRPR) 2A and CRPR 2B in 2010 (CNPS 2010). These new categories, in addition to the initial categories, are described as follows:

- CRPR 1A are plants presumed extirpated in California and either rare or extinct elsewhere
- CRPR 1B are rare, threatened, or endangered in California and elsewhere
- CRPR 2A are plants presumed extirpated in California, but more common elsewhere
- CRPR 2B are rare, threatened, or endangered in California but more common elsewhere
- CRPR 3 are plants which need more information
- CRPR 4 are limited distribution or a watch list
- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current

As shown in **Biological Resources Table 3**, several special-status plant species have the potential to occur within the Study area. Eight of these species were observed within the Study Area: Harwood's milk-vetch, Abram's spurge, Las Animas columbra, ribbed cryptantha, winged cryptantha, Utah milkvine, Harwood's eriastrum, and desert unicorn plant. Las Animas and winged cryptantha were observed outside the Disturbance Study Area to the west for the modified project. Of the eight species observed, only the Harwood's milk-vetch, Abram's spurge, ribbed cryptantha, Utah milkvine, Harwood's eriastrum, and desert unicorn plant occur within the Project Disturbance Area.

The special-status plants found in the Study area during spring 2010 and 2011 and fall 2012 surveys of the entire study area and buffer, and the proposed transmission line corridor for the BSPP is described below (see **Biological Resources Figure 2**).

Desert Unicorn Plant

Desert unicorn plant is a California Rare Plant Rank (CRPR) 4.3 species meaning it has limited distribution, but is not very endangered in California. California Rare Plant Rank was formerly known as CRPR, is a ranking system created to define and characterize rarity of California's flora. Desert unicorn plant is also a plant species covered under the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM CDD 2002) and it has a CNDDB (NatureServe) Global and State Rank of G5 S3.3. This plant occurs in Sonoran desert scrub habitats in San Bernardino, Imperial, and Riverside counties of California, and extends south into Baja and east into New Mexico.

This is a low-growing, perennial species that occurs in sandy soils along washes. There are 13 records known from the NECO planning area in Milipitas Wash, Chuckwalla Valley, and Chemehuevi Valley (BLM CDD 2002). There are no records in the CNDDB for the entire state of California, but there are 36 records in the Consortium of California Herbaria from Riverside, Imperial, San Bernardino, and San Diego counties, several of which are from the Chuckwalla Mountains and Desert Center area and the Ford Dry Lake area (CCH 2010). The blooming period for this species is from May to August. Desert unicorn plant was identified within the Project Disturbance Area during spring 2009 field surveys from a single collection of fruits from an unvegetated wash in the center of the facility footprint area. In spring 2010, a wetter year, 26 additional plants were found, mostly in the Reconfigured Alternative footprint in the southern portion of the Project Disturbance Area. Fall 2012 surveys observed 1,203 plants in the Project Disturbance Area and a total of 1,687 plants within the Survey Area (including a 1-mile buffer).

Harwood's Milk-vetch

Harwood's milk-vetch is a CCRPR 2.2 plant species, which means that it is classified as fairly endangered in California, but more common elsewhere (CNPS 2009); it is also a plant species covered under NECO (BLM CDD 2002). This is an annual herb species that mainly occurs in Sonoran desert scrub habitat and occurs throughout the Colorado Desert (BLM CDD 2002). This species is found in desert dunes and sandy or gravelly areas throughout the Mojavean and Sonoran deserts covering portions of Riverside, and San Diego counties (CNPS 2009). It is documented with 21 occurrences in CNDDB and 42 records in the California Consortium of California Herbaria (roughly half of which are duplications of the CNDDB occurrences). Occurrences in the BSPP vicinity include: Wiley's Well Road between McCoy and Mule Mountains, Ogilby Road in Imperial County, and three locales west of Blythe, the Pinto Basin, and Chuckwalla Basin in Riverside County. Several additional large occurrences have been documented in Chuckwalla Valley on other renewable energy projects between Ford Dry Lake and Palen Lake, and the spring 2010 surveys of the Blythe BSPP revealed an additional 2,748 plants; 677 of these were documented in the eastern portion of the solar plant site and transmission line alignment; most were found in the one-mile buffer. Harwood's milk-vetch has also been reported from Baja California, Sonora Mexico, and portions of Yuma County, Arizona (Reiser 1994).

Las Animas Colubrina

Las Animas colubrina is a CRPR 2.3 species indicating it is rare but not very endangered in California and more common elsewhere (CNPS 2009); it is also a plant species covered under NECO (BLM CDD 2002). This species is an evergreen shrub, long recognized for its anti tumor properties, and occurs in Mojavean and Sonoran desert scrub (creosote bush series) and occurs at elevations from approximately 30 to 3,000 feet. Dry canyonlands in Mojavean desert scrub is the preferred habitat of this species (Reiser 1994). This species has also been reported from Joshua tree woodland habitats but primarily occurs in dry canyons with gravelly, sandy soils. The distribution of this species includes San Diego, Imperial, and Riverside counties; portions of Arizona; Baja California; and Sonora, Mexico. This species has been reported from isolated desert locales in Joshua Tree National Monument, the Eagle Mountains, and Chuckwalla Mountains (Reiser 1994). There are expected to be approximately 27

occurrences primarily from the Chocolate Mountains area (BLM 2002, CNDDB 2010). Las Animas colubrina was observed within the Study Area during spring 2009 field surveys for the approved project; approximately 57 plants were observed within incised washes in the western portion of the Project Disturbance Area and 117 plants were within the survey buffer area. This species was observed flowering in April, the earliest that this species typically blooms (AECOM 2010a). No additional plants were found during the spring 2010 surveys. No Las Animas plants occur within the Project Disturbance Area for the modified project.

Ribbed Cryptantha

Ribbed cryptantha is a CRPR 4.3 species meaning it has a limited distribution but is not very endangered in California. This species typically occurs in loose friable soils in the eastern Mojave and Sonoran deserts in Imperial, Riverside, San Diego, and San Bernardino counties (CNPS 2009). Ribbed cryptantha occurs in the eastern Mojave Desert and the Sonoran Desert from California to Arizona and south to Baja California, Mexico. It commonly occurs in stabilized and partially stabilized desert dunes and sandy areas of Sonoran and Mojavean desert creosote bush scrub, which is the primary vegetation community that characterizes the Study Area (AECOM 2010a). There are 116 records of this species in the Consortium of California Herbaria database from several locations throughout Riverside, San Diego, and Imperial counties (CCH 2010).

This species was observed within the Study Area during spring 2009 field surveys but not mapped. In the spring 2010 surveys, over 71,000 of these annuals were documented in the entire Study Area and buffer; roughly half of these occur within the Project Disturbance Area. Similarly large populations have been found in Chuckwalla Valley between Ford Dry Lake and Palen Lake, and it is assumed that it occurs throughout the Chuckwalla Valley. All habitats within the Study area are suitable for this species.

Winged cryptantha

Winged cryptantha is a CRPR 4.3; it has a limited distribution but is not immediately threatened. It blooms March and April in Mojave and Sonora desert scrub from 300 to 5000 feet elevation. It is documented from Inyo County south through the Mojave and Sonora deserts to Sonora-Mexico and Baja California. As a CRPR 4, it is not tracked in CNDDB but there are 79 records of this species in the Consortium of California Herbaria database (CCH 2010), including occurrences in the McCoy Mountains and on the Blythe area desert pavement habitats. This spring annual was not detected during the 2009 surveys but 15 plants were documented within the one-mile buffer; no plants were found within the Project Disturbance Area. An occurrence in the Project Disturbance Area, if detected, would occur near the center of the species range in California. No winged cryptantha plants occur within the Project Disturbance Area for the modified project.

Cottontop Cactus

Cottontop cactus has no legally protected status. This species has been documented in Mojave and Sonoran deserts of Arizona, California, and Nevada, and also down into Mexico. Usually the species is found in rocky flats and washes, bajadas, rock ledges, Mojave and Sonoran desert scrub, igneous and calcareous substrates, at low elevations up to 1,700m (CalFlora, 2008). Occurrences in California range across San Bernardino, Riverside, Kern, Imperial, San Diego, and Inyo counties. Surveys performed in 2010 detected a small population of 16 plants; 10 of these were in the one-mile buffer.

Harwood's Eriastrum

Harwood's phlox, also known as Harwood's phlox, is a BLM Sensitive spring annual known from fewer than 20 occurrences worldwide. It is a CNPS List 1B.2 species, which indicates it is rare, threatened, or endangered throughout its range. This species is associated with sandy plains or dunes, but typically semi-stabilized soils (CNPS 2010). Its global range is restricted to 14 known occurrences in San Diego, Riverside, and San Bernardino counties, typically in dunes associated with the margins around dry lakes such as Dale, Cadiz, and Soda lakes. Surveys conducted in spring of 2010 located this plant primarily in the sandy areas around the substation site and along the transmission alignment south of I-10, where 2,134 plants were located and mapped within the Project Disturbance Area. Another approximate 1,300 plants were found in the one-mile buffer (AECOM, 2010u).

Utah Milkvine

Utah milkvine is on CRPR 4.2 which indicates it is not rare or endangered from a statewide perspective but there are known or documented threats. This species occurs in Mojavean and Sonoran desert scrub habitats, typically sandy or gravelly soils, from approximately 500 feet to 4,300 feet in elevation (CNPS 2009). The range in California includes San Diego, Imperial, Riverside, and San Bernardino counties, and it extends into portions of Arizona, Nevada, and Utah. As a CRPR 4, it is not tracked by CNDDB but there are 58 records of this species from the Consortium of California Herbaria database, primarily from San Bernardino and San Diego counties. There is one local record from the nearby Big Maria Mountains from wash and stabilized dune habitat at approximately 1,200 feet elevation (CCH 2010).

This species was identified within the Study Area during spring 2009 and 2010 field surveys; approximately 398 individual plants were identified within the washes draining from the McCoy Mountains on the western as well as the eastern portion of the Study Area. Suitable habitat for this species is present within the buffer area in the deeply incised washes (AECOM 2010a, DR-BIO-84, Figure DR-BIO-86). Suitable habitat also occurs within the transmission line area.

Abram's spurge

Abram's spurge is a late-season, ephemeral annual that responds to summer monsoonal rains but dries quickly and cannot be detected during routine spring surveys. It is a CRPR 2.2 species meaning it is fairly rare in California but more common elsewhere (CNPS 2009). Habitat consists of sandy flats in creosote bush scrub habitat from approximately 600 to 2,700 feet above mean sea level. This summer annual

occurs in halophytic (saline-alkaline) scrub flats, playas, and along inlets and floodplains of playas and always seems to prefer the lower floodplain ecotone but can also extend higher up in the floodplain drainages (Silverman, pers. comm.). Based on fourteen Consortium of California Herbaria database records for this species, habitats in Riverside, San Diego, and Imperial counties consist of sandy soil habitats often along dry lake margins, whereas documented occurrences in San Bernardino County occur on coarser, possibly sandy loams. Abram's spurge occurs from San Bernardino County to Imperial and eastern San Diego counties to Arizona, Nevada, Mexico, and Baja California (GSEP 2009a,b). The CNDDB (CNDDB 2010) lists 15 occurrences of this plant within the Riverside, Imperial, San Bernardino, and San Diego counties in California, east through Nevada to Arizona, and as far south as Baja California, Mexico. Of the total of 15 occurrences in California, seven of these are protected under Park Service, CDFW, or State Park ownership. A total of four records are historical records and one of these occurrences has documented threats which include grazing. A recent 2000 CNDDB record is from a location near the Blythe BSPP site; approximately 0.5 mile east of Ford Dry Lake on Gasline Road just south of I-10, and reported as a "substantial population" (CNDDB 2010).

The blooming period is identified by CNPS as September through November (CNPS 2009). Since the BSPP site occurs in the Chuckwalla Valley of the Sonoran Desert, an area known for bi-modal rain patterns and late summer/fall rains, this species typically only blooms during summer or fall months following monsoonal rains (>+/- 0.10 inch) (Silverman pers. comm.). On average, August receives the most rainfall, although rainfall is also received during winter months of December, January, and February. Regional botanical experts have concluded that this, and other summer annuals, may be missed if surveys are only conducted within the mid-March through mid-April window, and that a full inventory at multiple temporal windows are necessary in order to capture all appropriate growing conditions (typically following 12 to 18 mm rain events) (CEC 2009a).

Surveys for late season annuals were conducted in August and September 2012. Abram's spurge was found in the western portion of the Project Disturbance Area (Unit 4) (Figure 5.1-1 NEBS 2013a). Over 2,000 Abrams' spurge plants were observed and are within Unit 4. This occurrence extends north for at least 2 miles beyond the modified BSPP boundary. Another occurrence of more than 85 individuals are south of I-10 along the gen-tie route and another occurrence is along the north side of Black Rock Road, north of 1-10, with greater than 14,000 individuals.

Special-status Wildlife

Desert Tortoise

The desert tortoise was state-listed in California as threatened on August 3, 1989. The Mojave population was federally listed as threatened on April 2 1990, and critical habitat was designated on February 8, 1994. The desert tortoise is a large slow growing herbivorous reptile that is well adapted to a variable and often harsh desert environment (USFWS 2011b). In the United States the desert tortoise's range includes portions of the Mojave and Sonoran desert regions of southern California, southern Nevada, southwestern Utah, and western Arizona. In Mexico, the species is found throughout

most of Sonora and into portions of Sinaloa. Based on genetic differences there are two recognized populations of desert tortoise in the United States; these are the Mojave and Sonoran populations (USFWS 2011b). Recently, genetic data suggest these groups are unique species. Although the species often look similar, the differentiation between the Mojave and Sonoran assemblages of the desert tortoise are supported via multiple forms of evidence, including morphology, ecology, and genetics (Weinstein and Berry 1987; Lamb et al. 1989; Lamb and Lydehard 1994; Berry et al. 2002; Van Devender 2002a; 2002b; Murphy et al. 2007). The Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (a division of the Sonoran Desert). Desert tortoises are adapted to living in a highly variable and often harsh desert environment. They spend much of their lives in burrows, even during their seasons of activity, which generally coincides with the greatest annual forage availability. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. Activity does decrease in summer, but tortoises often emerge after summer rain storms to drink (Henen et al. 1998). Desert tortoises in the project region are active during the late summer months often in response to seasonal rainfall. Because up to 30 percent of the annual precipitation falls in response to summer monsoons; the region supports two distinct annual floras on which tortoises can feed (USFWS 2011a).

During activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Berry 1974; Luckenbach 1982; Esque 1994). During periods of inactivity, they reduce their metabolism and water loss and consume very little food. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets (Nagy and Medica 1986; Peterson 1996a,b; Henen et al. 1998).

The size of desert tortoise home ranges varies with respect to location and year (Berry 1986a) and also serves as an indicator of resource availability and opportunity for reproduction and social interactions (O'Connor *et al.* 1994). Females have long-term home ranges that may be as little or less than half that of the average male, which can range to up to 200 acres (Burge 1977; Berry 1986a; Duda *et al*. 1999; Harless *et al*. 2009). Core areas used within tortoises' larger home ranges depend on the number of burrows used within those areas (Harless *et al*. 2009). Thus, an individual home range is best viewed as a network of burrows, connected by somewhat linear corridors, which the desert tortoise visits serially through the year (O'Connor *et al*. 1994). Over its lifetime, each desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of more than 7 miles at a time (Berry 1986a).

Tortoises are long-lived and grow slowly, requiring 13 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner *et al.* 1984a; Bury 1987; Germano 1994). Mating occurs both during spring and fall (Black 1976; Rostal *et al.* 1994), and the number of eggs as well as the number of clutches (set of eggs laid at a single time) that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Turner *et al.* 1986, 1987; Henen 1997; McLuckie and Fridell 2002). Egg-laying occurs primarily from April to July (Rostal

et al. 1994; USFWS 1994); the female typically lays 2-14 eggs (average 5-6) eggs in an earthen chamber excavated near the mouth of a burrow or under a bush (Woodbury and Hardy 1948; USFWS 1994). The eggs typically hatch 90 to 120 days later, between August and October. The success rate of clutches has proven difficult to measure, but predation, while highly variable (Bjurlin and Bissonette 2004), appears to play an important role in clutch failure (Germano 1994).

The majority of threats to the desert tortoise and its habitat are associated with human land uses. Many of those identified in the 1994 and 2011 Recovery Plans, and that formed the basis for listing the species as threatened, continue to affect the tortoise today (USFWS 2011). Some of the threats identified at the time of listing include urbanization, upper respiratory tract disease and possibly other diseases, predation by common ravens and domestic and feral dogs, unauthorized off-road vehicle activity, authorized vehicular activity, illegal collecting, mortality on paved roads, vandalism, drought, livestock grazing, feral burros, non-native plants, changes to natural fire regimes, and environmental contaminants (USFWS 1994).

Even though a wide range of threats are known to affect desert tortoises and their habitat, very little is known about their demographic impacts on tortoise populations or the relative contributions each threat makes to tortoise mortality (Boarman 2002a). Extensive research shows that all of these threats can directly kill or indirectly affect tortoises; research has also clarified many mechanisms by which these threats act on individuals. While current research results can lead to predictions about how local tortoise abundance should be affected by the presence of threats, quantitative estimates of the magnitude of these threats, or of their relative importance, have not yet been developed. Thus, the Draft Revised Recovery Plan focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations (USFWS 2008a).

The original *Desert Tortoise (Mojave Population) Recovery Plan* identified six recovery units (Upper Virgin River, Northeastern Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, and Western Mojave) and recommended the establishment of 14 Desert Wildlife Management Areas (DWMAs) throughout the recovery units (USFWS 1994). Since 1994, greater insight into patterns of both ecological and genetic variation within the Mojave desert tortoise population has been gained. Based on this information the USFWS 2011 *Desert Tortoise (Mojave Population) Recovery Plan* identifies revised recovery unit boundaries and identified five recovery units for the Mojave population of desert tortoise. These include the Upper Virgin River; Northeastern Mojave; Eastern Mojave; Western Mojave; and Colorado Desert. Although the Recovery Unit designation does not provide special legal protection, the USFWS defines recovery units as special units that are geographically identifiable and are essential to the recovery of the entire listed population; that is recovery units are individually necessary to conserve the genetic, behavioral, morphological, and ecological diversity necessary for long-term sustainability of the entire listed population (USFWS 2011a).

The BSPP is located in the Colorado Desert Recovery Unit. This recovery unit combines the 1994 Eastern Colorado and Northern Colorado recovery units, as well as a portion of the Eastern Mojave Recovery Unit in Piute and Fenner valleys (USFWS 2012). Desert tortoise in this recovery unit are found primarily in “well-developed

washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities" (USFWS 1994a). Habitat within this recovery unit has been described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout the recovery unit (USFWS 2005). The highest desert tortoise densities within this recovery unit occur in Chemehuevi and Ward valleys (approximately 60 miles north of the Project); on the Chuckwalla Bench within the Chuckwalla DWMA and associated Critical Habitat Unit (CHU); and in Joshua Tree National Park (approximately 40 miles northwest of the Project). Desert tortoise densities at the Chuckwalla Bench in 1992 were estimated between 22 and 49 adults per square kilometer (approximately 57–127 adults per square mile) but have shown declining trends (Berry 1997; Tracey et al. 2004).

Density estimates from range-wide sampling over the past decade have resulted in general estimates of desert tortoise density for the entire Eastern Colorado Recovery Unit of approximately 5.9 animals per square kilometer, with estimates of 3.7 per square kilometer on BLM-managed lands (USFWS 2010). Generally the data suggest the species may still be in decline across most of its range

As part of the application process, the project owner prepared an evaluation of desert tortoise habitat in the region based on the recent USGS habitat model (Nussear et al. 2009). Based on the model, habitat quality is ranked from 0-1, with 1 representing high quality habitat. Values in the Project Disturbance Area range from of 0.4-0.6 in the western most edge of the solar facility site to 0.3 and below for the rest of the Project Disturbance Area (**Biological Resources Figure 3**).

Protocol-level surveys of part of the Project Disturbance Area were conducted in spring 2009. The project owner conducted additional protocol-level surveys in fall 2009 and spring 2010 to cover the southernmost 2.1 miles of the proposed transmission line corridor. Additional protocol-level desert tortoise surveys took place in May 2011 for changes in the gen-tie alternatives for the Colorado River Substation (PVSI 2011a). Spring 2009 survey results of the Project Disturbance Area include 1 adult desert tortoise, 65 burrows (Class 1-5), 147 pallets (Class 1-5), 45 scat (Class 1-5), 383 tortoise shell remains (Class 2-5), and 1 drinking depression (AECOM 2010a). Additional observations of two adult desert tortoises from Blythe BSPP Area buffers are included in the Revised Desert Tortoise Technical Report (AECOM 2010i). During 2010 surveys, an additional live tortoise was observed, along with Class 2 burrows, bone fragments, and other desert tortoise sign, indicating use of the BSPP area, particularly the south side.

Mojave Fringe-toed Lizard

The Mojave fringe-toed lizard is endemic to southern California and a small area of western Arizona, where it is restricted to aeolian sand habitats in the deserts of Los Angeles, Riverside, and San Bernardino counties in California and La Paz County in Arizona (Hollingsworth and Beaman 1999; Stebbins 1985). Nearly all records for this species are associated with present-day and historical drainages and associated sand dune complexes of the Mojave and Amargosa rivers (Norris, 1958).

Their distribution is naturally fragmented because of its obligate habitat specificity to lose sand, a patchy habitat type (Murphy et al. 2007). Many local populations of this species are quite small, with small patches of sand supporting small populations of lizards. This fragmented pattern of distribution leaves the species vulnerable to local extirpations from additional habitat disturbance and fragmentation (Murphy et al. 2007). The loose wind-blown sand habitat, upon which the species is dependent, is a fragile ecosystem requiring the protection against both direct and indirect disturbances (Weaver, 1981; Barrows, 1996). Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will also affect this species (Turner et al. 1984; Jennings and Hayes 1994). Additional threats to this species include habitat loss or damage from urban development, off-highway vehicles (OHV), and agriculture. Aside from the direct loss of land, development can also increase predators, such as the common raven, to occupied habitat.

Murphy et al. (2006) identified two maternal lineages of this species; the northern lineage is associated with the Amargosa River drainage system, and the southern with the Mojave River drainage system, Bristol Trough, Clark's Pass (including Palen Lake and Pinto Wash), and the Colorado River sand transport systems.

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range (Norris 1958; Jennings and Hayes 1994). This species is totally restricted to habitats of fine, loose, aeolian sand, typically with sand grain size no coarser than 0.375 mm in diameter (Turner et al. 1984; Jennings and Hayes 1994; Stebbins 1944). It burrows in the sand for both cover from predators and protection from undesirable temperatures (Stebbins 1944), though it will also seek shelter in rodent burrows. They are primarily insectivorous, but also eat plant food including leaves, seeds, and buds (Stebbins 1944).

Mojave fringe-toed lizards normally hibernate from November to February, emerging from hibernation sites from March to April. The breeding season is April to July, and adult Mojave fringe-toed lizards reach sexual maturity two summers after hatching. Females deposit 2-5 eggs in sandy hills or hummocks May through July (Mayhew 1964, Jennings and Hayes 1994). April to May, while temperatures are relatively cool, this species is active during mid-day; from May to September, they are active in mornings and late afternoon, but seek cover during the hottest parts of the day. Common predators of the Mojave fringe-toed lizard include burrowing owls, leopard lizards, badgers, loggerhead shrikes, roadrunners, various snakes, and coyotes (Jennings and Hayes 1994).

The only habitat for Mojave fringe-toed lizard in the Project Disturbance Area is the 50 acres of stabilized and partially stabilized sand dune habitat south of I-10 along the proposed transmission line corridor. During October 2009 protocol desert tortoise surveys, 57 Mojave fringe-toed lizards were observed; 15 of these were found within the Colorado substation footprint (Solar Millennium 2009a). **Biological Resources Figure 4** shows the locations of Mojave fringe-toed lizards observed in the Project Disturbance Area and associated buffers. On May 3 and 4, 2011, surveys for Mojave fringe-toed lizard were conducted due to changes in the Blythe BSPP gen-tie alignment for the Colorado River Substation (alternatives 1 and 2) (Appendix B of PVSI 2011a). Unlike previous surveys, individual counts of Mojave fringe-toes lizards were not done.

However, Mojave fringe-toed lizards were observed during desert tortoise protocol surveys in the stabilized and partially stabilized sand dune habitat.

Couch's Spadefoot Toad

Couch's spadefoot toad is found in southeastern California east through Arizona, New Mexico, Texas, and Oklahoma, south to San Luis Potosi, Nayarit, Mexico, at the southern tip of Baja California, Mexico, and an isolated population in Colorado. In California, it is found in the extreme southeast, including southeastern San Bernardino County and eastern Riverside and Imperial Counties (Jennings and Hayes 1994). Couch's spadefoot are found in a variety of plant communities, including desert dry wash woodland, creosote bush scrub, and alkali sink scrub. They require habitat with substrate capable of sustaining temporary pools for breeding, and loose enough to permit burial in subterranean burrows (Jennings and Hayes 1994, BLM CDD 2002). Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas (Morey 2005; Morey, pers. comm.; Mayhew 1965). Natural scour sites in washes with breeding toads (included in Dimmitt 1977) had washed down to a hardpan, which enabled ponding (Dimmitt, pers. comm.). The majority of known Couch's spadefoot toad breeding ponds are artificial, though this may be because of the difficulty of locating natural ponds within the limited amount of time ponds may retain water. Couch's spadefoot require a food source, primarily alate termites, but also includes beetles, ants, grasshoppers, solpugids, scorpions, and centipedes.

This species is dormant from 8-10 months of the year, emerging from burrows at the onset of warm summer rains. Emergence appears to be triggered by the low frequency sound caused by falling rain, though it appears to be inhibited by low soil temperatures. Threats to Couch's spadefoot include loss of habitat from urbanization and agriculture and impacts from off-highway vehicles, which can destroy potential pool habitat. There are also indications that the low-frequency sound created by off-highway vehicles may trigger emergence cues, and result in emergence in poor environmental conditions (Jennings and Hayes 1994). Emergence may also be triggered by construction vehicle noise (Dimmitt, pers. comm.).

No Couch's spadefoot toads were observed during surveys conducted in 2009 and spring 2010; however, because of the short time this species is above ground, and because the surveys were not conducted during the proper season (i.e., after summer rains), the lack of observations does not suggest the species is absent from the BSPP site. Recently, spadefoot toad were located in August 2012 several spadefoot toads were found on the Genesis Solar Energy Project site, following a storm event. The toads were located both in and adjacent an engineered concrete lined drainage channel with standing water, and captured and released offsite at the Ford Dry Lake. In addition, in May of 2012, a desiccated specimen was found adjacent an access road at the Genesis project site (AECOM 2012). This toad was found on bare ground with evidence of recent ponding, located in a low area between creosote shrubs. The Genesis Solar Energy Project is located approximately 13 miles west of the proposed project site, just north of the I-10.

Older records are available from Dimmitt (1977), including a breeding pond near the intersection of I-10 and Wiley Well Road (about 8 miles from the substation site), another near I-10 and State Route 78 (about 6 miles from the substation site), and another approximately 9 miles north of the BSPP Site on the Blythe-Midland Road. The closest CNDDB records include two from Imperial County (1989 and 2002) that are between 12 and 17 miles south of the BSPP area (CNDDB 2010). The BSPP area falls within the range for this species as the range is described in the Northern & Eastern Colorado Desert Coordinated Management Plan (BLM CDD 2002) and Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes 1994). Surveys performed in spring of 2010 detected multiple potential breeding pond sites (AECOM 2010u) within the BSPP area, including three within the linear route and 9 within the Study Area buffer.

Couch's spadefoot toad habitat assessment was conducted in May 2011 during desert tortoise protocol surveys for the 2011 Amendment (PVSI 2009a). These surveys were conducted to cover areas not previously surveyed during the original application for certification proceedings and because of changes to the gen-tie alignment alternatives for the Colorado River Substation. No suitable habitat was present since the area was primarily stabilized and partially stabilized sand dune habitat (alt 1). No further surveys were performed in support of the BSPP.

Avian Species

Staff has provided the following species accounts for the purposes of enumerating baseline conditions at the proposed BSPP site. The species discussed below are special status species that may occur at the site either as year-round residents, or may fly over or near the site during migration. Other species, such as migrants which rarely fly over the site or near the site, may also have the potential to be affected by the project. Therefore, the list of species which may be affected by the project could include hundreds of birds (not all of them special status) and cannot be reasonably described within this SA. The following descriptions are generally limited to those specieswhose occurrence at or over the site are generally predictable, and to those species documented to occur in the area. The following is a partial list only. Additionally, augmented data collection in support of the BSPP have been requested per the July 17, 2013 REAT agency biologists and project owners' conference call (CEC 2013D), and begun in August of 2013. These recommendations are for ongoing data collection during the fall 2013 migratory season. Additionally, the project owner has purchased a radar unit to use for collecting data preconstruction. Additional information on resident and migratory species, as well as movement patterns may be revealed from these efforts. Data would be used post-certification to inform monitoring and mitigation plans.

Golden Eagle

Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity March through July (Kochert et al. 2002). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. This species is generally considered to be more common in southern California than in the northern part of the state (USFS 2008).

Habitats for this species typically include rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover.

The status of golden eagle populations in the United States is not well known, although there are indications that populations may be in decline (USFWS 2009b, Kochert et al. 2002). Accidental death from collision with man-made structures, electrocution, gunshot, and poisoning are the leading causes of mortality for this species, and loss and degradation of habitat from agriculture, development, and wildfire continues to put pressure on golden eagle populations (Kochert et al. 2002; USFWS 2009b).

Absent interference from humans, golden eagle breeding density is determined by either prey density or nest site availability, depending upon which is more limiting (USFWS 2009b). A compilation in Kochert (2002) of breeding season home ranges from several western United States studies showed an average home range of 20–33 square kilometers (7.7 to 12.7 square miles) that ranged from 1.9 to 83.3 square kilometers (0.7 to 32.2 square miles). In San Diego, a study of 27 nesting pairs found breeding ranges to be an average of 36 square miles with a range from 19 to 59 square miles (Dixon 1937). Other studies from within and outside the United States include ranges from 9 to 74.2 square miles (McGahan 1968; Watson et al. 1992 [range of 14.7 to 26.1 pairs per 1,000 square kilometers]). An Environmental Assessment (EA) and Implementation Guidance for take permits has been issued under the Bald Eagle and Golden Eagle Protection Act (USFWS 2010c).

Based on data available at the time this report was prepared, the two closest known golden eagle nests are over 14 miles from the BSPP site; one is to the north in the Little Maria Mountains and the other is to the south in the Palo Verde Mountains (BLM 1999). Nearby Palen and McCoy mountains may provide suitable nesting habitat. No golden eagles were observed during surveys in the Study Area, including during avian point count surveys. However, these surveys were conducted within the BSPP site only and therefore were not designed to survey potential golden eagle nesting habitat near the BSPP site, and did not assess the quality of foraging habitat or prey abundance for eagles.

In Spring 2010 the project owner along with owners of other adjacent proposed solar development projects jointly funded golden eagle helicopter surveys, following the USFWS's February 2010 Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010). Based on discussion with the project owner during workshops staff understands that one golden eagle survey had been conducted in April of 2010 and another was scheduled for May, but staff had not received survey results as of publication of this document.

Surveys for golden eagle were also conducted for the Desert Harvest Solar Project, located in Riverside County, north of Desert Center, in the Chuckwalla Valley. These

surveys detected eight golden eagle nests, all located on power poles (Aspen 2012). Most of the nests were located south of the I-10 freeway.

Western Burrowing Owl

The western burrowing owl inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993) and is typically a year-round resident in much of California (Gervais et al. 2008).

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by California ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008). The southern California breeding season (defined as from pair bonding to fledging) generally occurs from February to August with peak breeding activity from April through July (Haug et al. 1993).

Burrowing owls are rare in the undisturbed desert areas of the eastern and southeastern portion of California (Small 1994). By the 1940s', burrowing owls had become scarce in many portions of the desert southwest as a result of shooting and elimination of ground squirrel burrows (Grinnell and Miller 1944). Limited data suggest that they are decreasing in some areas, but may be stable or increasing in others (Klute et al. 2003). Surveys in California in 1986-91 found population decreases of 23-52 percent in the number of breeding groups and 12-27 percent in the number of breeding pairs of owls (DeSante et al. 1997). In addition, in a 2003 report by the U.S. Fish and Wildlife Service, breeding burrowing owls were thought to be largely extirpated during the last 10-15 years from multiple areas in California, including Napa, Marin, San Francisco, Santa Cruz, and Ventura counties, coastal San Luis Obispo county and the Coachella Valley (http://burrowingowlconservation.org/PR12-09-2010.html).

In the Colorado Desert, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant, including along the lower Colorado River (Gervais et al. 2008). Burrowing owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), are also important food items for this species. Other prey animals include reptiles and amphibians, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. Consumption of insects increases during the breeding season (Haug et al. 1993).

Threats to burrowing owls include habitat modification and destruction of ground squirrel burrows. Other threats include pesticide accumulation, burrow destruction from farming practices and canal and road maintenance, roadside shooting, and direct mortality from squirrel poisons (BLM CDD 2002; Gervais et al. 2008).

Protocol-level surveys of part of the Project Disturbance Area were conducted in spring 2009 (**Biological Resources Figure 5)**. The southern-most 2.1 miles of the transmission line corridor were added to the BSPP after spring surveys were completed

and these areas were surveyed in fall 2009. The entire Project Disturbance Area (4,003 acres) is considered suitable burrowing owl nesting and foraging habitat, although the sandier habitat south of I-10 is of lower value (Solar Millennium 2009b, Western Burrowing Owl Technical Report). One burrowing owl was observed within the Project Disturbance Area at an active burrow during Phase II burrowing owl surveys in March 2009. In total, 92 burrows with burrowing owl sign were observed during 2009 Phase II and III surveys. An additional burrow with sign was observed near the transmission line Disturbance Area during fall 2009 surveys (Solar Millennium 2009b, Western Burrowing Owl Technical Report). May 2011 protocol surveys for western burrowing owl (for changes to the gen-tie route) detected no burrowing owls and no suitable burrows or potential habitat (**Biological Resources Figure 5**). All habitats within the Project Disturbance Area are considered suitable for this species. No further surveys were performed in support of the project.

Loggerhead Shrike

Loggerhead shrikes are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California they are generally much more common in interior desert regions than along the coast (Humple 2008). Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996).

This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996). Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple 2008).

The entire Project Disturbance Area (4,169 acres) contains suitable habitat for loggerhead shrike, and this was the second most common bird species (32 records) observed during avian point count surveys (these were conducted in all but the southern-most 2.1 miles of the transmission line corridor; these areas were added after spring 2009 surveys were completed) (Solar Millennium 2009a, Avian Point Count Technical Report, AFC Volume II). In addition, fledglings were seen on a number of occasions, and at least one active nest was found on April 11, 2009, one day before the commencement of the Avian Point Count study. Several recently used nests were also found, mostly in desert ironwood (*Olneya tesota*) (Solar Millennium 2009a, Avian Point Count Technical Report, AFC Volume II).

Le Conte's Thrasher

In California, Le Conte's thrasher is a resident in the San Joaquin Valley and the Mojave and Colorado deserts. It occurs in desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs. It rarely occurs in monotypic creosote scrub habitat, because creosote bush is unable to support a nest, or in massive Sonoran

Desert woodlands (Prescott 2005). Preferred nest substrate includes thorny shrubs and small desert trees. Breeding activity occurs from January to early June, with a peak from mid-March to mid-April (BLM CDD 2002). Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders.

This species was not observed during BSPP surveys, including avian surveys conducted over a period of four weeks in the spring of 2009. However, this species occurs in low densities and detecting them is difficult because their ventriloqual vocalizations carry over long distances, vocalizations are crepuscular, and they are secretive (Cal-PIF 2009). Le Conte's thrasher may occur on the BSPP site; the Project Disturbance Area contains 730 acres of desert dry wash woodland, which is suitable habitat for this species. The closest CNDDB record for this species is a nesting record from 1977, about 8 miles southwest of the BSPP site (CNDDB 2010).

Black-tailed gnatcatcher

A year round resident in southwestern United States and central and northern Mexico, in California the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Monument south, and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo Co. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season.

This species was the most common species detected during avian point count surveys conducted in the BSPP site (35 records) and was found predominantly in creosote bush scrub/desert dry wash woodland. The closest CNDDB (2010) record for this species is a 1977 record of a nesting pair, approximately 9 miles west of the BSPP site.

California horned lark

The California horned lark is found throughout California except the north coast, and is less common in mountainous areas. This species prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas. Eggs are laid March to early June, and this species frequently lays a second clutch.

The BSPP site contains suitable habitat for this species, especially in creosote bush scrub. This species was observed frequently in this habitat during surveys. There are numerous CNDDB (2010) records for this species in western Riverside County.

Elf owl

The elf owl is listed as endangered under CESA. The project site is near the western margin of its geographic range, though nesting has been documented near Corn Springs (Garret and Dunn 1981). Elf owls are more common and widely distributed outside of California and probably have never been common in California due to limited geographic range and generally marginal habitat. Riparian woodland in the Colorado River Valley, the elf owl's primary habitat in California, has declined and been degraded due to agricultural land use conversion and invasion by tamarisk (Gould 1987). The elf owl is also listed as a Bird of Conservation Concern (BCC) by USFWS. It is migratory,

spending winters in Mexico and southward. It arrives in California by March, and its breeding period extends from April to mid-July (Gould 1987).

The elf owl is a secondary cavity nester i.e.it nests in cavities of trees and cacti, generally in disused woodpecker nests. Its nesting habitat is closely correlated with nesting habitat of woodpeckers, including Gila woodpecker (Hardy et al. 1999; Johnsgard 2002). In Arizona, both elf owl and Gila woodpecker are best known for nesting in saguaro cacti. However, both species also nest in numerous trees, particularly riparian woodland trees such as cottonwood and willow. With one exception, all elf owl reports in California have been in these riparian trees, generally along the Colorado River. Farther east in their range, both species also nest in mesquite (an upland microphyll species). Gila woodpeckers nest in blue palo verde and elf owls have been documented nesting in blue palo verde near Wiley's Well by Robert McKernan (Director, San Bernardino County Museum; SBCM 2012a). The blue palo verde – ironwood woodland habitat on the site may provide suitable (albeit probably marginal) habitat for nesting elf owls.

Elf owls are primarily active nocturnally. Because of this, diurnal surveys are not sufficient to determine their status on the project site. The best method for determining elf owl use is to conduct several rounds of nocturnal, focused elf owl call playback surveys in appropriate habitat. As this has not occurred, staff considers that elf owl may occur on or adjacent to the BSPP site. When the data collected by the project owner becomes available this information will be incorporated into the project's BBCS plan.

Gila Woodpecker

The Gila woodpecker is listed as endangered under CESA but has no status under the ESA. It is identified as a bird species of conservation concern (BCC) by the USFWS. Its geographic range is generally in southern Arizona and southward into Baja California and western mainland Mexico. It occupies this range year around (i.e., it is not migratory). In California, the Gila woodpecker is known from riparian forests along the Colorado River and from desert wash woodlands in Imperial County. It excavates cavity nests in large riparian trees such as cottonwoods and saguaro cacti (in upland habitats), and feeds largely on insects, mistletoe berries, and cactus fruits. Its primary habitat is cottonwood-willow riparian woodland, but it also uses thickets of other desert trees (e.g., desert ironwood), as well as upland habitats, especially outside the breeding season. Desert ironwood is generally too dense for nest excavation. Where Gila woodpeckers occur in dry desert wash woodlands, they reportedly excavate cavity nests in large blue palo verde trees rather than ironwood. In suburban habitats, they nest in ornamental trees including athel (*Tamarix aphylla*), eucalyptus, and palms. Availability of suitable nesting trees is apparently a limiting factor in breeding habitat suitability.

In general, the project site does not possess a large amount of high quality habitat for breeding woodpeckers of any species, and the potential for this species to occur at the project site is moderate.

American Badger

American badgers were once fairly widespread throughout open grassland habitats of California. Badgers are an uncommon permanent resident with a wide distribution

across California, except from the North Coast area. Badgers inhabit burrows and often predate and forage on other small mammal burrows as evidenced by claw marks along the edges of existing burrows. This species is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner *et al* 1990). Badgers feed mainly on various species of small mammals and capture some of its prey above ground foraging on birds, eggs, reptiles, invertebrates, and carrion. Most of the CNDDB records from the Palo Verde Valley area of Riverside County are prior to 1960 and the closest to the BSPP site is just north of Palo Verde approximately 14 miles south of the BSPP site (CNDDB 2010).

The entire Study Area is considered suitable habitat for badgers and badger sign was detected during the 2009 field surveys. Surveyors observed eleven badger dens and over 80 wildlife burrows showing evidence of predation by badgers (**Biological Resources Figure 6**).

Desert Kit Fox

Desert kit fox is an uncommon to rare permanent resident of arid regions of the southern portion of California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox occur in association with their prey base which is primarily cottontail rabbits, ground squirrels, kangaroo rats and various species of insects, lizards, or birds (Zeiner *et al* 1990). California Code of Regulations 14 CCR § 460 stipulates that desert kit fox may not be taken at any time. Protection provided by kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of the species.

Desert kit fox burrows, complexes and scat were observed throughout the Study Area during spring 2009 (Solar Millennium 2009a) (**Biological Resources Figure 6**) and staff considers the entire Study Area as suitable habitat for this species. In addition, several kit fox burrows and complexes were found within the transmission line survey areas (AECOM 2010a, Figure BIO-DR-79). The desert kit fox population size within the Study Area is substantial. Suitable prey base (wood rats, pocket mice, ground squirrels, cottontail rabbits) and habitat to support this species occurs throughout much of the undeveloped portions of the project site and adjacent habitat.

Nelson's Bighorn Sheep

Desert bighorn sheep is a BLM California Sensitive Species, a State Fully Protected Species, and a State Game Species (BLM CDD 2002). The Nelson's bighorn sheep includes bighorns from the Transverse Ranges through most of the desert mountain ranges of California and adjacent Nevada and northern Arizona to Utah. Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains, termed "escape terrain." Their agility on steep rocky terrain is an adaptation used to escape predators such as coyotes, eagles, and cougars (Wehausen 1992). Surface water is another element of desert bighorn habitat considered essential to population health. Male and female bighorn sheep inhabiting desert ecosystems can survive without consuming surface water (Krausman et al. 1985), and males appear to drink infrequently in many situations; however, there are no known large populations of bighorn sheep in the desert region that lack access to surface water. In the spring, when

annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage. Desert bighorn have a long lambing season that can begin in December and end in June in the Mojave Desert, and a small percentage of births commonly occur in summer as well (Wehausen 1992).

Over the past 140 years, bighorn sheep have suffered considerable population declines throughout their range, and metapopulations have been fragmented by roads and other barriers with a resulting decline in genetic diversity (Bleich et al. 1996, Epps et al. 2005). Disease, sometimes brought about by contacts with domestic sheep, drought and predation, interacting with other anthropogenic factors may also have contributed to declines in bighorn sheep populations (Wehausen 2005). Loss of surface water sources may also diminish the viability of existing populations (Wehausen 2005).

Two metapopulations of bighorn sheep occur within the NECO planning area, the Southern Mojave and Sonoran. Within these metapopulations, there are smaller somewhat isolated subpopulations of bighorn sheep known as demes (BLM CDD 2002). The NECO Plan addresses the conservation of the bighorn sheep through the designation of Bighorn Sheep Wildlife Habitat Management Areas (WHMAs), which overlay the entire range of their occurrence and movement corridors. The western portion of the Project buffer, but not the Project Disturbance Area, occurs within a bighorn sheep WHMA (AECOM 2010a Preliminary Mitigation and Monitoring Plan Figure 9). This bighorn sheep WHMA occurs in the McCoy Mountains within the Southern Mojave metapopulation; the McCoy Mountains are believed unoccupied, but there have been no recent, systematic surveys to verify this status. Nearby occupied WHMAs include in the Palen and Granite Mountains. Recent surveys also suggest bighorn sheep may occur in the Little Maria Mountains (Wehausen 2009). Sheep are difficult to detect in ranges with very low number of individuals such as the McCoy Mountains and other ranges thought to be extinct. The McCoy mountain range has been determined to be an important area for sheep recovery and is designated as a desert bighorn sheep WHMA within BLM.

Bighorn sheep have recently been documented within two mountain ranges that were thought to be unoccupied. In December 2009 a male bighorn sheep was killed in the northern section of the Big Maria Mountains (Rodriguez pers. comm.). Also in December 2009 DNA testing of scat found in the Little Maria Mountains was confirmed to be that of a male bighorn sheep (Rodgriguez pers. comm.). These examples confirm that sheep do occur in the ranges adjacent to the McCoy Mountains and have the ability to naturally recolonize that range in the future.

Sheep are capable of crossing large expanses of lands between mountain ranges. For example five Peninsular bighorn sheep ewes were documented on the Imperial Valley Solar 2 site which is approximately 7 miles from the nearest mountain range. Telemetry data have documented animals traveling across the flats approximately10 -12 miles between the Old Dad’s and Marble Mountains (Rodriguez pers. comm.). Also, CDFG captured and moved a ram from the Colorado River area near Parker to the Whipple Mountains and he eventually traveled back down to the river area which was approximately 150 air miles (300 miles on land) (Rodriguez pers. comm.).

Potential evidence of this species was observed within the Study Area during spring 2009 surveys; two potential bighorn sheep scat locations were found within the western portion of the Study Area during 2009 surveys near the lower elevations of the McCoy Mountains (Solar Millennium 2009a, AECOM 2010a). Characteristics of the scat found during spring 2009 surveys overlap with the characteristics of burro deer, and therefore it is not possible to verify with absolute confidence presence of bighorn sheep on the Project site (AECOM 2010a). The facility footprint and 1-mile buffer area, including sections of McCoy Wash, were surveyed again on December 9 and 11, 2009 for potential bighorn sheep and mule deer sign and no sign (tracks or scat) were observed for either species (AECOM 2010a). Based on information provided by the project owner (AECOM 2010a, Data Response BIO-53) and consultation with experts (Rodgriguez pers. comm.), staff believes it is more likely that the sign found during spring 2009 surveys was burro deer. This species was not carried forward for further analysis under the amended BSPP project proposal.

Burro Deer

Burro deer is a subspecies of mule deer (*Odocoileus hemionus*) found in the Colorado Desert of southern California. This species is found in the Colorado region of the Sonoran Desert near the Colorado River and within desert dry wash woodland communities. Some burro deer are resident along the Colorado River, but a significant portion move into desert areas in response to water and forage. During the hot summers, water is critical, and burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where the microphyll (small-leaved) woodland is dense and provides good forage and cover. With late summer thundershowers and cooler temperatures, deer move away from the Colorado River and Coachella Canal and then up the larger washes into mountains or wash complexes in the foothills (BLM CDD 2002).

During spring 2009 field surveys, scat and tracks were observed in rocky substrate and deep washes within the western portion of the Study Area that were determined indiscernible between mule deer and bighorn sheep. Follow-up surveys in December 2009 did not detect wildlife use in desert washes of the Study Area. Additional scat was found in another wash within the western portion of the buffer area of the facility footprint. Scat of bighorn sheep and mule deer vary depending on time of year, type of vegetation and foraging, age, and sex of the animal. The tracks found within the Study Area were observed within rocky, uneven ground making it difficult to decipher between tracks of bighorn sheep and mule deer (AECOM 2010a). Probable burro deer tracks were observed at the southern end of the transmission line route south of I-10.Staff believes the entire Study Area is suitable habitat for burro deer.

Biological Resources Table 4, below, was generated for analysis of the Blythe BSPP, and provides a summary of special-status plants and animals also considered in this assessment. This table provides a summary of special-status plants and wildlife that have a low to moderate potential to occur in the Disturbance Area. These species were believed to have low to moderate potential to occur at the BSPP, at the time of publication. Species that are now expected to occur onsite, and therefore removed from Table 4, are now marked in ~~strikeout~~.

Biological Resources Table 4
Special-Status Species with Low to Moderate Potential to Occur at the BSPP Site

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants		
Angel trumpets *Acleisanthes longiflora*	This species occurs in Sonoran desert scrub habitats on carbonate soils from approximately 200 to 300 feet above MSL. There are two records from the Consortium of California Herbaria from the Colorado Desert, Palo Verde area (CCH 2010).	This species is not expected to occur within the Study Area primarily since carbonate/limestone derived soils in mountainous areas do not occur within the Study Area (Solar Millennium 2009a). Also, the BSPP site is located at a higher elevation than the typical elevation where this species has been reported. The closest record of this species is in Big Maria Mountain approximately 15 miles northeast of the Study Area (AECOM 2010a).
Argus blazing star *Mentzelia puberula*	This plant species occurs in desert scrub and desert woodlands with limestone and granitic slopes above 2,000 feet in elevation. Based on 13 Consortium of California Herbaria database records for this species, this species has been collected from Riverside, San Bernardino, and Imperial counties from the Little and Big Maria Mountains in Riverside County.	This species is not expected to occur in the Study Area due to lack of limestone and granitic slopes which are soil types preferred by this species that are absent from the Study Area (AECOM 2010a). The BSPP site is located at approximately 800 feet above MSL which is well below the typical elevation where this species typically occurs.
Arizona spurge *Chamaesyce arizonica*	This species occupies sandy, Sonoran desert scrub habitat areas and has been reported from Imperial, Riverside, San Diego counties and portions of Arizona and Baja, California (CNPS 2009) from approximately 150 feet to 1,200 feet above MSL. There are 7 database records from the Consortium of California Herbaria primarily from San Diego County but also Riverside and Imperial counties often from sandy areas and transition areas between chaparral and desert habitats. The record from Riverside County is near Palm Springs from Andreas Canyon (CCH 2010).	Arizona spurge has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the BSPP site.
Bitter hymenoxys *Hymenoxys odorata*	Bitter hymenoxys grows riparian scrub and Sonoran desert scrub habitats from 150 feet to 500 feet above MSL. This plant species blooms from February through November (CNPS 2009). There are five CNDDB records for this species for the entire state of California, two of which occur in Riverside County; the nearest CNDDB occurrence is a historical record approximately 5 miles southeast of the BSPP area from sandy slope, low bottom lands and overflow flats (CNDDB 2010).	This species was not found during spring 2009 field surveys. This species is a target plant species to be surveyed for during spring 2010 botanical surveys within the transmission line, substation, and associated road spurs.
Bitter snakeweed *Condalia globosa* var. *pubescens*	Also referred to by the common name, spiny abrojo. Bitter snakeweed occurs in Sonoran desert scrub from approximately 400 feet to 3,000 feet above MSL. Bitter snakeweed blooms from March through May (CNPS 2009). Based on 35 records Consortium of California Herbaria database, all records are from Imperial County except one from	This species was not observed during spring 2009 field surveys. This species is a target plant species to be surveyed for during spring 2010 botanical surveys within the transmission line, substation, and associated road spurs.

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	Riverside County, a record from 1,900 feet elevation from a relatively flat alluvial fan from Chuckwalla Bench (CCH 2010). There are no CNDDB records for this species for the state of California. The nearest record for this species is located approximately 22 miles south of the Study Area (AECOM 2010a).	
California ayenia *Ayenia compacta*	This species occurs in Mojavean and Sonoran desert scrub habitats from approximately 500 to 3,300 feet above MSL. This species blooms from March through April. There are 29 records from the Consortium of California Herbaria database from the Anza Borrego area alone, one from Riverside County from a sandy wash in the Santa Rosa Mountains off Martinez Canyon (CCH 2010). The nearest CNDDB occurrence is a historical record from 1776 approximately 30 miles southwest of the BSPP area in the Chuckwalla Mountains (CNDDB 2010). There is also a known extant population in the vicinity of the BSPP area (AECOM 2010a).	This species was not observed during spring 2009 field surveys. This species is a target plant species to be surveyed for during spring 2010 botanical surveys within the transmission line, substation, and associated road spurs.
California ditaxis *Ditaxis serrata* var. *californica*	This species occupies Sonoran desert scrub habitat and has been reported as occurring from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS 2009) from approximately 100 to 3,000 feet above MSL. There are 23 records from the Consortium of California Herbaria database primarily from Riverside County from sandy, open alluvial fans.	California ditaxis has a low potential to occur within the Study Area due to the presence of suitable habitat and records from the Chuckwalla Valley and Desert Center areas.
California satintail *Imperata brevifolia*	This species occurs in grassy areas found near chaparral, desert scrub, riparian scrubs, coastal scrub, wet springs, meadows, stream sides and floodplains (Solar Millennium 2009a) from sea level to approximately 1,500 feet above MSL. There are 64 records from the Consortium of California Herbaria database from many northern and southern California counties. Records from Riverside County are from the Palm Springs and San Jacinto Mountains area along irrigation ditches or streams.	California satintail is not expected to occur within the Study Area due to lack of suitable habitat.
Chaparral sand verbena *Abronia villosa* var. *aurita*	This species occupies sandy soil areas of chaparral, coastal sage scrub, and sandy desert dune habitats (CNPS 2009) from approximately 240 feet to approximately 4,800 feet above MSL. There are 147 records in the Consortium of California Herbaria database many from Riverside County in the San Jacinto Mountains area.	Chaparral sand verbena has a low potential to occur within the Study Area due to the presence of suitable habitat.
Coachella Valley milk-vetch *Astragalus lentiginosus* var. *coachellae*	The Coachella Valley Multiple Species Habitat Conservation Plan states that this species occurs on “dunes and sandy flats, along the disturbed margins of sandy washes, and in sandy soils along roadsides and in areas formerly occupied by undisturbed sand dunes. Within the sand dunes and sand fields, this milk-vetch tends to occur in the coarser sands at the margins of dunes, not in the most active	This species is not expected to occur in the BSPP area. The distribution of Coachella Valley milk-vetch is restricted to the Coachella Valley in Riverside County, between Cabazon and Indio. CVAG (2007) identifies six outlying occurrences within a 5-mile area along Rice Road in the Chuckwalla Valley north of Desert Center, California

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	blowsand areas. As this species is strongly affiliated with sandy substrates, it may occur in localized pockets where sand has been deposited by wind or by active washes. It may also occur in sandy substrates in creosote bush scrub, not directly associated with sand dune habitat (CVAG 2007). This plant species blooms from February to May, producing pink to deep magenta-colored flowers. This species occurs on aeolian deposits with fewer than 25 occurrences in the Coachella Valley. Coachella Valley milk-vetch depends on natural disturbances from fluvial and aeolian processes for seedling establishment (BLM CDD 2002).	(CVAG 2007); however, USFWS staff has indicated that these occurrences are not of the listed taxon (Engelhard, personal communication).
Cove's cassia *Senna covesii*	This species occurs on dry, sandy desert washes and slopes of the Sonoran Desert between 1,600 to 2,000 feet above MSL. This species occurs in sandy washes, roadsides, alkaline flats in the Mojave Desert and northern Sonoran Desert between 1,600 to 2,000 feet above MSL (Solar Millennium 2009a).	Cove's cassia has a low potential to occur within the Study Area due to the presence of suitable habitat and the BSPP site being located below the typical elevation range where this species is known from.
Crucifixion thorn *Castela emoryi*	This species occurs in Sonoran Desert and Mojavean Desert in scrub habitats and playas with dry, gravelly washes, slopes, and plains from approximately 300 to 2,100 feet above MSL. There are 64 records in the Consortium of California Herbaria database from Riverside, San Bernardino, Imperial counties among others and often times prefers grassy or hayfield habitats. There is a record from a hayfield in Chuckwalla Valley.	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the BSPP site.
Desert portulaca *Portulaca hamiloides*	This species occurs in Joshua tree woodlands and has been reported from Riverside, San Bernardino, and portions of Arizona and Baja, California from 3,000 feet to 3,600 feet above MSL (CNPS 2009).	This species is not expected to occur within the Study Area due to lack of typical habitat associations and the BSPP site being located outside of the elevation range.
Desert sand parsley *Ammoselinum giganteum*	This species occupies Sonoran desert scrub habitat and has been reported from Riverside County, California and portions of Arizona (CNPS 2009) at approximately 1,200 feet elevation. There are 2 records from the Consortium of California Herbaria database from Riverside County from the Chuckwalla Valley where this species was observed growing in dry basins at 500 feet above MSL (CCH 2010).	Desert sand parsley has a low potential to occur within the Study Area due to presence of suitable habitat and appropriate elevation range of the site and reported occurrences from the Chuckwalla Valley.
Desert spike moss *Selaginella eremophila*	This is a dense, mat-forming, non-flowering plant. This species occurs in Sonoran creosote bush scrub habitats in gravelly or rocky soils from approximately 600 to 2,700 feet. There are 56 records in the Consortium of California Herbaria database from Riverside and San Diego counties with several records from Anza Borrego State Park, Palm Springs, Palm Canyon, and San Jacinto Mountain Range. One collection from Riverside County is from the vicinity of the Chocolate-Chuckwalla Mountain region near the north side of the Orocopia Mountains from sloped rocky, shady surfaces in gravelly soils (CCH	This species was not observed during spring 2009 field surveys and there are no CNDDB occurrences within 10 miles of the site.

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	2010).	
Dwarf germander *Teucrium cubense* ssp. *depressum*	This species occurs in desert dune, playa margins, and Sonoran desert scrub habitats from approximately 100 feet to 1,200 feet above MSL. This species typically blooms from March to May but may also bloom from September through November. This species typically occurs in sandy soils and wash habitats and is known from fewer than 10 occurrences in California (CNPS 2009). There are 15 records from Consortium of California Herbaria database from Riverside and Imperial counties; there are records from the Chuckwalla Valley in the Hayfield area and Palo Verde Valley. There is a CNDDB record from Wiley's Well Road (400 feet elevation) during 1979 (CNDDB 2010). Another CNDDB occurrence is a historical record from 1912 located approximately 7 miles southeast of the BSPP area from the Palo Verde Valley (CNDDB 2010).	This species has a low potential to occur due to the presence of suitable habitat and appropriate elevation range of the site. This species was not observed during spring 2009 field surveys.
Foxtail cactus *Coryphantha alversonii*	This species occurs on rocky, granitic soils in Sonoran and Mojavean desert scrub habitats from 200 feet to 4,600 feet above MSL. Prior to conducting spring 2009 field surveys, a reference population was observed on April 9, 2009 at a gravel pit northwest of Blythe along State Route 95 and several individuals were observed in relatively undisturbed Sonoran creosote bush scrub on granitic rock, a preferred habitat type of this species (CNPS 2009). This species was not found during surveys performed in the Study Area (AECOM 2010a). There are 25 records of this species from the Consortium of California Herbaria database from Riverside, Imperial, and San Bernardino counties. There are records from the Chuckwalla Valley from rocky, granitic slopes (CCH 2010).	Foxtail cactus has a low potential to occur within the Study Area due to the presence of suitable desert scrub habitat and appropriate elevation of the site.
Mesquite nest straw *Stylocline sonorensis*	This species occupies Sonoran desert scrub habitats around 1,300 feet elevation and has been reported from Riverside County and portions of Arizona and Sonora, Mexico (CNPS 2009). There are 2 records from the Consortium of California Herbaria database from Riverside County both from the Chuckwalla Mountains, Hayfields region from 1930 (CCH 2010).	Mesquite nest straw has a low potential to occur within the Study Area due to suitable habitat present within the site.
Orocopia sage *Salvia greatae*	This species occurs in the southeastern Sonoran Desert and is associated with the Orocopia and Chocolate Mountains on alluvial slopes between 100 and 800 feet above MSL. This species has been recorded in the mountainous areas 30 miles west of the Study Area (Solar Millennium 2009a). There are 49 records from the Consortium of California Herbaria database several from the Chocolate, Chuckwalla, and Orocopia mountain areas (CCH 2010).	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the site.
Pink fairyduster	This species occurs in the Sonoran Desert in sandy washes, slopes	Pink fairy duster has a low potential to occur within the

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Calliandra eriophylla	and mesas from 350 to 5,000 feet above MSL. There are 62 records from the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains area in Imperial and San Diego counties (CCH 2010).	Study Area due to suitable habitats and appropriate elevation range of the site.
Pink velvet mallow *Horsfordia alata*	This species occurs in the Sonoran Desert in California, Arizona, and Mexico. It occurs in Sonoran desert scrub habitats from approximately 300 to 1,500 feet above MSL.	There are no CNDDB records for this species for the entire state of California; the most recent collections have been from the Chocolate, Chuckwalla, and Cargo Muchacho Mountains approximately 50 miles south of the Study Area and is believed to be extant (AECOM 2010a, page BIO-118).
Sand evening-primrose *Camissonia arenaria*	This species occupies sandy and gravelly areas of Sonoran desert scrub habitat and has been reported from Imperial and Riverside counties and areas of Arizona and Mexico from 200 feet to 2,700 feet above MSL (CNPS 2009). There are 13 records of this species in the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains, Palo Verde Valley, and Ogilby Pass area (CCH 2010).	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation of the site.
Slender woolly-heads *Nemacaulis denudata* var. *gracilis*	This species occupies desert sand dunes, coastal dunes, and Sonoran desert scrub (CNPS 2009) from 150 to 1,200 feet above MSL. There are 45 records in the Consortium of California Herbaria database from the Palm Springs, Indian Wells area in Riverside County (CCH 2010).	Slender woolly-heads has a low potential to occur within the Study Area due to suitable habitat and appropriate elevation range of the site.
Small-flowered androstephium *Androstephium breviflorum*	This species occurs in desert dune and Mojavean desert scrub habitats from approximately 700 feet to 2,000 feet above MSL (CNPS 2009). This species blooms from March through April and often occurs on desert bajadas.	This species has a potential to occur within the site due to suitable habitat and appropriate elevation range of the site. The nearest CNDDB record for this species is from Cadiz Valley from Riverside and San Bernardino counties approximately one mile north of Highway 62 during 1995 from a sandy, Mojavean Desert shrub-land bajada (CNDDB 2010).
Spearleaf *Matelea parvifolia*	This species occurs in Mojavean and Sonoran desert scrub habitats from 1,320 feet to approximately 3,300 feet above MSL. This species blooms from March through May (CNPS 2009). The nearest CNDDB record for this species is from the Chuckwalla Bench area during 1986 from desert dry wash woodland and creosote scrub habitats (CNDDB 2010).	This species has a potential to occur within the site due to the presence of suitable habitat although the site is located below the typical elevation range of this species. This species was not observed during spring 2009 field surveys. This species is a target plant species to be surveyed for during spring 2010 botanical surveys within the transmission line, substation, and associated road spurs.
Wiggins' cholla *Cylindropuntia wigginsii*	Wiggins' cholla is not recognized as a species, but is considered a hybrid of silver cholla (C. echinocarpa) and pencil cholla (C. remosissima). Wiggins' cholla is not found as a separate species in	Since this species is not a recognized subspecies, Wiggins' cholla is not expected to occur in the BSPP area.

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	The Jepson Manual nor in Munz's et al A California Flora and Supplement; however, the BLM's Proposed Northern and Eastern Colorado Desert Coordinated Management Plan identifies Wiggins' cholla as a special-status species (BLM CDD 2002). The CNPS recognizes Wiggins' cholla as a CRPR 3.3 species meaning more information is needed about this species and is not considered very endangered in California and also considers this species a sporadic hybrid of the two Cylindropuntia species mentioned above (CNPS 2009).	
White-margined penstemon *Penstemon albomarginatus*	This species is a perennial herb restricted to sandy substrates in desert dunes and Mojavean desert scrub habitats, from 2,000 to 3,000 feet elevation. It appears to be restricted to the southeastern Mojave Desert ecoregion (BLM 2006, TNC 2007) and has no known occurrences as far south as Riverside County. It blooms March through May and flowering does not always appear to be dependent on the amount of rainfall (CNPS 2009, BLM 2006). It is believed that established plants may bloom even in very dry years by utilizing water and food resources that are stored in the large taproot (1 to 4 feet long); however rain probably affects germination rates of this species (BLM 2006, TNC 2007). In California, this plant often occurs in fine alluvial sand and in wide canyons within a creosote bush scrub community; sandy environments help establish and hold the deep taproot of this species. This species also occurs in deep, loose to stabilized sand, sometimes on sand dunes or in sandy to gravelly washes. Common associate plant species are white bursage, galleta grass, rice-grass, creosote bush, range rattany, goldenhead, and winterfat (TNC 2007). In Nevada, this species commonly grows along the base of hills and mountains in wind-blown sand dune-like areas, but is also found in deep loose sand in wash bottoms.	White-margined penstemon occurs in southern Nevada, western Arizona, and in the western Mojave Desert in San Bernardino County (BLM 2006). Its distribution in the western Mojave Desert is restricted, occurring in a large four-mile long wash near Pisgah Crater and Lavic Lake, extending southwest from Sleeping Beauty Peak, crossing Interstate 40, and terminating in a flat spreading basin south of Interstate 40 (BLM 2006). There are 19 recent CNDDB records for the entire state of California all of which are from San Bernardino County near the vicinity of Highway 40 and Pisgah Crater (CNDDB 2010). There are 40 records of this species from the Consortium of California Herbaria database from the same general Ludlow and Lavic areas in San Bernardino County; most of these records are from sandy substrates associated with dry desert washes and desert scrub habitats (CCH 2010). It has low potential to occur in the BSPP area but is included here because it has been found outside its previously documented range (Andre pers comm) and is a species of particular concern to BLM due to threats across its restricted range. The project owner was directed to include this species in the target list for the spring 2010 surveys.
Birds		
~~Bendire's thrasher *Toxostoma bendirei*~~	~~Bendire's thrashers are known in California from scattered locations in Kern, Inyo, San Bernardino, and Riverside counties. This species is a summer resident in southeastern California, and arrives at breeding grounds from mid-March through May, and departs by late August. This species favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw,~~	~~The desert dry wash vegetation community provides potential habitat for this species (270 acres), although this species was not observed during surveys. There are CNDDB (2010) records from near the Desert Center, approximately 35 miles west of the BSPP, from 2004.~~

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	~~desert-thorn, or agave. The status of populations of this species is poorly understood, but threats are believed to be loss of habitat due to urbanization, harvesting of yucca and Joshua trees, overgrazing, and off-road vehicle activity. In parts of the range, grazing may increase habitat suitability by increasing the area with scattered junipers.~~	
~~Crissal thrasher~~ ~~*Toxostoma crissale*~~	~~Crissal thrashers are non-migratory residents ranging from southern Nevada and southeastern California to western Texas and central Mexico. This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush. Nests of this species typically consist of an open cup of twigs, lined with finer vegetation, and are placed in the middle of a dense shrub.~~	~~Based on a review of the vegetation community descriptions provided by the Applicant, the BSPP site does not contain suitable dense scrub habitat preferred by this species. They are known from the area, including from McCoy Spring, Palen Valley, and Chuckwalla Well (Fitton 2008). The closet occurrences based on the CNDDB (2010) are two historical records about 6 to 8 miles east of the BSPP site (from 1917 and 1919) and a more recent record (1977) approximately 8.5 miles to the west.~~
~~Ferruginous hawk~~ ~~*Buteo regalis*~~	~~Ferruginous hawks do not breed in California, but are winter residents and in California are most common in grassland and agricultural areas in the southwest. Ferruginous hawks are found in open terrain from grasslands to deserts, and are usually associated with concentrations of small mammals. Threats to this species include loss of wintering habitat from urbanization and cultivation.~~	~~The BSPP site contains suitable wintering habitat for this species, and one ferruginous hawk was observed during BSPP surveys (Solar Millenium 2009a, Biological Resources Technical Report). There are nine CNDDB (2010) records for this species in western Riverside County.~~
Gila woodpecker *Melanerpes uropygialis*	The Gila woodpecker's range is limited to a small area of southwestern United States and northwestern Mexico. In California, this species is found only along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers were formerly associated with desert washes extending up to one mile from the Colorado River. Currently, they are found only in riparian areas along the Colorado River.	In California, this species is currently known only from the Colorado River; therefore this species is not expected in the BSPP site. The Applicant has also indicated in the Biological Technical Report (Solar Millennium 2009a, Biological Resources Technical Report) that the BSPP site does not contain suitable nesting habitat for this species. The closest CNDDB (2010) record for this species is a 1986 record east of the BSPP site at the Colorado River.
Gilded flicker *Colaptes chrysoides*	In California, the gilded flicker is known from the southeast; habitat includes stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Until the mid-1990's, this species was considered a subspecies of northern flicker (*C. atratus*). This species nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. This species may be nearly extinct in California.	This species is not expected to regularly use the BSPP site due to lack of suitable habitat. The closest CNDDB (2010) record for this species is a 1983 record approximately 17 miles northeast of the BSPP site, along the Colorado River.
~~Mountain plover~~ ~~*Charadrius montanus*~~	~~Mountain plovers do not breed in California, but are winter visitors primarily from September to mid-March. In California they are found in the Central Valley, Antelope Valley, San Jacinto Valley, Imperial Valley, and Palo Verde Valley. Mountain plover habitat includes short-~~	~~This species is not expected to extensively use the site, but may use nearby agricultural areas. The closest CNDDB (2010) record for this species is in Imperial County at the southern end of the Salton Sea.~~

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas, though use of these areas is suspected to be because of loss of native grassland and playa habitats.	
Northern harrier *Circus cyaneus*	In western North America, the northern harrier breeds from northern Alaska south to Baja California, Mexico. This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	The BSPP site contains suitable wintering habitat for the northern harrier, and this species was observed during BSPP site surveys (Solar Millennium 2009a, , Appendix F Desert Tortoise Tech Report,Attachment 5). There are no CNDDB (2010) nesting records for this species in eastern Riverside County.
Peregrine falcon *Falco peregrinus*	The Peregrine falcon's year-round range includes coastal and northwestern California and the Sierra Nevada and other California mountains. Additionally, this species winters inland throughout the Central Valley and in northeastern California. They are rare in the arid southeast, but they occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging, and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	This species may forage on the BSPP site and nest in nearby mountains, but was not observed in the BSPP site during BSPP surveys. There are no CNDDB (2010) records for Riverside County.
Prairie falcon *Falco mexicanus*	The prairie falcon inhabits dry environments in the North American west from southern Canada to central Mexico. It is found in open habitat from annual grasslands to alpine meadows at all elevations up to 3,350 m, but is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. They require cliffs or bluffs for nesting though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcon will also prey on lizards, other small birds, and small rodents.	Prairie falcons were observed during surveys, and the entire Project Disturbance Area (7,077 acres) contains suitable foraging habitat for this species. The BSPP site does not contain suitable nesting habitat, although adjacent mountains may. There are numerous CNDDB (2010) records in the region for this species, including eyrie records from Little Maria Mountains to the north (1977) and the Chuckwalla Mountains to the southwest (1978).
Purple martin *Progne subis*	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically. Neither the historical or current breeding range, however, includes the Colorado Desert. Purple martins habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources. Threats to this species include loss of large tree and snags and competition from European starlings.	This species was observed migrating through the BSPP site, but is not expected to extensively use the BSPP site. There are six CNDDB (2010) records for this species from western Riverside County, the most recent of which include nesting records from 1983 and 1993.
Short-eared owl *Asio flammeus*	Short-eared owls breed through much of northern North America, and are year-round residents in some areas of California. Historically, this species occurred throughout much of California, west of the southern deserts, in low numbers. Currently, small populations breed in	The BSPP site contains suitable wintering habitat for the short-eared owl. This species was not observed during surveys for this BSPP, it was observed during surveys for a nearby proposed energy facility site immediately east of

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	~~regularly in the Great Basin and in the Sacramento/San Joaquin River Delta area, but sporadically in other parts of its former range. Short-eared owls require open country that supports small mammal populations, and that also provides adequate vegetation to provide cover for nests. This includes salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.~~	~~the McCoy Mountains. There are no Riverside County CNDDB (2010) records for this species.~~
~~Swainson's hawk~~ ~~*Buteo swainsoni*~~	~~Swainson's hawks require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in nonnative trees, such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands.~~ ~~While there are historical breeding records of this species from the Colorado Desert, this species is now known from southern California only as a spring and fall migrant. This reduction in breeding range is believed to be from loss of nesting habitat.~~	~~The BSPP site may provide foraging habitat for migrating individuals, and this species was observed in the BSPP site during surveys. There are no CNDDB (2010) records for this species in Riverside County.~~
~~Vermilion flycatcher~~ ~~*Pyrocephalus rubinus*~~	~~Vermilion flycatchers are rare breeders or residents in localized areas of southern California, including along the Colorado River. They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite.~~	~~Within the BSPP vicinity, occurrences of this species are limited to the Colorado River. This species is not expected in the BSPP site. The closest CNDDB (2010) records are a historical record from 6 miles west of mile from 1919, and a recent (1983) record from the Blythe golf course.~~
~~Yellow warbler~~ ~~*Dendroica petechia*~~	~~Yellow warblers historically bred throughout much of California except for high elevations, the Colorado Desert, and most of the Mojave Desert. Breeding abundance for this species has declined in much of California, as has the breeding range, especially in the Central Valley and parts of Owens Valley. In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. Currently, this species no longer breeds in much of the Riverside County segment of the lower Colorado River Valley. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter.~~	~~This species was observed during surveys, but is not expected to nest in the BSPP site due to lack of suitable habitat. The closest CNDDB (2010) records for this species are two 1986 records east of the BSPP site at the Colorado River.~~
Mammals		
Arizona myotis *Myotis occultus*	This species has been found from southeastern California through Arizona, New Mexico, and south into Chihauhau, Mexico. Arizona myotis is most commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in	This species is not expected to occur due to lack of suitable habitat and the BSPP occurring below elevations where roosts typically occur. The project owner has indicated that the Study Area lacks suitable habitat requirements for bat roosts for Arizona myotis (AECOM

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	California.	2010a). The closest CNDDB (2010) record is a historical occurrence from 1945 approximately 10 miles south of the BSPP site near the town of Ripley.
Big-free tailed bat *Nyctinomops macrotis*	This species ranges from most of South America northward to include Mexico, Arizona, New Mexico, southern and western Texas, southern California, southeastern Nevada, southern Utah, and north and western Colorado from generally sea level to 8,000 feet in elevation. This species occurs in desert shrub, woodlands, and coniferous forests. It roosts mostly in the crevices of rocks although big free-tailed bats may roosts in buildings, caves, and tree cavities	This species has the potential to occur as a roosting and foraging bat in the BSPP site. The nearest occurrences for this species in Riverside County are from the vicinity of Palm Springs and Joshua Tree National Park (CNDDB 2010).
California leaf-nosed bat *Macrotus californicus*	California leaf-nosed bat is a species of concern and a BLM Sensitive species indicating it is covered under the NECO. California leaf-nosed bats occur in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, they are now found primarily in the mountain ranges bordering the Colorado River Basin. In California, the two largest roosts (each sheltering 1,500 bats during winter months) are in mines in extreme southeastern California. This species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD 2002). Radio-telemetry studies of Macrotus in the California desert show that the California leaf-nosed bat forages almost exclusively among desert wash vegetation within 10 km of their roost (WBWG 2005-2009).	No evidence of this species and/or bat roosts were observed during spring 2009 field surveys. Follow-up surveys were performed during December 2009 to investigate wash drainages and rock crevices for evidence of bat roosts and no sign of bat roosts were found. This species has a potential to roost and forage within the site. There are several CNDDB (2010) records in the vicinity of the BSPP. The nearest record is approximately 3 miles west of the BSPP from 1993 from the McCoy Mountains from creosote bush scrub habitat (CNDDB 2010); approximately 300 adults were observed roosting. Staff believes all habitats within the Project Disturbance Area are suitable for this species.
~~Cave myotis~~ ~~*Myotis velifer*~~	The cave myotis occurs from western Texas, to southern Nevada, southeastern California (only along the Colorado River), southward into Mexico, and is also widely distributed in Arizona. This species is found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a “cave dweller” and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts.	The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).
Colorado Valley wood rat *Neotoma albigula venusta*	Occurs from southern Nevada, southeastern California, northeastern Baja California, to western Arizona. Colorado Valley wood rats are found in a variety of habitats including low desert, pinyon-juniper woodlands, and desert-transition chaparral. Suitable habitat elements for this species include washes where organic debris gathers, areas of prickly pear cactus and mesquite, rocky areas, and crevices in boulders which are used for cover and nest sites.	The nearest CNDDB record is from 1934 near Blythe and approximately 7 miles southeast of the BSPP site (CNDDB 2010).
Hoary bat *Lasiurus cinereus*	Hoary bat is the most widespread of North American bats and are highly associated with forested habitats in the west. They are highly	This species may occur in the area as a foraging bat species. The closest CNDDB (2010) record is a historical

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	associated with forested habitats in the west. Hoary bats roost are usually located at the edge of a clearing although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, and building sides	occurrence approximately 7 miles southeast of the BSPP from the town of Neighbors from 1919.
Pallid bat *Antrozous pallidus*	The pallid bat is a California species of concern and a BLM Sensitive species indicating it is covered under the NECO. Pallid bats inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyonlands, shrub/steppe grasslands, but also occur in higher elevation coniferous forests, greater than 7,000 feet in elevation. This species is most abundant in xeric landscapes including the Great Basin, Sonoran, and Mojave Deserts (WBWG 2005-2009). Pallid bats are known from Cuba, Mexico, and throughout the southwestern and western United States. Population trends are not well known, but there are indications of decline. Pallid bats roost alone, in small groups (2 to 20 bats), or gregariously (100s of individuals). Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees with exfoliating bark, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2005-2009).	No evidence of this species and/or bat roosts were observed during spring 2009 field surveys. In order to further address use of the BSPP site and buffer area by bats, BSPP biologists conducted a two-day visual survey to survey large washes and rock crevices specifically for bat sign (roosting locations, guano piles, staining on trees, etc.) during December 9 and 11, 2009 and no evidence of bat use of the Study Area was observed during these surveys; Anabat/Sonobat surveys were not conducted in conjunction of these surveys which allows for more precise identification of bat species based on the recording of echolocation frequencies. The project owner has indicated that the pallid bat may potentially roost within the Study Area (AECOM 2010a). Primary suitable roosting habitat for bats in the area includes washes with large trees within the western portions of the BSRA in the foothills and washes and in the McCoy Wash in the northeastern portion of the BSPP site. Staff believes all habitats within the Study Area are suitable habitats for pallid bat.
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Pocketed free-tailed bat is a California species of concern. This species occurs in western North America, from southern California, central Arizona, southern New Mexico, western Texas, south into Mexico and Baja, California (WBWG 2005-2009). Despite only a limited number of records, pocketed free-tailed bats are known to occur in the desert from March through August, when they then migrate out of the area. In California, they are found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	This species has a potential to roost and forage within the BSPP site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).
Spotted bat *Euderma maculatum*	This species is known from all the states west of and including Montana, Wyoming, Colorado, New Mexico and Texas. Although broadly distributed, this species is rarely common, but may occur locally from southern British Columbia, northern Arizona, Arizona/Utah border, and western Texas from below sea level to 8,100 feet above mean sea level. Spotted bats occur in arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a	This species has a potential to roost and forage within the BSPP site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record is a historical occurrence from 1907 in the Colorado Desert near Mecca (CNDDB 2010).

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
	necessary feature for roosting.	
Townsend's big-eared bat *Corynorhinus townsendii*	This species has been reported in a wide variety of habitat types ranging from sea level to approximately 9,000 feet. Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	This species has a potential to roost and forage within the study area. There are no CNDDB occurrences within 10 miles of the site.
Western mastiff bat *Eumops perotis*	The subspecies that occurs in North America*, E. p. californicus*, ranges from central Mexico across the southwestern United States including parts of California, southern Nevada, Arizona, southern New Mexico and western Texas. Recent surveys have extended the previously known range to the north in both Arizona with several localities near the Utah border and California. It is found in a variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests. Surveys in northern Arizona have documented roosts at approximately 3,600 feet elevation and foraging bat species at 7,500 feet (WBWG 2005-2009).	The BSPP site supports suitable roosting and foraging habitat for western mastiff bat. There are no CNDDB occurrences within 10 miles of the site
Yuma mountain lion *Puma concolor browni*	In the NECO planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal.	This species likely uses the BSPP site but no definitive sign for this species was observed during 2009 spring surveys.
Yuma myotis *Myotis yumanensis*	This species ranges across the western third of North America from British Columbia, Canada, to Baja California and southern Mexico. Yuma myotis is usually associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects, but Yuma myotis also use tinajas in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. The species roosts in bridges, buildings, cliff crevices, caves, mines, and trees	This species has a potential to roost and forage within the BSPP site. The nearest CNDDB record is from 2002 near the Blythe bridge over the Colorado River. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Reptiles/Amphibians		
Desert rosy boa *Charina (Lichanura) trivirgata*	In California, desert rosy boas are found only in the southern part of the state south of Los Angeles, from the coast to the Mojave and Colorado deserts (Zeiner et al. 1990, updated 1997; BLM CDD 2002). It is uncommon throughout its range. Desert rosy boas are found in habitats with moderate to dense vegetation and rocky cover, such as desert canyons, washes, and mountains. They have been found under rocks, in boulder piles and along rock outcrops and vertical canyon walls. Their diet consists of small mammals and birds. Rosy boas are primarily nocturnal, but may be out in the evening or morning in the spring and may appear during the day. The greatest activity occurs in late spring to early or mid-summer. They hibernate in winter. Desert rosy boas are not listed, but are included in the NECO and the BSPP area is within the range of this species.	There are 4 CNDDB records of this species from Riverside County, the majority of which are reported from western Riverside County near Cabazon, Lake Matthews, Lake Elsinore, and Hemet areas from disturbed sage scrub habitats with rocky soils and outcroppings. This species was not observed during spring 2009 field surveys; however temperatures may have been too low and therefore not during an optimal time to identify this species in the field. The BSPP site does not contain the preferred substrate, and therefore the site is not expected to provide important habitat for this species.
Western chuckwalla *Sauromalus obesus*	This species has no protective status or designation. Western chuckwalla occurs in southeastern California, southern Nevada, southeastern Utah, and western Arizona. Chuckwallas occur in virtually all undisturbed rocky hillsides and often escape into deep rock crevices to evade predators. These areas are typically vegetated by creosote bush and other such drought-tolerant scrub habitats.	This species was detected during spring 2009 field surveys (Solar Millennium 2009a, Volume II, Biological Technical Report). Suitable large, rock outcroppings do not occur within the BSPP site which is often preferred by this species.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

CONSTRUCTION AND OPERATION - DIRECT IMPACTS, INDIRECT IMPACTS, AND MITIGATION

Direct impacts are those resulting from a project and occur at the same time and place. Indirect impacts are caused by a project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the project. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the modified BSPP.

Impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In the desert ecosystems the definition of permanent impacts needs to reflect the slow recovery rates of its plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999). In this analysis, an impact is considered temporary only if there is evidence to indicate that pre-disturbance levels of biomass, cover, density, community structure, and soil characteristics could be achieved within five years.

Summary of Impacts

Biological Resources Table 5 summarizes the direct, indirect, and cumulative impacts to biological resources and includes the proposed conditions of certification that would mitigate these impacts.

Biological Resources Table 5
Summary of Impacts and Mitigation

Biological Resource	Impact/Mitigation
Sonoran Creosote Bush Scrub & Associated Wildlife	**Direct Impacts**: There will be some modification to all vegetation within the BSPP site boundary. Approximately three percent would be cleared and/or graded, six percent would be micro-graded, 15 percent would be disc and rolled, and 76 percent would be mowed. The project owner assumes that all the vegetation will be directly impacted. Permanent loss of 3722.7 acres and fragmentation of adjacent wildlife habitat and native plant communities. **Indirect Impacts**: Disturbance (noise, lights, dust) to surrounding plant and animal communities; spread of non-native invasive weeds; changes in drainage patterns down slope of modified BSPP. **Cumulative Impacts**: Contribution to the cumulative loss of Sonoran creosote scrub is not cumulatively considerable with the incorporation of (**BIO-12**), (**BIO-7**), and (**BIO-14**). **Mitigation**: Off-site habitat acquisition and enhancement (**BIO-12**); implement impact avoidance and minimization measures (**BIO-8)** and weed control plan (**BIO-14**)
Stabilized and Partially	**Direct impacts**: Permanent loss of 50 acres for construction of the

Biological Resource	Impact/Mitigation
Stabilized Dunes	project's transmission line and access roads, potential accidental direct impacts to adjacent preserved habitat during construction and operation. **Indirect impacts**: Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; fragmentation and degradation of remaining habitat. **Cumulative Impacts**: Contribution to cumulative impacts on Mojave fringe-toed lizard is less than cumulatively considerable with implementation of (**BIO-20**) and (**BIO-1** through **BIO-8**) **Mitigation**: Implement (**BIO-20**), Stabilized and Partially Stabilized Sand Dunes/Fringe-Toed Lizard Mitigation.
Waters of the State/ Sensitive Plant Communities	**Direct Impacts**: Permanent loss of biological functions and values of 253 acres of state waters, including: • 22.0 acres desert dry wash woodland • 228.8 acres of vegetated ephemeral streams (creosote bush-big galleta grass association • 3.3 acres of unvegetated ephemeral dry wash **Cumulative Impacts**: Implementation of (**BIO-22**), (**BIO-7** and **BIO-8**) the contribution to cumulative impacts from the modified BSPP would be less than cumulatively considerable **Mitigation**: Acquisition and enhancement of 409.7 acres ephemeral desert washes, implementation of avoidance and minimization measures to protect state waters (**BIO-22**); implement weed plan (**BIO-14**)
Desert Tortoise	**Direct Impacts**: Potential take of individuals during operation and construction; permanent loss of 3,976 acres of low to moderate desert tortoise habitat and fragmentation of surrounding habitat. **Indirect Impacts**: Increased risk of predation from ravens, coyotes, feral dogs; disturbance from increased noise and lighting; introduction and spread of weeds; increased road kill hazard. **Cumulative Impacts**: Implementation of (**BIO-12**), (**BIO-22**), and (**BIO-1** through **BIO-6**) the contribution to cumulative impacts from the modified BSPP would be less than cumulatively considerable. **Mitigation**: Implement avoidance and minimization measures (**BIO-6** through **BIO-11**) and acquire off-site desert tortoise habitat and implement enhancement measures (**BIO-12**).
Mojave Fringe-Toed Lizard	**Direct impacts**: Mortality to individuals during construction of the transmission line; permanent loss of 50 acres of fringe-toed lizard habitat (dune habitat) for construction associated with transmission line construction; potential accidental direct impacts to adjacent preserved habitat during construction and operation. **Indirect impacts**: Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; fragmentation and degradation of remaining habitat; increased road kill hazard from construction and operations traffic; harm from accidental spraying/drift of herbicides and dust suppression chemicals. **Cumulative Impacts**** Contribution to cumulative impacts on Mojave fringe-toed lizard is less than cumulatively considerable with implementation of (**BIO-20**) and (**BIO-1** through **BIO-8**) **Mitigation**: Implement (**BIO-20**), Sand dune/Mojave fringe-toed lizard mitigation.
Fully protected species (golden eagle, Yuma clapper rail,)	**Direct/Indirect Impact**: Loss of foraging habitat; potential disturbance to nesting golden eagles during construction if active nests occur within 10 miles of BSPP boundaries, fragmentation of habitat, displacement,

Biological Resource	Impact/Mitigation
	and disruption of movement. Other impacts may stem from introduction and spread of non-native invasive plants; increased risk of fire; and degradation of off-site springs or seeps collision, glare, and electrocution.. **Cumulative Impacts**: Contributes to cumulative loss of foraging habitat from future projects within the NECO planning area (Table 15). **Mitigation**: Implementation of impact avoidance and minimization measures (**BIO-6** through **BIO-8**); Avian Protection Plan (**BIO-15**) which includes annual inventory and monitoring; pre-construction nest surveys (**BIO-16**); netting for evaporation ponds (**BIO-25**),., and off-site habitat acquisition and enhancement (**BIO-12**). Direct Impacts are Less than Significant with Mitigation; Indirect Impacts May Remain Significant After Mitigation; Cumulative Impacts May Remain Significant After Mitigation.
Special-Status Birds (e.g. Swainson's hawk)	**Direct/Indirect Impacts**: Permanent loss of breeding and foraging habitat, including loss of 3,723 acres of Sonoran creosote bush scrub and 551.1 acres of desert dry wash scrub; potential loss of eggs and young; disturbance of nesting and foraging activities for populations on and near the plant site and linear facilities; degradation and fragmentation of remaining adjacent habitat from edge effects; hazards from evaporation ponds. Also increased road kill hazard from operations traffic and collision with mirrors and other project features; disturbance or disruption to normal bahaviors and habitat use from operations, including potential attraction to the site. **Cumulative Impacts**: Contributes to cumulative loss of habitat from future projects within NECO planning area (Table 14, Le Conte's Thrasher), including desert dry wash woodland (Table 15). **Mitigation**: Implement impact avoidance and minimization measures (**BIO-6** through **BIO-8**); Avian Protection Plan (**BIO-15**); pre-construction nest surveys (**BIO-16**); off-site habitat acquisition and enhancement (**BIO-12**); netting for evaporation ponds (**BIO-25**)
Western Burrowing Owl	**Direct Impacts**: Permanent loss of breeding and foraging habitat; potential loss of eggs and young; degradation and fragmentation of remaining adjacent habitat from edge effects; disturbance of nesting and foraging activities for nesting pairs near the plant site and linear facilities (1 western burrowing owl and active burrow detected in Project Disturbance Area during 2009 surveys; 1 detected in buffer); **Indirect Impacts**: increased road kill hazard from operations traffic and collision with mirrors; increased predation from ravens; disturbance of nesting activities from operations, site glint and glare and associated effects which may lead to disorientation or fatigue, or other anthropogenic sources of injury or mortality. Cumulative Impacts: Contribution to cumulative impacts on Western Burrowing Owls would not be cumulatively considerable with implementation of conditions of certification (**BIO-12**), (**BIO-21**), (**BIO-18**), and (**BIO-1** through **BIO-8**) **Mitigation:** Implementation of impact avoidance and minimization measures (**BIO-6** through **BIO-8**); Avian Protection Plan (**BIO-15**); pre-construction nest surveys (**BIO-16**); off-site habitat acquisition and enhancement (**BIO-12**); netting for evaporation ponds (**BIO-25**)Implement burrowing owl impact avoidance and mitigation measures (**BIO 18**); would reduce cumulative impacts to below significance.

Biological Resource	Impact/Mitigation
Desert Kit Fox & American Badger	**Direct Impacts**: Permanent loss of 3,976 acres of occupied habitat; fragmentation and degradation of remaining habitat, loss of foraging grounds, crushing or entombing of animals during construction; increased risk of road kill hazard from construction traffic **Indirect Impacts**: Disturbance from increased noise and lighting; introduction and spread of weeds; increased risk of road kill from operations traffic; increased risk of infection from Canine Distemper Virus (CDV) during passive relocation or hazing activities conducted in an area experiencing or adjacent to distemper cases, increased risk of disturbance or mortality from vegetation management activities. **Cumulative Impacts**: Implementation of (**BIO-12**), (**BIO-21**), (**BIO-17**), (**BIO-1** through **BIO-7**) would reduce cumulative impacts to less than cumulatively considerable. **Mitigation:** Implementation of avoidance and minimization measures (**BIO-17**); off-site habitat acquisition and enhancement (**BIO-12**);
Couch's spadefoot toad	**Direct Impacts:** loss of breeding and upland habitat, mortality of individuals; disturbance to breeding ponds, **Indirect Impacts:** reduced flow to breeding areas, increased flow to upland habitat, construction noise could trigger emergence when conditions are not favorable. **Cumulative Impacts:** Contribution is less than cumulatively considerable with implementation of (**BIO-1** through **BIO-8**) and (**BIO-26**) **Mitigation**: Mitigation for this species has been completed.
Special Wildlife Management Areas	**Desert Wildlife Management Areas**: None **Areas of Critical Environmental Concern**: None **Wildlife Habitat Management Areas**: None **Desert Tortoise Critical Habitat**: None **Mitigation**: None proposed.
Harwood's milk-vetch*	**Direct Impacts**: Harwood's milk-vetch plants were found throughout the eastern plant site Disturbance Area, linear facilities route, and along Black Rock Road; potential accidental direct impacts during construction and operation **Indirect impacts**: Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; potential disruption of sand transport systems that maintain habitat below the BSPP; alteration of drainage patterns; herbicide drift; disruption of photosynthesis and other metabolic processes from dust **Cumulative Impacts***: Contribution is less than cumulatively considerable with implementation of (**BIO-19**), (**BIO-14**), (**BIO-22**), and (**BIO-21**) **Mitigation**: Implement weed management plan (**BIO-14**); Best Management Practices (**BIO-8**); special-status plant compensatory mitigation and impact avoidance and minimization measures (**BIO-19**).
Harwood's phlox	**Direct Impacts**: Harwood's phlox were found throughout the eastern transmission line route and substation site; potential accidental direct impacts during construction and operation **Indirect impacts**: Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; potential disruption of sand transport systems that maintain habitat below the BSPP; alteration of drainage patterns; herbicide drift; disruption of photosynthesis and other metabolic processes from dust **Cumulative Impacts***: Contribution is less than cumulatively considerable with implementation of (**BIO-19**), (**BIO-14**), (**BIO-22**), and

Biological Resource	Impact/Mitigation
	(**BIO-21**) **Mitigation**: Implement weed management plan (**BIO-14**); Best Management Practices (**BIO-8**); special-status plant impact avoidance and minimization measures (**BIO 19**).
Abram's spurge	**Direct Impacts**: Abram's spurge were found in Unit 4 of the Modified Project, along the gen-tie, and north of I-10; potential accidental direct impacts during construction and operation **Indirect Impacts**: Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; population fragmentation, impacts to pollinators and gene flow; risk of fire **Cumulative**: Contribution is less than cumulatively considerable with implementation of (**BIO-19**), (**BIO-14)**, (**BIO-22**), and (**BIO-21**) **Mitigation**: Implement weed management plan (**BIO-14**); Best Management Practices (**BIO-8**); special-status plant compensatory mitigation and impact avoidance and minimization measures (**BIO-19**).

*Does not reflect the impacts to stabilized and partially-stabilized sand dune habitat along the transmission line corridor south of I-10; the impacts to this habitat and species associated with this habitat are included in the discussion of direct and indirect impacts.

Impacts to Native Vegetation and Wildlife Habitat

Construction of the BSPP would result in permanent or long-term land use conversion of native vegetation and habitat (4,003 acres). Impact analyses typically characterize effects to vegetation and habitat as either temporary or permanent. Permanent impacts are generally considered disturbances or land use conversion that would preclude most natural habitat function throughout the life of a project or longer. Temporary disturbance is generally understood as construction disturbance occurring on a site that later may return to a more natural condition or may be actively revegetated or enhanced, either immediately after construction or during the early phases of project operation, returning to natural conditions within about five years. In the desert ecosystem, the interpretation of permanent and temporary impacts needs to reflect the slow recovery rates of native plant communities. Natural recovery rates from disturbance in desert ecosystems depend on the nature and severity of the impact. Temporary habitat impacts such as vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery and complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge, 1999). In this analysis, an impact that might be considered temporary in other parts of California will be considered long-term or permanent due to these very slow natural recovery rates.

Vegetation within the proposed solar facility would be mowed initially and mowed or trimmed later to prevent interference with the panels. Staff believes that this proposed vegetation treatment would enhance soils and water resource conservation (as compared with complete removal of the vegetation). However, the proposed vegetation treatment would substantially degrade habitat value for most wildlife species throughout the facility and treats this impact as a permanent loss of habitat. Construction and operation of the BSPP would have permanent impacts throughout the site. In addition, the project would have long-term impacts where habitat is disturbed for temporary construction use, gen- tie line construction areas, or temporary access routes to construction sites.

Native vegetation at the BSPP site would be graded, micro-graded, disc and rolled, and mowed (NEBS 2013e). During operations vegetation would be mowed or trimmed as needed to provide clearance of panels.

Grading

The approved project design called for clearing and grading of the entire site. For the modified project grading would occur in areas of the fence lines, roads, for panel installation safety, operations and maintenance building, switchyard, water treatment area, parking, and inverters. Grading would occur in approximately 3 percent of the site.

Mirco-grading

This technique is also known as isolated cut/fill, where areas would be contoured to a smooth grade. This would be used to accommodate perimeter fencing, roads, equipment or structures, or for panel installation safety. Approximately 6 percent of the site would be micro-graded.

Disc and roll

The disc and roll technique uses tractors to till the soil to help level out low spots and is followed by drum rollers to compact the soil. It would be used in areas requiring minor grading. This technique crushes vegetation and disturbs root systems and would represent 15 percent of the site.

Mowing

With PV technology the vegetation can be mowed since grading on the entire site is not required. Mowing will involve cutting the vegetation down but leaving the root systems alone. The vegetation would be mowed or trimmed periodically after some regrowth has occurred. Mowed vegetation would represent the majority of the site (76 percent).

Staff recommends Conditions of Certification BIO-12 mitigation for impacts to creosote bush scrub, BIO-14 developing a weed management plan, and BIO-22 mitigation for impacts to state waters. These conditions would mitigate for loss of sensitive vegetation and reduce the impacts of invasive weeds to a level less than significant.

Waters of the State: Impacts and Mitigation

Biological Resources Table 6 summarizes the direct impacts to waters of the state as a result of constructing the modified BSPP, and includes compensatory mitigation ratios from the Commission Decision for these impacts.

Biological Resources Table 6
Direct and Indirect Impacts to Waters of the State and Recommended Mitigation

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
State Waters - Direct Impacts			
Desert Dry Wash Woodland	21.0	3:1	63.0
Vegetated Ephemeral Swales (creosote bush-big galleta grass association)	228.8	1.5:1	343.2
Unvegetated Desert Dry Wash	3.3	1:1	3.3
Total direct impacts to state waters	**253.1**		**409.5**

Source: Acreages for impact areas are from Table5.1-2 from Revised Petition to Amend (NEBS2013a).

As stated above grading has been greatly reduced at the BSPP site. The majority of the onsite drainages will be undisturbed to allow water to flow through the site and maintain exiting flow rates. Panel support structures would be placed within drainages, with the larger deeper ephemeral drainages avoided. There would be no diversion channel since water would be allowed to flow across the site. Grading for the approved project would have directly impacted approximately 551 acres of state jurisdictional waters and would eliminate the hydrological, biochemical, vegetation, and wildlife functions of these drainages. However, even with the reduced modifications to the onsite grading regime for the modified BSPP, 253 acres of state jurisdictional waters would be impacted because of the modifications to the vegetation including the loss of some hydrological functions and loss of wildlife functions of these drainages.

Indirect impacts to desert washes downstream from the BSPP site would be negligible due to the low (3 percent) percentage of impervious areas (i.e. maintenance roads, buildings, etc.) on the BSPP site.

Staff considers, and the project owner agrees, direct impacts of the BSPP of 253 acres of state jurisdictional waters to be significant. The extensive ephemeral drainage network at the BSPP site currently provides many functions and values, including landscape hydrologic connections, stream energy dissipation during high-water flows that reduces erosion and improves water quality, water supply and water-quality filtering functions, surface and subsurface water storage, groundwater recharge, sediment transport, storage, and deposition aiding in floodplain maintenance and development, nutrient cycling, wildlife habitat and movement/migration; and support for vegetation communities that help stabilize stream banks and provide wildlife habitat. Although many of these functions would not be greatly disturbed the BSPP would result in the modification of vegetation, loss of wildlife habitat, and movement/migration functions and values.

Off-site acquisition and enhancement of off-site state waters would mitigate the BSPP impacts to waters and would mitigated at a ratio of 1.5:1 for these impacts. Vegetated ephemeral swales provide important wildlife habitat, offering foraging opportunities, cover, and wildlife movement corridors that are distinctly more valuable compared to the

surrounding uplands or even unvegetated ephemeral washes. Desert dry wash woodland would be mitigated at a 3:1 ratio, as required by guidelines in the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM-CDD 2002). Condition of Certification **BIO-22** from the Commission Decision provides the specifics of avoidance and mitigation measures for impacts to ephemeral drainages within the Project Disturbance Area. Implementation of Condition of Certification **BIO-22** would reduce BSPP impacts to state waters to less than significant levels.

Impacts to Sand Transport Corridor and Sand Dune Habitat

The western portion of the transmission line route is exclusively within stabilized and partially stabilized dune habitat as well as the major regional sand transport corridor. Construction of the transmission line would directly impact 50 acres of sand dunes. Construction of the transmission line would have little direct impact on the sand transport corridor, but indirect impacts include facilitating the spread of noxious weeds, including Sahara mustard. Sahara mustard increases stabilization, and therefore degrades, dune habitat. Implementation of Condition of Certification **BIO-14** (as modified by staff), Weed Management Plan, would reduce these potential impacts to less than significant levels. The project would reduce the supply of sand within the project area that would otherwise have been transported downwind to other dune areas. New sand that would have been transported across the project footprint from upwind would potentially be reduced by above ground infrastructure.

Implementation of mitigation such as land acquisition within the same regional sand transport corridor (described in Condition of Certification **BIO-20**) would ensure impacts from this BSPP are less than significant.

Special-status Species: Impacts and Mitigation

Desert Tortoise

Direct Impacts

During construction of the BSPP desert tortoises may be harmed during clearing, grading, and trenching activities or may become entrapped within open trenches and pipes. Construction activities could also result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual tortoises being crushed or entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises may also be attracted to the construction area by application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel would occur from the construction and improvement of access roads, which could disturb, injure, or kill individual tortoises. Also, tortoises may seek shade and thermal cover by taking shelter under parked vehicles and be killed, injured, or harassed when the vehicle is moved.

Use of paved roads, including I-10, and dirt access roads could result in mortality of desert tortoises by vehicle strikes. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest. Desert tortoises on dirt roads may be affected depending on vehicle frequency and speed. Data indicate that desert tortoise numbers decline as vehicle use increases (Bury et al. 1977) and that tortoise sign increases with increased distance from roads (Nicholson 1978; Karl 1989; von Seckendorf & Marlow 1997, 2002).

Construction activities that result in accidental fires can directly affect desert tortoise and their habitat. Because of the abundance of weeds in the region wildfires that result from welding, vehicles carelessly parked on vegetation, smoking, or other ignition sources pose a potential direct impact to desert tortoise and can quickly spread to off-site areas. Direct effects of fire on desert tortoise include mortality by incineration, elevating body temperature, poisoning by smoke, and asphyxiation (Whelan 1995). Small individuals such as hatchlings are more at risk from lethal heating than large ones because they have a higher surface to volume ratio that allows heat to penetrate their vital organs relatively quickly (Brooks and Esque 2002).

The original project applicant recommended impact avoidance and minimization measures to reduce these direct impacts to desert tortoise, including installation of exclusion fencing to keep desert tortoise out of construction areas, relocating/translocating the resident desert tortoise from the BSPP site, reducing construction traffic and speed limits to reduce the incidence of road kills and worker environmental awareness training programs.

Staff incorporated these recommendations into its proposed conditions of certification, which were adopted by the Energy Commission in its Decision on the original BSPP. Conditions of Certification **BIO-1** through **BIO-5** (as modified herein by staff) require the project owner to hire qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, and to be present on site during all construction activities. Condition of Certification **BIO-6** (as modified) requires the development and implementation of a Worker Environmental Awareness Program to train all workers to avoid impacts to sensitive species and their habitats. Condition of Certification **BIO-7** (as modified) requires the BSPP owner to prepare and implement a Biological Resources Mitigation Implementation and Monitoring Plan that incorporates the mitigation and compliance measures required by local, state, and federal LORS regarding biological resources. Condition of Certification **BIO-8** (as modified) describes Best Management Practices requirements and other impact avoidance and minimization measures.

Conditions of Certification **BIO-9** through **BIO**-**11** are specific to desert tortoise. Condition of Certification **BIO-9** requires desert tortoise exclusionary fencing to be installed around the entire Project Disturbance Area (including access roads) and desert tortoise clearance surveys to be performed. **BIO-10** requires the development and implementation of a desert tortoise relocation/translocation plan to move the tortoises currently living in the Project Disturbance Area to identified relocation or translocation

sites. **BIO-11** requires verification that all desert tortoise impact avoidance, minimization, and compensation measures have been implemented.

Implementation of Conditions of Certification **BIO-9** and **BIO-10** have inherent risks and could themselves result in direct effects such as mortality, injury, or harassment of desert tortoises due to equipment operation, fence installation activities, removal of tortoise burrows, and tortoise translocation. These impacts are described in more detail below.

Impacts of Relocation/Translocation

Capturing, handling, and relocating desert tortoises from the proposed site after the installation of exclusion fencing could result in harassment and possibly death or injury. Tortoises may die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81-0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens may be spread among the tortoises, both resident and relocated or translocated animals. For those tortoise near but not within the Project Disturbance Area, removal of habitat within a tortoise's home range or segregating individuals from their home range with a fence would likely result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death. Tortoises moved outside their home ranges would likely attempt to return to the area from which they were moved, therefore making it difficult to isolate them from the potential adverse effects associated with BSPP construction.

The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee (SAC) has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

> "*As such, consensus (if not unanimity) exists among the SAC and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing "good" habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of "depleted" (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition.*"

The prior project owner prepared a draft Desert Tortoise Relocation/Translocation Plan as part of the Incidental Take Permit application (AECOM 2010a, Attachment DR-BIO-47), which includes measures to avoid and minimize adverse impacts to resident and translocated desert tortoise for the BSPP. This plan would be reviewed and approved by CDFW, USFWS, BLM and Energy Commission staff, and would be implemented to move any tortoises detected during clearance surveys. In addition, the Desert Tortoise Relocation/Translocation Plan would include an analysis to determine whether relocation or translocation is an appropriate action; the identification and prioritization of potentially suitable locations for translocation; desert tortoise handling and transport considerations (including temperature); animal health considerations; a description of translocation scheduling, site preparation, and management; and specification of monitoring and reporting activities for evaluating success of translocation. With implementation of Condition of Certification **BIO-10**, adverse impacts associated with desert tortoise relocation/translocation would be minimized.

Mitigation for Desert Tortoise Habitat Loss

The most significant effect of the BSPP on desert tortoise is loss of approximately 3,976 acres of occupied habitat and fragmentation and disturbance to adjacent habitat. In its decision on the approved BSPP, the Commission concluded that mitigation at a 1:1 ratio through land acquisitions or an assessed financial contribution based on the final construction footprint would mitigate for this significant habitat loss. This mitigation is consistent with measures in Incidental Take Permits issued by CDFW for projects in the region, and with requirements described in the NECO (BLM-CCD 2002). The NECO specifies the following desert tortoise compensation requirements (from page D-2, Appendix D, BLM-CCD 2002):

> "*A mitigation fee based on the amount of acreage disturbed shall be required of proponents of new development. Within Desert Wildlife Management Areas (DWMAs) (Category I) the lands delivered or equivalent fee shall be an amount that achieves a ratio of 5 acres of compensation land for every 1 acre disturbed. Outside DWMAs (Category III) the lands delivered or equivalent fee shall be an amount that achieves a ratio of one 1 acre of compensation land for every 1 acre disturbed. Funds may be expended as approved by the Management Oversight Group in 1991. Lands will be acquired or enhanced within the same recovery unit as the disturbance. CDFW may require additional fees for management of lands and for rehabilitation of lands.*"

As specified in Condition of Certification **BIO-12** (Desert Tortoise Compensatory Mitigation), acquisition, protection and enhancement of desert tortoise habitat would mitigate BSPP impacts to desert tortoise. Acquisition of mitigation lands would focus on parcels in critical habitat within the Chuckwalla DWMA as well as securing lands that would promote protection of high quality desert tortoise habitat between the northern portions of the Chuckwalla DWMA and Joshua Tree National Park (see Appendix B for a regional map depicting these targeted acquisition areas). The location of the mitigation lands would also facilitate connectivity between desert tortoise populations in the Chuckwalla and Chemehuevi DWMAs and critical habitat units.

Integrating State and Federal Desert Tortoise Mitigation

While there is agency agreement that 1:1 compensatory mitigation is appropriate for BSPP impacts to desert tortoise habitat, some differences remain between the federal and state approach to desert tortoise mitigation that currently preclude a complete integration of desert tortoise mitigation requirements. One difference is the state requirement for permanent protection of acquired mitigation lands. The Energy Commission and CDFW require that mitigation lands acquired for endangered species be maintained and protected in perpetuity for the benefit of those species.

The BLM cannot always make the same commitment to protecting acquired mitigation lands because their multiple use mandate restricts their ability to designate lands solely for conservation purposes and to exclude potentially incompatible development and activities. The REAT agencies agree that to address the in-perpetuity protection requirement for any lands acquired and subsequently donated to BLM will have either a deed restriction or conservation easement in title that will preclude future development of the land (Fesnock pers. comm., Flint pers. comm.). The REAT agencies also note that protection could be achieved by buying private in-holdings within designated wilderness or wilderness study areas, being that these areas are congressionally designated and as such preclude any development within them, thus meeting the requirement for in-perpetuity protection.

The BLM has also indicated that for any land enhancement actions or recovery actions implemented on existing BLM-owned lands, BLM would develop a Memorandum of Understanding (MOU) with CDFW containing provisions for notification of any proposed projects affecting those lands (BLM 2009a). The BLM agreed that future projects authorized on these mitigation lands that might degrade or diminish the desert tortoise recovery value would be compensated at a higher rate (BLM 2009a).

Calculation of Security for Desert Tortoise Compensatory Mitigation

To satisfy section 2081 of the California Endangered Species Act an applicant must provide financial assurances to guarantee that an adequate level of funding is available to implement all impact avoidance, minimization, and compensation measures. These financial assurances are generally provided in the form of an irrevocable letter of credit, a pledged savings account or another form of security prior to initiating ground-disturbing BSPP activities. Staff's proposed conditions of certification typically specify the dollar amount of the security, and include a provision for adjusting that security amount when parcel-specific information is available. This security amount is calculated by multiplying the acreage of the impact area by the total per acre costs, a figure which represents the sum of the costs required for: (1) land acquisition, (2) initial habitat improvements, and (3) a long-term maintenance and management fee to support long-term management of the acquired lands.

The latter cost for the long-term maintenance and management is typically the largest component of the mitigation fee. Interest from the long-term maintenance and management fee creates a funding source that provides enough income to cover annual stewardship costs on the acquired lands and includes a buffer to offset inflation. The

amount for the long-term maintenance and management fee is established by a Property Analysis Record (PAR), a computerized database methodology developed by the Center for Natural Lands Management (<www.cnlm.org/cms>) which calculates the costs of land management activities for a particular parcel. These activities include development of a desert tortoise management plan tailored for each parcel of mitigation land to assess habitat status, identify desired conditions, and develop plans to achieve conditions that would best support desert tortoise. Once the management plan is developed and approved by the appropriate resource agencies, implementation of enhancement actions such as fencing, road closure, weed control, habitat restoration as well as monitoring can begin. The goal of these activities is to increase the carrying capacity of the acquired lands for desert tortoise and increase their population numbers by enhancing survivorship and reproduction.

Funding for the initial habitat improvements supports those actions needed immediately upon acquisition of the property to secure it and remove hazards. These activities might include fencing or debris clean-up, or other urgent remedial action identified prior to when the parcels were acquired. When the management plan is completed for the acquired parcel activities like these are thereafter funded from the interest produced by the long-term maintenance and management described above.

Condition of Certification **BIO-12** specifies security for acquisition of 3,976 acres and provides an estimate of associated costs. These costs include an acquisition fee of $500 per acre, initial habitat improvement costs at $330 per acre, and long-term maintenance and management fee is estimated at $1,450 per acre (Nicol pers. comm.). The estimated composite mitigation cost to meet staff's recommendation for establishing the security would be $2,280 per acre. This security amount may change when an updated appraisal is made and a Property Analysis Record is prepared for the parcels that have been selected for acquisition. These are estimates based on current costs; the requirement is defined in terms of acres, not dollars per acre, and actual costs may vary. If the security proves to be inadequate to secure the necessary acreage because of increases in land costs, the project owner would need to make up the difference. Similarly, if the security was an overestimate the project owner would be refunded the excess. In contrast to the state mitigation approach, the BLM does not require a long-term maintenance and management fee or other funding to manage the acquired desert tortoise mitigation lands because they pursue recovery goals through implementation of region-wide management plans and land use planning as described in the NECO and the Desert Tortoise Recovery Plan rather than through parcel by parcel acquisitions and management. The BLM typically requires a cash payment (proffer) prior to initiating ground-disturbing activities, which generally includes a per acre cost reflecting current land value and recent purchase prices, as well as additional acquisition and indirect costs and funding for appraisals, environmental site assessments, property cleanup, and an inflation contingency. However, as noted by the REAT agencies, other methods may be employed which would satisfy both BLM and the state agency legal requirements.

Indirect and Operational Impacts to Desert Tortoise

Indirect effects to desert tortoises could include soil compaction, fugitive dust, the introduction of non-native and invasive plant species, and increased human presence along access roads. Indirect effects may also include habitat fragmentation, the disruption of existing home ranges, and barriers to dispersal. Increased human presence from new access roads or interest in the facility could lead to increased road kill, illegal collecting and the spread of disease due to abandonment of captive tortoises infected with upper respiratory tract disease. Operational impacts to desert tortoise include both direct and indirect effects including those described above. Typically, these effects are similar in type but smaller in magnitude when compared to construction related effects. These effects may include the risk of mortality from vehicle traffic, crushing of burrows by routine maintenance activities on access roads or if any desert tortoises remain in the facility area post construction, vegetation management activities, and washing of the heliostats. Other operational effects include fires, habitat degradation, and the spread of invasive plant species. Increased road traffic on roads in the region either from facility staff or sightseers increases the risk of road kill to both tortoises and common wildlife. This not only results in the loss of desert tortoise but increases the risk for subsidized predators such as ravens and coyotes.

Indirect Impacts to Desert Tortoise

Ravens, Coyotes, and Other Predators

Construction and operations activities associated with the BSPP could provide food or other attractants in the form of trash, road-killed animals, and water, which would draw unnaturally high numbers of desert tortoise predators such as the common raven, kit fox, and coyote to the BSPP area. BSPP structures would also provide new nesting and perching sites for ravens, increasing their presence in the vicinity of the BSPP and eventually increasing their population. Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM 1990, USFWS 2008a) and one of many anthropogenic contributors to desert tortoise population declines.

In addition to ravens, feral dogs have emerged as major predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS 1994; Evans 2001). Dogs brought to the BSPP site with visitors may harass, injure, or kill desert tortoises, particularly if allowed off leash to roam freely in occupied desert tortoise habitat. The worker environmental awareness training (**BIO-6**) and restrictions on pets being brought to the site required of all personnel (**BIO-8**) would reduce or eliminate the potential for these impacts.

Construction and operation of the BSPP would increase raven and coyote presence in the BSPP area. Ravens capitalize on human encroachment and expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting

resources that are introduced or augmented by human encroachment. The city of Blythe and the nearby airport provide food, water features, and roosting/nesting substrates (buildings, signs, lamps, and utility poles) that otherwise would be unavailable. This development adjacent to the proposed BSPP provides year-round water and trash subsidies for the raven as well as nesting opportunities.

Small mammal, fox, coyote, rabbit, lizard, snake, and tortoise road kill along I-10 provides an additional attractant and subsidy for opportunistic predators/scavengers such as ravens. Road kills would mount with increased BSPP construction and operations traffic, further exacerbating the raven/predator attractions and increasing desert tortoise predation levels. Condition of Certification **BIO-8** provides measures to minimize the number of road-kill that might attract desert tortoise predators.

Regional Approach to Raven Control

The USFWS has developed a comprehensive, regional raven management and monitoring program in the California Desert Conservation Area to address the regional, significant threat that increased numbers of common ravens pose to desert tortoise recovery efforts. The Regional Raven Management Program will implement recommendations in the USFWS E*nvironmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise* (USFWS 2008). The BSPP project owner will contribute to the Regional Raven Management Program with a fee that reflects the anticipated level of adverse impacts from their project on desert tortoise populations from predation by ravens (USFWS 2010).

The draft Common Raven Management Plan (AECOM 2010a, Attachment BIO-49) includes methods and best management practices to avoid and minimize raven attractants and subsidies on the BSPP site. This draft plan was integrated into Condition of Certification **BIO-13** and would minimize and offset the contributions of the BSPP to increased desert tortoise predation from ravens to less than significant levels.

Increased Risk from Roads/Traffic

Vehicle traffic would increase as a result of construction and improvement of access roads, increasing the risk of injuring or killing desert tortoise. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest though tortoises on dirt roads may also be affected depending on vehicle frequency and speed. Census data indicate that desert tortoise numbers decline as vehicle use increases and that tortoise sign increases with increased distance from roads (Nicholson 1978; Hoff and Marlow 2002). Additional unauthorized impacts that may occur from casual use of the access roads in the BSPP area include unauthorized trail creation.

To minimize the risks of increased traffic fatality and other hazards associated with roads at the BSPP site, the prior project owner proposed a variety of minimization measures which staff incorporated into Condition of Certification **BIO-8**. These measures include confining vehicular traffic to and from the BSPP site to existing routes

of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 25 miles per hour (except for on roads with posted speed limits).

Impacts from Noxious Weeds

Sahara mustard (*Brassica tournefortii*) is regarded as one of the most invasive wildland pest plants in the Colorado and Mojave deserts, one of the most common invasive plants in desert tortoise habitat, and capable of dominating entire desert landscapes if no control actions are taken. Left uncontrolled, it out-competes and ultimately replaces native wildflowers that provide valuable forage for the desert tortoise. It forms dense thickets that can increase the frequency, intensity, and size of desert fires, increasing the threat to native plant communities, the desert tortoise, and other wildlife (Brooks 2010). In areas where Sahara mustard is particularly dense it may also impede desert tortoise movement (Berry pers. comm.). In the Colorado and Mojave deserts, a single tortoise was necropsied that had died from renal failure, related to renal oxalosis, and the crystals present in the kidneys were identified as oxalates (Jacobson et al. 2009). One additional tortoise was later necropsied that died of oxalosis in the same region (Berry pers. comm.). Many native plants in the Mojave and Colorado deserts contain oxalates; however, the oxalate-containing weed Sahara mustard is one of the most common invasives in desert tortoise habitat and is a suspected cause of the renal failure (Berry pers. comm.).

Sahara mustard spreads explosively during wet years but even during a 12-year drought in Riverside County (1989-1991), the population of Sahara mustard increased by nearly 35 times. Densities equivalent to and as high as three million plants per acre have been recorded at Lake Mead National Recreation Area (Graham et al. 2003).

Other Indirect Impacts

Indirect effects to desert tortoise may occur from wildfires. Desert tortoises that escape direct mortality from wildfires may be affected by fire-induced habitat alteration. Alterations to habitat can result in mortality, decreased fecundity, increased predation, starvation, and dehydration; all resulting in reduced viability of this species (USFWS 2011a). Reduction in plant cover also reduces available shelter as perennial plants, especially woody shrubs, provide protection for desert tortoises from mortality due to predators and overheating from the sun (Woodbury and Hardy 1948; Burge 1977; Mushinsky and Gibson 1991). Although single fires may not produce long-term reduction in the cover of perennial plants or biomass of native annual plants (O'Leary and Minnich 1981), recurrent fire can convert native desert scrub to alien annual grasslands (Brown and Minnich 1986; Duck et al. 1997; Esque et al 2003). Indirect effects can also increase the risk of predation by predators attracted to the area by increased human activity, water or food subsidies. Clearing and grading activities would result in the exposure of large numbers of fossorial species such as small rodents and reptiles. Many of these species are killed or injured during these activities and attract ravens and other opportunistic predators. Potential deposition of sediment loads as a result of construction-related sediment mobilization during heavy rain events and

flooding downstream would impact existing desert tortoise burrows outside of the Project Disturbance Area.

Mojave Fringe-toed Lizard

Direct impacts to Mojave fringe-toed lizards during construction of the transmission line and associated access road would result from a permanent loss of 50 acres of occupied habitat, accidental disturbance to protected habitat adjacent to the BSPP site, and mortality from vehicle strikes. Indirect impacts include the introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; fragmentation and degradation of remaining habitat; increased road kill hazard from operations traffic; harm from accidental spraying or drift of herbicides and dust suppression chemicals, and; an increase in access for avian predators (such as loggerhead shrikes) due to new perching structures.

Sahara mustard, in particular, is a noxious weed of high concern in the Colorado Desert. Sahara mustard may affect wildlife by altering the availability of forage plants and characteristics of their habitat structure. The Coachella Valley fringe-toed lizard (*Uma inornata*) is a dune-dependent species that requires fine, loose, windblown sand for survival (Zeiner et al. 1990). Barrows et al. (2009) found the Coachella Valley fringe-toed lizard to be the only animal species of five vertebrates evaluated to demonstrate a negative response to Sahara mustard abundance. Coachella Valley fringe-toed lizard abundance on weeded plots showed an increase in lizard abundance while the control plots showed a decrease in abundance (Barrows et al 2009). This negative impact was short-lived and declined no more than a year after the mustard's dominance waned. This indicates that Sahara mustard removal would improve habitat quality for fringe-toed lizards. An indirect effect of Sahara mustard on fringe-toed lizard is that it may increase sand compaction within aeolian sand (active dune) communities (Barrows et al 2009). Over time sand compaction could lead to a change in habitat from an aeolian sand community to a stabilized sand community.

Staff agrees with the project owner that permanent loss of occupied Mojave fringe-toed lizard habitat is considered a significant impact since this habitat is declining in availability in the region. In addition, staff has concluded that indirect impacts that degrade habitat and increase the risk of mortality are also considered significant impacts to this species. Impacts from this BSPP would contribute to cumulative impacts to this species within the NECO planning area.

The proposed transmission line would impact 50 acres of sand dune habitat. The project owner identifies 25.3 acres of impacts to Mojave fringe-toed lizard habitat in the 2013 amendment, which is 24.7 acres less than the 2011 amendment. In 2011, staff updated impacts to Mojave fringe-toed lizard habitat based on impacts from two gen-tie alternatives. Acreage was reduced from 58 acres down to 50 acres. Since the gen-tie alignment has not changed from the 2011 amendment to the 2013 amendment, impacts to Mojave fringe-toed lizard habitat would still be the same. Therefore, the modified BSPP would impact 50 acres of stabilized and partially stabilized desert dune habitat.

The previous project owner proposed various measures to minimize impacts to adjacent habitat and mitigate for on-site mortality and habitat loss, and many of these proposals were incorporated into Condition of Certification **BIO-20**. Direct and indirect impacts to Mojave fringe-toed lizards would be reduced to less than significant through implementation of Condition of Certification **BIO-20** in the Commission Decision, which requires acquisition of sand dune habitat for Mojave fringe-toed lizards at a 3:1 ratio.

Couch's Spadefoot Toad

Three ponds potentially suitable for Couch's spadefoot toads occur within the BSPP site, and nine more ponds, also suitable, exist within a mile of the site (AECOM 2010u). This species requires aquatic habitat for breeding and upland habitat for burrowing. Because the species does not breed every year, potential breeding habitat does not necessarily need to sustain surface water for an extended period of time (minimum approximately nine days) every year. Burrowing habitat is considered any area with friable soil within the dispersal distance for this species. The dispersal distance is largely unknown, though there is one record from Mayhew (1965) of a juvenile 0.25 miles from the closest breeding pond, and other observations place them at least one mile from ponds (Dimmitt, pers. comm.). Therefore, in the absence of more conclusive information, upland Couch's spadefoot toad habitat is considered to be all areas with friable soils within 0.25 miles of a potential breeding pond. While little is known about the location and proximity of subterranean refuge sites, there is some indication that they are widely distributed and that breeding pond habitat is the limiting factor in the species distribution (Dimmitt, pers. comm.).

Direct effects to Couch's spadefoot toads could include loss of breeding habitat and direct mortality during grading or construction. Disturbance to breeding ponds, including to new ponds incidentally created during construction activities, could also impact this species. In addition, construction, maintenance, and operation traffic could result in direct mortality on BSPP area roads, particularly Black Rock Road, where the three ponds are located. Indirect impacts could result from hydrology changes that reduce flow to breeding areas. In addition, construction noise could trigger emergence when conditions are not favorable.

Without species-specific survey results and with limited occurrence information, it is difficult to assess the potential for direct and indirect impacts to Couch's spadefoot toads. However, based on known occurrence information along I-10 to the east and west of the BSPP area (Dimmit 1977), and because the BSPP is within an area NECO mapped as Couch's spadefoot toad habitat, staff concludes that the three ponds are potential breeding habitat for Couch's spadefoot toad.

Condition of Certification **BIO-26** in the Commission Decision requires development and implementation of a Couch's Spadefoot Toad Protection and Mitigation Plan, which requires avoiding impacts to all spadefoot toad breeding habitat, or requires construction of replacement habitat if impacts are unavoidable. The avoidance, minimization and compensatory mitigation described in **BIO-26** would reduce BSPP impacts to Couch's spadefoot toad to less than significant levels. A Couch's Spadefoot

Toad Protection and Mitigation Plan was developed by AECOM in June 2011 and the project owner has provided $4,014 for mitigation for 0.13 acre of Spadefoot toad habitat. Originally 1.3 acres was required for compensation of Couch's spadefoot toad habitat but was renegotiated to 0.13 acre with the REAT agencies (REAT 2011, tn 63112) The project owner's mitigation obligation for Couch's spadefoot toad has been completed.

Avian and Bat Impacts

The following discussion presents potential direct and indirect impacts of construction and operation of the BSPP on all avian and bat species. This discussion of impacts is applicable to special status species as well as to species afforded no special protection. Additional bird species of particular concern, bat species and migrants, are discussed individually under separate sections.

Western Burrowing Owl

One burrowing owl was observed within the Project Disturbance Area at an active burrow during Phase II burrowing owl surveys in March 2009 and a total of 92 burrows with burrowing owl sign were observed during 2009 Phase II and III surveys (Solar Millennium 2009b, Western Burrowing Owl Technical Report). An additional burrow with sign was observed near the transmission line Disturbance Area during fall 2009 surveys (Solar Millennium 2009b, Western Burrowing Owl Technical Report). Therefore, at least two burrowing owls have been confirmed within the BSPP area during 2009 surveys that have the potential to be impacted during construction and operation of the BSPP.

Direct impacts to burrowing owl includes the loss of nest sites, eggs, and/or young; permanent loss of breeding and foraging habitat; and disturbance of nesting and foraging activities for burrowing owl pairs within the project site, buffer, or immediately surrounding area. This includes crushing burrows, increased noise levels from heavy equipment, disturbance from human presence, and exposure to fugitive dust. Because burrowing owls are cavity dwellers that are primarily active during crepuscular periods (i.e., dawn and dusk) or at night, birds flushed from burrows during the day would be exposed to elevated predation risk from raptors. Burrowing owls also exhibit site fidelity and owls displaced from a burrow during construction or from passive relocation activities have an increased risk of mortality from predation if they lack access to adequate burrows.

Indirect impacts to burrowing owls during construction and from operation of the facility can include increased road kill hazards, modifications to foraging and breeding activities, and loss of prey items and food sources due to a decreased number of fossorial mammals. Indirect and operational impacts to nesting birds may also include the loss of habitat due to the colonization of invasive plants and the disruption of breeding or foraging activity due to facility maintenance. Weed abatement, panel washing, and maintenance activities would likely limit the use of some areas as foraging or nesting habitat. Burrowing owls may also be at risk from collision with facility structures (e.g. panels)There is much debate among state, federal, local, and private entities over the most practicable and successful relocation/translocation methods for

burrowing owl. When passive relocation is used solely as an impact avoidance measure, it is generally only effective when burrowing owl nesting territories are directly adjacent to permanently protected lands (i.e. military reservation, airport, wildlife reserve, agricultural reserve with appropriate crop type such as alfalfa) (Bloom 2003). Passive relocation has been criticized as a relocation method because relocated or displaced owls are tenacious about returning to their familiar burrows and are inclined to move back to the impact site if the impact site is still visible to the owl and/or if the impact site is not completely graded (Bloom 2009).

For successful active or passive relocation breaking the owl's site fidelity is of utmost importance (Bloom 2003). The off-site location for the relocated owls should ideally have an existing burrowing owl colony and a large ground squirrel colony. Should neither colony already exist at the translocation site, artificial burrows should be installed if significant grassland or appropriate agricultural crop type is present (Bloom 2003). Active translocation of owls involves trapping owls, temporarily holding them in enclosures with supplemental feeding, and releasing at a suitable off-site location with existing or artificial burrows prior to breeding.

While active translocation might be a better solution than passive relocation for moving owls from large sites like the BSPP site, California Fish and Game Code 3503.3 prohibits the active relocation of burrowing owls; therefore, staff is recommending implementation of passive relocation techniques if relocation is needed. Although passive relocation would be conducted to avoid direct mortality of owls within the proposed project area, previously occupied burrow(s) would be destroyed and foraging habitat would be degraded. Due to the loss of habitat compensatory mitigation is required to reduce these impacts to less than significant levels. The location and amount of compensatory habitat required to mitigate impacts to burrowing owl is often based on the number of impacted owls and assumes that currently occupied habitat will be replaced with nearby occupied habitat

In 2012 the CDFW published The Staff Report on Burrowing Owl Mitigation (CDFG 2012), replacing and updating the previous 1993 guidelines (CBOC 1993). This document indicated that "reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Departments' existing recommended avoidance, minimization and mitigation approaches for burrowing owls". The new guidelines provide revised methods for surveying; reflect new data on the species; and recommend an ecological approach to establishing mitigation for this species. The 2012 guidance departs from the standardized approach to determining off-site habitat compensation because the acreages are often implemented as the "default" mitigation and may not reflect the actual habitat requirements of the species in a given location (CDFG 2012).

Acquisition of the appropriate amount of off-site habitat for burrowing owl should take into consideration the foraging distance and average home range of breeding and non-breeding owls. Diurnal home range for owls can be 150 feet on both sides of burrow. Nocturnal home range is much larger, 1 square mile per owl pair, and several owls can

overlap in that 1 square mile (Bloom 2009). The mean home range for 11 male burrowing owls in 1998 and 22 males in 1999 was 177 ha (437 acres) and 189 hectares (467 acres), respectively, at Naval Air Station in Lemoore, California which is located south of Fresno (Bloom 2003). Male burrowing owls often move greater than 1,000 meters when foraging in the breeding season and home ranges often overlap (Bloom 2003). The Commission Decision for the project confirmed staff's position that both owls identified during 2009 surveys would be impacted by BSPP development and a minimum of 39 acres of suitable, off-site (preferably occupied) burrowing owl habitat would need to be acquired to offset the loss of these habitat resources on the BSPP site. Staff continues to believe that this is a correct approach, and has therefore retained Condition of Certification **BIO-18**.

Burrowing owl would also be subject to lighting, noise, and other anthropogenic sources of injury or fatality associated with the project site. To date, staff has no indication of burrowing owl injury or mortality at renewable energy facilities; however it is possible that burrowing owl may be attracted to the site, based on misinterpretation of PV modules as water. These effects are not quantifiable; however due to the low occurrence of the species onsite in addition to the lack of documented collisions, overheating, or other injury or fatalities on renewable energy sites, staff concludes that implementation of recommended conditions of certification would reduce these impacts to below the level of significance.

Condition of Certification **BIO-18** (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures) would require the project owner to prepare and implement a Burrowing Owl Mitigation Plan that would include a description of suitable burrowing owl relocation/translocation sites, provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl, provide detailed methods and guidance for passive relocation of burrowing owls, and describe proposed maintenance monitoring, reporting, and management of the relocated burrowing owls. This condition also requires acquisition and enhancement of a minimum of 39 acres of off-site suitable nesting and foraging burrowing owl habitat to mitigation for displacement of at least two owls. The project owner has already submitted a draft Burrowing Owl Relocation/Translocation Plan (AECOM 2010a, DR-BIO-51) which could serve as the basis for the Burrowing Owl Mitigation Plan. With implementation of Condition of Certification **BIO-18** and staff's proposed **BIO-15** (which requires ongoing project monitoring, a suite of habitat restoration and enhancement measures, and adaptive management strategies based on results of project monitoring), the impacts to burrowing owls would be reduced to less than significant levels.

Golden Eagle

Golden eagles can be extremely susceptible to disturbance during the breeding season (Anderson et al. 1990; USFWS 2009b), and adverse effects are possible from various human activities up to (and in some cases exceeding) one mile from a nest site (Whitfield et al. 2008). While golden eagles are known to occur in the region, there are no known nests within 10 miles of the project site. The 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 (AECOM 2010g). The initial helicopter 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 Solar Energy Project area (AECOM 2010g). No active golden eagle nests were found within 10 miles of the BSPP. One inactive golden eagle nest was located approximately 3 miles west of the BSPP site. This nest was in poor condition and showed signs of weathering and was in the process of deterioration. One active golden eagle nest was located in the Big Maria Mountains northeast of the site; however, this nest was not occupied (no fledglings or eggs) during spring 2010 and is outside the 10-mile buffer surrounding the BSPP.

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 (AECOM 2010g). No eagles were observed during March, April, or May 2010 helicopter surveys in either mountain range. The project owner concluded that disturbance to nesting golden eagles was unlikely due to the distance of the solar facility from nests, lack of existing eagle nests and nesting habitat within one mile from the project site, and that a three mile buffer of the eagle nest from the project site is a sufficient buffer to prevent agitation behavior such as displacement, avoidance, or defense.

Based on guidance provided by the USFWS (72 FR 31132, June 5, 2007) staff defined disturbance as an activity that would result in injury to an eagle or which would substantially interfere with normal breeding, feeding, or sheltering behavior. For example, a nestling being knocked from the nest by a startled adult would be considered an injury. A nestling fed inadequately because adults were agitated in the vicinity of the nest due to construction-related noise and activity would also be considered substantial interference, as would a situation in which nestlings starve because the adults were excluded from their familiar foraging grounds and could not provide adequate food to their young.

Staff concluded that BSPP construction activities could potentially injure or disturb golden eagles if nests were established sufficiently close to BSPP boundaries to be affected by the sights and sounds of construction. Staff considers these potential impacts unlikely, however, because suitable nesting substrate (i.e., cliff ledges, rocky outcrops, or large trees) do not occur within one mile of the proposed BSPP area. If active golden eagle were established within 10 miles of the BSPP boundaries, disturbance to nesting activities would be avoided with implementation of staff's proposed Condition of Certification **BIO-15** (formerly contained within **BIO-24**, Golden Eagle Inventory and Monitoring). This condition recommends that during construction, golden eagle nest surveys be conducted in accordance with USFWS guidelines to verify the status of golden eagle nesting territories within 10 miles of the BSPP boundaries. If active nests are detected, **BIO-15** recommends monitoring guidelines, performance standards, and adaptive management measures to avoid adverse impacts to golden eagles from BSPP construction. Implementation of **BIO-15** would reduce potential

impacts of BSPP construction and operation on nesting golden eagles to less than significant levels.

Staff also assessed the impacts of the BSPP to golden eagle foraging habitat, and concluded that the BSPP would contribute to the cumulative loss of golden eagle foraging habitat within the NECO planning area. The BSPP would reduce the availability of eagle foraging habitat and could degrade nearby foraging habitat by the introduction and spread of noxious weeds. As discussed under "Cumulative Impacts" below, the modified BSPP would contribute to the cumulative loss of foraging habitat from future projects within the NECO planning area (see **Biological Resources Table 15**). The potential for impacts to golden eagle foraging habitat can be reduced to less than significant levels by implementation of Conditions of Certification **BIO-12** (acquisition of desert tortoise compensatory mitigation lands), **BIO-22** (acquisition of state waters compensatory mitigation lands), and **BIO-14** (implementation of weed management plan). As described in **BIO-12**, the acquisition of desert tortoise mitigation lands would be targeted for areas within and near the Chuckwalla Bench and the Chuckwalla DWMA. Because these targeted areas are also within 10 miles of potential nesting sites for golden eagles, acquisition of these desert tortoise mitigation lands would also provide protected golden eagle foraging grounds. Other indirect impacts, such as the potential for collisions, disorientation, and attraction to the site based on project technology are discussed below under "Additional Operation Impacts to Wildlife."

Migratory/Special-status Bird Species

The BSPP area does not provide breeding habitat for Swainson's hawks, northern harriers, ferruginous hawks, or yellow warblers but these species could occur there during migration or in the winter. The BSPP impacts to Sonoron creosote bush scrub and desert dry wash woodland would contribute to loss of foraging habitat, cover, and roost sites for these species on their migratory or wintering grounds, but would not contribute to loss of breeding habitat. The BSPP would have more substantial adverse effects to the resident breeding birds at the site, which include loggerhead shrike, California horned lark, and black-tailed gnatcatcher among others. These species would be adversely affected by the loss of 21 acres of desert dry wash woodland, 229 acres of vegetated ephemeral swales, and 3,723 acres of Sonoran creosote bush scrub. Black-tailed gnatcatchers, loggerhead shrikes and other wash-dependent species would in particular be affected by the loss of the cover, foraging and nesting opportunities provided by the structurally diverse and relatively lush desert dry wash woodland. Dry washes contain less than 5 percent of the Sonoran Desert's area, but are estimated to support 90 percent of Sonoran Desert birdlife (CalPIF 2006). As discussed in the cumulative impact subsection, staff considers the modified BSPP to be a substantial contributor to the cumulative loss of the NECO planning area's biological resources, including habitat for these special-status birds. Condition of Certification **BIO-12**, the desert tortoise compensatory mitigation plan and **BIO-22**, mitigation for impacts to state waters, would offset the cumulative loss of habitat for these species.

The loss of active bird nests or young is regulated by the federal Migratory Bird Treaty Act and Fish and Game Code section 3503, which protects active nests or eggs of

California birds. The project owner has proposed mitigation measures to avoid and minimize impacts to nesting birds that have been incorporated into staff's proposed Conditions of Certification **BIO-8** (Impact Avoidance and Minimization Measures) and **BIO-16** (Pre-construction Nest Surveys), which states guidelines for performing the pre-construction surveys. Implementation of staff's proposed conditions of certification would avoid direct impacts to nests, eggs, or young of migratory birds, and would minimize the impacts to less than CEQA significant levels for construction disturbance to nesting birds. Other indirect bat and avian impacts, such as the potential for collisions, disorientation, and attraction to the site based on project technology is discussed under a section titled "Additional Construction and Operation Impacts to Wildlife".

Bats

The BSPP site supports foraging and roosting habitat for several special-status bat species. Roosting opportunities for bats are available in tree cavities, soil crevices, and rock outcroppings primarily within dry desert wash woodland habitats. Bat roosts are known to occur in the BSPP area in the McCoy Mountains, Eagles Nest Mine (Little Maria Mountains), and Paymaster Mine in the BSPP vicinity (LaPre pers. comm.). Bats likely utilize habitats throughout the study area for foraging but forage more commonly when water is present within the desert washes when insects are more abundant.

As discussed under "Cumulative Impacts" below, staff considers the modified BSPP to be a substantial contributor to the cumulative loss of habitat for the NECO planning area's biological resources, including habitat for these special-status bats. Condition of Certification **BIO-12**, the desert tortoise compensatory mitigation plan and **BIO-22**, mitigation for impacts to state waters, would offset the cumulative loss of habitat for these species.

Construction Noise

Noise from construction activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the BSPP area. In particular, many bird species rely on vocalization during the breeding season to attract a mate within their territory. Noise levels from certain construction, operations, and demolition activities could reduce the reproductive success of nesting birds.

The composite noise level from construction of the approved project was determined to be approximately 85 dBA at 50 feet from the activity, which results in noise levels of approximately 79 and 73 dBA at distances of 100 and 200 feet from the activity, respectively (Solar Millennium 2009a). Noise impacts are expected to be the same for the modified project except for the inclusion of a hydraulic ram (NEBS 2013a). A hydraulic ram may be used to drive steel posts for the single-axis tracking or fixed tilt mounting systems for the modified project. Noise created by a hydraulic ram (pile driver) at the edge of the solar layout project boundary would be 65dB at a distance of approximately 440 feet.

The construction period is temporary and relatively long term (48 months), and wildlife usually becomes habituated to ongoing general construction noise. Weisenberger et al. (1996) found that bighorn sheep responded to aircraft over-flights with increased heart rates and altered behavior; however, animal response decreased with increased exposure. Low-noise construction activities would occur day and night: cement pours, pulling wire, and welding. These activities would subsequently require operation of the concrete batch plant, generators, light plants, welders, forklifts, possibly small cranes, and miscellaneous other equipment.

Elevated noise from hydraulic ram (pile driver) could adversely affect the breeding, roosting, or foraging activities of sensitive wildlife proximate to the BSPP area (NEBS 2013a, NEBS 2013e). To minimize these potential noise impacts, Condition of Certification **BIO-8**, requires avoidance of loud construction activities (i.e., hydraulic ram) between February 15 and April 15, which is the height of the bird breeding season. With implementation of this condition, impacts to BSPP construction activities would be less than significant. For a complete analysis of construction noise impacts, refer to the **Noise** section of this SA.

Heavy equipment operation and noisy construction work related to BSPP construction would typically start no later than 6:00 am and end no later than 7:00 pm. As a result of these design features, the temporary nature of these activities, and the adherence to noise reducing mitigation measures, the noise levels at the BSPP fence line are not expected to have any substantial impact on nearby wildlife resources.

Additional Construction and Operation Impacts to Wildlife

Lighting, Collisions, Electrocution, and Glare

Lighting plays a substantial role in collision risk because lights can attract nocturnal migrant songbirds and major bird kill events have been reported at lighted communications towers (Manville 2001) with most kills from towers higher than 300 to 500 feet (Kerlinger 2004). Lights may also attract insects, and subsequently bats. PV panels themselves are also attractive to certain species. For example, Greif and Siemers (2010), noted that juvenile bats repeatedly attempted to drink from PV panels, even in some cases as many as 100 times. This type of behavior could adversely impact survival rates, and would be considered a regional ecological sink, that is, where death rates are higher than birth rates, and immigration exceeds emigration. Many of the avian fatalities at communications towers and other tall structures have been associated with steady-burning, red incandescent L-810 lights used at communications towers that seem to attract birds (Gehring et al. 2006). Longcore et al. (2008) concluded that use of strobe or flashing lights on towers resulted in less bird aggregation, and, by extension, lower bird mortality, than use of steady-burning lights. BSPP operations would require onsite nighttime lighting for safety and security and the effects on visual condition during nighttime lighting would be moderate to high. Due to the lack of man-made structures and lack of artificial light sources in the BSPP area, the overall change in ambient lighting conditions following BSPP construction may be substantial. Night lighting close to the ground at the BSPP site could also attract bats and disturb wildlife that occurs adjacent to the BSPP site (e.g., nesting birds, foraging mammals, and flying

insects). Security lighting in the BSPP solar fields would operate during non-operating, non-sunlight hours, approximately 3,600 hours per year (AECOM 2010a).

The BSPP would no longer have four power blocks, parabolic trough, air cooled condenser, heat transfer fluid heaters, cooling towers, take off tower and auxiliary boilers. The PV modules are expected to be one third the height of the solar trough mirrors (~8 feet tall). The BSPP would result in the construction of a three-phase 500-kV, gen-tie transmission line consisting of a high-voltage line with monopoles that would range in height from 90 to 145 feet which would pose a collision and electrocution hazard to perching raptors, migrating birds, and possibly bats described in further detail in the following section. The transmission line insulators would be made of a non-refractive material and of a neutral color, and the conductors would be non-specular (i.e., their surfaces would have a dulled finish so that they do not reflect sunlight).

To reduce lighting impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded and lights would be directed on site so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting is not required for normal operation, safety, or security; this would allow these areas to remain un-illuminated (dark) most of the time and thereby minimizing the amount of lighting potentially visible off site. Structure heights and corresponding span lengths would be selected to meet Federal Aviation Administration (FAA) requirements for the nearby Blythe Airport located to the southeast of the BSPP facility. Along parts of the north-south run of the transmission line, pole heights would be no taller than 90 feet in accordance with FAA guidelines. Staff believes that bird collisions with structures would be less than significant since the tallest BSPP structure would be 17 feet tall and major nocturnally migrating bird strikes occur with structures that are from 300 to 500 feet tall. To minimize this risk of collision and disturbance to wildlife from lights, Condition of Certification **VIS-3** (Temporary and Permanent Exterior Lighting), which includes specifications that the lighting would be of minimum necessary brightness and recommendations for lighting to be shielded downward and turned off when not needed.

Electrocution

Large raptors like golden eagles can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between these elements. In addition, distribution lines that are less than 69 kV but greater than 1 kV pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996). The proposed transmission lines would be 230 kV and would be fitted on top of monopole structures expected to range in height from 90 feet to a maximum height of 145 feet and an average span length of in the range of 150 to 800 feet between poles (NEBS 2013a). The transmission line and pole fitting would be constructed in accordance with the guidelines of Institute of Electrical and Electronics

Engineers (IEEE) Guide 524 “Guide to the Installation of Overhead Transmission Line Conductors” and would also follow the Suggested Practices for Avian Protection on Power Lines (APLIC 2006). To minimize risk of electrocution, the BSPP should impose a “raptor-friendly” construction design for the transmission line with conductor wire spacing greater than the wingspans of large birds to help prevent electrocution as described in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). With the proposed mitigation addressed in Condition of Certification **BIO-8 and BIO-15**, staff concludes that the proposed transmission lines would not pose a substantial threat to large raptors such as golden or bald eagle, and the proposed mitigation measures would reduce these impacts to below the level of significance.

Collisions

Bird collisions with structures typically result when the structures are invisible (e.g., bare power lines or guy wires at night), deceptive (e.g., glazing and reflective glare), or confusing (e.g., light refraction or reflection from mist) (Jaroslow 1979). Collision rates generally increase in low light conditions, during inclement weather (e.g., fog, which is rare in the desert), during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger, and Martin (2010) has noted that during flight, many birds may be blind to objects directly ahead, and often instead employ later vision.

Solar PV panels absorb solar energy rather than reflect it. The reflective characteristics of the smooth, dark surfaces of PV panels are much different compared to the mirrored surfaces of heliostat panels that were proposed under the approved project. However, the glass surfaces of PV panels can and do reflect the sky. The reflective characteristics of PV panels likely vary depending on the position of the sun, viewing angle, tilt of the panels, and other variables. PV solar arrays sometimes reflect the sky, including clouds, and can appear lighter in color. At other times and under different conditions, the PV arrays may appear dark like a still body of water. While it remains unclear how wildlife (primarily birds and bats, but also insects) perceive solar fields, and if the solar collectors are attractive under certain conditions, it is well documented that solar fields, including large PV array fields, can pose risks to birds or bats (pers. comm. REAT agency biologists regarding the Desert Sunlight Solar Farm, and Monthly Compliance Reports for Genesis Solar Electric Project[7], Ivanpah Solar Electric Generating System, Abengoa Mojave Solar, and SEGS VIII and SEGS IX.

At the Desert Sunlight Solar Farm project site, a PV installation of a few thousand acres, birds have been documented to have collided with the panels or other project features (Pagel and Baird, pers. comms., 2013). The majority of the species impacted has been identified as migrant waterbirds that would not typically be found foraging in desert

[7] Monthly Compliance Reports for all projects except SEGS VIII and SEGS IX are available for download from the Energy Commission’s website, located at:

http://www.energy.ca.gov/sitingcases/alphabetical.html. The Biological Resources Mitigation Implementation and Monitoring Plan for the SEGS VIII and SEGS IX are available upon request from the Energy Facility Compliance and Dockets Office of the Energy Commission

habitats, and whose presence would not have been expected to occur at the PV project site. A federally endangered species, the Yuma clapper rail (*Rallus longirostris yumanensis*), was among the recorded mortalities. Similarly, at the Genesis Solar Energy Project (GSEP) site, featuring reflective parabolic trough technology, waterbirds rarely found in the desert have collided with the mirrored troughs, or been found on-site, unable to fly, with no obvious injury. Both the GSEP and Desert Sunlight Solar Farm are in construction in Riverside County, between the Colorado River to the east and the proposed PSEGS site to the west. All three of these projects may be expected to encounter the same general suites of resident and migrant avian species. Of the injuries and mortalities that have occurred, reported incidents include birds being found overheated and/or stressed with no clear indication of the causes. Of the reported injuries or mortalities, some have occurred in association with evaporation ponds and as a result of collisions with perimeter fencing and other project features.

The extent and severity of potential collision impacts on avian species under the modified BSPP is not quantifiable, yet are certain to occur. Based on the extent of injury or mortality, and the species affected, this effect will likely be significant. Impacts could remain cumulatively considerable after implementation of all feasible mitigation measures.

Bird collision at solar facilities is a relatively new concern, and therefore, monitoring and reporting of injuries and fatalities at renewable facilities is in preliminary stages. Take of special status species has occurred at renewable energy projects during construction, and before the start of full operation. For the BSPP, staff has concluded that with the recent avian mortality and injury at other sites, presence of evaporation ponds, and possible polarized light pollution from the PV panels (discussed below), there is a likelihood of bird collisions and other yet unclear sources of anthropogenic sources of injury or mortality at the BSPP site. The site would still contain some vegetation and contain the majority of the ephemeral drainages, which serve aspossible additional attractants for avian species. In addition, avian species would migrate through the area to and from the Colorado River, which is 12 miles to the east of the project. These additional factors would contribute to the risk of injuries or mortalities posed to the bird species.

Although the potential collision risks are unknown for the BSPP there is information available to warrant conducting avian surveys during construction and operations at the BSPP site. Staff proposes Condition of Certification **BIO-15**, which requires development and implementation of an Avian Protection Plan. The Avian Protection Plan would provide the information needed to determine if construction and operation of the BSPP posed a collision risk for birds, and would provide adaptive management measures to mitigate those impacts. Take of any special status species would be in direct violation of state and federal LORS, as well as violate project permit conditions. In addition, these impacts are considered to remain significant after implementation of mitigation, and to also remain cumulatively significant.

Polarized Light Pollution

Light is naturally polarized by large bodies of water, but light is often artificially polarized by smooth, large, dark surfaces such as roads, large glass windows, and PV panels. PV panels have been shown to attract aquatic insects due to the polarized light produced from the panels (Horvath 2010). Polarization occurs when light undergoes linear polarization from reflecting off smooth dark surfaces which occurs from natural surfaces as well as anthropogenic. Polarized light sensitivity has been studied in invertebrates, fish, and birds (Malik et al 2008; Bernath et al 2003; Danthanarayana and Dashper 1986; Schwind 1995; Wehner 2001; Labhart and Meyer 2002; Harvath and Varju 2004; Waterman 2006; Wehner and Labhart 2006). Polarized light pollution is when there is "highly and horizontally polarized light reflected from artificial surfaces, which alters the naturally occurring patterns of polarized light experienced by organisms in ecosystems" (Horvath et. al. 2009). This artificial pollution from polarized light can interfere with the natural environmental cues used by animals. Multiple cues are used by birds for orientation and navigation including the Earth's magnetic field, stars, the sun and the skylight polarization pattern (Horvath and Varju 2004). Avian species migrating nearby or over PV project sites may be drawn to the panels partly due to the polarization; however, many confounding variables exist, such as the potential for PV fields to appear as a body of water.

Little is known about the effects of polarized light pollution from PV panel and its potential effects on animals, specifically avian species. There have been recent avian collisions with PV panels (pers. comm. Pagel and Baird) (See "Collisions" above). Polarized light from PV panels may contribute to avian collisions; however, curently there is no enough evidence to determine whether polarized light from PV panels would lure avian species flying or migrating overhead or nearby. More studies need to be conducted to know whether polarized light plays a role in avian mortality with PV panels.

Staff has proposed Condition of Certification **BIO-15** which includes guidance for monitoring collisions and corrective actions to reduce collision rates. As more information is discovered from PV projects through monitoring, adaptive management strategies would be used to augment avoidance and minimization procedures in the Avian and Bat Protection Plan.

Evaporation Ponds

The approved project contained two, 4-acre evaporation ponds in each power block for a total of eight new ponds. The modified BSPP has reduced the number of evaporation ponds to two, 6-acre ponds total. Photovoltaic technology requires little water consumption.

A variety of waterfowl and shorebirds could seasonally use evaporation ponds as resting, foraging, and nesting areas. Evaporation ponds in the Sonoran Desert pose several threats to wildlife. First, creation of a new water source to an area where water is scarce would attract ravens to the BSPP site, potentially increasing predation rates on juvenile desert tortoise in adjacent habitat. Second, waterfowl, shorebirds, and other

resident or migratory birds that drink or forage at the ponds or Couch's spadefoot toads and their eggs could be harmed.

Condition of Certification **BIO-25** requires installation of netting over the evaporation ponds to exclude birds and other wildlife, as well as a monitoring program to ensure the effectiveness of exclusion. Implementation of this measure would reduce evaporation pond impacts to birds and other wildlife to less-than-significant levels. The use of netting over ponds has its own drawbacks, primarily that birds may become entangled in netting from time to time, and be unable to escape. Staff believes that even with this risk, netting the evaporation ponds is still a better choice than leaving them uncovered because of the possible risk of salt toxicosis to wildlife. Staff researched additional means of making the evaporation ponds unappealing to wildlife; preliminary data shows that the addition of an orange or red colorant has served as a deterrent, as well as placement of large floating rafts in the ponds, but have not found a solution that reasonably appears to be a lower risk than netting.

Operational Noise

Operational noise, would be substantially less for the BSPP since there will be no power blocks with air cooled condensers and its associated equipment (NEBS 2013a). The approved project had anticipated noise at the site boundary to be less than 45 dBA, would be more consistent and at a much lower level than during construction. Short-term ambient noise in the BSPP area was measured at 42 dBA, a different of 3 dBA from daytime operating noise levels (a difference barely perceptible to the human ear). The power plant would operate 24 hours a day, but noise during the non-daylight hours is anticipated to be at levels reduced by approximately 20 dBA (Solar Millennium 2009a). Based on these estimates, the impact of operational noise on surrounding wildlife is expected to be less-than significant.

American Badger and Desert Kit Fox

Construction of the BSPP project could kill or injure American badger or desert kit fox by crushing individuals with heavy equipment, or could entomb them within a den if avoidance measures are not implemented. Construction activities could also result in disturbance or harassment of individuals or introduction of foxes into populations with canine distemper virus (CDV) or increase risk of contracting the disease. Staff has proposed deleting the version of Condition of Certification **BIO-17** in the Commission Decision and replacing it with a new condition **BIO-17**, which would require development of an American Badger and Kit Fox Management Plan that includes, but is not limited to, conducting a pre-construction baseline surveys and expanded avoidance measures to protect badgers and kit fox during construction and operation.

The desert kit fox is not a special-status species, but it is protected under Title 14, California Code of Regulations (section 460), and potential impacts to individuals of this species must be avoided. Desert kit fox sign was detected on the BSPP site, and the site includes marginally suitable foraging and denning habitat for this species. Staff's proposed Condition of Certification **BIO-17** requires that concurrent with the desert tortoise clearance survey, a qualified biologist perform a preconstruction survey for kit

fox dens in the BSPP area, including areas within 250 feet of all BSPP facilities, utility corridors, and access roads.

In 2011, an outbreak of CDV was identified in the desert kit fox population within or adjacent to the Genesis Solar Energy Project (GSEP) site, located approximately 10 miles east of the BSPP site. This disease had not been reported previously in wild desert kit foxes (Clifford 2011a). Additional CDV deaths were detected at the Colorado River substation approximately 12 miles to the southeast of the BSPP site in February 2012 and additional foxes shedding the virus were detected near both sites (Clifford 2013).To date 22 kit fox carcasses submitted from the solar projects have been necropsied and 11 of these deaths (50%) were due to distemper. The last known distemper death was detected in May 2012 near the Colorado River substation (Clifford 2013). It is thought that stress from animals being passively relocated or disturbed may put animals at greater risk of contracting the disease if conducted in an area experiencing or adjacent to a CDV outbreak as CDV infection decreases immune function (Clifford 2011b). In addition, passive relocation activities in an area experiencing a CDV outbreak may result in increased movement of animals shedding the virus and thereby increase transmission into new areas.

CDFW Wildlife Investigations Laboratory have monitored, via telemetry and remote cameras, the survival of a sample ranging from 9-18 radio collared foxes living in close proximity to each site and their dens at four study sites since late January 2012 in order to better detect cases of CDV (Clifford 2013). Consultants for the Desert Sunlight, Colorado substation, and GSEP are monitoring survival of the collared foxes near their respective sites while the Palen Solar Electric Generating Systems (PSEGS) site is monitored by a CDFW wildlife technician. No distemper caused mortalities have been detected in monitored foxes near the Palen or Desert Sunlight sites located in the western portion of the solar zone. However, testing of live foxes in 2012 and 2013 shows that some foxes in this area have been exposed to canine distemper virus as antibodies against the virus have been detected in their serum. Thus it is likely that canine distemper virus is also present in the Riverside East Solar Zone.

In order to address the concern of increasing the risk of spreading canine distemper virus within the Blythe desert kit fox population, CDFW and BLM coordinated with staff to revise **BIO-17** based on measures developed for GSEP. In addition CDFW and BLM coordinated with staff to develop a CDFW-led Proposed Desert Kit Fox Health Monitoring and Mitigation Program. The CDFW-led Proposed Desert Kit Fox Health Monitoring and Mitigation Program would be initiated by CDFW potentially by the end of 2013 and project owners could opt to participate by paying a fee into the program. **BIO-17** was revised to include the option for the project owner to participate in this program. Program goals include the following:

- By minimizing the number of clinical cases (and therefore deaths) to the greatest extent possible and reducing the risk of disease spread through trapping and testing, radio collaring, monitoring, and selective vaccination of animals targeted for relocation.

- By utilizing best practices during relocation events to minimize stress to the greatest extent possible and by systematically evaluating relocation outcomes to determine factors associated with successful vs. unsuccessful outcomes.
- By providing treatment and rehabilitation for foxes found sick or injured due to construction site activities.
- By definitively determining the cause of death whenever possible for foxes that die or are found dead in the project impact area so that projects can address and potentially avoid any causes of death that are construction related.

The BSPP would permanently remove approximately 3,976 acres of foraging and denning habitat for American badgers and kit fox and would fragment and reduce the value of foraging and denning habitat adjacent to the BSPP site. This habitat loss and degradation could adversely affect American badger and kit fox populations within the NECO planning area. As discussed in under "Cumulative Impacts" below, staff considers the modified BSPP to be a substantial contributor to the cumulative loss of the NECO planning area biological resources, including American badgers and kit fox. Condition of Certification **BIO-12**, the desert tortoise compensatory mitigation plan, and **BIO-22**, compensatory mitigation for state waters, could offset the loss of habitat for this species and reduce the impact to less-than-significant.

Special-status Plant Species

Regional Overview

The Sonoran Desert region of southeastern California, a region bounded by the Mojave Desert to the north and by the higher elevations of the Peninsular Ranges to the west, has a uniquely 'tropical' warm desert climate influenced by the addition of monsoonal summer rains; a contrast to the dry summer Mediterranean climate that characterizes much of California. This under-surveyed southeastern corner of California has a bi-modal rainfall pattern, with cooler late fall and winter rains that originate in the North Pacific Ocean, and tropical summer storms from southern Mexico (Conservation Biology Institute 2009).

The unique position of the region at the junction with the Neotropic ecozone to the south contributes to the presence of a number of rare and endemic plants and vegetation communities specially adapted to this bi-modal rainfall pattern, and not found elsewhere in California. These include microphyll woodlands, palm oases, and a number of summer annuals that only germinate after a significant warm summer rain.

This distinctive bi-modal climate of the Sonoran Desert distinguishes it, floristically, from other deserts, including the Mojave Desert, and from the rest of California, which is characterized by warm dry summers and a single rainy season in winter. In addition to being hotter and drier, the Sonoran Desert region also rarely experiences frost. Although the region supports numerous perennial species, including a wide variety of cacti, more than half of the region's plant species are herbaceous annuals, which reveal themselves only during years of suitable precipitation and temperature conditions.

This region also occupies an important biogeographic location and zone of ecological transition on the Pacific coast of North America, and so its floristic diversity includes many widespread taxa on the edge of their range. This includes all of the CNPS List 2 plants occurring in the region—species that are more common outside of California but here they represent geographically marginal, peripheral populations on the frontiers of their range. The evolutionary significance—and therefore the conservation value—of peripheral populations are well documented, as is their greater risk of extirpation (Leppig & White 2006).

Summary of the Modified BSPP Impacts and Mitigation

Spring 2009 surveys (Solar Millennium 2009a) and 2010 surveys (AECOM 2010u), and Fall 2012 surveys of the Project Disturbance Area, indicate that construction of the BSPP would directly and indirectly impact six special-status plant species:

- **Harwood's eriastrum** (also sometimes referred to as Harwood's phlox), (*Eriastrum harwoodii*), a BLM Sensitive species, California Rare Plant Rank (CRPR)1B.2 (rare, threatened, or endangered throughout its range) and NatureServe rank[8] of G2/S2;
- Harwood's milk-vetch (*Astragalus insularis* var*. harwoodii*), a CRPR 2B.2 and G5T3/S2;Abram's spurge (*Chamaesyce abramsiana*), CRPR 2B.2 (rare, threatened, or endangered in California, but more common elsewhere and NatureServe/CNDDB rank[9] G4/S2S3;
- **Desert unicorn** (*Proboscidea althaeifolia*), a CRPR 4.3 (limited distribution; a 'watch list') and G5/S3.3;
- **Ribbed cryptantha** (*Cryptantha costata*), a CRPR 4.3 and G4G5/S3.3, and
- **Utah milkvine** (*Funastrum utahense*), a CRPR 4.2 and G4/S3.2

Winged cryptantha (*Cryptantha holoptera*), a CRPR 4.3, and a NatureServe rank G3G4/S3? and Las Animas colubrina CRPR 2.3 and G4/S2S3.3 were observed in the zone-of-influence surveys; therefore, they would not be affected by the modified BSPP and are not discussed further in this impact analysis.

Staff concludes that the modified BSPP's direct, indirect, and cumulative impacts to three special-status species—Harwood's eriastrum (a BLM Sensitive species), Harwood's milk-vetch, and Abram's spurge—are significant. Impacts to ribbed

[9] NatureServe Global Rank/State Rank is a reflection of the overall condition of an element's rarity, threats, and trend throughout its global range (G) or state (S) range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values. G1 or S1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals; G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals

Deleted:

[9] NatureServe Global Rank/State Rank is a reflection of the overall condition of an element's rarity, threats, and trend throughout its global range (G) or state (S) range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values. G1 or S1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals; G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals

G3 or S3 = 21-100 EOs OR 3,000-10,000 individuals; G4 or S4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat; G5 or S5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world. Thus the state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical. The threat ranks are defined as follows: .1= very threatened; .2 = threatened; .3 = no current threats known.

cryptantha and desert unicorn are less-than-significant. Staff concludes that the direct effects of the modified BSPP on desert unicorn plant and Utah vining milkweed are less than significant; however, the cumulative impacts to both plants and the desert washes that support them from all existing and reasonable foreseeable future projects in the NECO planning area (see **Biological Resources Table 9**), and from other projects throughout these species range in California, are significant. The modified BSPP's contribution to the significant cumulative impact would be cumulatively considerable. The BSPP occurrences of Utah vining milkweed are also a range extension for the species and occur at the periphery of its range and thus have a greater ecological significance.

Condition of Certification **BIO-19** (Special-Status Plant Mitigation), as modified herein by staff, includes avoidance and minimization measures and off-site compensatory mitigation to ensure that impacts to Abram's spurge, Harwood's milk-vetch, and Harwood's eriastrum are mitigated to a less than significant level. Implementation of the Avoidance and Minimization Measures contained in **BIO-19** (Section A) and **BIO-22** (Compensatory Mitigation for State Waters) would reduce the BSPP's contribution to significant cumulative effects to desert unicorn plant and Utah vining milkweed to less than cumulatively considerable. The Avoidance and Minimization Measures combined with the compensatory mitigation standards described in Section D of **BIO-19**—acquisition and enhancement (restoration)—would minimize the impacts to Harwood's milk-vetch to a less than significant level and would ensure a no net loss for the BLM Sensitive Harwood's eriastrum. The Avoidance and Minimization Measures would be applied to all avoided special-status plants, including ribbed cryptantha.

Assessment Methodology and Analytical Tools

Staff's determinations of significance were based on the following considerations:

- Proportion of occurrences affected by the project relative to the total number of documented occurrences in California;
- NatureServe 2009 rank (which encompasses rarity, threats, and population trend);
- Impacts to the local (Chuckwalla Valley or Palo Verde Mesa) population from all proposed projects;
- Impacts to hydrologic or geomorphic processes necessary to sustain the habitat (e.g., diversion or alteration of desert washes, altered sediment transport, interrupted wind transport of dune-maintaining sands;
- Ecological integrity of affected and remaining habitat;
- Cumulative effects and threats to remaining occurrences;
- Ownership and management threats to remaining occurrences;
- Status as a peripheral or disjunct population (or position within the species range);

- Indications of any other population characteristics that may assign it local or regional significance;
- Other potential indirect effects of fragmentation (and its effects on gene flow), invasive plants, increased risk of fire, OHV use of new access roads, operation impacts (dust, chemical drift), and climate change; and
- Intrinsic vulnerability of the species.

In addition to state and federal-listed plant species, and BLM sensitive species, staff's definition of special-status plants also included California Rare Plant Rank (CRPR) 1B, 2A, 2B, 3 and 4 plants, any potentially new species found, and a few currently unlisted plants that are proposed additions to the CNPS Inventory. CRPR List 3 plants (plants of questionable taxonomic status) may be analyzed under CEQA if sufficient information is available to assess potential impacts to such plants (CDFG 2009). Additionally, a potentially new un-described taxon of saltbush (*Atriplex*) was discovered on the marginal dunes of Palen and Ford Dry Lakes in spring 2010, underscoring the region's under-surveyed and poorly understood flora. CRPR 3 plants (plants of questionable taxonomic status) may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. CRPR 3 and 4 may be considered regionally significant if, for example, the occurrence is located at the periphery of the species' range, exhibits unusual morphology, or occurs in an unusual habitat/substrate.

Staff consulted with several recognized experts in the region's rare plant flora during the preparation of the data requests and its analysis of impacts to special-status plants (J. Andre, T. LaDoux, D. Silverman, A. Sanders, pers. comm.). Other sources consulted include the CNDDB (CDFW 2010), the CNPS online inventory (CNPS 2009) and the BLM Palm Springs occurrence records (unpublished). The Consortium of California Herbaria (CCH 2010) was reviewed to determine if there were additional documented occurrences that were not already included in CNDDB. To improve its analysis, the occurrence data was loaded into an ESRI GIS-based web application that allowed staff to view all CNDDB and CCH occurrences overlain on various jurisdictional, biological, landform, utility, USGS topographic maps and aerial imagery. This allowed staff to better understand a species' threats and management vulnerabilities, their distance and proximity to projects or features, and to see—at a glance—the variety of habitats and landforms associated with a given species' occurrences. The application also allows users to quickly pan, zoom and print areas of interest with simple web tools that are provided with the application. The following is a list of datasets that were utilized in staff's analysis:

- PLATTS Transmission Data: licensed 3-rd party commercial transmission data);
- CA State County boundaries: http://atlas.ca.gov/download.html?sl=casil
- CNDDB RareFind: http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp
- BLM Renewables Projects: BLM online solar and wind project data: http://www.blm.gov/ca/gis/
- CA STATSGO Soils: NRCS soil mapping from http://SoilDataMart.nrcs.usda.gov/

- CA Cities boundaries: Part of PLATTS Transmission Data delivery
- CA State Parks boundaries: http://atlas.ca.gov/download.html?sl=casil
- Federal Wilderness boundaries: http://www.blm.gov/ca/gis/
- Federal Lands ownership boundaries: http://www.blm.gov/ca/gis/
- CA GAP Vegetation: http://www.biogeog.ucsb.edu/projects/gap/gap_data_state.html
- Landforms NECO: from BLM Palm Springs Office – no Metadata – based on CA GAP but improved by BLM for NECO area
- Landforms MDEP: Mojave Desert Ecosystem project: http://www.mojavedata.gov/datasets.php?&qclass=geo
- Aerial Imagery – ESRI Data from ArcGIS.com
- USGS Topo – ESRI Data from ArcGIS.com

Impacts to Special-Status Plants Found During Spring and Fall Surveys

This section addresses the direct and indirect effects of the modified BSPP to plants found within the Project Disturbance Area during the spring 2009, and 2010, and late summer 2012 surveys. The spring 2009 surveys encompassed the entire Project Disturbance Area and a one-mile buffer; the survey results are presented in the Biological Resources section of the AFC (Solar Millennium 2009a). The preliminary results of the spring 2010 surveys of the Project Disturbance Area and previously un-surveyed areas were submitted in May 2010 (AECOM 2010u) and are reflected in this analysis. Fall 2012 survey (August and September) results covered the entire Project Disturbance Area, linear facilities plus an alternate gen-tie route (Appendix F of NEBS2013a). In addition to state and federal-listed plant species, and BLM sensitive species, staff's definition of special-status plants also includes CNPS List 1B, 2, 3 and 4 plants, as well as unlisted (proposed additions to the CNPS Inventory) and plants with local or regional significance as defined in the 2009 CDFW protocols for botanical assessments (CDFW 2009).

Harwoods Eriastrum

Harwood's eriastrum, also sometimes referred to as Harwood's phlox or Harwood's woollystar, is a BLM Sensitive species and CNPS List 1B.2 species, which indicates it is rare, threatened, or endangered throughout its range. It has a NatureServe (CNDDB) rank of 2, meaning it is an imperiled species.. This spring annual is associated with sandy plains or dunes, but typically semi-stabilized habitat (versus active dunes) (CNPS 2010). Its global distribution is restricted to 14 known locations in San Diego, Riverside, and San Bernardino counties, typically in dunes associated with the margins around dry lakes such as Dale, Cadiz, and Soda lakes. Surveys conducted in spring of 2010 for the BSPP located this plant primarily in the sandy areas south of I-10, where 2,134 plants were located and mapped (AECOM 2010u). The majority of plants were found at the Colorado Substation site; however, plants could also be directly and indirectly affected by construction of the BSPP linears.

Staff reviewed the occurrence data in the Consortium of California Herbaria and detected 2 new occurrences that were not in the CNDDB (CCH 2010). Both of these are historical records from 1939 and 1958. Of the total of 14 occurrences in California (12 CNDDB plus two additional historic records), 3 of these are protected under National Park Service or State Park ownership. A total of three records are historical records. Four of these occurrences have documented threats, including OHV and non-native plant impacts.

Staff concludes that the direct, indirect, and cumulative impacts of the BSPP to Harwood's eriastrum, a BLM Sensitive species, are significant. Reasonably foreseeable indirect effects include the spread of the non-native Sahara mustard across its habitat, which also degrades its habitat by prematurely stabilizing dunes. Transmission line maintenance activities and an increase in OHV use from the construction of roads into previously inaccessible areas are also likely. Global warming is also anticipated to adversely affect this and other desert annuals by delaying the fall rains beyond the optimum germination temperatures for many desert annuals in the Sonoran Desert region. For the original project, staff recommended in consultation with BLM (Lund pers comm) and the Commission's Final Decision included, the following mitigation to minimize the impacts to this rare and imperiled species to a no net loss:

1. BLM requests 100 percent on-site avoidance for BLM Sensitive plants but the BLM Authorized Officer will decide the level of avoidance on a case-by-case basis (Lund pers comm). The BSPP owner will be required to incorporate site design modifications to minimize impacts and meet the avoidance standard, including: using existing roads to limit new road construction; limiting the width of the work area; adjusting the alignment of the BSPP linears, and driving over and crushing vegetation as an alternative to blading temporary roads in order to preserve the seed bank and soil organisms in the upper few centimeters of soil.
2. Implement Avoidance and Minimization Measures for avoided plants as described in **BIO-19**; and
3. Off-site mitigation through compensation (acquisition) or restoration and enhancement as described in **BIO-19.**

Harwood's Milk-Vetch.

Harwood's milk-vetch is a CRPR 2.2 species; a rank that indicates it is fairly threatened in California, but more common elsewhere. It is also a covered species under NECO. It is found in desert dunes and sandy or gravelly areas in portions of Imperial, Riverside, and San Diego counties (CNPS 2009). Herbarium collections occur for this species from Ogilby Road in Imperial County and three locales west of Blythe, the Pinto Basin, and Chuckwalla Basin in Riverside County. Harwood's milk-vetch has also been reported from Baja California, Sonora Mexico, and portions of Yuma County, Arizona (Reiser 1994). There are several CNDDB records for this species within the BSPP area (CNDDB 2010) and a 10-mile radius of the BSPP area. There is a record in the Consortium of California Herbaria database from Wiley's Well Road between McCoy and Mule Mountains from 400 feet elevation (CCH 2010). The Harwood's milk-vetch

populations on the southern deserts are presumed stable given limited disturbance to their desert habitats (Reiser 1994), but the recent push for renewable development threatens a large portion of its habitat in Chuckwalla Valley.

Staff reviewed the occurrence data in the Consortium of California Herbaria and detected 3 new occurrences that were not in the CNDDB. All of these are historical occurrences. Of the total 46 occurrences in California (CNDDB plus new additional occurrences), 9 of these are protected under National Park Service or State Park ownership. A total of 11 records are historical records. Sixteen of these occurrences have documented threats including development, OHV, agriculture, transmission lines, road maintenance, and trash dumping.

Approximately 2,748 plants were detected in the study area and buffer; 677 of these were found in the shallow, sandy fluvial deposits in the eastern portion of the solar plant site and in the sandy fluvial and aeolian deposits south of I-10 along the transmission alignment. While it is presumed impacts along the transmission alignment could be minimized through the detailed measures described in the draft Special-Status Plant Impact Avoidance and Minimization Plan (AECOM 2010a), the impacts to these and the many new plants located within the solar plant site are significant. Significant indirect effects anticipated include alteration of the hydrology and sediment transport of the desert washes that support the plants (on-site and off-site), as well as spread of Sahara mustard across its habitat, which also degrades its habitat by prematurely stabilizing dunes. Transmission line maintenance activities and an increase in OHV use from the construction of roads into previously inaccessible areas are also likely. Global warming is also anticipated to adversely affect this and other desert annuals by delaying the fall rains beyond the optimum germination temperatures for many desert annuals in the Sonoran Desert region. Although many new occurrences have been found around the Chuckwalla Valley and Palo Verde mesa, many are also impacted by renewable energy projects, which fragment the remaining habitat, disrupt gene flow, and render the remaining occurrences more vulnerable to future impacts

Staff concludes that the direct, indirect, and cumulative impacts of the BSPP to Harwood's milk-vetch are significant. The following mitigation would minimize the direct, indirect, and cumulative impacts to Harwood's milk-vetch to a level less than significant:

1. Implement Avoidance and Minimization Measures for avoided plants as described in **BIO-19**;
2. Incorporate site design modifications to minimize impacts where feasible to minimize impacts along the linears, such as limiting the width of the work area and minor adjustments to the alignment of the linears or placement of poles (within the constraints of the ROW or utility easement), and;
3. Off-site mitigation through compensation (acquisition) or restoration and enhancement as described in **BIO-19**.

Abram's Spurge

Abram's spurge (CRPR 2B.2) has a NatureServe rank of G4/S2S3; i.e., it is 'critically imperiled' within its range in California. It is a summer annual that is triggered to germinate by significant summer monsoonal rains; consequently, its year-to-year population size is highly variable. It was not detected during the 2009 or 2010 spring surveys; however, the washes and other low-lying areas could support this species. This species is known to occur in halophytic flats, playas, and along inlets and floodplains of playas. It tends to prefer the lower floodplain ecotone but can also extend higher up along the washes that feed the playa (Silverman, pers. comm.). The blooming period is described in the CNPS Inventory (2009) as September through November but it could be detected earlier if significant (>0.10mm) summer rain event occurred in June. On average, August receives the most rainfall, but the warm monsoonal rains sometimes overlap the start of the fall-winter rains of Pacific Northwest origin.

The CNDDB (CDFW 2010) lists 15 occurrences of this plant in Riverside, Imperial, San Bernardino, and San Diego counties in California, east through Nevada to Arizona, and as far south as Baja California, Mexico. Of the total of 15 occurrences in California, 7 of these are protected under Park Service, CDFW, or State Park ownership. A total of 4 records are historical (pre-1972) that have not been confirmed since collected. One of these occurrences is described as threatened by grazing. A recent 2000 CNDDB record is from a location approximately 0.50 mile east of Ford Dry Lake on Gasline Road just south of I-10 and the occurrence was reported as a "substantial population" (CNDDB 2010).

Impacts to Abram's spurge are considered significant. Even locations off-site in the playa margins could indirectly be affected by the proximity of construction activities. Global warming is expected to adversely affect annual species like Abrams spurge in the Sonoran Desert as rains are predicted to occur later in the fall when temperatures are cooler and not adequate for germination. To address direct, indirect, and cumulative impacts to Abram's spurge, implementation of a weed management plan (**BIO-14**), Best Management Practices (**BIO-8**), and special-status plant compensatory mitigation and impact avoidance and minimization measures (**BIO-19**) would reduce impacts to less than significant.

Desert Unicorn Plant

Desert unicorn plant is documented from at least 37 occurrences in Riverside, Imperial, San Bernardino, and San Diego counties, several of which are from the Chuckwalla Mountains and Desert Center area; however, occurrences are relatively small and many of the local occurrences may be directly or indirectly affected by proposed solar projects between Blythe and Desert Center. Many of the projects would have downstream indirect effects on the hydrology and sediment transport of the desert wash habitats that support desert unicorn. A total of 26 plants were found in 2010; 10 of these would be destroyed within the solar plant site (AECOM 2010u). The occurrence does not appear to represent an important range extension or occur in unusual habitats and is considered to have a stable population in California (threat rank of 3). During late summer surveys in 2012, 1,687 plants were discovered scattered throughout the entire

site. This population extends at least 2 miles beyond the boundary to the north. Desert unicorn plant has also been observed at the Genesis Solar Energy Project and McCoy Solar Energy Projects. Recent surveys for desert unicorn plant indicate a greater local abundance and distribution in the area of BSPP for this species. Staff concludes that the direct effects of the BSPP on desert unicorn are not significant; however the cumulative impacts of all existing and reasonably foreseeable future projects (see **Biological Resources Table 9**) on desert washes along the eastern base of the McCoy Mountains and the Palo Verde Mesa are significant. The modified BSPP's contribution to this significant cumulative impact would be cumulatively considerable. Implementation of Avoidance and Minimization Measures for avoided plants as described in **BIO-19** would minimize the BSPP's contribution to significant cumulative effects.

Ribbed Cryptantha

Ribbed cryptantha is a CRPR 4.3 species, meaning that it has limited distribution in California; however it is not very threatened in California. There are 116 records of this species from several locations throughout Riverside, Imperial, San Diego, and Imperial counties in the Consortium of California Herbaria database; the nearest collection is from the Palen Valley approximately three miles east of the Desert Center Airport (CCH 2010).

Spring 2009 surveys identified a single population of a few ribbed cryptantha was observed northwest of the Wiley's Well rest area at approximately 380 feet elevation from in an area of mixed sand drifts, hummocks with Patton tank tracks with widely scattered shrubs (Solar Millennium 2009a). Preliminary survey findings from spring 2010 estimated tens of thousands individual plants and large populations of ribbed cryptantha along the transmission line and buffer area (AECOM 2010u). In addition, several ribbed cryptantha plants and a large occupied habitat area of this species were identified within the six-pole extension area needed for the gen-tie transmission line associated with the SCE Colorado River Substation site (**SCE Colorado River Substation - Appendix A)**. This area occurs along the southern linear corridor route north of I-10.

Many similarly large occurrences of ribbed cryptantha have been found during the spring surveys for at least three projects, totaling over 100,000 plants and possibly many more. Staff has concluded that because of the local abundance of this species in the BSPP vicinity, and its apparently stable population in its range in California, that the impacts of the project are less-than-significant. However, the Avoidance and Minimization Measures contained in **BIO-19** will be applied to all avoided special-status plants and ensure that the BSPP does not result in unanticipated indirect impacts.

Utah Milkvine

Utah milkvine is also a CRPR List 4.2 and G4/S3.2; although it is only a watch list species, its threat rank indicates that it is somewhat more endangered than ribbed cryptantha (described above). Utah milkvine populations are likely stable on the southern deserts based on limited historical impacts to its habitat but the recent push for

renewable energy places several of its populations at risk. Although it is apparently more common in the Mojave and areas outside of California, within the western Colorado Desert are uncommon and should be protected (Reiser 1994). As a CRPR 4 it is not tracked in CNDDB but there are 58 records of this species from the Consortium of California Herbaria database, primarily from San Bernardino and San Diego counties. There is one record from the nearby Big Maria Mountains (CCH 2010).

This species was identified within the Study Area and one-mile buffer during spring 2009 and 2010 field surveys; approximately 630 plants were documented in the washes draining from the McCoy Mountains on the western as well as the eastern portion of the Study Area. Only 14 plants were found in the Project Disturbance Area; 100 or fewer were found in the Reconfigured Alternative. However, staff concludes that although the direct effects of the modified BSPP on Utah milkvine are less than significant, the cumulative impacts on the sandy washes across the eastern base of the McCoy Mountains and Palo Verde Mesa from all existing and reasonable foreseeable future projects (see **Biological Resources Table 9**) are significant. The modified BSPP's contribution to this significant cumulative impact would be cumulatively considerable. Indirect impacts to off-site (downstream) occurrences are also expected to indirectly affect the species habitat by altering the hydrology and sediment transport processes. Staff recommends the implementation of Avoidance and Minimization Measures for avoided plants as described in **BIO-19** would minimize the BSPP's contribution to significant cumulative effects.

Indirect Impacts to Special-Status Plants

The anticipated indirect impacts to special-status plants, i.e., impacts outside the Project Disturbance Area or that occur following construction include: introduction and spread of invasive plants; alteration of the surface hydrology and basic geomorphic processes that support rare plants and their habitat (e.g., disrupted aeolian and fluvial sand transport processes from obstructions and diversions); population fragmentation and disruption of gene flow; potential impacts to pollinators; increased risk of fire; erosion and sedimentation of disturbed soils, which render the habitat vulnerable to invasion by pest plants, disturbance of the structure and ecological functioning of biological soil crusts, which affect seed germination, reduce soil nutrition, carbon sequestration, and render the soil vulnerable to water and wind erosion (Belnap & Eldridge 2001), herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during construction and operation of the BSPP.

A recent study conducted in the Mojave Desert found that the desert soil ecosystems could represent a significant carbon sink (Campbell et al. 2009). Whether a result of biotic crusts, vegetation, alkaline soils, or an increase in average precipitation, the rate of carbon absorption in the soil has scientists postulating whether desert ecosystems play a more critical role in the carbon cycle than previously believed (Campbell et al. 2009). Some scientists, however, dispute these findings and attribute them to an anomaly caused by increased rain for the study period reported (Campbell et al. 2009). A study is currently underway by the University of Oregon "to determine whether the installation and operation of solar thermal plants will impact carbon sequestration

capabilities of the Mojave Desert ecosystem and ecosystem services (assessment endpoint) to the extent that more carbon is released or inhibited from being stored than saved while utilizing solar technology." (Campbell et al. 2009). Until the dispute is resolved, staff expects that the answer may vary on a case-by-case basis. For example, projects that are dominated by desert pavement, shifting dunes or sand fields, and sparsely vegetated with only a minor component of soil crusts, like the Blythe BSPP, may confer less sequestration capabilities than sites with a rich cover of biological soil crusts and succulent desert scrubs.

Following construction, exotic species are characteristically opportunistic and could occupy disturbed soils within the Project Disturbance Area and spread into adjacent vegetation communities. Years of high abundance of the noxious weed Sahara mustard have shown a clear negative impact on native flora (Barrows et al. 2009). Sahara mustard can form dense stands and potentially crowd out native annual plants. Sahara mustard plants growing early in the season may dominate available soil moisture which may adversely affect native annuals which start growing a little later in the season (Barrows et al. 2009). Barrows et al. (2009) found that native annuals growing under a canopy of Sahara mustard were often taller, and were etiolated, at the expense producing branches, flowers, and fruits. This led to a shift in the dominance of the following year's species composition from native annuals to Sahara mustard. Removal of Sahara mustard from active sand dunes had a positive impact on the endangered special-status plant Coachella Valley milk-vetch (*Astragalus lentiginosus* var*. coachellae*). Coachella Valley milk-vetch plants located on weeded study plots produced significantly more seed pods per plant than the control plots (Barrows et al. 2009).

Tamarisk, Russian thistle, Sahara mustard, Mediterranean grass, and red brome are already present in the BSPP area and are expected to increase as a result of construction- and operation-related disturbance. The proliferation of these and other non-native species has dramatically increased the fuel load and frequency of fire in many desert ecosystems (Lovich & Bainbridge 1999). Unlike other ecosystems in California, fire was not an important part of the Mojave Desert ecosystems and most perennials are poorly adapted to even low-intensity fires, and the animals that coevolved are not likely to respond favorably to fire either. The potential spread or proliferation of non-native annual grasses, combined with the proximity to ignition sources could potentially increase the risk of fire, and the effects to these poor-adapted desert communities would be harmful, particularly to cacti and most native shrubs species. Burned creosote and other native shrubs are typically replaced by short-lived perennials and non-native grasses (Brown & Minnich 1986). The spread of invasive plants is a major threat to biological resources in the Colorado Desert because non-native plants can displace native plants, increase the threat of wildfire, and supplant wildlife foods that are important to herbivorous species.

Wildfires (caused by construction or downed transmission lines) are rare but the increase in daily vehicle use in the area from an anticipated 200 new jobs during operation and up to 1000 jobs during construction will significantly increase the risk of

ignition. Other temporary and permanent impacts from the BSPP could occur to surrounding vegetation communities from grading activities creating air-born, fugitive dust, sedimentation, and erosion, which disruption of photosynthesis and other metabolic processes. The destruction of plants and soil crusts by windblown sand and dust also exacerbates the erosion of the soil and accelerates the loss of nutrients (Okin et al. 2001).

Discussion of Mitigation

Condition of Certification **BIO-19** is updated to reflect recent rare plant survey results conducted in fall 2012.

Compensatory Mitigation for Significant Impacts to Spring and Late-Season Plants. BLM requests 100 percent on-site avoidance for BLM Sensitive plants but the level of avoidance would be decided on a case-by-case basis (Lund, pers comm). On-site avoidance is also required under **BIO-19** for species that are not BLM Sensitive if the affected special-status species is a NatureServe Global Rank of G1 or G2 and the impacts exceed 10 percent of the species' known and documented occurrences. For non-BLM Sensitive species, the BSPP owner would be required to avoid a minimum of 75 percent of the total population. For perennial taxa the percent avoidance would be measured based on the percentage of the total individuals affected; for annuals the percent avoidance would be measured based on the total area occupied by the occurrence plus any additional habitat deemed critical for maintenance of the population (e.g., the upstream reach of a wash for wash-dependent species). For these very rare and critically imperiled species, the BSPP owner would be required to incorporate site design modifications to minimize impacts and meet the avoidance standard, including using existing roads to limit new road construction; limiting the width of the work area; adjusting the alignment of the BSPP linears, or the locations of poles and spur roads, driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and, if necessary, reducing or reconfiguring the layout of the solar arrays to facilitate greater avoidance.

For all other significant impacts, Condition of Certification **BIO-19** allows for compensatory mitigation through land acquisition or qualifying habitat enhancement (restoration) projects. This is consistent with the CEQA definition of "mitigation" (14 Cal. Code Reg. 15370 of the CEQA Guidelines): avoiding; minimizing; rectifying; reducing or eliminating the impact over time; and compensating by providing replacement or substitute resources or environments. **BIO-19** allows for the compensatory mitigation to occur anywhere within the species' range in California, as threats are documented throughout their range. However, most of the species are restricted to the Sonoran Desert region and portions of the eastern Mojave Desert. **BIO-19** includes specific triggers for mitigation of late-season plants detected during the required summer-fall surveys, and specific performance standards and criteria for habitat acquisition and enhancement.

Condition of Certification **BIO-19**, identifies options for mitigation that meet the CEQA definition of mitigation by rehabilitating, repairing or restoring the affected environment

of a resource. Qualifying ‘enhancement’ options must be designed to ‘rescue’ an off-site occurrence that is currently assessed with either: a) a long-term population or area decline >30%; b) exhibit an immediate threat that affects >30% of the population, or c) has an overall threat impact that is High to Very High (see NatureServe Threat Ranking system, available online at: <www.natureserve.org/publications/ConsStatusAssess_StatusFactors.pdf**>**. To demonstrate or achieve a ‘rescue’ of a threatened or declining population. the proposed enhancement must achieve an improvement in the occurrence trend to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).

The impacts of stressors (such as the spread of invasive plants, hydrologic and geomorphic alterations, etc.) on special-status plants are well-documented in the literature. The benefits of restoration and enhancement to rare plant populations have been demonstrated in a variety of projects conducted by public and private land managers, including BLM, National Park Service, The Nature Conservancy, US Forest Service, California State Parks, and the California Native Plant Society. **BIO-19** also includes detailed and specific guidelines for the preparation of enhancement plans. Qualifying enhancement projects include:

1. Controlling unauthorized vehicle or pedestrian use within or adjacent to a special-status plant occurrences. This enhancement project could prevent the direct loss of plants and protect the occurrence from the introduction and spread of noxious weeds (which are typically introduced by vehicles), trampling, soil compaction and its effects on regeneration, or by preventing soil erosion/sedimentation associated with OHV use;
2. Controlling noxious weeds or other invasive pest plants. The spread of non-native plants in wildlands is second only to habitat loss as a primary cause of decline of many special-status plants. Weeds out-compete, and eventually displace native plants for moisture and nutrients or impact them through shading or allelopathic chemicals, or increases in the frequency and intensity of fires. They can also affect rare plants indirectly by stabilizing dune habitats prematurely and disrupting the geomorphic and hydrologic processes that support them.
3. Eliminating grazing by wild burros or livestock. This land use directly harms rare plant occurrences through trampling and soil compaction, encouraging the spread of invasive or non-native plants, and altering hydrology by eroding and incising washes.
4. Restoring critical lost or degraded hydrologic or geomorphic functions to known special-status plant occurrences that have lost historic sheet flow or instream flows, as a result of diverting washes upslope by roads or ditches. In addition to the loss of water, the loose sands and natural disturbance process may be equally important for germination. Obstruction of the aeolian (wind-blown) sand transport systems from artificial structures (buildings, fences) indirectly but acutely impacts rare plants dependent on fine wind-blown sands and the natural disturbance process.

In lieu of acquiring lands or implementing enhancement projects itself, the BSPP owner (subject to approval by the Compliance Project Manager) may satisfy the requirements of the mitigation measure for acquisition by depositing funds (equivalent to the cost of acquisition or enhancement) into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) or other qualified third party. The BSPP owner must commit to the terms and conditions of **BIO-19,** and the Energy Commission, through the Compliance Project Manager, would be responsible for enforcement of the mitigation according to the timeline, monitoring, and reporting requirements specified in the condition.

Avoidance and Minimization Measures for All Special-Status Plants. Condition of Certification **BIO-19** includes detailed measures for avoiding and minimizing accidental impacts and indirect impacts to avoided plants, including CRPR 4 (State rank 3) species, during construction, operation, and closure.

Other Mitigation Measures to Address Indirect Effects. A number of additional conditions of certification are required that would minimize direct and indirect impacts to special-status plants. **BIO-14** requires finalizing and implementing the detailed Weed Management Plan, the guidance for which was based on a hybrid of BLM, The Nature Conservancy, USFS, and NatureServe guidelines for management of invasive plants. The avoidance and minimization measures contained in **BIO 1** through **BIO-8** would also benefit special-status plants by protecting the avoided occurrences of Harwood's milk-vetch, ribbed cryptantha, desert unicorn plant, Las Animas colubrina and other avoided special-status plants from accidental effects during construction. **BIO-20** requires compensation for impacts to Mojave fringe-toed lizard habitat; the dunes and sand fields that support this species also support several special-status plants. **BIO-22** (Mitigation for Impacts to State Waters) requires acquisition of desert washes and desert wash woodland and permanent protection of the acquired habitat from future development. Desert washes provide essential habitat for a number of late-season special-status plants. **BIO-7** would ensure implementation of all mitigation measures under a mitigation monitoring plan and enforced under the authority of the CPM and BLM Authorized Officer.

Condition of Certification **BIO-8** requires the project owner prepare a Revegetation Plan to restore all areas subject to temporary disturbance to pre-BSPP grade and conditions. To the extent practical and as part of this Revegetation Plan, the project owner would salvage native desert plants during construction of the BSPP and would use the salvaged plants for revegetation of temporarily disturbed areas. The Revegetation Plan would addresses the salvaging of cacti, native trees, and topsoil during initial vegetation grubbing of the BSPP site, as well as proper storage of salvaged plant material and seed collection, replanting of salvaged materials, and monitoring parameters including revegetation success criteria and performance standards for salvaged materials.

Cacti, Yucca, and Native Trees

The 2009 and 2010 surveys also included an inventory of native cacti, succulents and native trees that area not considered rare (e.g., they are not tracked by CNDDB or included on the CNPS special-status plant lists) but the harvesting of these native plants is regulated under the California Native Plant Protection Act (Fish and Game Codes 1900-1913) and the California Desert Native Plant Act of 1981 (i.e. Food and Agricultural Code 80001, et . seq. and Fish and Game Codes 1925-1926), and prevent unlawful harvesting of non-listed native desert plants of the state (see **Biological Resources Table 1)**.

Several species of non-listed cactus and native desert trees were observed within the study area including California barrel cactus (*Ferocactus cylindraceus* var. *cylindraceus*), cottontop cactus (*Echinocactus polycephalus* var. *polycephalus*), common fishhook cactus (*Mammillaria tetrancistra*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), catclaw acacia (*Acacia gregii*), blue palo verde (*Cercidium floridium* ssp. *floridium*), ironwood (*Olneya tesota*), mesquite (*Prosopis glandulosa*), smoketree (*Psorothamnus spinosum*), and ocotillo (*Fouquieria splendens* ssp. *splendens*) (Solar Millennium 2009a, Volume II, Biological Technical Report). Cottontop cactus was also mapped and documented during the spring 2010 surveys. A total of 6 cottontop cactus were documented in the Project Disturbance Area during the 2010 surveys; an additional 10 plants were found in the one-mile buffer area.

Condition of Certification **BIO-8** requires the project owner to prepare and implement a Revegetation Plan which would address the salvaging of topsoil and native desert plants to aid in the revegetation of temporarily disturbed areas following BSPP construction.

PROJECT CLOSURE AND DECOMMISSIONING

The project owner submitted a Draft Conceptual Decommissioning Plan – Blythe Solar Power Project (AECOM 2010d) in January 2010 in response to staff's data request for a conceptual decommissioning plan that addressed the fate of the engineered channels (CEC 2009d). Staff requested a conceptual plan for filling the re-created channels and restoring drainages on the BSPP site, including a description of a revegetation plan for restoring the function and values of the ephemeral drainages. Staff also requested a cost estimate, adjusted for inflation, for implementing the closure, including the revegetation component of the closure activities for the drainages, and asked for a conceptual plan and funding mechanism for monitoring and maintenance of the ephemeral drainages until existing functions are reestablished. The modified BSPP eliminates the large drainage channels and the majority of the project site would maintain the original grades and natural drainage features (NEBS2013a).

Regulations promulgated by BLM at 43 CFR 3809.550 et seq. require a more detailed reclamation plan and an estimate. Page 5 of BLM's Instructional Memo for Oregon/Washington BLM Policy for 43 CFR 3809 Notice and Plan-level Occupations,

43 CFR 3715 Use and Occupancy and Reclamation Cost Estimates (BLM 2009b) lists the requirements for a reclamation plan as follows:

"(c) Reclamation Plan. A plan for reclamation to meet the standards in §3809.420 with a description of the equipment, devices, or practices proposed for use including, where applicable, plans for:

(i) drill-hole plugging;

(ii) regrading and reshaping;

(iii) mine reclamation, including information on the feasibility of pit backfilling that details economic, environmental, and safety factors;

(iv) riparian mitigation;

(v) wildlife habitat rehabilitation;

(vi) topsoil handling;

(vii) revegetation;

(viii) isolation and control of acid-forming, toxic, or deleterious materials;

(ix) removal or stabilization of buildings, structures, and support facilities; and

(x) post-closure management."

Page 3 of the same document also explicitly requires an estimate of the costs of reclamation, as follows:

"Reclamation Cost Estimate. An estimate of the cost to fully reclaim disturbances created during the proposed operations as required by §3809.552. The reclamation cost estimate must be developed as if the BLM were to contract with a third party to reclaim the operations according to the reclamation plan."

Condition of Certification **BIO-23** requires the project owner to develop a Decommissioning and Reclamation Plan and cost estimate that meets the requirements of BLM's 43 CFR 3809.550 et seq. Staff acknowledges the uncertainty in planning for conditions 30 to 50 years in the future, but the Decommissioning and Reclamation Plan cannot defer establishing reasonable performance standards and goals until that time.

CUMULATIVE IMPACT ANALYSIS

ANALYSIS OF CUMULATIVE EFFECTS TO BIOLOGICAL RESOURCES

"Cumulative" impacts refer to a proposed project's incremental effect viewed over time together with other closely related past and present projects and projects in the reasonably foreseeable future whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code, section 21083; Title 14, California Code of Regulations, sections 15064[h], 15065[c], 15130, and 15355). The following sections present a definition of the geographic extent within which

cumulative impacts are analyzed and an analysis of the project's potential incremental effects when combined with other past, present, and future projects.

GEOGRAPHIC SCOPE

The geographic scope of this cumulative impact analysis is primarily the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) area (BLM-CDD 2002). The NECO planning area is located in the southeastern California Desert Conservation Area (CDCA). It occurs primarily in the Sonoran Desert region but includes a smaller portion of the southern Mojave Desert region. For some resources, a different geographic scope was warranted, such as the use of watershed boundaries to analyze cumulative effects to desert washes, or the Chuckwalla Valley region for populations or dune systems restricted to that geographic area.

REGIONAL OVERVIEW

The California Desert remained a desolate area for the first few decades of the 20th century. Disturbance was more or less restricted to highways, railroad, and utility corridors, scattered mining, and sheep grazing. In the 1940s, several large military reservations were created for military training, testing, and staging areas, including the BSPP site. Populations of many of the desert's sensitive plants and animals were considered relatively stable until recently, as the push for renewable energy and other development has placed many populations at risk. Energy providers have submitted project applications that would collectively cover more than one million acres of the Sonoran and Mojave deserts of California (BLM 2010). Some of the many sensitive biological resources at risk include: desert washes and desert dry wash woodland, desert tortoise, Nelson's bighorn sheep, Mojave fringe-toed lizard (including an important local population), western burrowing owl, fragile dune ecosystems, a wide variety of special-status wildlife, and sensitive plants.

The incremental, direct loss of habitat and individuals is more significant when considered with the indirect effects of fragmentation and the resultant restriction of gene flow from disrupted wildlife movement and connectivity. The introduction and spread of non-native plant species and increases in predators such as ravens has also contributed to population declines and range contractions for many special-status plant and animal species (Boarman 2002a). Combined with the effects of historical grazing and military training, agriculture, and highway construction, the proposed wind and solar energy projects have the potential to further reduce and degrade native plant and animal populations, in particular sensitive species such as desert tortoise. In the context of this large scale habitat loss, the BSPP would contribute, at least incrementally, to the cumulative loss and degradation of habitat for desert plants and wildlife, including desert tortoise, within Sonoran Desert region of southeastern California.

MAKING CONCLUSIONS ABOUT THE SEVERITY OR SIGNIFICANCE OF THE EFFECT

"No net loss" does not necessarily mean there are no cumulative impacts. The standard for a cumulative impacts analysis is defined by the use of the term "collectively

significant" in the CEQA Guidelines section 15355; the analysis must assess the collective or combined effect of development. Cumulative impact assessments cannot conclude that contributions to cumulative impacts are not significant because the contributions represent a small percentage of the overall problem. Doing so could improperly omit facts relevant to an analysis of the collective effect that the project and other related projects would have upon biological resources. The result could be approval of projects based on an analysis that avoided evaluating the severity of impacts which, when taken in isolation appear insignificant, but when viewed together appear significant. For each cumulative effect the following were considered in making conclusions about the severity or significance of an effect:

- The health, status or condition of the resource as a result of past, present and reasonably foreseeable impacts;
- The contribution of the proposed project to the overall cumulative impact to the resource;
- The project's mitigated effect, when added to the effects of these planned future projects, and
- Impact avoidance and minimization: any project design changes that were made, or additional opportunities that could be taken, to avoid and minimize potential impacts in light of cumulative impact concerns.

PROJECTS CONTRIBUTING TO CUMULATIVE EFFECTS TO BIOLOGICAL RESOURCES

Executive Summary Figure 1 and Table 1 present the numerous existing and foreseeable future projects on BLM, state, and private land within 50 miles of the BSPP. Most of these are renewable energy projects and all projects are primarily concentrated along I-10 between Desert Center and the Colorado River. Not all of the projects included in the cumulative scenario will complete the environmental review, and not all projects will be funded and constructed. Refer to Section B.3.2 (**Cumulative Scenario**) for additional information on the assumptions and limitations of the cumulative project list.

ANALYSIS OF CUMULATIVE EFFECTS TO BIOLOGICAL RESOURCES

Waters of the State

The geographic scope for the analysis of cumulative impacts to waters of the state includes the Palo Verde watershed within the greater NECO planning area. The primary hydrologic feature in the watershed is McCoy Wash, a tributary of the Colorado River. Staff analyzed the cumulative effects within the context of the Palo Verde watershed as it encompasses the BSPP and would be disproportionately affected by future solar projects. There has also been considerable agricultural and urban development in this watershed, relative to other watersheds in the region, due to its proximity to the city of Blythe and the Colorado River.

Currently there are no Wildlife Habitat Management Areas (WHMAs) or Desert Wildlife Management Areas (DWMAs) that afford protection of desert washes within the watershed. Furthermore, many drainages on the Chuckwalla Valley floor were diverted historically for agriculture. Many of those that remain are expected to be affected by proposed solar development. Direct impacts of these existing and reasonably foreseeable future projects on desert washes (i.e., loss) are compounded by concomitant impairment of hydrologic, geochemical, geomorphic, and habitat function and values of the remaining reaches downstream of the impact. Indirect impacts include degradation of water quality and the loss of sediment input from the numerous channel diversions, culverts and road crossings, fragmentation of the habitat and the corresponding loss of habitat function and values.

The BSPP would contribute to the cumulative loss of desert washes in the Palo Verde watershed. However, with implementation of mitigation measures the BSPP's contribution to cumulative impacts is less than cumulatively considerable. These measures are in staff's proposed Condition of Certification **BIO-22** (acquisition of desert washes within or adjacent to the Palo Verde watershed); **BIO-7** (monitoring and reporting requirements); and **BIO-8** (avoidance and minimization measures). The acquisition and permanent protection of drainages within or immediately adjacent to the Palo Verde watershed (**BIO-22**) has particular importance considering the paucity of protection currently provided on public lands in the Blythe area and the development potential of private lands in the watershed area.

Special-Status Wildlife

Desert Tortoise

The geographic extent of the analysis of cumulative impacts to desert tortoise is the range of the Mojave Desert portion of the population with special emphasis on the Colorado Desert Recovery Unit, as recognized by the USFWS. Habitat within this recovery unit has been described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005).

Desert tortoise recovery is threatened several factors, each of which tends to be exacerbated by the next and all of which are associated with development activities, such as the projects listed in **Executive Summary Table 1**. Habitat degradation and loss to due to development and habitat conversion, grazing, mining, geothermal development, highway construction and expansion have all contributed to the rapid decline of this species. Off-road vehicle use is a popular recreation activity in the desert that causes direct mortality from vehicle collision or crushed burrows and destruction of habitat. Desert tortoises are also susceptible to vehicle collisions on existing or newly constructed roads and highways. Drought, habitat degradation and associated noxious weed invasion decrease nutrients available to desert tortoise in food items; this makes them susceptible to upper respiratory tract disease, which can be fatal and is transmittable between populations (Jacobson et al. 2009). Infrastructure development creates perching opportunities for ravens, which elevates predation pressure on juvenile

tortoise. Habitat fragmentation and development can isolate tortoise populations, further increasing risk of disease and lowering genetic diversity.

Of particular concern are the cumulative effects of proposed future projects on desert tortoise connectivity between the Chuckwalla and Chemehuevi DWMAs and critical habitat units. One of the objectives for desert tortoise recovery in the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM CDD 2002) is to "*mitigate effects on desert tortoise populations and habitat outside DWMAs to provide connectivity between DWMAs*." Maintaining connectivity is particularly important given the threats posed by global climate change (USFWS 2008a).

The BSPP area contains some low-to-moderate quality desert tortoise habitat (according to the USGS model). Although the BSPP is not located near any DWMAs or critical habitat units it nevertheless contributes incrementally to overall impacts to desert tortoise habitat and connectivity along the mid-to-upper bajadas that flank the mountain ranges; these are the areas targeted for development by future solar energy projects proposed in the BSPP vicinity. However, with implementation of mitigation measures the BSPP's contribution to cumulative impacts is less than cumulatively considerable. These measures are staff's proposed Condition of Certification **BIO-12** (acquisition of compensation lands); the acquisition and permanent protection of drainages and desert washes within or immediately adjacent to the Palo Verde watershed (**BIO-22**); monitoring responsibility and worker training in **BIO-1** through **BIO-6**; monitoring and reporting requirements (**BIO-7**)*;* impact avoidance and minimization measures (**BIO-8)**; desert tortoise specific measures regarding clearance surveys and relocation techniques in **BIO-9** through **BIO-12**; and a Raven Management Plan (**BIO-13)**. Condition of Certification **BIO-12** specifies that compensation habitat acquisitions occur within the Colorado Desert Recovery Unit in areas that have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve land.

Residual effects to desert tortoise include fragmentation, impaired connectivity, degradation of the function and values of remaining habitat from predators, invasive plants, fire, and disease. Such residual cumulative effects can only be addressed through a regional and coordinated effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between wildlife management areas and other movement corridors. Ongoing collaborative efforts by federal and state agencies to develop a Desert Renewable Energy Conservation Plan and BLM's Solar Energy Development Programmatic EIS offer an appropriate forum for such planning.

Mojave Fringe-toed Lizard

The geographic scope for the cumulative impact analysis of Mojave fringe-toed lizard is the entire NECO planning area. The analysis also considers the Chuckwalla Valley population of Mojave fringe-toed lizard, which may be a Distinct Population Segment.

Direct cumulative effects to Mojave fringe-toed lizard include habitat loss from construction of the interconnecting transmission line and injury or mortality from increased vehicle and equipment traffic. Indirect cumulative effects include impacts to sand transport systems and the maintenance of dunes from renewable energy projects (wind fencing and the obstruction of sand-carrying winds and water-deposited sands); premature stabilization of dunes by the spread of noxious weeds, which also fuel wildfires; the effects of past and future grazing and off-road vehicles; fragmentation of the remaining habitat and reduced gene flow; an increase in predation by ravens and other predators from an increase in perching structures; and an increase in the potential for fire from transmission lines and increased vehicle use. The cumulative effects of existing and proposed future projects are significant within the NECO planning area and even more dramatic within the context of the Chuckwalla Valley and its potentially distinct population of Mojave fringe-toed lizard.

The BSPP would contribute to these cumulative effects. Staff's proposed Condition of Certification **BIO-20** requires implementation of impact avoidance and minimization measures and acquisition of habitat at a 3:1 ratio for sand dune habitat loss attributable to the BSPP interconnecting transmission line south of I-10. Therefore, with implementation of **BIO-20**, monitoring and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, and the impact avoidance and minimization measures in **BIO-8**, the BSPP's contribution to cumulative impacts on Mojave fringe-toed lizard is less than cumulatively considerable.

Golden Eagle and other Fully Protected Species

The geographic scope for the cumulative impact analysis of golden eagle is the entire NECO planning area. The analysis also considers foraging habitat within 140 miles of the BSPP.

Cumulative effects to golden eagles include foraging habitat loss, habitat degradation, and disturbance resulting in reduced recruitment. The USFWS and others (USFWS 2009b; Kochert et al. 2002) estimate there are approximately 30,000 golden eagles in the western U.S., down from an estimated 100,000 in the late 1970s. Survey data from 2003 and 2006–2008 indicate a decline of 26 percent since 2003. Climate change is also expected to impact golden eagle by increasing drought severity, and the CO_2 concentrations are expected to exacerbate the spread of non-native invasive plants, which displace native species and habitats, fuel wild fires, and alter fire regimes. Cumulative effects of existing and proposed future projects are significant within the NECO planning area.

The BSPP would contribute to these cumulative effects. Staff's proposed Condition of Certification **BIO-12** requires the acquisition of desert tortoise habitat that can also be utilized as foraging habitat for golden eagles, monitoring responsibility and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, the impact avoidance and minimization measures in **BIO-8**, and golden eagle nest monitoring,**,** development of an Eagle Conservation Plan, ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures that would benefit golden eagles to

mitigate and avoid potential electrocutions both on and offsite (**BIO-15)**. Staff concludes that take of a bald or golden eagle, or any fully protected species, would be significant according to CEQA, violate Fish and Game codes, and would violate federal law unless an Eagle Take Permit was acquired by the project owner. An eagle permit has not been applied for at this time. Staff concludes that the project impacts on golden eagles and fully protected species may remain cumulatively considerable even after implementation of proposed conditions of certification.

While acquisition does not address the net loss of foraging habitat in the immediate future, it is expected to prevent future losses of habitat by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban or agricultural uses or energy development. With implementation of these conditions of certification, the BSPP's contribution to cumulative impacts on golden eagle would remain cumulatively considerable.

With the exception of golden eagle and other special status avian species, the project's contribution to cumulative effects would be reduced to a level of less than significant, it is possible that the residual indirect effects of all proposed future projects--after mitigation to less than significant level --could combine to cause a cumulative effect. Such residual cumulative effects can only be addressed through a regional and coordinated, multi-agency efforts aimed at preserving and enhancing large, intact expanses of foraging habitat and minimizing the indirect effects of fragmentation, bird collisions, weed invasions, and other landscape-scale indirect effects.

Western Burrowing Owl

The BSPP's contribution to the cumulative impacts on burrowing owl is comparable to badger and kit fox, described below. Direct cumulative effects include habitat loss and potential injury or mortality as well as indirect effects such as habitat fragmentation, increased road kills, increased risk of fire from weed invasion and ignition sources, and the degradation of remaining habitat function and values. Potential impacts to burrowing owls would be mitigated by implementation of staff's proposed Condition of Certification **BIO-18**. This condition involves passive relocation of burrowing owls, as well as acquisition of 39 acres of off-site lands suitable for burrowing owl. This offset may be nested within Condition of Certification **BIO-12**, Desert Tortoise Compensatory Mitigation; given that selection criteria are met. Additionally, PV mirrors, perimeter fencing, and other project structures pose a risk of collision for burrowing owls. Indirect impacts to burrowing owl include collisions with project features, glare, and electrocution. Condition of certification **BIO-15** provides onsite monitoring for burrowing owl injury or death due to collision with project features, and would establish adaptive management and mitigation for these impacts. Staff considers these cumulative effects from existing and future projects significant. However, the BSPP's contribution to indirect effects and loss of burrowing owl habitat is not cumulatively considerable with the incorporation of conditions of certification.

Other Special Status Avian Species

The BSPP's contribution to the cumulative impacts on special status species (gilded flicker, elf owl, ferruginous hawk, northern harrier, prairie falcon, American peregrine falcon, Swainson's hawk, Vaux's swift, and short-eared owl) would be cumulatively considerable. Proposed future projects within the NECO planning area would cumulatively displace substantial amounts of foraging and/or nesting habitat for other special status listed above.. The project will also contribute to a cumulatively considerable impact from habitat fragmentation and edge effects, noise and lighting, increased road kills, increased risk of fire from weed invasion and increased ignition sources (vehicles), all of which ultimately degrade the function and values of the remaining habitat.

Climate change is expected to exacerbate drought and compound the impacts of surface and groundwater use in the desert region.

The BSPP would contribute incrementally to these cumulatively considerable effects; and this contribution is considered to be significant, even after incorporation of staff's proposed conditions of certification. These conditions are **BIO-22** which requires acquisition of ephemeral washes within or immediately adjacent to the same watershed as the BSPP that will also serve as habitat for LeConte's thrasher, compensatory habitat acquisition of Sonoran creosote bush in **BIO-12**, pre-construction nesting bird surveys in **BIO-16,** monitoring and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, and general impact avoidance and minimization measures in **BIO-8**. Condition of certification **BIO-15** provides onsite monitoring for burrowing owl injury or death due to collision with project features, and would establish adaptive management and mitigation for these impacts.

American Badger and Desert Kit Fox

The geographic scope for the cumulative analysis for American badger and desert kit fox encompasses the entire NECO planning area.

Direct cumulative effects to American badger and desert kit fox include habitat loss and injury or mortality from increased vehicle and equipment traffic. Indirect cumulative effects include habitat fragmentation and the diminished habitat values of remaining habitat from increased noise, lighting, exotic plant and wildlife invasion and their ability to fuel wildfires and alter fire regimes, dust and air pollution, an increase in predators, agriculture and urban development (which has eliminated much habitat in the immediate BSPP vicinity), and the consequences of human intrusion into previously undisturbed habitats: hunting, use of rodenticides and other poisons, road kills, trapping, and human disturbance. Cumulative effects of existing and proposed future projects are significant within the NECO planning area.

The BSPP would contribute to these cumulative effects. Staff's proposed Condition of Certification **BIO-12** requires acquisition desert tortoise habitat that also serves as badger and kit fox habitat. **BIO-22** requires acquisition and enhancement of desert washes as badger and kit fox habitat. In addition, avoidance and minimization measures

contained in **BIO-17,** monitoring and worker training in **BIO-1** through **BIO-6**, and monitoring in **BIO-7** are recommended. With implementation of these conditions of certification, the BSPP's contribution to cumulative impacts on American badger and desert kit fox is less than cumulatively considerable.

Burro Deer

Burro deer is a subspecies of mule deer found in the Colorado Desert of Southern California, primarily along the Colorado River and in Desert Wash Woodland communities away from the River. During the hot summers, water is critical, and deer concentrate along the Colorado River where water developments have been installed and where the microphyll woodland is dense and provides good forage and cover. Impacts are most important within 1/4 mile of natural or artificial watering sites. The BSPP would contribute to the cumulative loss of microphyll woodland and burro deer scrub habitat within the NECO planning area and Palo Verde watershed. However, the BSPP's contribution to the loss of suitable habitat for burro deer is not cumulatively considerable with the incorporation of conditions of certification. These conditions are: **BIO-22** for acquisition of ephemeral washes within or immediately adjacent to the Palo Verde watershed, **BIO-12** for compensatory habitat acquisition for Sonoran creosote bush scrub, monitoring and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, and general impact avoidance and minimization measures in **BIO-8**.

Couch's Spadefoot Toad

The geographic scope for the cumulative analysis for Couch's spadefoot toad encompasses the entire NECO planning area. Urbanization and agriculture have eliminated historical Couch's spadefoot toad habitat (Morey 2005). Additional threats to Couch's spadefoot include impacts from off-highway vehicles, which can destroy potential pool habitat. Cumulative habitat loss for Couch's spadefoot toad from existing and foreseeable future projects is relatively minor. This species has a limited range in California and potential breeding habitat occurs in the project area (AECOM 2010u); therefore, the BSPP would contribute to cumulative effects on Couch's spadefoot toad. However, the BSPP's contribution is less than cumulatively considerable with implementation of staff's proposed conditions of certification. Applicable conditions are: monitoring and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, general impact avoidance and minimization measures in **BIO-8**, and breeding pond avoidance and mitigation measures in **BIO-25**.

Wildlife Movement and Connectivity

Connectivity refers to the degree to which organisms can move among habitat patches and populations. Individuals must be able to move between patches to meet their resource needs, while populations must be connected to allow for dispersion, gene flow, and re-colonization. The BSPP does not overlap with any connectivity areas such as designated Areas of Critical Environmental Concern (ACECs), WHMAs, or DWMAs, nor has it been proposed by the public for designation as wilderness. In addition, the eastern portion of the BSPP site was included in the Solar Programmatic EIS recommendations for the Riverside East Solar Energy Study Areas (SESA) by the Wilderness Society and Natural Resources Defense Council because of its low potential

for significant resource conflicts, relative to other project sites. Nonetheless, the BSPP, when combined with other proposed solar projects in the McCoy Wash valley, could obstruct movement for any wildlife movement across the valley floor. Movement along the mountain slopes would remain unimpeded; however, movement along the toe slopes of the McCoy Mountains could be disrupted by the effects of operation (noise, lighting, human disturbance, and an increase in avian predators from new structural perching sites). Staff considers this potentially a significant effect, given the potential for natural (or artificial) re-introduction of bighorn sheep into the McCoy Mountains from adjacent occupied ranges. However, with the incorporation of conditions of certification, the BSPP's contribution to cumulative impacts on wildlife movement and connectivity is less than cumulatively considerable. Applicable conditions are: **BIO-12** which requires the acquisition of desert tortoise habitat that can also be utilized as foraging habitat for wildlife, acquisition of drainages and desert washes in or immediately adjacent to the Palo Verde watershed in **BIO-22**. These two conditions will also minimize future fragmentation in the Chuckwalla Valley region by permanently protecting these critical resources from future development and its associated indirect effects. Other applicable conditions that would minimize human disturbance to migrating wildlife are monitoring and worker training in **BIO-1** through **BIO-6**, monitoring in **BIO-7**, and the impact avoidance and minimization measures in **BIO-8**.

Although the implementation of the conditions of certification would reduce the project's contribution to cumulative impacts to wildlife movement and connectivity to less than cumulatively considerable levels, there may still be minor residual impacts. These residual effects from all future projects can only be addressed through a regional and coordinated planning effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between wildlife management areas and other movement corridors. Ongoing collaborative efforts by federal and state agencies to develop the Desert Renewable Energy Conservation Plan (DRECP) and the recent BLM Solar Energy Development Programmatic EIS offer an appropriate forum for such planning.

Natural Communities

The geographic scope of the analysis of cumulative effects on plant communities encompasses the NECO planning area. The plant community of particular concern is Sonoran creosote bush scrub; desert dry wash woodland is considered separately in this cumulative analysis and the BSPP would not impact playas or dry lake beds. Sonoran creosote bush scrub is a common and widespread community in the southeastern deserts of California; however, this does not reflect the importance of large, intact blocks of habitat to wildlife movement, or to foraging and breeding habitat for wildlife, including state and federal listed species. Development of existing and future projects is resulting in loss and fragmentation of this community. Similarly, indirect effects to remaining vegetation would occur from alteration of the surface drainage patterns, affecting both riparian and upland habitats. Other indirect cumulative effects are an increase in the risk of fire (from increased vehicle use of area roads) and the introduction and spread of noxious weeds.

The BSPP would contribute to these cumulative effects. The BSPP's contribution to the cumulative loss of Sonoran creosote scrub is not cumulatively considerable with the incorporation of staff's proposed conditions of certification. Applicable conditions are: acquisition of desert tortoise habitat (including Sonoran creosote bush scrub) in **BIO-12**, best management practices and impact avoidance measures in **BIO-7**; weed management plan in **BIO-14**; and mitigation monitoring and reporting in **BIO-7**. While acquisition does not address the net loss of habitat in the immediate future (a temporal net loss of habitat), it is expected to prevent future losses of habitat by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban, agricultural or energy development.

Active Dune Habitat in Chuckwalla Valley

This analysis highlights the cumulative effects of the many BLM renewable energy projects on this important habitat. Dunes provide habitat for a variety of special-status plants and animals; locally these include Mojave fringe-toed lizard, and Harwood's milk-vetch. The same NECO Landforms dataset was used for the analysis but only the following values selected: crescentic dunes, longitudinal dunes, and undifferentiated dunes. **Biological Resources Figure 21** quantifies the cumulative effects of the BLM renewable energy projects and other existing and future projects on "active" dune formations in the NECO planning area; the extent of other less active aeolian-deposited and stream-deposited sands are better reflected in the habitat model for Mojave fringe-toed lizard (**Biological Resources Figure 8** and **9**, and **Biological Resources Table 14**). The mapping and model for Mojave fringe-toed lizard includes sandy plains and sand-covered alluvial fans; portions of these landforms may be located within the wind-sand transport corridor but occur in the less active outer portions beyond the "active dunes".

Cumulative effects to dune habitat not reflected in this quantitative analysis include: obstruction of wind and fluvial sand transport systems (which are essential for the maintenance of the dunes) by new structures and wind fencing, fragmentation and degradation of remaining habitat by roads, development, off-road vehicles, altered drainage patterns, and the spread of noxious weeds and other invasive plants, such as Russian thistle and Saharan mustard. Habitat values for dune-dependent wildlife are also affected by increased predation from avian predators, which benefit from the new perching structures.

Existing and foreseeable future projects in the NECO planning area will have significant cumulative impacts to dune habitat. The Blythe project site makes no contribution to these effects as it was sited entirely on alluvial fans and away from any important dune formations. However, four acres of dune habitat south of I-10 (occupied by Mojave fringe-toed lizard) would be directly affected by the proposed interconnecting transmission line between the BSPP.

Thus, the BSPP contributes incrementally to a significant cumulative effect on active dune habitat. However, the BSPP's direct contribution to the cumulative loss of active dune habitat (50 acres) is not cumulatively considerable with implementation of

Condition of Certification **BIO-20** for acquisition of dune habitat and Mojave fringe-toed lizard mitigation. Other mitigation measures recommended by staff to minimize indirect effects of the BSPP on dunes and dune-dependent wildlife and plants include the raven and weed management plans (**BIO-13** and **BIO-14**), BSPP mitigation monitoring in **BIO-6**, and the specification for preparation of a detailed revegetation plan for temporary disturbance contained in BIO-8.Special-Status Plants

The geographic scope for the cumulative analysis for special-status plants encompasses the entire NECO planning area. Special-status plants considered in this analysis are Harwood's milk-vetch, Harwood's phlox ribbed cryptantha, Utah milkvine, desert unicorn plant, Harwood's milk-vetch, Harwood's eriastrum, and Abram's spurge.

Direct cumulative effects to these special-status plants include destruction or crushing from vehicles and equipment. Indirect effects include alteration of the hydrology and sediment transport of the desert washes that support the plants, as well as spread of Sahara mustard, which outcompetes natives, exacerbates fire risk, and prematurely stabilizes dunes. Cumulative effects of existing and proposed future projects are significant within the NECO planning area. Development of the BSPP would result in significant, but mitigable impacts to Harwood's milk-vetch, Harwood's eriastrum, and Abram's spurge; as such, the BSPP would contribute to these cumulative effects. With implementation of Avoidance and Minimization Measures, and compensatory mitigation requirements in **BIO-19**, the detailed Weed Management Plan in **BIO-14**, the compensatory mitigation requirements for dune habitat in **BIO-20**, and desert washes in **BIO-22**, the BSPPs contribution to impacts to special status plants would be less than cumulatively considerable.

CONCLUSION

Cumulative impacts to most biological resources from existing and foreseeable future projects within the NECO planning area are significant. Of particular concern are the cumulative effects on desert washes within the Palo Verde watershed. Development of future projects north of BSPP would eliminate habitat and degrade connectivity and regional hydrologic function. The BSPP would contribute to these cumulative effects. Staff has concluded that with implementation of proposed Condition of Certification **BIO-22**, which specifies acquisition and enhancement of 1,320 acres of desert washes within or adjacent to the Palo Verde watershed, the BSPP's contribution to this cumulative effect is not cumulatively considerable.

Although the BSPP is not located near any DWMAs or critical habitat units and contains habitat of low-to-moderate quality, it nevertheless contributes incrementally to cumulative impacts to desert tortoise habitat and loss of population connectivity. BSPP's contribution to the cumulative effect of desert tortoise habitat loss is not cumulatively considerable with the incorporation of conditions of certification **BIO-12**, which specifies that habitat acquisitions and enhancement measures occur within the Colorado Desert Recovery Unit in areas that have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat,

known populations of desert tortoise, and/or other preserve land; and avoidance and minimization measures in **BIO-1** through **BIO-8.**

Regarding other special-status species and sensitive biological resources (e.g., Mojave fringe-toed lizard, golden eagle, American badger, desert kit fox, burrowing owl, LeConte's thrasher, burro deer, Couch's spadefoot toad, wildlife movement and connectivity, natural communities, and special-status plants), the direct effects (habitat loss, injury, mortality) of existing and future projects are compounded by the indirect effects of fragmentation, impaired connectivity, an increase in invasive plants and predators, impaired sand and sediment transport systems (which help maintain dune and other ecosystems), increased human disturbance and vehicular mortalities, etc. With implementation of conditions of certification for compensatory mitigation of habitat loss, and the avoidance and minimization measures, including raven and weed control plans, revegetation plans, and other measures designed to minimize direct and indirect effects, the BSPP's contribution to cumulative impacts is less than cumulatively considerable.

Although project-specific mitigation measures of the BSPP and all other foreseeable future projects would reduce project impacts to a level that is not significant, with the exception of avian species, there are still minor residual impacts that contribute to cumulative impacts. These residual cumulative effects can only be addressed through a regional and coordinated planning effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between wildlife management areas and other movement corridors. Ongoing collaborative efforts by federal and state agencies to develop a Desert Renewable Energy Conservation Plan and BLM's Solar Energy Development Programmatic EIS offer an appropriate forum for such planning.

Overview of Impacts to Biological Resources: The modified BSPP would have significant impacts to biological resources, eliminating all of the Sonoran creosote bush scrub and other native plant and wildlife communities within the approximately 4,003-acre site. The project would also directly and indirectly affect an extensive network of desert washes comprising over 253 acres of state jurisdictional waters.

The entire project site provides low to moderate quality habitat for desert tortoise, a species listed as threatened under the federal and state endangered species acts, therefore construction and operation of the BSPP would require state and federal endangered species "take" authorization. In addition to direct loss of habitat, the project would fragment and degrade adjacent native plant and wildlife communities, and could promote the spread of invasive non-native plants and desert tortoise predators such as ravens.

Staff have concluded that without mitigation the modified BSPP would contribute to the cumulatively significant loss of biological resources within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) area. Staff recommends compensatory mitigation to offset direct, indirect, and cumulative impacts to desert

tortoise and other special-status species, and to assure compliance with state and federal laws such as the federal and state endangered species acts and regulations protecting waters of the state. Staff have concluded that with implementation of recommended conditions of certification, impacts to avian species would remain cumulatively significant. Other impacts to biological resources would be mitigated to less than significant levels.

Mitigation for Desert Tortoise: The measures in Conditions of Certification **BIO-9** through **BIO-11** would avoid and minimize potential take of desert tortoise during project construction and operation. Condition of Certification **BIO-13** requires implementation of a Raven Management and Monitoring Plan to address project-related increases in ravens, a desert tortoise predator. To offset the loss of 3,976 acres of desert tortoise habitat, Condition of Certification **BIO-12** requires habitat compensation at a 1:1 ratio for desert tortoise (i.e., acquisition and preservation of one acre of compensation lands for every acre lost) **BIO-12** requires that the land acquisitions occur within the Colorado Desert Recovery Unit, and have potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise populations and designated critical habitat. These conditions satisfy the California Department of Fish and Wildlife's requirements under Section 2081 of the California Fish and Game Code.

Mitigation for State Waters: Condition of Certification **BIO-22** describes avoidance and minimization measures as well as compensatory mitigation for impacts to desert dry wash woodland, vegetated ephemeral swales and unvegetated desert washes, all of which are considered waters of the state. To offset impacts to these biologically and hydrologically valuable ephemeral washes, the project owner would need to acquire a total of 1,320 acres of similar desert wash habitat within the immediate or adjacent watersheds. This condition would also fulfill requirements of CDFW's Lake and Streambed Alteration Agreement program. Land acquisitions for the desert wash compensatory mitigation may be combined with the desert tortoise acquisitions.

Impacts and Mitigation to Special-Status Plants: No federal- or state-listed plant species occur within the project disturbance area, but six species of special-status plants (California Native Plant Society List 1B, 2, or 4 species) were detected there, including ribbed cryptantha, Utah milkvine, desert unicorn plant, Las Animas colubrina, Harwood's erastrium, and Harwood's milk-vetch. Staff's proposed Condition of Certification **BIO-19** describes impact avoidance and minimization measures for these special-status plants as well as compensatory mitigation for direct impacts to special-status plant species.

This region of California is characterized by a uniquely 'tropical' warm desert climate influenced by monsoonal summer rains and a full suite of ephemeral desert annuals that only germinate in the wake of these summer rains. These annuals cannot be detected during a typical spring survey. Specific triggers and detailed performance standards for mitigation of impacts are also included in **BIO-19** to ensure that impacts to any special-status plants found during the late season surveys are mitigated to a level less than significant.

Impacts and Mitigation for Avian Impacts: Implementation of the BSPP project will result in the direct loss of foraging habitat for resident and migratory birds. Desert dry wash woodland, Sonoran creosote bush scrub and other habitat within the project area provides foraging, cover, and/or breeding habitat for resident and migratory birds, including a number of state and federally listed bird species potentially occurring at the site (Swainson's hawk, Yuma clapper rail, bald and golden eagle, gilded flicker, gila woodpecker), as well as various species of special concern (western burrowing owl, short-eared owl, Prairie falcon, yellow warbler, Leconte's thrasher). Migratory birds and their eggs and young are protected by the federal Migratory Bird Treaty Act and Fish and Game Code section 3503. Golden eagles are fully protected under state law, and a take of a golden eagle would violate the California Fish and Game Code, as well as the Bald and Golden Eagle Protection Act. Under state law, take permits are not issued for fully protected species, such as the American peregrine falcon. With implementation of proposed conditions of certification, the project may comply with most laws, ordinances, regulations, and standards (LORS), and most direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels. However, even with the implementation of the proposed conditions of certification the project would kill or injure a birds from collisions with project structures, PV panels, entanglement with evaporation pond netting and/or salt toxicosis, or be attracted to the site based on faulty perception, and be exposed to adverse anthopogenic impacts.

Implementation of Conditions of Certification **BIO-8** (Impact Avoidance and Best Management Practices) **BIO-15** (Bird and Bat Conservation Strategy) and **BIO-16** (Pre-Construction Nest Surveys) would partially mitigate these potentially significant impacts to migratory and resident birds, however, residual impacts would remain. Potential impacts to burrowing owls would be further mitigated by implementation of staff's proposed Condition of Certification **BIO-18**. This condition involves passive relocation of burrowing owls, as well as acquisition of 39 acres of off-site lands suitable for burrowing owl. While implementation of these Conditions of Certification would reduce impacts of habitat loss to avian species, staff believes significant impacts to avian species may not be fully mitigated even after the implementation of the proposed Conditions of Certification. To mitigate for potentially significant impacts to nesting golden eagles, staff's proposed Condition of Certification **BIO-15** requires updated inventories to be conducted every year construction would occur, and **i**f nests are detected within 10 miles of project boundaries, implementation of a golden eagle monitoring and management program to prevent any construction related injury or disturbance. Condition of CertificationBIO-15 also requires that an Eagle Protection Plan be developed, containing survey protocols and implementation of adaptive management as necessary. Staff also concluded that the project would contribute to the cumulative loss of golden eagle foraging habitat. Staff's proposed Condition of Certification **BIO-12** for habitat acquisition would provide partial compensation for the project's contribution to the cumulative loss of golden eagle foraging habitat (Sonoran creosote bush scrub) from future projects within the NECO planning area, however, residual impacts would remain.

The project owner proposes to build two 4-acre evaporation ponds, which pose a risk to waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds because they could be harmed by selenium or hyper-saline conditions resulting from high total-dissolved-solids concentrations. Staff's proposed Condition of Certification **BIO-25** reduces this potential impact; however, impacts to special status avian species would remain cumulatively significant.

Impacts and Mitigation for Burrowing Mammals: American badgers and desert kit fox occur throughout the Project area, and construction activities could also crush or entomb kit fox and American badger. Staff's proposed Condition of Certification **BIO-17**, which requires preconstruction surveys and avoidance measures to protect badgers and kit fox, would avoid this potential impact.

Impacts to Sand Dunes/Mojave Fringe-toed Lizards: Mojave fringe-toed lizards, which are restricted to sand dunes and other habitats with fine, wind-blown sand, could occur along the project's proposed transmission line alignment. The transmission line construction would result in permanent impacts to approximately 50 acres of sand dune habitat. Condition of Certification **BIO-20** would mitigate for the loss of 4 acres with acquisition of sand dune habitat at a 3:1 ratio, as required by the NECO.

Impacts to Special Status Bats: Documented roosting areas for several special-status bats, including caves and mines, are known to occur in mountains surrounding the project site, and ground roosting onsite may also occur. Conditions of Certification **BIO-1** through **BIO-8** would minimize or compensate for habitat loss, including offset for dry desert washes and upland habitat within the project boundaries. Staff concludes that these measures would effectively mitigate habitat impacts for special-status bats. Bats may also experience collision impacts or suffer from overheating when attempting to roost under conductive man-made materials onsite. These impacts are largely unavoidable, yet are typically sporadic, and based on monitoring at other project sites it would affect only a small number of bats,**.** Conditions of Certification **BIO-15** would benefit bats by requiring ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures, and adaptive management strategies based on results of project monitoring. Take of special status bats on the project site would be considered significant under CEQA, as it would violate CESA and/or FESA, depending on the species taken.

Cumulative Effects: Impacts to most biological resources from existing and reasonably foreseeable future projects within the I-10 corridor, and the NECO planning area, are cumulatively significant. The cumulative effects of habitat loss from all existing impacts and future projects are compounded by the indirect effects of fragmentation, impaired connectivity, an increase in invasive plants and predators, impaired fluvial transport systems (which help maintain dune and other ecosystems), increased human disturbance and vehicular mortalities. The modified BSPP would contribute considerably to significant cumulative impacts. Staff believes that with implementation of conditions of certification for compensatory mitigation of habitat loss, the avoidance and minimization measures, including raven and weed control plans, revegetation plans, and other

measures designed to minimize direct and indirect effects, the BSPP's contribution to significant cumulative impacts would be less cumulatively significant, with the exception of special status avian species.

The Blythe Project's contribution to cumulative effects on desert washes within the Palo Verde watershed is of particular concern as approximately a large percentage of all washes in the immediate watershed are affected by proposed future projects. These impacts are attributed largely to the proposed solar projects north of the Blythe Project. Staff has concluded that with implementation of proposed Condition of Certification **BIO-22,** which specifies acquisition and enhancement of desert washes within or adjacent to the Palo Verde watershed, the avoidance and minimization measures in **BIO-8**, monitoring requirements in **BIO-7**, and the **BIO-23** closure and revegetation plan, the Project's contribution to this cumulative effect would be reduced to less than significant levels.

COMPLIANCE WITH LORS

The BSPP project must comply with state and federal laws, ordinances, regulations, and standards (LORS) that address state and federally listed species, as well as other sensitive species and their habitats.

FEDERAL LORS

Endangered Species Act (Title 16 United States Code Section 1531 et seq.) And Desert Tortoise Potential take of the desert tortoise, listed as threatened by the USFWS, requires compliance with the federal Endangered Species Act (ESA)."Take" of a federally listed species is prohibited without an Incidental Take Permit, which would be obtained through a Section 7 consultation between BLM and the USFWS. The project owner has submitted a Revised Draft Biological Assessment (BA) for the project to BLM, and formal Section 7 consultation process has been reinitiated. The BLM will not issue a Record of Decision prior to receiving the approved BO. At the time of publication of this SA, the BLM has entered formal consultation with the USFWS, the revised BO is expected in December 2013 or as late as January 2014. Take of any other federally threatened or endangered species would constitute a violation of ESA. The project is therefore expected to comply with ESA with respect to the desert tortoise.

Endangered Species Act and Threatened or Endangered Avian Species Desert dry wash woodland, vegetated ephemeral swales, Sonoran creosote bush scrub, and other habitat within the BSPP area provides foraging, cover, and/or breeding habitat for a number of resident and migratory birds, including a number of special-status bird species potentially occurring at the site. It is possible for this project to attract resident and migratory birds from a great distance, including those not typically detected in an arid environment. Based on preliminary monitoring data from other commercial-scale solar projects, staff believes that the construction and operation of the proposed project could result in the death or injury of these birds by posing the risk of collision, and other poorly understood anthropogenic sources of injury or mortality such as overheating. Other commercial-scale projects in the area have experienced injury and mortality of

special status migratory species, such as the state-threatened California brown pelican, as well as other non-listed species, during construction, and prior to commercial operation. Given that no known avoidance measures are currently available, staff believes that federally threatened or endangered species will be taken during the lifetime of the project, including construction, and this would violate the ESA.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711) virtually all birds native to the United States are covered under the Migratory Bird Treaty Act (MBTA). Take of birds covered under this act may be viewed as a violation; current legal interpretations are unclear.

Bald and Golden Eagle Protection Act (Title 16, United States Code, Sections 668-668c) A recently issued Final Rule (September 2009) provides for a regulatory mechanism under the Bald and Golden Eagle Protection Act (Eagle Act) to permit take of bald or golden eagles comparable to incidental take permits under the ESA. This rule adds a new section at Title 50, Code of Federal Regulation is, section 22.26 to authorize the issuance of permits to take bald eagles and golden eagles on a limited basis. The project could potentially result in "take" of the golden eagle from disturbance to nesting pairs, loss of foraging habitat. Cumulatively, the loss of habitat and forage, as well as the disturbance from other planned and existing commercial-scale renewable projects is significant. Operation of the project could also result in injury or death of bald and golden eagles via electrocution via contact with power lines. While the risk of injury or death to bald or golden is unpredictable, staff believes there is the potential for take to occur over the 30-year life of the project. Implementation of Condition of Certification **BIO-15** would address impacts on bald and golden eagles by requiring development of an Eagle Conservation Plan, ongoing project monitoring and implementation of a suite of habitat restoration and enhancement measures that would benefit golden eagles and would mitigate and avoid potential electrocutions both on and offsite.

Staff concludes that any take of a bald or golden eagle, or any fully protected species, would be significant according to CEQA, violate Fish and Game codes, and would violate federal law unless an Eagle Take Permit is acquired by the project owner. An eagle permit has not been applied for at this time. Effects may remain significant after implementation of recommended conditions of certification.

Conditions of Certification **BIO-12** and **BIO-21** would provide suitable bald and golden eagle foraging habitat by requiring the acquisition of desert tortoise habitat similar to that lost at the project site, as well as acquisition and permanent protection of desert dry wash habitat. While acquisition does not address the net loss of foraging habitat in the immediate future, it would prevent future losses of habitat by placing a permanent conservation easement and deed restrictions on private lands. The project owner has not elected to apply for an Eagle Conservation Permit at this time; take of an eagle would be considered a violation of the Bald and Golden Eagle Protection Act

STATE LORS

Under the Warren-Alquist Act (Pub. Resources Code § 25500) the Energy Commission's certificate for thermal power plants 50 MW and more is "in lieu of" other

state, local, and regional permits (*ibid*.). Staff has incorporated into the conditions of certification in this FSA all required terms and conditions that might otherwise be included in state permits to satisfy the following state LORS:

Incidental Take Permit: California Endangered Species Act (Fish and Game Code Sections 2050 et seq.) The California Endangered Species Act (CESA) prohibits the "take" (defined as "to hunt, pursue, catch, capture, or kill") of state-listed species except as otherwise provided in state law. Construction and operation of the project could result in the wake of desert tortoise, listed as threatened under CESA. Condition of Certification **BIO-12** specifies compensatory mitigation for desert tortoise habitat loss Avoidance and minimization measures described in Conditions of Certification **BIO-6** through **BIO-11** and **BIO-13** would also mitigate for potential impacts to desert tortoise. Implementation of these conditions of certification would ensure compliance with CESA and ensure that impacts to desert tortoise are fully mitigated, with the exception of avian species. Take of any state listed threatened or endangered avian species by collision, disorientation or other anthropogenic means without a take permit would violate CESA and is prohibited. In the absence of no known avoidance measures are currently available, staff believes that federally threatened or endangered species will be taken during the lifetime of the project, including construction, and this would violate CESA.

Streambed Alteration Agreement: California Fish and Game Code Sections 1600 1607. Pursuant to these sections, CDFW typically regulates all changes to the natural flow, bed, or bank, of any river, stream, or lake that supports fish or wildlife resources. Construction and operation of the project would result in direct impacts to waters of the state. Condition of Certification **BIO-21** would minimize and offset direct and indirect impacts to state waters and would assure compliance with CDFW codes that provide protection to these waters.

Protected furbearing mammals (Title 14 California Code of Regulations, Title 14, Section 460). This regulation specifies that fisher, marten, river otter, desert kit fox and red fox may not be taken at any time. Condition of Certification **BIO 17** (American Badger and Kit Fox Avoidance Measures) requires the development of a management plan to safely exclude animals from the project site and ensure compliance with the California Fish and Game Code section 460 that provides protection to these species.

Fully Protected Species (Fish and Game Code, Sections 3511, 4700, 5050, and 5515). Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, section 670.7). Yuma clapper rail is a fully protected species that may occur in the project area, but there are others, including golden eagle, discussed above. that the construction and operation of the proposed project could result in the death or injury of these birds by posing the risk of collision, and other poorly understood anthropogenic sources of injury or mortality such as overheating, or entanglement in the evaporation ponds, or salt toxicosis if birds access the ponds. Condition of Certification **BIO-15** would require monitoring of the project site and impacts and implementation of a suite of recovery actions such as habitat enhancement and trash removal as determined to be beneficial across the range of species potentially impacted by construction and operation of the project. Loss of habitat would be off-set through

Condition of Certification **BIO-12**, compensation lands for loss of Sonoran creosote bush scrub. Take of fully protected species, even if mitigated as required under CEQA, would violate the Fish and Game Code (Fully Protected Species) and is prohibited. No known avoidance measures are available, and birds cannot be prevented from accessing the site. A dead clapper rail has been documented at another renewable project in construction in the area, and staff believes that over the life of the project, fully protected species would be taken, and would not conform with this LOR.

Nest or Eggs (Fish and Game Code Section 3503, 3503.5, and 3513). These regulations protect California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird and by providing a nexus to the federal migratory bird treaty act. Implementation of Conditions of Certification **BIO-1** through **BIO-8** (Impact Avoidance and Best Management Practices) and **BIO-15** (Pre-construction Nest Surveys) would ensure the project complies with regulations that protect nesting birds and their nests.

NOTEWORTHY PUBLIC BENEFITS

The modified BSPP would result in significant impacts to sensitive biological resources, and would permanently diminish the extent and value of native plant and animal communities in the region. Staff has therefore concluded that the modified BSPP would not provide any noteworthy public benefits related to biological resources, despite the contributions the BSPP would make to meeting federal and state mandates for development of renewable energy resources.

PROPOSED CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Biological Resources Conditions of Certification as shown below. (Note: Deleted text is in ~~strikethrough~~, new text is **bold and underlined.**)

DESIGNATED BIOLOGIST SELECTION AND QUALIFICATIONS[10]

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist(s), with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with ~~CDFG~~**CDFW** and USFWS.

[10] USFWS <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt> designates biologists who are approved to handle tortoises as "Authorized Biologists." Such biologists have demonstrated to the USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, and have received USFWS approval. Authorized Biologists are responsible for the implementation of all desert tortoise measures for which a project is approved and are permitted to then approve specific monitors to handle tortoises, at their discretion. The California Department of Fish and ~~Game~~ **Wildlife** (~~CDFG~~**CDFW**) must also approve such biologists, potentially including individual approvals for Biological Monitors approved by the Authorized Biologist. **Designated Biologists are the equivalent of Authorized Biologists.** Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist would be allowed to handle desert tortoises.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. Have at least one year of field experience with biological resources found in or near the project area;
4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS; and
5. Possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.
6. In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, in consultation with ~~CDFG~~**CDFW** and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the Conditions of Certification.

Verification: ~~No fewer than 45~~**At least 60** days prior to ~~the start of~~ site mobilization or construction-related ground disturbance, the project ~~Owner~~ **owner** shall submit the names of the Designated Biologist (s) along with completed USFWS Desert Tortoise Authorized Biologist Request Form (www.fws.gov/ventura/speciesinfo/protocols_guidelines) to the USFWS and the CPM for review and final approval.

No~~construction-related ground disturbance~~**site mobilization or construction-related ground disturbance**, grading, boring, or trenching shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM and for consideration.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The project owner shall ensure that the Designated Biologist**(s)** performs the activities described below during any ~~site mobilization activities~~**pre-**construction **site mobilization and construction, commissioning,** ~~related ground disturbance, grading, boring or trenching activities~~**, or other activities that may impact biological resources**. The Designated Biologist may be

assisted by the approved Biological Monitor(s) but remains the contact for the project owner and the CPM. The Designated Biologist, or project owner if no Designated Biologist is available, duties, shall include the following:

1. Advise the project owner's Construction and Operation Managers **and the CPM** on the implementation of the biological resources Conditions of Certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and Conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;
6. Notify the project owner and the CPM **within 24 hours** of any non-compliance with any biological resources Conditions of Certification, **injury or mortality of a special status species, or if more than six injured or dead birds or bats are located onsite at one time, and collect all data necessary to document such events, such as GPS location, photographs, and observations necessary to develop a comprehensive report.** ;
7. Respond directly to inquiries of the CPM **or responsible Energy Commission staff** regarding biological resource issues, **and provide or collect reasonably available data upon CPM request, including information as specified in BIO-2 #6**;

Respond to reports of onsite kit fox mortality or injury, and to the extent possible, reports of dead or injured kit fox offsite and immediately adjacent the project boundaries or on access roads in accordance with Conditions of Certification BIO-17, fully document and record the event and collect pertinent data, and undertake restorative and/or disease prevention actions as specified within the American Badger and Kit Fox Management Plan prepared in accordance with Condition of Certification BIO-17.

8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines**>, as well as all terms and conditions of the Biological Opinion**; and

10. Maintain the ability to be in regular, direct communication with representatives of ~~CDFG~~**CDFW**, USFWS, and the CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base.

Verification: The Designated Biologist shall provide copies of all written reports, **email communications** and summaries that document biological resources compliance activities in the Monthly Compliance Reports submitted to the CPM. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his or her duties cease, as approved by the CPM.

BIOLOGICAL MONITOR SELECTION AND QUALIFICATIONS

BIO-3 The **project owner's approved** Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS designated Desert Tortoise Monitor (USFWS 2008).

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the Conditions of Certification, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>.

Verification: The project owner shall submit the specified information to the CPM for approval at least ~~30~~ **45** days prior to the start of any site mobilization or construction **activities** ~~-related ground disturbance, grading, boring and trenching~~. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) has been trained including the date when training was completed. If additional biological monitors are needed during construction the specified information shall be submitted to the CPM and for approval at least 10 days prior to their first day of monitoring activities.

BIOLOGICAL MONITOR DUTIES

BIO-4 The Biological Monitors shall assist the Designated Biologist**(s)** in conducting surveys and in monitoring of site mobilization ~~activities~~, **and** construction related ground disturbance, **site preparation, or permanent installation activities, including installation of desert tortoise exclusion fencing** ~~grading, boring or trenching~~**or reporting responsibilities**. The Designated Biologist shall remain the contact for the project owner and the CPM, **however, biological monitors will also respond directly to inquiries of the CPM or other responsible Energy Commission staff** regarding biological resource issues, **and collect and provide reasonably available information as requested by the CPM**.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM and copies of all written reports and summaries that document biological resources compliance activities, including those conducted by Biological Monitors. If actions may affect biological resources during operation a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties cease, as approved by the CPM.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

BIO-5 The project owner's construction/operation manager shall act on the advice of the Designated Biologist, Biological Monitor(s), **and CPM** to ensure conformance with the Biological Resources Conditions of Certification. The project owner shall provide Energy Commission staff with reasonable access to the project site under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the Conditions of Certification. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist the project owner's construction/operation manager shall halt all site mobilization, **and construction, including** ground disturbance, **site preparation, or permanent installation activities, including installation of desert tortoise exclusion fencing** ~~grading, boring, trenching~~ and operation activities in areas specified by the Designated Biologist. **During operations, or when the Designated Biologist and/or Biological Monitors are not onsite, the following provisions are the project owner's responsibility** The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner, the construction/operation manager, **and the CPM** when to resume activities; and
3. Notify the CPM **immediately** if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage. If the work stoppage relates to desert tortoise or any other federal or state-listed species, the ~~Carlsbad~~ **Palm Springs** Office of USFWS and the Ontario Office of ~~CDFG~~**CDFW** shall also be notified.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist. **It is expected that the Designated Biologist will be onsite during site mobilization, pre-construction, and construction activities.**

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM **and BLM** immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities, **via phone and email**. If the non-compliance or halt to construction or operation relates to desert tortoise or any other federal or state-listed species, the project owner shall notify the ~~Carlsbad~~ **Palm Springs** Office of USFWS and Ontario Office of ~~CDFG~~**CDFW** at the same time. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure would be made by the CPM in consultation with **BLM**, USFWS and ~~CDFG~~**CDFW,** within **5** ~~five~~ working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The project owner shall develop and implement a Blythe Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the CPM. The project owner shall also provide the~~BLM~~, USFWS and ~~CDFG~~**CDFW** a copy of all portions of the WEAP relating to desert tortoise and any other federal or state-listed species for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during **pre-construction,** site **mobilization and** ~~preconstruction~~, construction, **commissioning,** operation, **non-operation,** and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes, reptiles, or other wildlife shall be **intentionally** harmed **(unless posing a reasonable and immediate threat to humans)**;
3. Place special emphasis on desert tortoise, including **pictures and** information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
4. **Provide pictures of desert tortoise, golden eagles, American badger, desert kit fox, Mojave fringe-toed lizard, and burrowing owl, provide information on sensitivity to human activities, legal protection, reporting requirements, and how to identify construction avoidance zones for these species as marked by flagging, staking, or other means, also describe the protections for bird nests and provide information as described above;**
5. **Provide overview for staff of potential impacts to reptiles and amphibians from vehicle strikes on all project roads (paved and unpaved) during construction operations, closure phases, reporting requirements, and protection measures;**
6. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers **to: a)** dispose of cigarettes and cigars appropriately and not leave them on the ground or buried, **b) keep vehicles on graveled or well-maintained roads at all times to prevent vehicle exhaust systems from coming in contact with roadside weeds, c) use and maintain approved spark arresters**

on all power equipment, and d) keep a fire extinguisher on hand at all times;

7. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
8. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
9. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist **and documented within the Monthly Compliance Report**.

Verification: At least ~~30~~ **45** days prior to **site mobilization and** construction~~-related ground disturbance~~ the project owner shall provide to the CPM for review and approval and to BLM, USFWS, and ~~CDFG~~**CDFW** a copy of the final WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to **site mobilization and** construction~~-related ground disturbance activities~~ the project owner shall submit two copies of the final WEAP **and implement the training for all workers.**

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

Throughout the life of the project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM, BLM, USFWS, and ~~CDFG~~**CDFW** and upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training.

During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-7 The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit two copies of the proposed BRMIMP to the CPM for review and approval. The project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described

in final versions of the Desert Tortoise Relocation Translocation Plan, **the USFWS Biological Opinion,** the Raven Management Plan, the Closure, Conceptual Restoration Plan, **the American Badger and Desert Kit Fox Management Plan,** the Burrowing Owl Mitigation and Monitoring Plan, the Weed Management Plan, and all other biological mitigation and/or monitoring plans associated with the project. The project owner shall provide to BLM, ~~CDFG~~**CDFW**, and USFWS a copy of all portions of the BRMIMP relating to desert tortoise and any other federal or state-listed species for review and comment.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources Conditions of Certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;
4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource, **including remedial actions for standing water onsite in accordance with Conditions of Certification BIO-8 and known or suspected disease outbreaks on the project site in accordance with Condition of Certification BIO-17**;
6. **Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after whole acreages and a determination of whether more or less habitat compensation is necessary in the Construction Termination Report prepared in accordance with BIO-28;**
7. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
8. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

9. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

10. All performance standards and remedial measures to be implemented if performance standards are not met;

11. Biological resources-related facility closure measures including a description of funding mechanism(s);

12. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and

13. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base ~~(~~CNDDB~~)~~ per ~~CDFG~~**CDFW** requirements.

Verification: The project owner shall submit the draft BRMIMP to the CPM at least ~~30~~ **60** days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching. At the same time, the project owner shall provide to BLM, ~~CDFG~~**CDFW**, and USFWS a copy of all portions of the draft BRMIMP relating to desert tortoise and any other federal or state-listed species. The project owner shall provide the final BRMIMP to the CPM**, BLM, CDFW, and USFWS** at least ~~seven~~ **30** days prior to the start of any **preconstruction site mobilization and** construction~~-related ground disturbance~~, grading, boring, or trenching. The BRMIMP shall contain all of the required measures included in all biological ~~C~~**conditions** of ~~C~~**certification**. No **preconstruction site mobilization or-**construction-related ground disturbance, grading, boring or trenching may occur prior to approval of the final BRMIMP by the CPM.

If any permits have not yet been received when the final BRMIMP is submitted, these permits shall be submitted to the CPM within ~~five~~ **5** days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition**(**s**)**. **The project owner shall submit to the CPM the revised or supplemented BRMIMP within 10 days following the project owner's receipt of any additional permits. Under no circumstances shall ground disturbance proceed without implementation of all permit conditions.**

To verify that the extent of construction disturbance does not exceed that described in these ~~C~~**c**onditions, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM, BLM, USFWS, and ~~CDFG~~**CDFW**. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and shall be submitted prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction, and shall be submitted to the CPM, BLM, USFWS, and ~~CDFG~~**CDFW** no later than 90 days after completion of construction. The project owner shall also provide a final accounting in whole acres of ~~the areas~~ of vegetation communities/cover types present before and after construction. Construction acreages shall be rounded to the nearest acre.

Any changes to the approved BRMIMP must be approved by the CPM ~~and BLM~~ in consultation with **BLM**, ~~CDFG~~**CDFW,** and USFWS.

Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's ~~preconstruction~~ site mobilization and construction **activities**~~-related ground disturbance~~, ~~grading, boring, and trenching~~, and which mitigation and monitoring items are still outstanding.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-8 The project owner shall undertake the following measures to manage the project site and related facilities **during site mobilization, operation and maintenance** in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Areas. **Minimize soil disturbance by locating staging areas, laydown, and temporary parking or storage for linear facilities in existing disturbed areas. Equipment maintenance and refueling shall not be conducted with 100 feet of any sensitive resource (for example, waters of the state, creosote bush–big galleta association, desert dry wash woodland, unvegetated ephemeral dry wash, dune habitats, and rare plant populations). Limit the width of the work area near sensitive resources. Avoid blading temporary access roads where feasible and instead drive over and crush the vegetation to preserve the seed bank and biotic soil crusts.** The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to **site mobilization and** construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, project vehicles and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. Minimize Traffic Impacts. Vehicular traffic during project **site mobilization,** construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour **on paved or stabilized unpaved roads** within the project area, on maintenance roads for linear facilities, or on access roads to the project site. Speed limit signs shall be posted on new access roads to the site. **Vehicles shall not exceed 10 miles per hour on unpaved areas within the project site, except on stabilized unpaved roads. Project vehicles shall abide by posted speed limits on public paved access roads outside the project site.**

4. **Salvage or Relocate Wildlife during Ground Disturbance Activities. The Designated Biologist or Biological Monitor shall salvage or relocate sensitive wildlife during ground disturbance activities including clearing, grubbing, and grading operations when feasible to off-site habitat or out of harm's way. The species shall be salvaged or relocated when conditions will not jeopardize the health and safety of the monitor.**

5. Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing ~~but have been~~ **and** cleared, the Designated Biologist shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. **Upon completion of desert tortoise fencing installation and clearing the Designated Biologist or Biological Monitor shall be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife.** The Designated Biologist or Biological Monitor shall ~~walk immediately~~ **clear** ahead of equipment during brushing and grading activities. If desert tortoise are found during construction monitoring, procedures outlined in **BIO-9** shall be implemented.

6. Minimize Impacts of Transmission/Pipeline Alignments, Roads, and Staging Areas. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 1994) and *Mitigating Bird Collisions with Power Lines* (APLIC 2004) to reduce the likelihood of large bird electrocutions and collisions. **Where feasible,**

avoid impacts to desert washes and special-status plants by adjusting the locations of poles and laydown areas, and the alignment of the roads and pipelines. Construction drawings and grading plans shall depict the locations of sensitive resources and demonstrate where temporary impacts to sensitive resources can be avoided and where they cannot.

7. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. **Anticoagulants shall not be used for rodent control. Pre-emergents and other herbicides with documented residual toxicity shall not be used. Herbicides shall be applied in conformance with federal, State, and local laws and according to the guidelines for wildlife-safe use of herbicides in BIO-14 (Weed Management Plan).**

8. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

9. Minimize Noise Impacts ~~A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Blythe Project.~~ Loud construction activities (e.g., ~~unsilenced high-pressure steam blowing and pile driving~~**hydraulic ram**, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles). Loud construction activities may be permitted from February 15 to April 15 only if:

   a. the Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in **BIO-15** and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 65 dBA noise, OR

   b. the Designated Biologist or Biological Monitor monitors active nests within the range of construction-related noise exceeding 65 dBA. The monitoring shall be conducted in accordance with Nesting Bird Monitoring and Management Plan approved by the CPM. The Plan shall include adaptive management measures to prevent disturbance to nesting birds from construction related noise. Triggers for adaptive management shall be evidence of project-related disturbance to nesting birds such as: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Nesting Bird Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of disturbance to the nesting bird.

Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed outside the areas permanently fenced with desert tortoise exclusion fencing, it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may move it out of harm's way as described in the USFWS Desert Tortoise Field Manual (USFWS 2009).

10. Avoid Wildlife Pitfalls**. To avoid trapping desert tortoise and other wildlife in trenches, pipes or culverts, the following measures shall be implemented:**

    a. Backfill Trenches. At the end of each work day, the Designated Biologist **or Biological Monitor** shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day, at the end of each workday and at the beginning of each day by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor move it out of harm's way as described in the **most recent** USFWS Desert Tortoise Field Manual (**currently** USFWS 2009). Any other wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

    b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than ~~eight~~**8** inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on elevated pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed.

11. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and

common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

12. Dispose of Road-killed Animals. Road killed animals or other carcasses detected by personnel on roads associated with the project area shall be reported immediately to a Designated Biologist, Biological Monitor or Project Environmental Compliance Manager who will promptly remove the roadkill for disposal (i.e. removal to a landfill or disposal at the BSPP facility). For special-status species roadkill, the Biological Monitor shall contact **the CPM,**~~CDFG~~**CDFW** and USFWS within 1 working day of detection **(within 8 hours in the case of a desert kit fox)** of the carcass for guidance on disposal or storage of the carcass; all other roadkill shall be disposed of promptly, **or as directed by the USFWS or CDFW**. **Handling of desert kit fox carcasses shall follow handling requirements included in the BIO-17 American Badger and Kit Fox Management Plan.** The Biological Monitor shall provide the special-status species record as described in **BIO-11** below.

13. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

14. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. ~~Vehicular traffic shall be confined to existing routes of travel to and from the Pproject site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 25 miles per hour~~.

15. Avoid Spread of Noxious Weeds. The project owner shall implement the following Best Management Practices during construction and operation, and all other measures as required in the final approved Weed Management Plan (BIO-14) to prevent the spread and propagation of noxious weeds and other invasive plants:

a. For work outside the project facility fence line limit the size of any vegetation and/or ground disturbance and limit ingress and egress to defined routes;

b. Prevent spread of non-native plants via vehicular sources by implementing Trackclean™ or other methods of vehicle cleaning for vehicles getting into and out of the construction sites. Earth-moving equipment shall be cleaned prior to transport to the construction site; and

c. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations.

16. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter "Waters of the State". Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) which slope toward drainages shall be stabilized to reduce erosion potential.

17. Monitor Ground Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

18. Implement Erosion Control Measures. All disturbed soils and roads within the Project site shall be stabilized to reduce erosion potential, both during and following construction. All areas subject to temporary disturbance shall be restored to pre-project grade and stabilized to prevent erosion and promote natural revegetation. Temporarily disturbed areas within the Project area include, but are not limited to: linear facilities, temporary access roads, temporary lay-down and staging areas. If erosion control measures include the use of seed, only locally native plant species from a local seed source shall be used. Local seed includes seeds from plants within the Chuckwalla Valley or Colorado River Hydrologic Units.

19. Avoid Spreading Weeds. Prior to the start of site mobilization and construction, flag and avoid dense populations of highly invasive noxious weeds. If these areas cannot be avoided, they shall be pre-treated by the methods described in BIO-14 (Weed Management Plan). Noxious weeds and other invasive non-native plants in the temporarily disturbed areas shall be managed according to the requirements in BIO-14.

20. Salvage Topsoil. Topsoil from the Project site shall be salvaged, preserved and re-used for restoration of temporarily disturbed areas. Salvaged topsoil shall be collected, stored and applied in a way that maintains the viability of seed and soil crusts. The project owner shall excavate and collect the upper soil layer (the top 1 to 2 inches that includes the seed bank and biotic soil crust) as well as the lower soil layer up to a depth of 6 to 8 inches. The upper and lower soil layers shall be stockpiled separately in areas that will not be impacted by other grading, flooding, erosion, or pollutants. If the soil is to be stored more than 2 weeks it shall be spread out to a depth of no more than 6 inches to maintain the seed and soil crust viability. The project owner shall install temporary construction fencing around stockpiled topsoil, and signage that indicates whether the pile is the upper layer seed bank, or the lower layer, and clearly indicates that the piles are for use only in erosion control. After construction, the project owner shall replace the topsoil in the temporarily disturbed areas in the reverse order of stockpiling, starting with the 6-8 inch layer of subsoil, and then the seed-containing upper layer using a harrow or similar equipment to thinly distribute the layer to depths no greater than 1 to 2 inches.

21. Revegetation of Temporarily Disturbed Areas. The project owner shall prepare and implement a Revegetation Plan to restore all areas subject to temporary disturbance to pre-project grade and conditions. Temporarily disturbed areas within the project area include, but are not limited to: all proposed locations for linear facilities, temporary access roads, ~~berms, areas surrounding the drainage diffusers,~~ construction work temporary lay-down areas, and construction equipment staging areas. The Revegetation Plan shall include a description of topsoil salvage and seeding techniques and a monitoring and reporting plan, and the following performance standards by the end of monitoring year 2:

    a. at least 80 percent of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and

    b. relative cover and density of plant species within the temporarily disturbed areas shall equal at least 60 percent.

22. Decommission Temporary Access Roads with Vertical Mulching. Discourage ORV use of temporary construction roads by installing vertical mulching at the head of the road to a distance necessary to obscure the road from view. Boulder barricades and gates shall not be used unless the remainder of the site is fenced to prevent driving around the gate or barricade. Designated ORV routes and roads shall not be closed.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures would be reported in the Monthly Compliance Reports by the Designated Biologist.

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

As part of the Annual Compliance Report each year following construction, the Designated Biologist shall provide a report to the CPM that describes compliance with avoidance and minimization measures to be implemented during construction, operation, and maintenance (for example a summary of the incidence of road-killed animals during the year, implementation of measures to avoid toxic spills, erosion and sedimentation, efforts to enforce worker guidelines, etc.).

No less than 30 days prior to **site mobilization and** construction, the project owner shall submit to the CPM**, BLM, and CDFW** a final agency-approved Revegetation Plan that has been reviewed and approved by the CPM **in consultation with BLM**. All modifications to the Revegetation Plan shall be made only after approval from the CPM.

Within 30 days after completion of project construction, the project owner shall provide to the CPM ~~in consultation with BLM~~ for review and approval, a written report identifying which items of the Revegetation Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

As part of the Annual Compliance Report, each year following construction until the completion of the revegetation monitoring specified in the Revegetation Plan, the Designated Biologist **or project owner** shall provide a report to the CPM that includes: a summary of revegetation activities for the year, a discussion of whether revegetation performance standards for the year were met; and recommendations for revegetation remedial action, if warranted, are planned for the upcoming year.

If loud construction activities are proposed between February 15 and April 15 which would result in noise levels over 65 dBA in nesting habitat, the project owner shall submit nest survey results (as described in 8a) to the CPM no more than ~~seven~~ **7** days before initiating such construction. If an active nest is detected within this survey area the project owner shall submit a Nesting Bird Monitoring and Management Plan to the CPM for review and approval no more than ~~seven~~ **7** days before initiating noisy construction.

DESERT TORTOISE CLEARANCE SURVEYS AND FENCING

BIO-9 The project owner shall undertake appropriate measures to manage the project site and related facilities in a manner to avoid or minimize impacts to desert tortoise**.** Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the **most recent** USFWS' Desert Tortoise Field Manual (**currently** USFWS 2009) <http://www.fws.gov/ventura/speciesinfo/protocols_guidelines> or more

current guidance provided by ~~CDFG~~**CDFW** and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. The project owner shall implement the following measures:

1. Desert Tortoise Exclusion Fence Installation. To avoid impacts to desert tortoises, permanent exclusion fencing shall be installed along the permanent perimeter security fence (boundaries) as phases are constructed. Temporary fencing shall be installed along any subset of the plant site phasing that does not correspond to permanent perimeter fencing. Temporary fencing shall be installed along linear features unless a Biological Monitor is present in the immediate vicinity of construction activities for the linear facility. All **permanent or temporary** fencing shall be flagged and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the desert tortoise exclusionary fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) **or Biological Monitors (with direct contact to the Designated Biologist)** using techniques outlined in the *Desert Tortoise Field Manual* (USFWS 2009) and may be conducted in any season with USFWS and ~~CDFG~~**CDFW** approval. Biological Monitors may assist the Designated Biologist under his or her **direct** supervision. These fence clearance surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. Disturbance associated with desert tortoise exclusionary fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the project owner shall provide to the CPM, **BLM,** ~~CDFG~~**CDFW** and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. Desert tortoise located within the utility ROW alignments shall be moved out of harm's way in accordance with the USFWS *Desert Tortoise Field Manual* (USFWS 2009). Any desert tortoise detected during clearance surveys for fencing within the project site and along the perimeter fence alignment shall be translocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan (**BIO-10**). Tortoise shall be handled by the Designated Biologist(s) in accordance with the USFWS' ~~-~~*Desert Tortoise Field Manual* (USFWS 2009).

    a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed in any area subject to disturbance prior to the onset of site clearing and grubbing in that area. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. Fence Material and Installation. All desert tortoise exclusionary fencing shall be constructed in accordance with the USFWS' *Desert Tortoise Field Manual* (USFWS 2009) (Chapter 8 – Desert Tortoise Exclusion Fence) **or the most recent agency guidance with the approval of the CPM**.

c. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time.

d. Fence Inspections. Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing in the utility corridors, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

2. Desert Tortoise Clearance Surveys within the Plant Site. Clearance surveys shall be conducted in accordance with the USFWS *Desert Tortoise Field Manual* (USFWS 2009) (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) **or the most recent USFWS Desert Tortoise Field Manual (currently 2009)** and shall consist of two surveys covering 100 percent the project area by walking transects no more than 15-feet apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. **To maximize the opportunity to find all tortoises ~~E~~each** separate survey shall be walked in a different direction**, in opposite directions, and/or offset** to allow opposing angles of observation**, or as directed in the Biological Opinion**. ~~Clearance surveys for non-linear areas of Phase 1A may be conducted outside the active season.~~ Clearance surveys of the ~~remaining portions of the~~ ~~power~~ plant site may only be conducted when tortoises are most active (April through May or September through October) unless the project receives approval from ~~CDFG~~**CDFW** and USFWS. Clearance surveys of linear

features may be conducted during anytime of the year. Surveys outside of the active season in areas other than Phase 1A require approval by USFWS and ~~CDFG~~**CDFW**. Any tortoise located during clearance surveys of the power plant site and linear features shall be translocated or relocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan:

a. Burrow Searches. During clearance surveys all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS *Desert Tortoise Field Manual* (USFWS 2009). To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined in accordance with the Desert Tortoise Relocation/Translocation Plan. Tortoises taken from burrows and from elsewhere on the power plant site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

b. Burrow Excavation/Handling. All potential desert tortoise burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises in accordance with the Desert Tortoise Relocation/Translocation Plan. All desert tortoise handling, and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the USFWS *Desert Tortoise Field Manual* (USFWS 2009).

3. Monitoring Following Clearing. Following the desert tortoise clearance and removal from the power plant site and utility corridors, workers and heavy equipment shall be allowed to enter the project site to perform clearing, grubbing, leveling, and trenching activities. A Designated Biologist or Biological Monitor shall be onsite for clearing and grading activities to move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

4. Reporting. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert. Desert tortoise moved from within project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to BLM, the CPM, USFWS, and ~~CDFG~~**CDFW** describing implementation of each of the mitigation measures listed above. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises, and any other information needed to demonstrate compliance with the measures described above.

DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN

BIO-10 The project owner shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of the CPM. The Plan shall include guidance specific to each of the ~~three~~ **4** phases of project construction, as described in **BIO-28** (Phasing), and shall include measures to minimize the potential for repeated translocations of individual desert tortoises. The goals of the Desert Tortoise Relocation/Translocation Plan shall be to relocate or translocate all desert tortoises from the project site to nearby suitable habitat; minimize impacts on resident desert tortoises outside the project site; minimize stress, disturbance, and injuries to relocated/translocated tortoises; and assess the success of the relocation/translocation effort through monitoring. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the ~~Applicant~~ **project owner** ~~(AECOM 2010t)~~ and shall include all revisions deemed necessary by BLM, USFWS, ~~CDFG~~**CDFW** and the Energy Commission staff.

Verification: At least ~~3~~**360** days prior to site mobilization **and construction** the project owner shall provide the CPM with the final version of a Desert Tortoise Relocation/Translocation Plan that has been reviewed and approved by the CPM in consultation with BLM, USFWS and ~~CDFG~~**CDFW**. All modifications to the approved Plan shall be made only after approval by the CPM, in consultation with BLM, USFWS and ~~CDFG~~**CDFW**.

Within 30 days after initiation of relocation and/or translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Plan have been completed, and a summary of all modifications to measures made during implementation of the Plan.

DESERT TORTOISE COMPLIANCE VERIFICATION

BIO-11 The project owner shall provide Energy Commission, ~~CDFG~~**CDFW**, and USFWS and BLM staff with reasonable access to the project site and compensation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation

measures set forth in the Conditions of Certification. The Designated Biologist shall do all of the following:

1. Notification. Notify the CPM at least 14 calendar days before initiating ~~construction-related ground disturbance~~ **site mobilization and construction** activities; immediately notify the CPM in writing if the project owner is not in compliance with any **~~C~~conditions** of **~~C~~certification**, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the Conditions of Certification;

2. Monitoring During Grubbing and Grading. Remain onsite daily while vegetation salvage, grubbing, grading and other ground-disturbance construction activities are taking place to avoid or minimize take of listed species and verify personally or use Biological Monitors, to check for compliance with all impact avoidance and minimization measures, including checking all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.

3. Monthly Compliance Inspections. Conduct compliance inspections at a minimum of once per month after **ground disturbance activities including** clearing, grubbing, and grading are completed and submit a monthly compliance report to the BLM, CPM, USFWS and ~~CDFG~~**CDFW** during construction.

4. Notification of Injured, Dead, or Relocated Listed Species. If an injured or dead listed **or special status** species is detected within or near the Project Disturbance area, the CPM, the Ontario Office of ~~CDFG~~**CDFW**, and ~~Carlsbad~~ **Palm Springs** Office of USFWS shall be notified immediately by phone **and email, or as otherwise directed by the CPM or, in the case of avian species, controlling permits as issued by the USFWS**. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species **(within 8 hours in the case of desert kit fox)**. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

    a. Injured Desert Tortoise. If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist or approved Biological Monitor shall immediately take it to a ~~CDFG~~**CDFW**-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the project owner. Following phone notification as required above, the CPM, ~~CDFG~~**CDFW**, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at

a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken.

b. Desert Tortoise Fatality. If a desert tortoise is killed by project-related activities during construction or operation, submit a written report with the same information as an injury report to the CPM, **BLM, the Ontario Office of** ~~CDFG~~**CDFW**, and **the Palm Springs Office of** USFWS. These desert tortoises shall be salvaged according to guidelines described in *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise* (Berry 2001) **or most recent guidelines approved by the CPM**. The project owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

c. Avian or bat injury or fatality. Notifications of injured or dead avian and bat species found onsite must include relevant scientific data such as GPS locations, photographs, observations and other reasonably available information.

5. Final Listed Species Report. The Designated Biologist or project owner shall provide the CPM and BLM a Final Listed Species Mitigation Report that includes, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about Project-related incidental take of listed species; 3) information about other Project impacts on the listed species; 4) construction dates; 5) an assessment of the effectiveness of conditions of certification in minimizing and compensating for Project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future Projects on the listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the Project

6. Stop Work Order. The CPM may issue the project owner a written stop work order to suspend any activity related to the construction or operation of the project to prevent or remedy a violation of one or more Conditions of Certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The project owner shall comply with the stop work order immediately upon receipt thereof.

Verification: No later than ~~two~~ **2** days following the above required notification of a sighting, kill, or relocation of a listed species, the project owner shall deliver to the CPM, **BLM** ~~CDFG~~**CDFW**, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems)

depicting both the limits of construction and sighting location to the CPM, **BLM** ~~CDFG~~**CDFW** and USFWS.

No later than 45 days after initiation of project operation the Designated Biologist shall provide the CPM a Final Listed Species Mitigation Report**.** ~~that includes, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of listed species; 3) information about other project impacts on the listed species; 4) construction dates; 5) an assessment of the effectiveness of Conditions of Certification in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the project.~~

Beginning with the first month after clearing, grubbing, and grading are completed and continuing every month until construction is complete, the project owner shall submit a report describing their results of the Monthly Compliance Inspections to the CPM, BLM, USFWS, and ~~CDFG~~**CDFW**.

DESERT TORTOISE COMPENSATORY MITIGATION

BIO-12 To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide compensatory mitigation at a 1:1 ratio for impacts to ~~**3,976** acres, **per BIO-28 – Table 1, adjusted to reflect the final project footprint.** adjusted to reflect the final project footprint.~~ For purposes of this Condition, the project footprint means all lands disturbed in the construction and operation of the Blythe **Solar Power** Project, including all **project** linears, as well as undeveloped areas inside the project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. To satisfy this ~~**C**~~**condition**, the project owner shall acquire, protect and transfer 1 acre of desert tortoise habitat for every acre of habitat within the final project footprint, and provide associated funding for the acquired lands, as specified below. Condition **BIO-27** may provide the project owner with another option for satisfying some or all of the requirements in this Condition. In lieu of acquiring lands itself, the project owner may satisfy the requirements of this Condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as provided below in section 3.i. of this Condition.

The timing of the mitigation shall correspond with the timing of the site disturbance activities as stated in **BIO-28** (phasing). If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. Selection Criteria for Compensation Lands. The compensation lands selected for acquisition in fee title or in easement shall:
    a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages

between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;

b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

c. be as close to the source of the impact as possible

d. be prioritized near larger blocks of lands that are either already protected or planned for protection, **such as the Chuckwalla DWMA as first priority then within the Colorado Desert Recovery Unit as the second** or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

e. be connected to lands with desert tortoise habitat equal to or better quality than the project ~~S~~**site**, ideally with populations that are stable, recovering, or likely to recover;

f. not have a history of intensive recreational use**, grazing** or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;

g. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

h. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

i. have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with ~~CDFG~~**CDFW**, BLM and USFWS, agrees in writing to the acceptability of land.

2. Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM, ~~CDFG~~**CDFW**, USFWS, and BLM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the CPM and ~~CDFG~~**CDFW**, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels.

3. Compensation Lands Acquisition Requirements. The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM and ~~CDFG~~**CDFW**, in consultation with BLM and the USFWS, have approved the proposed compensation lands:

   a. Preliminary Report. The project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM and

~~CDFG~~**CDFW**. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM and ~~CDFG~~**CDFW**, in consultation with BLM and the USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

b. Title/Conveyance. The project owner shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the CPM and ~~CDFG~~**CDFW**. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to ~~CDFG~~**CDFW**, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM under terms approved by the CPM and ~~CDFG~~**CDFW**. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of ~~CDFG~~**CDFW** in a form approved by ~~CDFG~~**CDFW**. If an approved non-profit holds a conservation easement, ~~CDFG~~**CDFW** shall be named a third party beneficiary. **If a Security is provided, the project owner or an approved third party shall complete the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities.**

c. Initial Habitat Improvement Fund. The project owner shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if it meets the approval of ~~CDFG~~**CDFW** and the CPM. If ~~CDFG~~**CDFW** takes fee title to the compensation lands, the habitat improvement fund must be paid to ~~CDFG~~**CDFW** or its designee.

d. Property Analysis Record. Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands.

e. Long-term Maintenance and Management Fund. In accordance with **BIO-28** (phasing), the project owner shall deposit in NFWF's REAT Account **or with another CPM-approved entity** a non-wasting capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.

The CPM, in consultation with ~~CDFG~~**CDFW**, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If ~~CDFG~~**CDFW** takes fee title to the compensation lands, ~~CDFG~~**CDFW** shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for ~~CDFG~~**CDFW** and with ~~CDFG~~**CDFW** supervision.

f. Interest, Principal, and Pooling of Funds. The project owner, the CPM and ~~CDFG~~**CDFW** shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

    i. Interest. Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by ~~CDFG~~**CDFW** designed to protect or improve the habitat values of the compensation lands.

    ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the ~~CDFG~~**CDFW** or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If ~~CDFG~~**CDFW** takes fee title to the compensation lands, monies received by ~~CDFG~~**CDFW** pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless ~~CDFG~~**CDFW** designates NFWF or another entity to manage the long-term maintenance and management fee for ~~CDFG~~**CDFW**.

    iii. Pooling Long-Term Maintenance and Management Fee Funds. ~~CDFG~~**CDFW**, or a CPM-and ~~CDFG~~**CDFW**-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the ~~CDFG~~**CDFW** and CPM.

g. Other expenses. In addition to the costs listed above, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs, expenses incurred from other state agency reviews, and overhead related to providing compensation lands to ~~CDFG~~**CDFW** or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

h. Mitigation Security. The project owner shall provide financial assurances in accordance with **BIO-28** (phasing) to the CPM and ~~CDFG~~**CDFW** with copies of the document(s) to BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this Condition. These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this Condition, or shall be returned to the project owner upon successful compliance with the requirements in this Condition. The CPM's or ~~CDFG~~**CDFW**'s use of the security to implement measures in this Condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the CPM and ~~CDFG~~**CDFW** in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with ~~CDFG~~**CDFW**, BLM and the USFWS, of the form of the Security. Security shall be provided in the amounts of ~~$2,374,672~~**4,169,993.77** for Phase 1~~A~~; ~~$9,248,560~~**3,432,478.17** for Phase ~~1B~~**2 $3,720,700.55, for Phase 3,** and ~~$9,859,984~~**3,489,982.41** for Phase ~~2~~**4**. These Security estimates are based on the most current guidance from the REAT agencies (Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010) and may be revised with updated information. This Security estimate reflects the amount that would be required for Security if the project owner acquired the ~~6,958~~**4,208** acres of mitigation lands itself. **The actual costs to comply with this condition will vary depending on the final footprint of the project and its four phases, and the actual costs of acquiring, improving and managing the compensation lands.**

~~The amount of security shall be adjusted for any change in the project footprints for each phase as described above~~.

i. **NFWF REAT Account.** The project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose, which includes a NFWF

administrative fee, must be made in the amounts of **$4,169,993.77 for Phase 1, $3,432,478.17 for Phase 2, $3,720,700.55 for Phase 3, and $3,489,982.41** ~~$2,465,611 for Phase 1a; $9,481,161 for Phase 1b; and $10,105,186 for Phase 2~~ **as the security required in section 3h., above and may be provided in lieu of security.** If this option is used for the acquisition and initial improvement, the project owner shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than that estimated based on the *Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010,* or more current guidance from the REAT agencies, the excess money deposited in the REAT Account shall be returned to the project owner. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission and ~~CDFG~~**CDFW**. Such delegation shall be subject to approval by the CPM and ~~CDFG~~**CDFW**, in consultation with BLM and USFWS, prior to land acquisition, initial protection or maintenance and management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be implemented with 18 months of the Energy Commission's approval.

Verification: If the mitigation actions required under this Condition are not completed prior to the start of ground-disturbing activities **including site mobilization and construction**, the project owner shall provide the CPM and ~~CDFG~~**CDFW** with an approved form of Security in accordance with this Condition of Certification no later than 30 days prior to beginning project ground-disturbing activities**, including site mobilization and construction**. Actual Security shall be provided no later than 7 days prior to the beginning of project ground-disturbing activities. If Security is provided, the project owner, or an approved third party, shall complete and provide written verification to the CPM, ~~CDFG~~**CDFW**, BLM and USFWS of the compensation lands acquisition and transfer within 18 months of the start of project ground-disturbing activities**, including site mobilization and construction**.

The project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF or other approved third party by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the amounts in section 3**h** of this ~~C~~**condition**. Payment of the initial funds for acquisition and initial improvement must be made at least 30 days prior to the start of ground-disturbing activities for each phase.

No fewer than 90 days prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to the CPM, ~~CDFG~~**CDFW**, USFWS, and BLM describing the parcels intended for purchase and shall obtain approval from the CPM and ~~CDFG~~**CDFW** prior to the acquisition.

No fewer than 30 days after acquisition of the property the project owner shall deposit the funds required by Section 3e above (long term management and maintenance fee) and provide proof of the deposit to the CPM.

The project owner, or an approved third party, shall provide the CPM, ~~CDFG~~**CDFW**, BLM and USFWS with a management plan for the compensation lands within 180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan, in consultation with ~~CDFG~~**CDFW**, BLM and the USFWS.

Within 90 days after completion of all project related ground disturbance, the project owner shall provide to the CPM, ~~CDFG~~**CDFW**, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during project construction. This shall be the basis for the final number of acres required to be acquired.

RAVEN MANAGEMENT PLAN

BIO-13 The project owner shall implement a Raven Monitoring, Management**,** and Control Plan (Raven Plan) that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the CMP, in consultation with BLM, USFWS and ~~CDFG~~**CDFW**. The draft Raven Plan submitted by the ~~Applicant~~ **project owner** (AECOM **20**10a, Attachment DR-BIO-49) shall provide the basis for the **revised draft and** final Raven Plan, subject to review, revisions and approval from BLM, the CPM, ~~CDFG~~**CDFW** and USFWS. The Raven Plan shall include but not be limited to a program to monitor raven presence in the project vicinity, determine if raven numbers are increasing, and to implement raven control measures as needed based on that monitoring. The purpose of the plan is to avoid any project-related increases in raven numbers during construction, operation, and decommissioning. In addition~~, to monitoring at the project site, the Plan shall address raven monitoring and control at the new water source proposed in the McCoy Mountains in staff's proposed Condition of Certification **BIO-21.T**~~**the** project owner shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below. The Raven Plan shall:

a. Identify conditions associated with the project that might provide raven subsidies or attractants;

b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;

c. Describe control practices for ravens;

d. Establish thresholds that would trigger implementation of control practices;

e. Address monitoring and nest removal during construction and for the life of the project, and;

f. Discuss reporting requirements.

USFWS Regional Raven Management Program. The project owner shall submit **a per phase** payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The one time fee shall be as described in the cost allocation methodology (Exhibit 213, *Renewable Energy Development And Common Raven Predation on the Desert Tortoise – Summary*, dated May 2010; *Cost Allocation Methodology for Implementation of the Regional Raven Management Plan*, dated July 9, 2010) or more current guidance as provided by USFWS or ~~CDFG~~**CDFW**.

Verification: **At least 45 days prior to any project-related ground disturbance activities, the project owner shall submit the revised draft Raven Plan to the CPM for review and approval and CDFW and USFWS for review and comment.** No less than 10 days prior to the start of any project-related ground disturbance activities, **including pre-construction site mobilization,** the project owner shall provide the CPM, USFWS, and ~~CDFG~~**CDFW** with the final version of a Raven Plan. The CPM would determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Raven Plan shall be made only with approval of CPM in consultation with USFWS and ~~CDFG~~**CDFW**.

No less than 10 days prior to the start of any project-related ground disturbance**, including pre-construction site mobilization** activities **for each phase of project construction as described in BIO-28**, the project owner shall provide documentation to the CPM, BLM, ~~CDFG~~**CDFW** and USFWS that the one-time fee for the USFWS Regional Raven Management Program of has been deposited to the REAT-NFWS subaccount for the project.

Current estimate of the fee for the USFWS Regional Raven Management Program is $105/acre. ~~Phase 1a disturbance is estimated to be 769 acres. Phase 1b disturbance is estimated to be 2,995 acres. Phase 2 disturbance is estimated to be 3,193 acres~~.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Raven Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

As part of the annual compliance report, each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of raven management and control activities for the year; a discussion of whether raven control and management goals for the year were met; and recommendations for raven management activities for the upcoming year.

WEED MANAGEMENT PLAN

BIO-14 The project owner shall implement a Weed Management Plan **(Plan)** that meets the approval of the CPM. The objective of the ~~Weed Management~~ Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of project **site mobilization,** construction, operation, and **closure**~~decommissioning~~. ~~The Weed Management Plan shall include at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; weed risk assessment and measures to prevent the introduction and spread of weeds; monitoring and surveying methods; and reporting requirements.~~ The draft Weed Management Plan submitted by the ~~Applicant~~ **previous owner** (AECOM 2010a, Attachment DR-BIO-97) shall provide the basis for the final plan, subject to review and revisions from the CPM **and the BLM**.

1. **Weed Plan Requirements. The project owner shall provide a map to the CPM indicating the location of the Weed Management Area, which shall include all areas within 100 feet of the Project Disturbance Area, access roads, staging and laydown sites, and all other areas subject to temporary disturbance. The project owner shall provide a Plan for the Weed Management Area includes at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; map of existing populations of target weeds within 100 feet of the Project Disturbance Area and access roads; weed risk assessment; measures to prevent the introduction and spread of weeds; measures to minimize the risk of unintended harm to wildlife and other plants from weed control activities; monitoring and surveying methods; and reporting requirements. Weed control described in the Plan shall focus on prevention, early detection of new infestations, and early eradication for the life of the Project. Weed control along the Project linears shall be limited to the areas where soils were disturbed during construction. Weed monitoring shall occur a minimum of once per year during the early spring months (March-April) to detect seedlings before they set seed. The focus of the Plan shall be on avoiding the introduction of new invasive weeds or the spread of highly invasive species, such as Sahara mustard. Non-native species with low ecological risk, or that are very widespread, such as Mediterranean grass, shall be noted but control shall not be required. When detected, infestations of high priority species shall be eradicated immediately.**

    a. **Avoidance and Treatment of Dense Weed Populations**. **The Plan shall include a requirement to flag and avoid dense populations of the most invasive non-native weeds during any Project-related**

construction and operation in or adjacent to infestations. If these areas cannot be avoided, they shall be pre-treated by one of the following methods: a) treating the infested areas in the season prior to construction by removing and properly disposing of seed heads by hand, prior to maturity, or spraying the new crop of plants that emerge in early spring, the season prior to construction, to reduce the viable seed contained in the soil, or b) removing and disposing the upper 2 inches of soil and disposing it offsite at a sanitary landfill or other site approved by the County Agricultural Commissioner , or burying the infested soil, e.g. under the solar facility or in a pit, and covering the infested soil with at least three feet of uncontaminated soil.

3. **Cleaning Vehicles and Equipment. The Plan shall include specifications and requirements for the cleaning and removal of weed seed and weed plant parts from vehicles and equipment involved in Project-related construction and operation. Vehicles and equipment working in weed-infested areas (including previous job sites) shall be required to clean the equipment tires, tracks, and undercarriage *before* entering the Project area and before moving to infested areas of the Project Disturbance Area to uninfested areas. Cleaning shall be conducted on all track and bucket/blade components to adequately remove all visible dirt and plant debris. Cleaning using hand tools, such as brushes, brooms, rakes, or shovels, is preferred. If water must be used, the water/slurry shall be contained to prevent seeds and plant parts from washing into adjacent habitat.**
4. **Safe Use of Herbicides. The final Plan shall include detailed specifications for avoiding herbicide and soil stabilizer drift, and shall include a list of herbicides and soil stabilizers that will be used on the Project with manufacturer's guidance on appropriate use. The Plan shall indicate where the herbicides will be used, and what techniques will be used to avoid chemical drift or residual toxicity to special-status species and their pollinators, and consistent with the Nature Conservancy guidelines and the criteria under #2, below. Only weed control measures for target weeds with a demonstrated record of success shall be used, based on the best available information from sources such as The Nature Conservancy's The Global Invasive Species Team, California Invasive Plant Council: http://www.cal-ipc.org/ip/management/plant_profiles/index.php, and the California Department of Food & Agriculture Encycloweedia: http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_h p.htm.**
5. **The methods for weed control described in the final Plan shall meet the following criteria:**

a. **Manual: Well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.**

b. **Chemical: Herbicides known to have residual toxicity, such as pre-emergents and pellets, shall not be used in natural areas or within the engineered channels. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack and squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations (see Nature Conservancy guidelines described above);**

c. **Biological: Biological methods may be used subject to review and approval by CDF~~G~~W and USFWS and only if approved for such use by CDFA, and are either locally native species or have no demonstrated threat of naturalizing or hybridizing with native species;**

d. **Mechanical: Disking, tilling, and mechanical mowers or other heavy equipment shall not be employed in natural areas but hand weed trimmers (electric or gas-powered) may be used. Mechanical trimmers shall not be used during periods of high fire risk and shall only be used with implementation of fire prevention measures**.

Verification: No less than 10 days prior to start of any project-related ground disturbance activities **including site mobilization and construction**, the project owner shall provide the CPM with the final version of a Weed Management Plan that has been reviewed ~~and approved~~ by BLM, and Energy Commission staff~~,~~**.** USFWS, and **CDFW and approved by CPM**~~CDFG~~. Modifications to the approved Weed Control Plan shall be made only ~~after consultation~~ with **approval from the CPM in consultation with** ~~the Energy Commission staff,~~ BLM, USFWS, and **CDFW**~~CDFG~~.
Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Weed Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

As part of the annual compliance report, each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of noxious weeds surveys and management activities for the year; a discussion of whether weed management goals for the year were met; and recommendations for weed management activities for the upcoming year.

~~**AVIAN PROTECTION PLAN**~~

~~**BIO-15** The project owner shall prepare and implement an Avian Protection Plan to monitor the death and injury of birds from collisions with facility features such as transmission lines, reflective mirror-like surfaces and from heat, and bright light from concentrating sunlight. The monitoring data shall be used to inform an adaptive management program that would avoid and minimize project-related avian impacts. The study design shall be approved by the CPM in consultation with CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented. The Avian Protection Plan shall include detailed specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The plan shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.~~

~~**Verification:** No fewer than 30 days prior to commercial operation of any of the power plant units, the project owner shall submit to the CPM, USFWS, and CDFG a final Avian Protection Plan. Modifications to the Avian Protection Plan shall be made only after approval from the CPM.~~

~~For one year following the beginning of power plant operation the Designated Biologist shall submit quarterly reports to the CPM, CDFG, and USFWS describing the dates, durations, and results of monitoring. The quarterly reports shall provide a detailed description of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time, and describe adaptive management measures implemented to avoid or minimize deaths or injuries.~~

~~Following the completion of the fourth quarter of monitoring the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any project-related bird fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed. The Annual Report shall be provided to the CPM, CDFG, and USFWS. Quarterly reporting shall continue until the CPM, in consultation with CDFG and USFWS determine whether more years of monitoring are needed, and whether mitigation and adaptive management measures are necessary.~~

AVIAN AND BAT PROTECTION PLANS

BIO-15 The project owner shall prepare a Bird and Bat Conservation Strategy (BBCS) and submit it to the CPM for review and approval, in consultation with BLM, CDFW, and USFWS for review and comment. Alternately, the CPM, in conjunction with the USFWS, BLM, and CDFW, may determine the appropriate plan for the project site and provide it to the project owner for implementation. The BBCS shall provide for the following:

- **Survey and monitor onsite and offsite avian use and behavior to document species composition on and offsite, compare onsite and offsite rates of avian and bat use, document changes in avian and**

bat use over time (pre and post construction), and evaluate the changes in annual abundance and distribution of birds in and near the facility. The project owner will submit all data gathered onsite to the CPM as specified herein, or as requested by the CPM, and will also make consulting biologists available to answer CPM inquiries.

- **Implement a statistically robust avian and bat mortality and injury monitoring program to identify the extent of potential avian or bat mortality or injury from collisions with facility structures, including:**
  - ✓ **assessing levels of collision-related mortality and injury with PV panels, perimeter fences, gen-tie, and other project features and structures;**
  - ✓ **documenting flight spatial patterns via radar that may be associated with collision-related mortality and injury, if any.**
- **Implement an adaptive management and decision-making framework for reviewing, characterizing, and responding to mortality monitoring results.**
- **Identify specific conservation measures and/or programs to avoid, minimize, rectify, reduce or eliminate over time and evaluate the effectiveness of those measures.**

<u>BBCS Components</u>

The project owner shall prepare and implement a BBCS adopting all requirements applicable to solar generation in current guidelines recommended by the USFWS. The BBCS shall include the following components:

1. **Preconstruction Baseline survey results. A description and summary of the baseline survey methods, raw data, and results.**
2. **Formation of a technical advisory committee (TAC), if requested by the CPM. The TAC will facilitate concurrent project owner, CPM, and state and federal wildlife agency review of seasonal and annual survey results, the effectiveness of the adaptive management measures implemented by the project owner, modification of the surveys in response to the results, if necessary, and the identification of additional mitigation responses that are commensurate with the extent of impacts that may be identified in the monitoring studies. A meeting schedule for the TAC will be identified, for regular review of avian and bat injury and mortality monitoring results, and recommend any necessary changes to monitoring, adaptive management, and appropriate adaptive mitigation per . The TAC will also assist the CPM in implementing the following provisions: #2 - #8. The CPM has the authority to dissolve the TAC.**

3. **The BBCS will contain full survey methodology and field documentation, identification of appropriate onsite and offsite survey locations, control sites, and the seasonal considerations. Bat acoustic sampling may be implemented depending on results of the project owner's baseline studies, including preconstruction data.**

4. **Avian and bat mortality and injury monitoring: An avian and bat injury and mortality monitoring program shall be implemented, including:**

   (a) **Onsite monitoring that will systematically survey representative locations within the facility, at a level that will produce statistically robust data; account for potential spatial bias and allow for the extrapolation of survey results to non-surveyed areas and the survey interval based on scavenger and searcher efficiency trials and detection rates.**

   (b) **Low-visibility and high-wind weather event monitoring to document potential weather-related collision risks that may be associated increased risk of avian or bat collisions with project features, including foggy, highly overcast, or rainy night-time weather typically associated with an advancing frontal system, and high wind events (40 miles per hour winds) are sustained for period of greater than 4 hours. The monitoring report shall include survey frequency, locations and methods.**

   (c) **Statistically robust scavenger and searcher efficiency trials prior and post construction to document the extent to which avian or bat fatalities remain visible over time and can be detected within the project area and to adjust the survey timing and survey results to reflect scavenger and searcher efficiency rates.**

   (d) **Statistical methods used to generate facility estimates of potential avian and bat impacts based on the observed number of detections during standardized searches during the monitoring season for which the cause of death can be determined and is determined to be facility-related.**

   (e) **Field detection and mortality or injury identification, cause attribution, handling and reporting protocols consistent with applicable legal requirements.**

5. **Survey schedule and period. All post-construction monitoring studies included in the BBCS shall be conducted by a third party contractor for at least three years following commercial operation and approval of the BBCS by the CPM. All surveys and monitoring studies included in the BBCS shall be conducted during construction and commercial operation. At the end of the three-year period, the CPM shall determine whether the survey program shall be**

continued for subsequent periods, based on results of onsite monitoring. The monitoring program may be modified with the approval of the CPM in response to survey results, identified scavenging efficiency rates, or other factors to increase monitoring accuracy and reliability or in accordance with the adaptive management decision-making framework included in the BBCS.

6. **Adaptive management. An adaptive management program shall be developed to identify and implement reasonable and feasible measures that would reduce levels of avian or bat mortality or injury attributable to project operations and facilities. Any such impact reduction measures must be commensurate (in terms of factors that include geographic scope, costs, and scale of effort) to the level of avian or bat mortality or injury that is specifically and clearly attributable to the project facilities. Adaptive actions undertaken will be discussed and evaluated in survey reports. The adaptive management program shall include the following elements:**

   (a) Reasonable measures for characterizing the extent and significance of detected mortality and injuries clearly attributable to the project.

   (b) Measures that the project owner will implement to adaptively respond to detected mortality and injuries attributable to the project, including passive avian diverter installations along the perimeter or at other locations within the project to avoid site use, the use of sound, light or other means to discourage site use consistent with applicable legal requirements, onsite prey or habitat control measures consistent with applicable legal requirements, and additional perch and nest proofing of project facilities.

7. **Adaptive Mitigation: The CPM may require the project owner to implement adaptive mitigation for significant onsite injury or mortality of birds and bats, based on recommendations of the TAC. Such measures shall be approved by the CPM and may include, but not be limited to: (i) restoration of degraded habitat with native vegetation; (ii) restoration of agricultural fields to bird habitat; (iii) management of agricultural fields to enhance bird populations; (iv) invasive plant species and artificial food or water source management; (v) control and cleanup of potential avian hazards, such as lead or microtrash; (vi) retrofitting of buildings to minimize collisions; (vii) retrofitting of conductors and above ground cables to minimize collisions; (viii) animal control programs; (ix) support for avian and bat research and/or management efforts conducted by entities approved by the CPM within the project's mitigation lands or other approved locations; (x) funding efforts to address avian diseases or depredation due to the expansion of predators in response to anthropomorphic subsidies that may adversely affect**

birds that use the mitigation lands or other approved locations; and (xi) contribute to the Migratory Bird Conservation Fund managed by the Migratory Bird Conservation Commission. Adaptive mitigation will be discussed and evaluated in survey reports.

8. **Eagle Conservation Plan (ECP): The project owner shall prepare and implement an Eagle Conservation Protection Plan adopting all requirements applicable to solar generation as outlined in guidelines recommended by the USFWS (currently USFWS Land Based Wind Energy Guidelines 2011b). The ECP may be prepared as a stand-alone document or included as a chapter within the BBCS. The ECP shall describe all available baseline data on golden eagle occurrence, seasonality, activity, and behavior throughout the project area and vicinity. The ECP shall outline a study protocol to include annual pedestrian and/or helicopter surveys of golden eagle breeding sites within a 10 mile radius of the project site, to be reviewed and approved by the CPM, in consultation with the USFWS, BLM, and CDFW.**

   The ECP shall describe all proposed measures to minimize death and injury of eagles from (1) collisions with facility features including PV panels and gen-tie line towers or transmission lines, and (2) electrocutions on transmission lines or other project components. The ECP shall describe and evaluate any adaptive management, minimization, or mitigation efforts taken pursuant to BIO-15 #6 and BIO-15#7.

<u>Verification:</u> Prior to the start of construction, a draft BBCS shall be submitted to the CPM for review and comment in consultation with CDFW, BLM, and USFWS. If the CPM decides to take this responsibility, in conjunction with the BLM, USFWS, and CDFG, the project owner will be notified in advance. A final BBCS shall be submitted to the CPM within 60 days of construction commencement. The project owner shall provide the CPM with copies of any written or electronic transmittal from the USFWS, BLM, or CDFW related to the BBCS within 30 days of receiving any such transmittal. The EPP, if submitted under separate cover, shall follow the same timeline for review, edit, and approval as the BBCS.

Verification of Survey Results (including preconstruction bird and bat use, radar data, mortality monitoring, and golden eagle monitoring): All survey results and complete reports, including raw data, shall be submitted to the CPM after each survey season and in an annual summary report throughout the course of the study period, or as otherwise directed by the CPM. The results of onsite injury and mortality monitoring will be reported monthly or more frequently, if requested by the CPM. The reports will include all data required as part of the monitoring program. The Monitoring Study shall continue until the CPM, in consultation with CDFW, BLM, and USFWS, concludes that the cumulative monitoring data provide sufficient basis for estimating long-term bird mortality for the project. The reports will include all monitoring data required as part of the monitoring program.

The reports shall also assess any adaptive management measure implemented during the prior year as approved by the CPM. After the third year of the monitoring program, the CPM shall meet and confer with the TAC (if convened) to determine if the study period shall be extended based on data quality and sufficiency of analysis, or if needed, to document efficacy of any adaptive management measures undertaken by the project owner. If a TAC was not convened, then the study period may be extended as directed by the CPM, in consultation with CDFW, BLM, and the USFWS. If a carcass or injured live special status species is found at any time by the monitoring study or project operations staff, the project owner, Designated Biologist, or other qualified biologist that may be identified by the Designated Biologist shall contact the CPM, CDFW and USFWS by email, fax or other electronic means within one working day of any such detection. Verification of other injuries or mortalities shall be within 48 hours, or as otherwise directed by the CPM.

PRE-CONSTRUCTION NEST SURVEYS AND AVOIDANCE MEASURES

BIO-16 Pre-construction nest surveys shall be conducted if **site mobilization and** construction**, mowing, trimming, or any vegetation maintenance** activities would occur from February 1 through July 31. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). The goal of the nesting surveys shall be to identify the general location of the nest sites, sufficient to establish a protective buffer zone around the potential nest site, and need not include identification of the precise nest locations. Surveyors performing nest surveys shall not concurrently be conducting desert tortoise surveys. The bird surveyors shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat areas that could be disturbed by each phase of construction, as described in **BIO-28** (Phasing). Surveys shall also include areas within 500 feet of the boundaries of the active construction areas (including linear facilities);
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within a 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;
3. **During operations and maintenance prior to mowing and any other vegetation maintenance, surveys shall be conducted to determine whether birds are nesting in the vegetation on site;**
4. If active nests or suspected active nests are detected during the survey **(including mowing and vegetation maintenance surveys during operations),** a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation

with ~~CDFG~~**CDFW**) and monitoring plan shall be developed, **in coordination with the CPM**. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM; and

5. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

Verification: At least 10 days prior to the start of any **site mobilization and construction** ~~project~~-related ground disturbance activities **during the nesting season**, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. **At least 10 days prior to the start of any mowing and vegetation maintenance activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed.** If active or suspected active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest or suspected nest location and shall depict the boundaries of the no-disturbance buffer zone around the nest(s) that would be avoided during project construction.

Each year during construction as part of the annual compliance report a follow-up report shall be provided to the CPM, BLM, CDFW, and USFWS describing the success of the buffer zones in preventing disturbance to nesting activity and a brief description of the outcome of the nesting effort (for example, whether young were successfully fledged from the nest or if the nest failed).

~~AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES~~

~~BIO-17~~ ~~To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys. Surveys shall be conducted as described below:~~

1. ~~Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the Project Disturbance Area, including a 20 foot swath beyond the disturbed area, utility corridors, and access roads. If dens are detected each den shall be classified as inactive, potentially active, or definitely active.~~
2. ~~Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.~~
3. ~~Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for~~

~~three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.~~

4. ~~If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.~~

5. ~~If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. BLM approval may be required prior to release of badgers on public lands.~~

Verification: ~~The project owner shall submit a report to the CPM and CDFW within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, impact avoidance and minimization measures implemented, and the results of those measures.~~

AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-17 The project owner shall contract a qualified biologist to conduct a baseline pre-construction desert kit fox and American badger survey and develop and implement an American Badger and Desert Kit Fox Mitigation and Monitoring Plan (Plan). The survey data will be used to revise the final Plan, as necessary, with the most recent species data from the project site.

The project owner shall conduct a baseline kit fox census survey and submit a summary report that includes the following procedures:

1. **A qualified biologist with demonstrated mammal experience shall complete a baseline pre-construction survey of desert kit fox and American badger populations on the project site and the anticipated dispersal areas for passive relocation between 30 and 60 days prior to initiation of any ground disturbing activities, including site assessment and construction activities that include installation of desert tortoise fencing. The anticipated dispersal areas shall be defined as all suitable desert kit fox habitat within 500 meters of the project boundaries where desert kit fox would likely be displaced. The survey shall identify and record the locations of all potential dens throughout the project site (or phase) and shall characterize the approximate number and distribution of the badger and kit foxes on the site and anticipated dispersal areas. Depending on the season of the surveys (i.e. breeding or non-**

breeding) other demographic data will be. The baseline pre-construction survey shall include the following components:

a. **An inventory and mapped locations of desert kit fox dens and burrows on the project site (including all project disturbance areas) and in the anticipated dispersal areas, and an evaluation whether each burrow is occupied, and reproductive status of kit foxes (single animal, mated pair, or family group with young), if known. If status unknown measures as required under Item 2b, below, will be implemented.**

b. **Reporting: The project owner shall provide a draft Summary Report of the Baseline American Badger and Desert Kit Fox Survey to the CPM and BLM for review in consultation with CDFW. The project owner and the project owner's Designated Biologist shall consult with the CPM and BLM on any changes to the final Plan that would result from the baseline pre-construction survey data provided in the Summary Report. The project owner shall not implement the American Badger and Desert Kit Fox Mitigation and Monitoring Plan (below) until receiving the CPM and BLM's written approval of the final Plan.**

The objective of the plan shall be to avoid direct impacts to the American badger and desert kit fox as a result of site mobilization and construction of the power plant and linear facilities, as well as during project operation and non-operation and closure. The final plan is subject to review and comment by BLM and revision and approval by the CPM, in consultation with CDFW. The final Plan shall include, but is not limited to, the following procedures and impact avoidance measures:

2. **Describe pre-construction survey and clearance field protocol, to determine the number and locations of single or paired kit foxes or badgers on the project site that would need to be avoided or passively relocated and the number and locations of desert kit fox or badger burrows or burrow complexes that would need to be collapsed to prevent re-occupancy by the animals.**

   a. <u>Pre-Construction Surveys. A baseline, preconstruction survey shall be conducted as described above under Item 1.</u> Surveys may be concurrent with desert tortoise and burrowing owl surveys to the extent it does not conflict with desert tortoise and burrowing owl agency protocols. Depending on the timing of the project phases and time between phases, surveys may need to be conducted for each phase of construction Options for timing of surveys shall be detailed in the Plan. If dens are detected during the survey(s), each den shall be classified as inactive, potentially active, definitely active den, or natal den.

b. <u>Monitoring and Protection Measures, Passive Hazing, and Den Excavation:</u> The plan will include details on monitoring requirements, types and methods of passive hazing, and methods and timing of den excavation, including, but not limited to the following:

i. <u>Inactive dens.</u> Inactive dens [e.g. inactive dens are dens that are mostly or entirely silted in and ones in which the back of the den can be clearly seen (e.g., the den isn't deep and doesn't curve)] that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badger or kit fox.

ii. <u>Potentially and definitely active dens</u>. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. If the den is proven inactive then den may be collapsed during whelping season. BLM approval may be required prior to release of badgers on public lands.

iii. <u>Active natal/pupping dens.</u> If an active natal den (a den with pups) is detected on the site, the project owner shall proceed to implement the approved Plan and shall also notify the BLM, CPM, and CDFW within 24 hours. If the situation is unusual and/or not addressed by the approved Plan, then the project owner's biologist shall consult with the CPM,BLM, and CDFW to determine the appropriate course of action to minimize the potential for animal harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g. is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around all active dens. The denning season for American badger is

approximately March to August, and for desert kit fox the denning season is approximately Mid-January to pup independence typically by July 1 (or earlier with confirmation of pup independence based on monitoring data). If the den is active during the whelping season, even if pups are not seen, disturbance is not allowed. Active natal/pupping dens will not be excavated or passively relocated.

c. <u>Exception for American badger.</u> In the event that passive relocation techniques fail for badgers, outside the denning season, or during the denning season if individual badgers can be verified to not have a litter, then live-trapping by a CDFW and CPM approved trapper is an option that may be employed to safely perform active removal as a last resort. A live-trapping plan including trapping methods as well as the name and resume, including documentation of relevant handling permits of the proposed trapper, would be included in detail as part of the approved Plan. In the event live-trapping would be employed as a last resort, written notification would be submitted to the CPM for review and approval in consultation with BLM and CDFW. The CPM, BLM and CDFW would be notified in writing no less than 1 week prior to live trapping of badger. The notification would at a minimum include what passive relocation methods have been attempted to date and the justification for live-trapping as a last resort. In addition timing, and location of release of the individual badger as well as the name of the proposed trapper and resume, including documentation of relevant handling permits if not previously included and approved in the Plan shall be included in the notification. BLM approval may be required prior to release of badgers on public lands.

3. **Address other factors and procedures that may affect the success of kit fox and American badger relocation offsite, such as:**

   a. Qualitative discussion of availability of suitable habitat on off-site surrounding lands within 10 miles of the project boundary, and evaluation of kit fox burrows with 500 meters of the project boundary, in areas where onsite foxes may disperse (e.g., by inventorying burrow numbers in selected representative sample areas) as identified in the pre-construction surveys above;

   b. Estimates of the distances kit foxes would need to travel across the project site and across adjacent lands to safely access suitable habitat (including burrows) off-site;

   c. Proposed scheduling of the passive relocation effort;

d. Methods to minimize likelihood that the animals will return to the project site;

e. Descriptions of any proposed or potential ground disturbing activities related to kit fox relocation, and locations of those activities (e.g., artificial burrow construction);

f. A monitoring and reporting plan to evaluate success of the relocation efforts and any subsequent re-occupation of the project site; and

g. A plan to subsequently relocate any animals that may return to the site (e.g., by digging beneath fences).

4. **Address notification procedures for notifying the CPM, BLM and CDFW if injured, sick, or dead badger or kit fox are detected. Notify the CPM, BLM and CDFW if injured, sick, or dead American badger and desert kit fox are found. If an injured, sick, or dead animal is detected on any area associated with the solar project site or associated linear facilities, the CPM, BLM Palm Springs/ South Coast Field Office and the Ontario CDFW Office as well as the CDFW Wildlife Investigation Lab (WIL) shall be notified immediately by phone (8 hours in the case of a fatality). Written follow-up notification via FAX or electronic communication shall be submitted to the CPM, BLM and CDFW within 24 hours of the incident and shall include the following information as appropriate:**

a. Injured animals. If an American badger or desert kit fox is injured because of any project-related activities, the Designated Biologist or approved Biological Monitor shall immediately notify the CPM, BLM and CDFW personnel regarding the capture and transport of the animal to CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Following the phone notification, the CPM and CDFW shall determine the final disposition of the injured animal, if it recovers. A written notification of the incident shall be sent to the CPM, BLM and CDFW containing, at a minimum, the date, time, location, and circumstances of the incident.

b. Sick animals. If an American badger or desert kit fox is found sick and incapacitated on any area associated with the project site or associated linear facilities, the Designated Biologist or approved Biological Monitor shall immediately notify the CPM, BLM and CDFW personnel for immediate capture and transport of the animal to a CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Following the phone notification, the CPM and CDFW shall determine the final disposition of the sick animal, if it recovers. A necropsy shall be performed by a CDFW-approved facility to determine the cause of death. The project owner shall pay to have the animal transported and a

necropsy performed. A written notification of the incident shall be sent to the CPM, BLM and CDFW and contain, at a minimum, the date, time, location, and circumstances of the incident.

c. Fatalities. If an American badger or desert kit fox is killed because of any project-related activities during construction, operation, and decommissioning or is found dead on the project site or along associated linear facilities, the Designated Biologist or approved Biological Monitor shall immediately refrigerate the carcass and notify the CPM, BLM and CDFW personnel within 24 hours (8 hours in the case of desert kit fox) of the discovery to receive further instructions on the handling of the animal. Handling of a dead kit fox shall follow the Guidelines for Handling a Desert Kit Fox Carcass (CDFW WIL) or most recent guidance. A necropsy shall be performed by a CDFW-approved facility to determine the cause of death. The project owner shall pay to have the animal transported and a necropsy performed.

5. **Additional protection measures to be included in the Plan and implemented:**

a. All pipes within the project disturbance area must be capped and/or covered every evening or when not in use to prevent desert kit foxes or other animals from accessing the pipes.

b. All project-related water sources shall be covered and secured when not in use to prevent drowning.

c. The project owner shall coordinate with CDFW to identify any additional fence design features to maximize the effectiveness of the fence to exclude kit foxes from the project.

d. Incorporate and implement the CDFW Veterinarian's guidance regarding impact avoidance measures including measures to prevent disease spread among desert kit foxes.

e. Include measures to reduce traffic impacts to wildlife if the project owner anticipates night-time construction. The plan must also include a discussion of what information will be provided to all night-time workers, including truck drivers, to educate them about the threats to kit fox, what they need to do to avoid impacts to kit fox, and what to report if they see a live, injured, or dead kit fox.

f. In order to reduce the likelihood of distemper transmission:

i. No pets shall be allowed on the site prior to or during site mobilization and construction, operation, and non-operation and closure, with the possible exception of vaccinated kit fox scat detection dogs during

preconstruction surveys, and then only with prior CPM and CDFW approval;

ii. Any hazing activities that include the use of chemical or other repellents (e.g. ultrasonic noise makers, or non-animal-based chemical repellents) must be cleared through the CPM and CDFW prior to use. The use of animal tissue or excretion based repellents (e.g. coyote urine, anal gland products) is not permitted.

iii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to the CPM, CDFW, and the BLM immediately upon identification (within 8 hours for mortality). If a dead kit fox is observed, it shall be collected and stored according to established protocols distributed by CDFW WIL, and the WIL shall be contacted to determine carcass suitability for necropsy.

6. **The project owner may opt to participate in the CDFW led fee based Monitoring and Mitigation Program if in place prior to start of site mobilization and construction in lieu of implementation of certain items in 3i, 3j, 5a, 5b, 5d, 5f above. This includes financial responsibility for transportation and necropsy of desert kit fox mortalities due to project-related activities or sick animals found on or near the project site or associated linears as well as measures to address other factors and procedures that may affect the success of kit fox and American badger relocation offsite. If in place, the CDFW Monitoring and Mitigation Program activities associated with the Project and associated fees will be fully described in the final Plan. The project owner may also opt to participate in the program if established at a later date during site mobilization and construction or operation and will submit a revised Plan that includes the program information when established and confirmation that fees are paid.**

<u>Verification</u>: No fewer than 90 days prior to the start of any, site mobilization and construction the project owner shall provide the CPM, BLM, and CDFW with a draft American Badger and Desert Kit Fox Mitigation and Monitoring Plan for review and comment.

Approximately 30 to 60 days prior to initiation of site mobilization and construction activities a qualified biologist with demonstrated mammal experience shall complete a baseline study of American badger and desert kit fox populations on the project site and the anticipated dispersal areas for passive relocation.

The project owner shall submit a summary report to the CPM, BLM and CDFW within 7 days of completion of any badger and kit fox surveys. The report shall describe survey methods and results of the surveys. The project owner and the

Designated Biologist shall consult with the CPM and BLM upon submitting the summary report regarding any changes to the final Plan.

No fewer than 15 days prior to start of any site mobilization and construction, the project owner shall provide an electronic copy of the CPM-approved final Plan to the CPM, BLM and CDFW and implement the Plan.

No later than 24 hours following a phone notification of an injured, sick, or dead American badger or desert kit fox, the project owner shall provide to the CPM, BLM and CDFW, via FAX or electronic communication, a written report from the Designated Biologist describing the incident of sickness, injury, or death of an American badger or desert kit fox, when the incident occurred, and who else was notified.

Beginning with the first month after start of construction and continuing every month until construction is completed, the Designated Biologist shall include a summary of events regarding the American badger and desert kit fox in each Monthly Compliance Reports (MCR). The impact avoidance and minimization measure(s) implemented and the results of implementation of those measures shall be reported in each MCR.

No later than 45 days after initiation of project operation, the Designated Biologist shall provide the CPM and BLM a final American Badger and Desert Kit Fox Mitigation and Monitoring Plan Report that includes: 1) a discussion of all mitigation measures that were and currently are being implemented; 2) all information about project-related kit fox and badger injuries and/or deaths; 3) all information regarding sick kit fox and badger found within the project site and along related linear facilities; and 4) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the American badger and desert kit fox.

Within 30 days of participation in the CDFW led fee based Monitoring and Mitigation Program during site mobilization and construction or operation the project owner will submit a revised Plan that includes the program information related to the project and confirmation that all fees are paid.

BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

BIO-18 The project owner shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

1. Pre-Construction Surveys. The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of **site mobilization and** construction activities **in accordance with CDFW guidelines (CDFW 2012)**. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted

from two hours before sunset to ~~one~~ **1** hour after or from ~~one~~**1** hour before to ~~two~~ **2** hours after sunrise. The survey area shall include the Project Disturbance Area and surrounding 500 foot survey buffer for each phase of construction in accordance with **BIO-28** (phasing).

2. Implement Burrowing Owl Mitigation Plan. The project owner shall implement measures described in the final Burrowing Owl Mitigation Plan. The final Burrowing Owl Mitigation Plan shall be approved by the CPM, in consultation with BLM, USFWS and ~~CDFG~~**CDFW**, and shall::

    a. identify suitable sites within 1 mile of the Project Disturbance Areas for creation or enhancement of burrows prior to passive relocation efforts;

    b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl; **design of the artificial burrows shall be consistent with CDFW guidelines (CDFW 2012) and shall be approved by the CPM in consultation with CDFW and USFWS;**

    c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the Project Disturbance Area; and

    d. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where WBO were relocated from and provide a reporting plan.

3. Implement Avoidance Measures. If an active burrowing owl burrow is detected within 500 feet from the Project Disturbance Area the following avoidance and minimization measures shall be implemented:

    a. Establish Non-Disturbance Buffer. Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

    b. Monitoring: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 – August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

4. Acquire 39 Acres of Burrowing Owl Habitat. The project owner shall acquire, in fee or in easement 39 acres of land suitable to support a resident population of burrowing owls and shall provide funding for the

enhancement and long-term management of these compensation lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFW or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with BLM, CDFW and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.

a. Criteria for Burrowing Owl Mitigation Lands. The terms and Conditions of this acquisition or easement shall be as described in **BIO-12** [Desert Tortoise Compensatory Mitigation], with the additional criteria to include: 1) the 39 acres of mitigation land must provide suitable habitat for burrowing owls, and 2) the acquisition lands must either currently support burrowing owls or be **within dispersal distance from areas occupied by burrowing owl (generally approximately five miles).**~~no farther than five miles from an active burrowing owl nesting territory.~~ The 39 acres of burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met. If the 39 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the project owner shall fulfill the requirements described below in this Condition.

b. Security. If the 39 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the project owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition (see the verification section at the end of this Condition). Alternatively, financial assurance can be provided by the project owner to the CPM and **CDFW**, according to the measures outlined in **BIO-12**. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with BLM, **CDFW** and the USFWS, to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in **BIO-12**.

Verification: **If pre-construction surveys detect burrowing owls within the Project Disturbance Area and relocation of the owls is required, within 30 days of completion of the burrowing owl pre-construction surveys the project owner shall submit to the CPM, BLM, CDF~~G~~W, and USFWS a Burrowing Owl Mitigation Plan.**

The Burrowing Owl Mitigation Plan shall identify suitable areas for construction of burrows and the other passive relocation as described above. As part of the Annual Compliance Report each year following construction for a period of five years, the Designated Biologist shall provide a report to the CPM, BLM, USFWS and CDF~~G~~W that describes the results of monitoring and management of the burrowing owl burrow creation or enhancement area(s).

If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, at least 10 days prior to the start of any project-related site disturbance activities the Designated Biologist shall provide to the CPM**, BLM, CDFW, and USFWS** documentation indicating that non-disturbance buffer fencing has been installed **as described above**. The project owner shall report monthly to BLM, the CPM, **CDFW** and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures.

The project owner shall report monthly to BLM, the CPM, **CDFW** and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures.

Within 30 days after completion of construction the project owner shall provide to the **CDFW** and CPM a **written** report identifying how mitigation measures described in the plan have been completed.

No less than 30 days prior to the start of site mobilization and construction activities the project owner shall provide the CPM with an approved form of Security in accordance with this condition of certification. Actual Security for acquisition of 78 acres of burrowing owl habitat shall be provided no later than 7 days prior to the beginning of site mobilization and construction activities.

No fewer than 90 days prior to the land or easement purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFW, BLM, and USFWS, for the compensation lands and associated funds.

No later than 18 months from initiation of construction, the project owner shall provide written verification to the CPM that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.

SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATION

BIO-19 This Condition contains the following two sections:

- **Section A: Special-Status Plant Impact Avoidance and Minimization Measures** contains the Best Management Practices and other measures designed to avoid accidental impacts to plants **during site mobilization, construction, operation, and closure. The measures are required for special-status plants located** ~~occurring~~ outside of the Project

Disturbance Area and within 100 feet of the Project Disturbance Area ~~during construction, operation, and closure~~.

- ~~**Section B: Conduct Late Season Botanical Surveys** describes guidelines for conducting summer-fall 2010 surveys to detect special status plants that would have been missed during the spring 2010 surveys.~~
- ~~**Section C: Avoidance Requirements for Special-Status Plants** Detected **in the Summer/Fall 2010 Surveys** outlines the level of avoidance required for plants detected during the summer-fall surveys, based on the species' rarity and status codes.~~
- **Section ~~D~~B: Off-Site Compensatory Mitigation for Special-Status Plants** describes performance standards for mitigation ~~for a range of options for compensatory mitigation~~ through acquisition, restoration/enhancement, or a combination of acquisition and restoration/enhancement.

"Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation.

The project owner shall implement the following measures in Section A, **and** B, ~~and D~~ to avoid, minimize, and compensate for **direct, indirect, and cumulative** impacts to special-status plant species:

Section A: Special-Status Plant Impact Avoidance and Minimization Measures

To protect all special-status plants[11] located outside of the Project Disturbance Area and within 100 feet of the permitted Project Disturbance Area from accidental and indirect impacts during **site mobilization,** construction, operation, and closure, the project owner shall implement the following measures:

1. Designated Botanist. An experienced botanist who meets the qualifications described in Section **B-2** below shall oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this Condition throughout construction and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. During operation of the project, the Designated Biologist shall be responsible for protecting special-status plant occurrences within 100 feet of the project boundaries.

[11] Staff defines special-status plants as described in *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (California Natural Resources Agency, Department of Fish and Game, issued November 24, 2009).

2. Special-Status Plant Impact Avoidance and Minimization Measures. The project owner shall incorporate all measures for protecting special-status plants in close proximity to the site into the BRMIMP (**BIO-7**). These measures shall include the following elements:

   a. Site Design Modifications: Incorporate**s** ~~site design~~ modifications to **site design or construction techniques to** minimize **direct and indirect** impacts to special-status plants along the project linears: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW. ~~Design the engineered channel discharge points to maintain the natural surface drainage patterns between the engineered channel and the outlet of the natural washes that flow toward the south and east, downstream of the project~~ These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

Mitigation for CNDDB Rank 2 Plants (Imperiled~~)~~ (e.g. Abram's spurge)

Avoidance at Linear facilties Required: If species with a CNDDB rank of 2 are detected within the Project Disturbance Area, the project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan) that describes measures to achieve complete avoidance of occurrences on the project linears and construction laydown areas, unless such avoidance would create greater environmental impacts in other resource areas or would create greater environmental impacts in all other disciplines (e.g. Cultural Resource Sites) or other restrictions (e.g., FAA or other restrictions for placement of transmission poles). The project owner shall provide compensatory mitigation, at a ratio of 2:1, as described below in Section C~~D~~ for impacts to Rank 2 plants that could not be avoided. The content of the Plan and definitions shall be as described below.~~above in subsection C.1~~.

1. **A description of the occurrences of the CNDDB rank 2 species on the project, ecological characteristics such as micro-habitat requirements, ecosystem processes required for maintenance of the habitat, reproduction and dispersal mechanisms, pollinators, local distribution, a description of the extent of the population off-site, the percentage of the local population affected, and a description of how these occurrences would be impacted by the project, including direct and indirect effects. The "local population" shall include the number of individuals occurring within the Palo Verde Watershed boundaries. Occurrences shall be considered impacted if they are within the project footprint, and if they**

would be affected by project-related hydrologic changes or changes to the local sand transport system.

2. **A description of the avoidance and minimization measures that would achieve complete avoidance of occurrences on the project linears and construction laydown areas, unless such avoidance would create greater environmental impacts in other resource areas (e.g. Cultural Resource Sites) or other restrictions (e.g., FAA or other restrictions for placement of transmission poles).**
3. **A description of the measures that would be implemented to avoid or minimize impacts to occurrences on the solar facility. Avoidance is generally considered not feasible if the species is located within the Permanent Project Disturbance Area (bounded by the permanent tortoise exclusion fence and the drainage channels).**
4. **If avoidance on the linears, construction laydown areas, and solar facility combined protect less than 75 percent of the local population of the affected species, the project owner shall implement offsite mitigation that demonstrates that the impacts will not cause a loss of viability for that species. Implementation of the compensatory offsite mitigation must meet the performance standards described in section D of this Condition, and may include land acquisition or implementation of a restoration/enhancement program for the species.**
5. **"Avoidance" shall include protection of the ecosystem processes essential for maintenance of the protected plant occurrence. For all but one of the late blooming plant species with potential to occur, the plant species are annuals that depend on a viable seed bank to maintain population health and persistence. The primary goal of avoidance for these annual species will be protection of the soil integrity and the seed bank that is closely associated with undisturbed soils. Any impacts to the soil structure or surface features will be considered an impact, but measures like temporary mowing or brush removal that does not disturb the soil will not be considered impacts to the population. Isolated 'islands' of protected plants disconnected by the project from natural fluvial, aeolian (wind), or other processes essential for maintenance of the species, shall not be considered to be protected and shall not be credited as contributing to the 75 percent avoidance requirement because such isolated populations are not sustainable.**

b. Establish Environmentally Sensitive Areas (ESAs). Prior to the start of any ground- or vegetation-disturbing activities, the Designated Botanist shall establish ESAs to protect avoided special-status plants that occur outside of the Project Disturbance Areas and within 100 feet of Project Disturbance Areas. This includes plant occurrences identified during the spring 2009-2010 surveys**,** ~~and~~ the late season 2010 surveys**, and fall 2012 surveys**. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures, such as silt-fencing and sediment controls, may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be clearly identified (with signage or by mapping on site plans) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.

c. Special-Status Plant Worker Environmental Awareness Program (WEAP). The WEAP **(BIO-6)** shall include training components specific to protection of special-status plants as outlined in this Condition.

d. Herbicide and Soil Stabilizer Drift Control Measures. Special-status plant occurrences within 100 feet of the Project Disturbance Area shall be protected from herbicide and soil stabilizer drift. The Weed **Management Plan**~~Control Program~~ (**BIO-14**) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's *The Global Invasive Species Team*[12] , the U.S. Environmental Protection Agency, and the Pesticide Action Network Database[13].

e. Erosion and Sediment Control Measures. Erosion and sediment control measures shall not inadvertently impact special-status plants ~~(e.g.,~~ by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, **accidental burial by mulches,** etc.~~).~~ These **specifications**~~measures~~ shall be incorporated

[12] Hillmer, J. & D. Liedtke. 2003. Safe herbicide handling: a guide for land stewards and volunteer stewards. Ohio Chapter, The Nature Conservancy, Dublin, OH. 20 pp. Online: <http://www.invasive.org/gist/products.html.

[13] Pesticide Action Network of North America. Kegley, S.E., Hill, B.R., Orme S., Choi A.H., PAN Pesticide Database, Pesticide Action Network, North America. San Francisco, CA, 2010 <http://www.pesticideinfo.org>

in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.

f. **Locate Staging, Parking, Spoils, and Storage Areas Away from** ~~Avoid~~ Special-Status Plant Occurrences. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs. **These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under SOIL&WATER-1.**

g. Pre-Construction Seed Collection. For all significant impacts to special-status plants, mitigation shall include seed collection from the affected special-status plants population on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. Seed collection shall follow the guidelines described in Section D.III.3 of this condition.

h. Monitoring and Reporting Requirements. The Designated Botanist**, or Biological Monitor under supervision of the Designated Botanist,** shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and **closure**~~decommissioning~~ activities.

~~Section B: Conduct Late-Season Botanical Surveys~~

~~The project owner shall conduct late-summer/fall botanical surveys for late-season special-status plants prior to start of construction or by the end of 2010, as described below:~~

~~1. Survey Timing. Surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October). Fall-blooming perennials that respond to the cooler, later season storms (typically beginning in September or October) shall only be required if blooms and seeds are necessary for identification or the species are summer-deciduous and require leaves for identification. The surveys shall not be timed to coincide with the statistical peak bloom period of the target species but shall instead be based on plant phenology and the timing of a significant storm event (i.e., a 10mm or greater rain or multiple storm events of sufficient volume to trigger germination, as measured at or within one mile of the project site). Surveys shall occur at the appropriate time to capture the characteristics necessary to identify the taxon. Construction of Phase 1A as outlined in Condition of Certification **BIO-28** is authorized to commence following a September survey.~~

~~2. Surveyor Qualifications and Training. Surveys shall be conducted by a qualified botanist knowledgeable in the complex biology of the local flora, and consistent with CDFG protocols (CDFG 2009). Each surveyor shall be equipped with a GPS unit and record a complete tracklog; these data shall~~

be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all special-status taxa known to occur within the Sonoran Desert region and the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains.

3. Survey Coverage. The survey coverage or intensity shall be in accordance with BLM Survey Protocols (issued July 2009)[14], which specify that intuitive controlled surveys shall only be accomplished by botanists familiar with the habitats and species that may reasonably be expected to occur in the project area.

4. Documenting Occurrences. If a special-status plant is detected, the full extent of the population onsite shall be recorded using GPS in accordance with BLM survey protocols. Additionally, the extent of the population within one mile of project boundaries shall be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the population affected by the project. For populations that are very dense or very large, the population size may be estimated by simple sampling techniques. When populations are very extensive or locally abundant, the surveyor must provide some basis for this assertion and roughly map the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; the smallest populations may be recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the final botanical report shall be prepared to ensure consistency with definition of an occurrence by CNDDB, i.e., occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single 'occurrence'. The project owner shall also submit the raw GPS shape files and metadata, and completed CNDDB forms for each 'occurrence' (as defined by CNDDB).

5. Reporting. Raw GPS data, metadata, and CNDDB field forms shall be provided to the CPM within two weeks of the completion of each survey. If surveys are split into two or more periods (e.g., a late summer survey and

a fall survey), then a summary letter shall be submitted following each survey period.

The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG 2009), and BLM 2009 guidelines and shall include all of the following components:

a. the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List);

b. the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes;

c. the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area;

d. an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate);

e. a completed CNDDB field form for every occurrence (occurrences of the same species within one-quarter mile or less of each other combined as one occurrence, consistent with CNDDB methodology), and

f. two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with project features; and a second map that follows the CNDDB protocol for occurrence mapping.

Section C: Avoidance Requirements

The project owner shall apply the following avoidance standards to late blooming special-status plants that might be detected during late summer/fall season surveys. Avoidance and/or the mitigation measures described in Section D below would reduce impacts to these special-status plant species to less than significant levels.

1. Mitigation for CNDDB Rank 2 Plants (Imperiled) Abram's spurge – Avoidance on Linears Required: If species with a CNDDB rank of 2 are detected within the Project Disturbance Area, the project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan) that describes measures to achieve complete avoidance of occurrences on the project linears and construction laydown areas, unless such avoidance would create greater environmental impacts in other resource areas (e.g. Cultural Resource Sites) or other restrictions (e.g., FAA or other restrictions for placement of transmission poles). The project owner shall provide compensatory mitigation, at a ratio of 2:1, as described below in Section D for impacts to Rank 2 plants that could not be avoided. The

~~content of the Plan and definitions shall be as described above in subsection C.1.~~

2. ~~Preservation of the Germplasm of Affected Special-Status Plants. For all significant impacts to special-status plants, regardless of whether compensatory mitigation is required, **m**itigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the CPM.~~

Section ~~D~~B: Off-Site Compensatory Mitigation for Special-Status Plants

Where compensatory mitigation is required under the terms of Section C, above, the project owner shall mitigate project impacts to special-status plant occurrences with compensatory mitigation. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of populations of the target species, and shall meet the performance standards for mitigation described below. In the event that no opportunities for acquisition or restoration/enhancement exist, the project owner can fund a species distribution study designed to promote the future preservation, protection or recovery of the species. Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants, with three acres of habitat acquired or restored/enhanced for every acre of habitat occupied by the special status plant that will be disturbed by the Project Disturbance Area (for example if the area occupied by the special status plant collectively measured is one-fourth acre than the compensatory mitigation will be three-fourths of an acre). The mitigation ratio for Rank 2 plants shall be 2:1. So, for the example above, the mitigation ratio would be one-half acre for the Rank 2 plants.

The project owner shall provide funding for the acquisition and/or restoration/enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this Condition will vary depending on the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation.

The project owner shall comply with other related requirements in this Condition:

I. Compensatory Mitigation by Acquisition: The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands include all of the following:

1. Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:

    a. Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).

    b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan as described in Section D.II, below.

    c. Unoccupied but Adjacent. The project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

2. Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the CPM.

3. Management Plan. The project owner or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the CPM.

4. Integrating Special-Status Plant Mitigation with Other Mitigation lands. If all or any portion of the acquired Desert Tortoise, Waters of the State, or

other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

5. Compensation Lands Acquisition Requirements. The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:

   Preliminary Report. The project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

   Title/Conveyance. The project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title must be to ~~CDFG~~**CDFW**, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of ~~CDFG~~**CDFW** or another entity approved by the CPM. If an entity other than ~~CDFG~~**CDFW** holds a conservation easement over the compensation lands, the CPM may require that ~~CDFG~~**CDFW** or another entity approved by the CPM, in consultation with ~~CDFG~~**CDFW**, be named a third party beneficiary of the conservation easement. The project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.

   Initial Protection and Habitat Improvement. The project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities shall be estimated based on the *Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010,* or more current guidance from the REAT at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, but actual costs will vary depending on the measures that

are required for the compensation lands. A non-profit organization, ~~CDFG~~**CDFW** or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with ~~CDFG~~**CDFW**, and if it is authorized to participate in implementing the required activities on the compensation lands. If ~~CDFG~~**CDFW** takes fee title to the compensation lands, the habitat improvement fund must be paid to ~~CDFG~~**CDFW** or its designee.

Property Analysis Record. Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to establish funding levels or management activities for the compensation lands.

Long-term Maintenance and Management Funding. In accordance with **BIO-28** (phasing), the project owner shall deposit in NFWF's REAT Account **or other SPM approved entity,** a non-wasting capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.

The CPM, in consultation with ~~CDFG~~**CDFW**, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If ~~CDFG~~**CDFW** takes fee title to the compensation lands, ~~CDFG~~**CDFW** shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for ~~CDFG~~**CDFW** and with ~~CDFG~~**CDFW** supervision. .

Interest, Principal, and Pooling of Funds. The project owner shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) holder/manager to ensure the following requirements are met:

Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the CPM and is designed to protect or improve the habitat values of the compensation lands.

Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.

Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this project must be tracked and reported individually to the CPM.

Other Expenses. In addition to the costs listed above, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to ~~CDFG~~**CDFW** or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

Mitigation Security. The project owner shall provide financial assurances in accordance with **BIO-28** (phasing) to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this Condition that are not completed prior to the start of ground-disturbing project activities. Financial assurances shall be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the CPM. The amount of the Security shall be estimated based on the *Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010,* or more current guidance from the REAT agencies, at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is significantly impacted by the project. The actual costs to comply with this Condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security if the CPM determines the project owner has failed to comply with the requirements specified in this Condition. The CPM may use money from the Security solely for implementation of the requirements of this Condition. The CPM's use of the Security to implement measures in this Condition may not fully satisfy the project owner's obligations under this Condition, and the project owner

remains responsible for satisfying the obligations under this Condition if the Security is insufficient. The unused Security shall be returned to the project owner in whole or in part upon successful completion of the associated requirements in this Condition.

NFWF REAT Account. The project owner may elect to comply with the requirements in this Condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) **except to the extent Government Code section 65968 does not authorize NFWF to hold long-term maintenance and management funds for the project**. To use this option, the project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this Condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the project owner, the project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the project owner, the remaining balance shall be returned to the project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with ~~CDFG~~**CDFW**, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the Energy Commission's certification of the project.

II. Compensatory Mitigation by Habitat Enhancement/Restoration:

As an alternative or adjunct to land acquisition for compensatory mitigation the project owner may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants, with improvements applied to three acres, or two acres, respectively, of habitat for every acre special-status plant habitat directly or indirectly disturbed by the Project Disturbance Area (for example if the area occupied by the special status plant collectively measured is one-fourth acre than the improvements would be applied to an area equal to

three-fourths of an acre at a 3:1 ratio, or one-half acre at a 2:1 ratio). Examples of suitable enhancement projects include but are not limited to the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control of invasive non-native plants that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

If the project owner elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system[15] with one of the following threat ranks: a) long-term decline >30 percent; b) an immediate threat that affects >30 percent of the population, or c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").

If the project owner elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the CPM for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall be estimated based on the *Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010,* or more current guidance from the REAT agencies, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the CPM. The Habitat Enhancement/Restoration Plan shall include each of the following:

[15] Master, L., D. Faber-Langendoen, R. Bittman, G. A., Hammerson, B. Heidel, J. Nichols, L. Ramsay, and A. Tomaino. 2009. *NatureServe Conservation Status Assessments: Factors for Assessing Extinction Risk.* NatureServe, Arlington, VA. Online:
http://www.natureserve.org/publications/ConsStatusAssess_StatusFactors.pdf , "Threats". See also: Morse, L.E., J.M. Randall, N. Benton, R. Hiebert, and S. Lu. 2004. An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity. Version 1.
NatureServe, Arlington, Virginia. Online:
http://www.natureserve.org/publications/pubs/invasiveSpecies.pdf

1. Goals and Objectives. Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special-status plant occurrence that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).
2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species.
4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. Budget. Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. Contingency Plan. Describe the contingency plan for failure to meet annual goals.

10. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

III. Contingency Measures

a. **Preservation of the Germplasm of Affected Special-Status Plants. For all significant impacts to special-status plants, regardless of whether compensatory mitigation is required, mitigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the CPM**.

2. **Compensatory Mitigation by Conducting or Contributing to a Special-Status Plant Species Distribution Study**: **Subject to approval of the CPM, ~~A~~as** a contingency measure in the event that there are no opportunities for acquisition or restoration/enhancement **to meet the obligations for off-site mitigation as described in Section I above**, a Scientific Study of Special-status Plant Species Distribution Study may be funded. Distribution and occurrence health data is very limited for many of the sensitive species that occur on the project or have potential to occur on the project, especially the late summer and fall blooming species. Some of these late blooming species are only known from a few viable occurrences in California, and historic occurrences that have not been re-located or surveyed since they were first documented. The objectives of this study would be to better understand the full distribution of the affected species, the degree and immediacy of threats to occurrences, and ownership and management opportunities, with the primary goal of future preservation, protection, or recovery. This study would include the following:

1. Historical Occurrence Review. The Study would include an evaluation of historical localities for the species known to occur on the project or with potential to occur. This would include a review of the CNDDB database, herbarium records from regional herbaria (U.C. Riverside, San Diego Natural History Museum, etc.), other biotechnical reports from the region, and information from regional botanical experts.
2. Conduct Site Visits to Historical Localities. Historical occurrences would be evaluated in the field during the appropriate time of the year for each late blooming species. If located, these occurrences would be evaluated for population size, numbers, plant associates, soils, habitat quality, and potential threats, degree and immediacy of threats, ownership and management opportunities. GPS location data would also be collected during these site visits.
3. Survey Areas with habitat potential that surround each of these species occurrences to better determine the full range of distribution. If additional populations are found, collect data (GPS and assessment) on these additional populations consistent with III.2 above.
4. Prepare a Distribution Study Report. A report that discusses the finding from the historical information and the range extension surveys would be prepared that summarizes the information for each of the late season surveys. This report will provide valuable information and a better understanding of the actual distribution of these late blooming species within California and will help to determine when and when not there is potential for these species to occur. This valuable information will include a better understand of the ecological factors driving the distribution of these species and will help to better target appropriate habitat for both future surveys as well as potential future mitigation lands. All data from this study will be submitted for incorporation into the CNDDB system and the study report will be made available to resource agencies, conservation groups, and other interested parties.

Currently there is no program or study in place that is attempting to address the distributional issues for these late blooming species. If an existing study is identified or if one is developed prior to the study outlined here, an option to fund the existing study may be considered. If an existing study cannot be indentified then one will be developed that follows the guidelines discussed above. The funding provided for the program would be no greater than the cost for acquisition, enhancement, and long-term management of compensatory mitigation lands based on impacts to late blooming sensitive plant species.

Verification: The Special-Status Plant Impact Avoidance and Minimization Measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-7.**

Raw GPS data, metadata, and CNDDB field forms shall be submitted to the CPM **and the BLM State Botanist** within ~~two~~ **four** weeks of the completion of each survey. A preliminary summary of results for the late summer/fall botanical surveys shall also be submitted to the CPM and BLM's State Botanist within two weeks following the completion of the surveys. If surveys are split into more than one period, then a summary letter shall be submitted following each survey period. The Final Summer-Fall Botanical Survey Report, GIS shape files and metadata shall be submitted to the BLM State Botanist and the CPM no less than 30 days prior to the start of **site mobilization and construction** ~~ground-disturbing~~ activities. The Final Report shall include a detailed accounting of the acreage of project impacts to special-status plant occurrences.

The draft conceptual Special-Status Plant Mitigation Plan shall be submitted to the CPM for review and approval no less than 30 days prior to the start of **site mobilization and construction** ~~ground-disturbing~~ activities.

The project owner shall immediately provide written notification to the CPM, CDFW, USFWS, and BLM if it detects a State- or Federal-Listed Species, or BLM Sensitive Species at any time during its late summer/fall botanical surveys or at any time thereafter through the life of the project, including conclusion of project **closure**~~decommissioning~~.

No ~~fewer~~ **less** than 30 days prior to the start of ground-disturbing activities the project owner shall submit grading plans and construction drawings to the CPM which depict the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of this Condition.

If compensatory mitigation is required, no less than 30 days prior to the start of **site mobilization and construction**~~ground-disturbing~~ activities, the project owner shall submit to the CPM the form of Security adequate to acquire compensatory mitigation lands and/or undertake habitat enhancement or restoration activities, as described in this Condition. Actual Security shall be provided ~~seven~~ **7** days prior to start of **site mobilization and construction**~~ground-disturbing~~ activities.

No fewer than 90 days prior to acquisition of compensatory mitigation lands, the project owner shall submit a formal acquisition proposal and draft Management Plan for the proposed lands to the CPM, with copies to ~~CDFG~~**CDFW**, USFWS, and BLM, describing the parcels intended for purchase and shall obtain approval from the CPM prior to the acquisition. No fewer than 90 days prior to acquisition of compensatory mitigation lands, the project owner shall submit to the CPM and obtain CPM approval of any agreements to delegate land acquisition to an approved third party, or to manage compensation lands; such agreement shall be executed and implemented within 18 months of the start of ground disturbance.

No fewer than 30 days after acquisition of the property the project owner shall deposit the funds required by Section I e above (long term management and maintenance fee) and provide proof of the deposit to the CPM.

The project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM of such completion no later than 18 months after the start of project **site mobilization**~~ground-disturbing~~ activities. If NFWF or another approved third party is being used for the acquisition, the project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline. If habitat enhancement is proposed, no later than six months following the start of ground-disturbing activities, the project owner shall obtain CPM approval of the final Habitat Enhancement/Restoration Plan, prepared in accordance with Section D, and submit to the CPM or a third party approved by the CPM Security adequate for long-term implementation and monitoring of the Habitat Enhancement/Restoration Plan.

Enhancement/restoration activities shall be initiated no later than 12 months from the start of construction. The implementation phase of the enhancement project shall be completed within five years of initiation. Until completion of the five-year implementation portion of the enhancement action, a report shall be prepared and submitted as part of the Annual Compliance Report. This report shall provide, at a minimum: a summary of activities for the preceding year and a summary of activities for the following year; quantitative measurements of the project's progress in meeting the enhancement project success criteria; detailed description of remedial actions taken or proposed; and contact information for the responsible parties.

If a Distribution Study is implemented as contingency mitigation, the study shall be initiated no later than 6 months from the start of construction. The implementation phase of the study shall be completed within two years of the start of construction.

Within 18 months of **site mobilization and construction**~~ground-disturbing~~ activities, the project owner shall transfer to the CPM or an approved third party the difference between the Security paid and the actual costs of (1) acquiring compensatory mitigation lands, completing initial protection and habitat improvement , and funding the long-term maintenance and management of compensatory mitigation lands; and/or (2) implementing and providing for the long-term protection and monitoring of habitat enhancement or restoration activities.

Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, completed CNDDB field forms for each avoided occurrence on-site and within 100 feet of the project boundary off-site, and description of the remedial action, if warranted and planned for the upcoming year. The completed forms shall include an inventory of the special-status plant occurrences and

description of the habitat conditions, an indication of population and habitat quality trends.

SAND DUNE/FRINGE-TOED LIZARD MITIGATION

BIO-20 To mitigate for habitat loss and direct impacts to Mojave fringe-toed lizards the project owner shall provide compensatory mitigation at a 3:1 ratio, which may include compensation lands purchased in fee or in easement in whole or in part, for impacts to stabilized or partially stabilized desert dune habitat (50 acres or the acreage of sand dune/partially stabilized sand dune habitat impacted by the final project footprint from the project interconnection to the Colorado River Substation). If compensation lands are acquired, the project owner shall provide funding for the acquisition in fee title or in easement, initial habitat improvements and long-term maintenance and management of the compensation lands.

1. Criteria for Compensation Lands: The compensation lands selected for acquisition shall:
    a. Be sand dune or partially stabilized sand dune habitat within the Palen Valley or Chuckwalla Valley with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;
    b. To the extent feasible, be connected to lands currently occupied by Mojave fringe-toed lizard;
    c. To the extent feasible, be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
    d. Provide quality habitat for Mojave fringe-toed lizard, that has the capacity to regenerate naturally when disturbances are removed;
    e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;
    f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;
    g. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat;
    h. Not be subject to property constraints (i.e. mineral leases, cultural resources); and
    i. Be on land for which long-term management is feasible.
2. Security for Implementation of Mitigation: The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of

funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this Condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM according to the measures outlined in **BIO-12**, and within the time period specified for this assurance (see the verification section at the end of this Condition). The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in **BIO-12**.

3. Preparation of Management Plan: The project owner shall submit to the CPM, BLM, ~~CDFG~~**CDFW** and USFWS a draft Management Plan that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.

Verification: No later than 30 days prior to beginning **site mobilization and construction**~~project ground disturbing~~ activities, the project owner shall provide written verification of approved form of Security in accordance with this Condition of Certification. Actual Security shall be provided no later than seven days prior to the beginning of project ground-disturbing activities. The project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities.

No less than 90 days prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to BLM, the CPM, ~~CDFG~~**CDFW** and USFWS describing the parcels intended for purchase.

The project owner, or an approved third party, shall provide BLM, the CPM, ~~CDFG~~**CDFW** and USFWS with a management plan for the compensation lands and associated funds within 180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan, in consultation with BLM**,** ~~CDFG~~**CDFW** and the USFWS.

Within 90 days after completion of project construction, the project owner shall provide to the CPM an analysis with the final accounting of the amount of sand dune/stabilized sand dune habitat disturbed during project construction.

The project owner shall provide written verification to BLM, the CPM, USFWS, and ~~CDFG~~**CDFW** that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months from the start of ground-disturbing activities.

~~**MITIGATION FOR IMPACTS TO BIGHORN SHEEP**~~

~~**BIO-21** To compensate for project contributions to loss of spring foraging habitat for Nelson's bighorn sheep, the project owner shall:~~

1. Create a New Water Source. The project owner shall create a new water source for the Southern Mojave metapopulation of bighorn sheep in the McCoy Mountains or in other mountain ranges in the vicinity of the project north of I-10. The proposed location of the water source shall be developed in consultation with the CPM, BLM and CDFG. The project owner shall monitor and manage the artificial water source for the benefit of bighorn sheep for the life of the project, or shall provide sufficient funding to support such monitoring and management by an approved third party.

The project owner may elect to fund the creation of a new water source by depositing funds into a Renewable Energy Action Team (REAT) subaccount established with the National Fish and Wildlife Foundation (NFWF). Actual costs shall be developed in consultation with the CPM, BLM and CDFG. The project owner shall be responsible for providing adequate funding for installation of the water source and all costs associated with that installation, as well as costs of operation, monitoring and management of the water source for the life of the project. The project owner shall also provide sufficient funding for any administrative fees that NFWF may require to implement the measures described in this Condition. The initial estimate of funding required to fulfill the measures described above is $100,000. The total costs shall not exceed $120,000. If less than $100,000 is required to fulfill the terms of this Condition, the excess shall be refunded to the project owner. Based on the letter from Jim Abbott, Acting State Director of BLM to Alice Harron dated August 26, 2010; deposit of the funds by the project Owner into the NFWF Account will discharge the project owner's obligations under this Condition of Certification.

The project owner shall provide financial assurances to the CPM with copies of the document(s) to CDFG and BLM to guarantee that an adequate level of funding is available to implement the mitigation measures described in this Condition. Security shall be in the amount of the initial estimate of $100,000.

Or

2. Acquire Compensatory Habitat. As an alternative to providing a water source as described above, the project owner may elect to secure compensatory mitigation lands that would offset the loss of spring foraging habitat (desert dry wash woodland, vegetated swales, and unvegetated washes) for Southern Mojave metapopulation Nelson's bighorn sheep. If the project owner selects this compensatory mitigation option the project owner shall acquire, in fee or in easement no less than 929 acres of lands that:

a. Provide suitable spring foraging habitat for bighorn sheep in the form of desert dry wash woodland and vegetated swales within intermixed Sonoran creosote bush scrub habitat, and

b. Includes spring foraging habitat that would benefit the Southern Mojave metapopulation (i.e., north of I-10). Priority acquisition areas would be in eastern Riverside County roughly bounded by Interstate 10, Highway 62, and Highway 177.

Acquisition Terms and Conditions. The terms and conditions of this acquisition or easement shall be as described in **BIO-12** (Desert Tortoise Compensatory Mitigation) and the timing associated with **BIO-28** (phasing). The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.

Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM, CDFG, and BLM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for the Southern Mojave metapopulation of bighorn in relation to the criteria listed above. Approval from the CPM, in consultation with BLM and CDFG, shall be required for acquisition of all parcels comprising the compensation lands.

Acquisition Security. If the 929 acres of bighorn sheep mitigation land is separate from the acreage required for desert tortoise compensation lands, the project owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition (see the Verification section at the end of this Condition). Alternatively, financial assurance can be provided by the project owner to the CPM, BLM and CDFG, according to the measures outlined in **BIO-12** and **BIO-28**, with the Security estimate based on the Desert Renewable Energy REAT Biological Resource Compensation /Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010 or more current guidance from the REAT agencies. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM and, in consultation with BLM and CDFG, to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in **BIO-12**.

Verification: The project owner shall provide the CPM with a form of Security for installation, management and monitoring of the water source as described in this Condition Of Certification no later than 30 days prior to beginning project ground-disturbing activities for approval. Actual Security shall be provided no later than seven days prior to the beginning of project ground-disturbing activities. Security shall be $100,000.

If the project owner elects to fund the creation of a new water source by depositing funds into the REAT-NFWF subaccount, no less than 30 days prior to beginning project

~~ground-disturbing activities the project owner shall provide written verification to the CPM, BLM and CDFG that $100,000 has been deposited to that subaccount. Based on the letter from Jim Abbott, Acting State Director of BLM to Alice Harron, Solar Millennium dated August 26, 2010, deposit of the funds by the project Owner into the NFWF Account will discharge the project owner's obligations under this Condition of Certification.~~

~~No later than 6 months following start of ground disturbance activities, the project owner shall submit to the CPM for review and approval a description of the proposed location of the water source that will be created. No later than 24 months following the project ground-disturbing activities, the project owner shall provide written verification to the CPM that construction of the water source has been completed. At the same time, the project owner shall: (1) provide a monitoring and management plan for bighorn use of the water source; and (2) provide evidence of an agreement (Memorandum of Understanding) and a funding mechanism to provide ongoing maintenance of the water source by BLM or some other party approved by the CPM in consultation with BLM and CDFG.~~

~~As part of the annual compliance report, each year following completion of construction/restoration of the water source, the project owner shall provide a report to the CPM, BLM and CDFG that includes: a description of bighorn sheep detections at the water source and a summary of management activities for the year, and a discussion of whether management goals for the year were met. If the project owner elects to mitigate for loss of bighorn sheep spring foraging habitat with acquisition of compensatory mitigation lands as described above, no less than 90 days prior to acquisition of the bighorn sheep compensation lands, the project owner, or an approved third party, shall submit a formal acquisition proposal to the CPM, BLM, and CDFG describing the 929 acres of lands intended for purchase. At the same time the project owner shall submit a PAR or PAR-like analysis for the parcels for review and approval by the CPM, in consultation with BLM and CDFG.~~

~~No later than 18 months from initiation of construction the project owner shall provide written verification to the BLM, the CPM, and CDFG that no fewer than 929 acres of compensation lands or conservation easements that meet the criteria described in this Condition have been acquired and recorded in favor of the approved recipient.~~

~~Security shall be refunded to project owner once land has been acquired and recorded in favor of the approved recipient.~~

MITIGATION FOR IMPACTS TO STATE WATERS

BIO-22 The project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the state and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.

1. Acquire Off-Site State Waters: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least ~~1,384~~**253.2** acres of state jurisdictional waters, or the area of state waters directly or

indirectly impacted by the final project footprint. The project footprint means all lands disturbed by construction and operation of the Blythe Project, including all linears. The parcel or parcels comprising the ~~1,384~~**253.2** acres of ephemeral washes shall include at least ~~639~~**21** acres of desert dry wash woodland or the acreage of desert dry wash woodland impacted by the final project footprint at a 3:1 ratio. The terms and conditions of this acquisition or easement shall be as described in Condition of Certification **BIO-12** and the timing associated with **BIO-28** (phasing). Mitigation for impacts to state waters shall be within the Chuckwalla Valley or Colorado River Hydrological Units (HUs), as close to the project site as practicable.

2. Security for Implementation of Mitigation: The project owner shall provide financial assurances to the CPM and ~~CDFG~~**CDFW** to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this Condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM and ~~CDFG~~**CDFW** in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with BLM**,** ~~CDFG~~**CDFW** and the USFWS, to ensure funding. The final amount due will be determined by and updated appraisal and a PAR analysis conducted pursuant to **BIO-12**.

3. Preparation of Management Plan: The project owner shall submit to the CPM and ~~CDFG~~**CDFW** a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

4. Code of Regulations: The project owner shall provide a copy of this Condition (Condition of Certification **BIO-22**) from the Energy Commission Decision to all contractors, subcontractors, and the project owner's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any ~~CDFG~~**CDFW** personnel upon demand. The CPM reserves the right to issue a stop work order or allow ~~CDFG~~**CDFW** to issue a stop work order after giving notice to the project owner, the CPM, if the CPM in consultation with ~~CDFG~~**CDFW**, determines that the project owner has breached any of the terms or Conditions or for other reasons, including but not limited to the following:

    a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;

    b. New information becomes available that was not known to it in preparing the terms and Conditions; or

c. The project or project activities as described in the Staff Assessment have changed.

5. Best Management Practices: The project owner shall also comply with the following Conditions to protect drainages near the Project Disturbance Area:

   a. The project owner shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.

   b. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.

   c. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.

   d. Spoil sites shall not be located at least 30 feet from the boundaries and drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.

   e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage by the project owner or any party working under contract or with the permission of the project owner, shall be removed immediately.

   f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state.

   g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage.

   h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

Verification: No less than 30 days prior to the start of construction-related ground disturbance activities potentially affecting waters of the state, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented. The project owner shall also provide a discussion of work in waters of the state in Compliance Reports for the duration of the project.

No less than 30 days prior to beginning **site mobilization and construction**~~project ground-disturbing~~ activities, the project owner shall provide the form of Security in accordance with this Condition of Certification. No later than seven days prior to beginning project **site mobilization and construction**~~ground-disturbing~~ activities, the project owner shall provide written verification of the actual Security. The project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities.

The project owner, or an approved third party, shall provide BLM, the CPM, ~~CDFG~~**CDFW** and USFWS with a management plan for the compensation lands and associated funds within 180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan, in consultation with ~~CDFG~~**CDFW**.

Within 90 days after completion of project construction, the project owner shall provide to the CPM and ~~CDFG~~**CDFW** an analysis with the final accounting of the amount of jurisdictional state waters disturbed during project construction.

The project owner shall provide written verification to BLM, the CPM, USFWS and ~~CDFG~~**CDFW** that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months from adoption of the Final Energy Commission Decision for the Blythe Solar Power Project).

The project owner shall notify the CPM and ~~CDFG~~**CDFW**, in writing, at least five days prior to initiation of project activities in jurisdictional state waters and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM and ~~CDFG~~**CDFW** of any change of conditions to the project, impacts to state waters, or the mitigation efforts. The notifying report shall be provided to the CPM and ~~CDFG~~**CDFW** no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports or until it is deemed unnecessary by the CPM and ~~CDFG~~**CDFW**.

~~Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the Project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.~~

~~Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or substantial changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.~~

~~Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations~~.

DECOMMISSIONING AND RECLAMATION PLAN

BIO-23 Upon project closure the project owner shall implement a final Decommissioning and Reclamation Plan. The Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall be consistent with the guidelines in BLM's 43 CFR 3809.550 et seq.

Verification: No fewer than 30 days prior to the start of **site mobilization and construction**~~project-related ground disturbing~~ activities the project owner shall provide to the CPM (for review) and BLM's Authorized Officer (for review and approval) a draft Decommissioning and Reclamation Plan. The plan shall be finalized prior to the start of commercial operation and reviewed every five years thereafter and submitted to the CPM for review and to the BLM's Authorized Officer for approval. Modifications to the approved Decommissioning and Reclamation Plan shall be made only after approval from BLM's Authorized Officer. The project owner shall provide a copy of the approved Decommissioning and Reclamation Plan and any BLM approved revisions to the CPM.

NOTE: THIS CONDITION HAS BEEN DELETED AND IS NOW CONTAINED WITHIN BIO-15

~~GOLDEN EAGLE INVENTORY AND MONITORING~~

~~**BIO-24** The project owner shall implement the following measures to avoid or minimize project-related construction impacts to golden eagles.~~

1. ~~Annual Inventory During Construction. For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within one mile of the project boundaries. Survey methods for the inventory shall be as described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS.~~
2. ~~Inventory Data: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest~~

elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.

3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least two full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least two ground observation periods lasting at least four hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.

4. Monitoring and Adaptive Management Plan: If an occupied nest[16] is detected within one mile of the project boundaries, the project owner shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

Verification: No fewer than 30 days from completion of the golden eagle inventory the project owner shall submit a report to the CPM, CDFG, and USFWS documenting the results of the inventory.

[16] An occupied nest is one used for breeding by a pair of golden eagles in the current year. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or current years' mutes (whitewash) also indicate site occupancy. Additionally, all breeding sites within a breeding territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site is considered occupied throughout the periods of initial courtship and pair‐bonding, egg laying, incubation, brooding, fledging, and post‐fledging dependency of the young.

~~If an occupied nest is detected within one mile of the project boundary during the inventory the project owner shall contact staff at the USFWS Carlsbad Office and CDFG within one working day of detection of the nest for interim guidance on monitoring and nest protection. The project owner shall provide the CPM, **CDFG**, and USFWS with the final version of the Golden Eagle Monitoring and Management Plan within 30 days after detection of the nest. This final Plan shall have been reviewed and approved by the CPM in consultation with USFWS and CDFG.~~

EVAPORATION POND NETTING AND MONITORING

BIO-25 The project owner shall cover the evaporation ponds prior to any discharge with ~~1.5-inch~~ mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting ~~with~~ mesh sizes ~~other than 1.5-inches may be installed if~~ approv~~ed~~**al shall be determined** ~~-~~by the CPM in consultation with ~~CDFG~~**CDFW** and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the pond shall be designed such that the netting shall never contact the water. Monitoring of the evaporation ponds shall include the following:

4. Monthly Monitoring. The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. The monthly surveys shall be conducted in one day for a minimum of two hours following sunrise (i.e., dawn), a minimum of one hour mid-day (i.e., 1100 to 1300), and a minimum of two hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the CPM, ~~CDFG~~**CDFW**, and USFWS.

    1. Dead or Entangled Birds. If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, ~~CDFG~~**CDFW**, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

    2. Quarterly Monitoring. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected at the evaporation ponds by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.

5. Biannual Monitoring. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the CPM, USFWS and ~~CDFG~~**CDFW**, future surveys may

be reduced to two surveys per year, during the spring nesting season and during fall migration. If approved by the CPM, USFWS and ~~CDFG~~**CDFW**, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.

3. Modification of Monitoring Program. Without respect to the above requirements the project owner, ~~CDFG~~**CDFW** or USFWS may submit to the CPM a request for modifications to the evaporation pond monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. Modifications to the evaporation pond monitoring described above and implementation of adaptive management measures shall be made only after approval from the CPM, in consultation with USFWS and ~~CDFG~~**CDFW**.

   In addition, the project owner shall prepare and implement measures that will prevent Couch's spadefoot toads from using the evaporative basins (see Condition of Certification **BIO-26**)

Verification: No less than 30 days prior to operation of the evaporation ponds the project owner shall provide to the CPM as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. For the first year of operation the Designated Biologist shall submit quarterly reports to the CPM, ~~CDFG~~**CDFW**, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the Designated Biologist shall submit annual monitoring reports with this information. The quarterly and annual reports shall fully describe any bird or wildlife death or entanglements detected during the site visits or at any other time, and shall describe actions taken to remedy these problems.

COUCH'S SPADEFOOT TOAD IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-26 The project owner shall prepare and implement a Couch's Spadefoot Toad Protection and Mitigation Plan (Protection and Mitigation Plan) to avoid, minimize or mitigate impacts to Couch's spadefoot toads and their breeding habitat during construction and operation of the project. The Protection and Mitigation Plan shall be approved by the CPM in consultation with ~~CDFG~~**CDFW**, and shall be incorporated into the project's BRMIMP and implemented. It is expected that, as currently proposed, the project would impact three potential breeding ponds.

The Protection and Mitigation Plan shall address methods to achieve this avoidance and minimization, and shall include avoidance, minimization, and mitigation measures that would be required if additional habitat or Couch's spadefoot toad are found during habitat surveys. The Protection and Mitigation Plan shall include, at a minimum:

1. Habitat Survey Results:

a. Survey methodology that focuses on areas that are susceptible to ponding (such as areas that are disturbed and/or artificially compacted);

b. Survey results, including a detailed discussion of potential breeding sites, and a description of areas determined not to include breeding habitat; and

c. Figures showing the areas surveyed and the location of potential breeding habitat in relation to proposed project features.

2. Impacts Assessment from:

   a. Habitat disturbance from construction;

   b. Noise from construction, operations, and potential ORV traffic;

   c. Increased access for vehicles from road construction or improvements;

   d. Changes in breeding habitat due to changes in flow levels and flow patterns to breeding ponds;

   e. Increased traffic from construction and operations;

   f. Risk of exposure to elevated selenium and salinity levels in evaporative ponds; and

   g. Increased risk of predation.

3. Avoidance and Minimization Measures:

   a. Description of measures that would be implemented to avoid impacts to potential breeding ponds, such as design strategies; protective fencing or other barriers, worker's education, minimizing construction traffic within the vicinity of breeding ponds, and biological monitoring;

   b. Designation of a Management Area around breeding ponds that includes an appropriate upland buffer, and a description of measures used to minimize impacts within this buffer; and

   c. Design and operation measures that will bar individuals from entering evaporative ponds.

4. Mitigation: If complete avoidance of the ponds or other breeding sites identified during surveys is not possible, the Protection and Mitigation Plan shall include plans to create additional breeding habitats (ephemeral pond) at least equal in area to the acreage of ponds being impacted. Alternatively, the project owner may purchase mitigation land that has the potential for ponding that is equal to or greater than the ponds identified as potential Toad breeding ponds within the Project Disturbance Area.

   If ponds are to be created, the created ponds shall be capable of holding water for at least nine days during the spadefoot toad breeding season.

The created ponds shall be monitored and managed to ensure fulfillment of this performance standard by site visits at the pond following summer rainfall events. If the created ponds fail to achieve this standard, remedial action shall be implemented (for example, by compacting the soil in the pond to increase water-holding capacity).

If compensation lands are acquired, the project owner shall provide funding for the acquisition in fee title or in easement, initial habitat improvements and long-term maintenance and management of the compensation lands.

a. Criteria for Mitigation Lands: If the project owner chooses to mitigate in whole or in part by purchasing habitat:

   i. The project owner shall purchase habitats in fee title or easement within the known range of the Couch's spadefoot toad. The habitat shall have similar characteristics to those impacted on site including

      1. artificial or natural depressions should be deep enough to have the potential to support the Couch's spade foot toad
      2. depressions should have potential to pond water for nine days
      3. adjacent uplands should have potential to provide refugia and foraging habitat
      4. other characteristics that a trained biologist would employ in designating potential habitat for the species

   ii. If the above criteria are met, these habitats may overlap on other lands preserved by the project owner for other mitigation (e.g., desert tortoise habitat within Northern and Eastern Colorado Desert Coordinated Management) and shall:

      1. Provide quality habitat for Couch's spadefoot toad, that has the capacity to regenerate naturally when disturbances are removed;
      2. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;
      3. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;
      4. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat;
      5. Not be subject to property constraints (i.e. mineral leases, cultural resources); and

6. Be on land for which long-term management is feasible.

b. Security for Implementation of Mitigation: The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Couch's spadefoot toad habitat as described in this Condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM and according to the measures outlined in **BIO-12**, and within the time period specified for this assurance (see the verification section at the end of this Condition). The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in **BIO-12**.

Verification: No less than 30 days prior to any project-related ground disturbance, the project owner shall submit to the CPM and ~~CDFG~~**CDFW**, a final Protection and Mitigation Plan. The Protection and Mitigation Plan shall address on-site protection and mitigation measures to be implemented during construction. Modifications to the Protection and Mitigation Plan shall be made only after approval from the CPM, in consultation with ~~CDFG~~**CDFW**.

If the Protection and Mitigation Plan includes creation of ponds, the number and acreage of created ponds shall be described in the plan. No less than 90 days prior to operation of project the project owner shall provide to the CPM as-built drawings and photographs of the created ponds and maps showing the size and location of the ponds in relation to project features. On January 31st of every year following initiation of operation of the project, the project owner shall submit reports to the CPM documenting the capacity of the created ponds to hold water for at least nine days during the spadefoot toad breeding season. If ponds fail to hold water as described above the project owner shall implement remedial actions. The annual reporting may be terminated upon satisfactory demonstration of this performance standard, and with approval of the CPM.

If mitigation land is purchased as an alternative to pond creation, the project owner shall provide the CPM and ~~CDFG~~**CDFW** with an approved form of Security and the calculation of such security in accordance with this Condition of Certification and **BIO-12** no later than 30 days prior to beginning project ground-disturbing activities. Actual Security shall be provided no later than seven days prior to the beginning of project ground-disturbing activities. If Security is provided, the project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities.

No less than 90 days prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to the CPM, ~~CDFG~~**CDFW** and USFWS describing the parcels intended for purchase.

The project owner, or an approved third party, shall provide the CPM, ~~CDFG~~**CDFW** and USFWS with a management plan for the compensation lands and associated funds within 180 days of the land or easement purchase, as determined by the date on the

title. The CPM shall review and approve the management plan, in consultation with ~~CDFG~~**CDFW**.

The project owner shall provide written verification to the CPM, and ~~CDFG~~**CDFW** that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months from the start of ground-disturbing activities.

IN-LIEU FEE MITIGATION OPTION

BIO-27 The project owner may choose to satisfy its mitigation obligations by paying an in lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, to the extent the in-lieu fee provision is found by the Commission to mitigate the impacts identified herein. **If the in-lieu fee proposal is found by the Commission to be in compliance, and the project owner chooses to satisfy its mitigation obligations through the in-lieu fee, the project owner shall provide proof of the in-lieu fee payment to the CPM prior to site mobilization and construction.**

Verification: If electing to use this provision, the project owner shall notify the Commission that it would like a determination that the project's in-lieu fee proposal mitigate for the impacts identified herein.

PROJECT CONSTRUCTION PHASING PLAN

BIO-28 The project owner shall provide compensatory mitigation for the total Project Disturbance Area and may provide such mitigation in ~~three~~**four** phases **as depicted in Figure 2-3 (Project Phasing) in Revised Petition for Amendment dated April 2013**, ~~Phase 1a, Phase 1b, and Phase 2, as described in Palo Verde Solar 1, LLC's Proposed Phased Construction and Mitigation (Galati & Blek [tn:57593]. Palo Verde Solar 1, LLC's Proposed Phased Construction and Mitigation: Blythe Solar Power Project Docket No. (09-AFC-6), dated July 15, 2010.).~~ "Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the project **including all linear and ancillary facilities, as well as undeveloped areas inside the Project's boundaries that would no longer provide viable long-term habitat**.

Project construction will occur in ~~three~~**four** phases that generally follow development of the solar units, ~~with the exception of the first phase of the project, Phase 1a, which will consist of two types of construction areas: (1) linear facilities, including the access road and communication lines and (2) non-linear facilities to include a staging/laydown area and a portion of the Unit 1 solar block area.~~

- **Phase 1: Includes Unit 1 and the linear corridor from where the gen-tie leaves Unit 1 south to the Colorado River Substation, and the distribution line**

- **Phase 2: Includes Unit 2**
- **Phase 3: Includes Unit 3**
- **Phase 4: Includes Unit 4 and the linear corridor from where the gen-tie leaves Unit 1 to the northern boundary of solar plant site. This portion of the linear corridor would not need to be constructed/disturbed until Unit 4 is constructed.**

~~Phase 1b shall consist of the remainder of Unit 1 and Unit 2, and Phase 2 shall consist of the remainder of the project (Units 3 and 4).~~ These phases will generally include installation of fencing, clearing, grubbing and grading, and development of common facilities first, followed by the remaining power block units. All construction activities for the non-linear features during these subsequent phases will occur within desert tortoise exclusionary fenced areas that have been cleared in accordance with USFWS protocols.

The **estimated** disturbance area for each project Phase and resource type is provided in ~~the~~ **BIO-28 ~~T~~able~~s~~ 1** below. ~~This~~ **This table** shall be refined prior to the start of each construction phase with the disturbance area adjusted to reflect the final project footprint for each phase. Prior to initiating each phase of construction the project owner shall submit the actual construction schedule, a figure depicting the locations of proposed construction and amount of acres to be disturbed. Mitigation acres are calculated based on the compensation requirements for each resource type as described in the above Conditions of Certification – **BIO-12** (Desert Tortoise), **BIO-20** (Mojave Fringe-toed Lizard), **BIO-18** (Western Burrowing Owl), and **BIO-22** (State Waters). Compensatory mitigation for each phase shall be implemented according to the timing required by each ~~C~~**condition**.

~~For Interconnection to Colorado River Substation~~:

BIO-28 Table 1. Impacts and Mitigation Required For Each Phase of The Project

Phase	Desert Tortoise		MFTL		WBO	
	Impact (acres)	Mitigation (acres)	Impact (acres)	Mitigation (acres)	Impact (individuals/pairs)	Mitigation (acres)
Phase 1~~a~~	~~769~~**1,074**	~~769~~**1,074**	~~0~~	~~0~~	~~0~~**2**	~~0~~**39**
Phase **2**~~1b~~	~~2,994~~**942**	~~2,994~~**942**	50	151	~~1~~**0**	~~19.5~~**0**
Phase 3~~2~~	~~3,193~~**1,051**	~~3,193~~**1,051**	0	0	~~1~~**0**	~~19.5~~**0**
Phase 4	**908**	**908**	**0**	**0**	**0**	**0**
Total	~~6,957~~**3,976**	~~6,957~~**3,976**	50	151	2	39

Phase	~~State Waters – Direct~~Desert Dry Wash Woodland		~~State Waters – Indirect~~Vegetated Ephemeral Swales and Unvegetated Ephemeral Dry Wash		~~Bighorn Sheep~~	
	Impact (acres)	Mitigation (acres)	Impact (acres)	Mitigation (acres)	~~Impact (acres)~~	~~Mitigation (acres)~~
Phase 1~~a~~	~~67~~2	~~130~~6	~~0~~91	~~0~~137	~~27~~	~~27~~
Phase 2~~1b~~	~~231~~5	~~409~~15	~~36~~59	~~51~~86	~~488~~	~~488~~
Phase 3~~2~~	~~294~~0	~~665~~0	~~146~~5	~~189~~8	~~414~~	~~414~~
Phase 4	**15**	**45**	**77**	**115**		
Total	~~592~~22	~~1204~~66	~~182~~232	~~240~~346	~~929~~	~~929~~

Verification: The project owner shall not disturb any area outside of the area that has been approved for that phase of construction and for the previously approved phases of construction.

No less than 30 days prior to the start of desert tortoise clearance surveys for each phase, the project owner shall submit a description of the proposed construction activities for that phase to ~~CDFG~~**CDFW**, USFWS and BLM for review and to the CPM for review and approval. The description for each phase shall include the proposed construction schedule, a figure depicting the locations of proposed construction and amount of acres of each habitat type to be disturbed.

No less than 30 days prior to beginning Project ground-disturbing activities for each phase, the project owner shall provide the form of Security in accordance with this Condition of Certification in the amounts described in BIO-28 Table 1. No later than 7 days prior to beginning Project ground-disturbing activities for each phase, the project owner shall provide written verification of the actual Security. The project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities for each phase.

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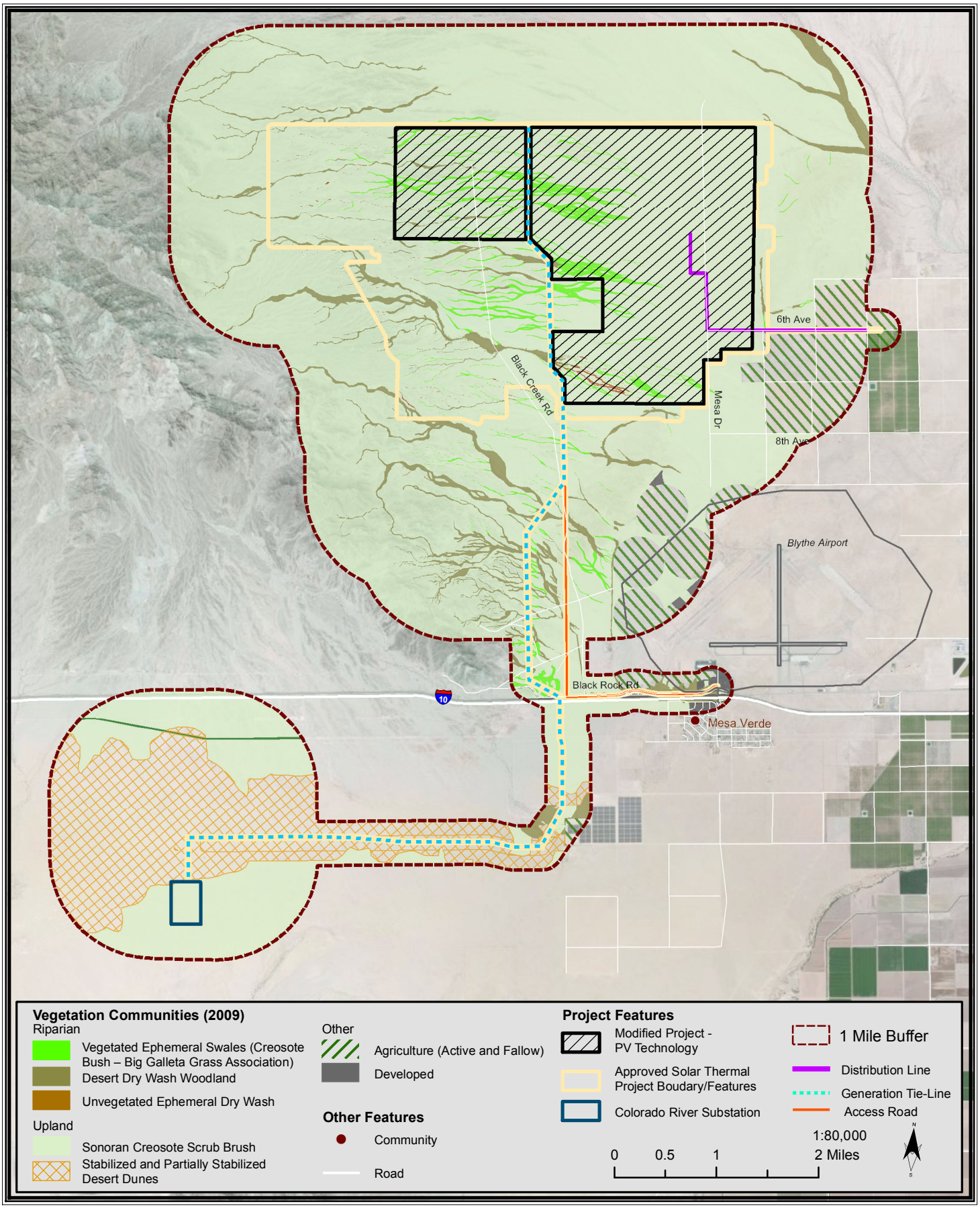
Silverman, David. 2010. Botanist, Xeric Specialties Consulting, Ridgecrest, CA. Electronic Communications a with Carolyn Chainey-Davis, Energy Commission, regarding special-status plants known or with potential to occur in the project vicinity, and summer and fall-blooming special-status plants [various dates between October 2009 and March 2010]

BIOLOGICAL RESOURCES - FIGURE 1

Blythe Solar Power Project - Amendment - Vegetation Communities

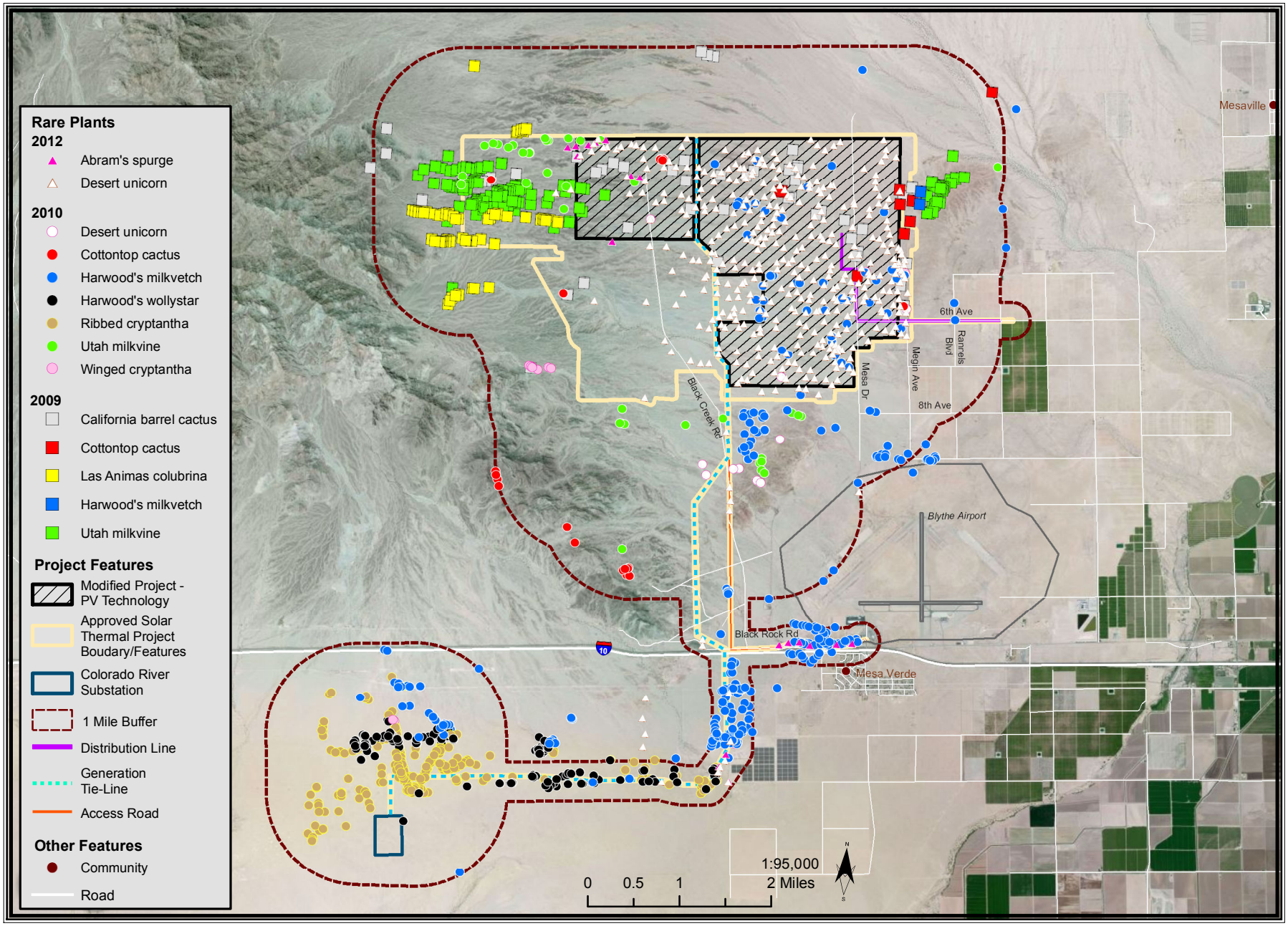


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH (2012), AECOM Figure DR-BIO-47-2 Vegetation Communities (2010), BING Aerial, and OpenStreetMap (June 2013).

BIOLOGICAL RESOURCES - FIGURE 2

Blythe Solar Power Project - Amendment - Special Status Plants



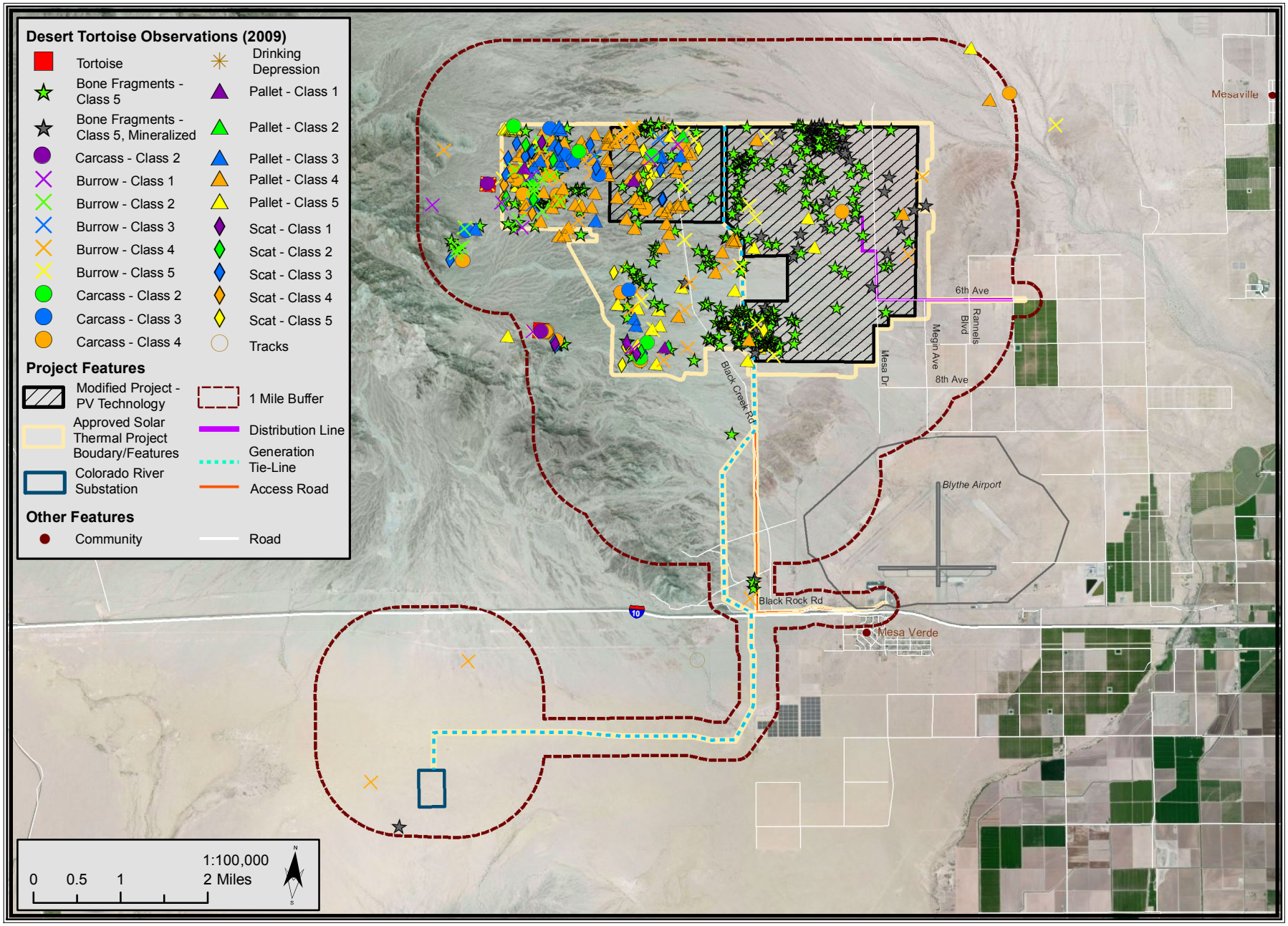
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH Figure 5.1-1 Special Status Plant Observed August/September 2012, AECOM Figure 4 Special Status Plant Species (2010), BING Aerial, and OpenStreetMap (June 2013).

BIOLOGICAL RESOURCES - FIGURE 3

Blythe Solar Power Project - Amendment - Desert Tortoise Obervations



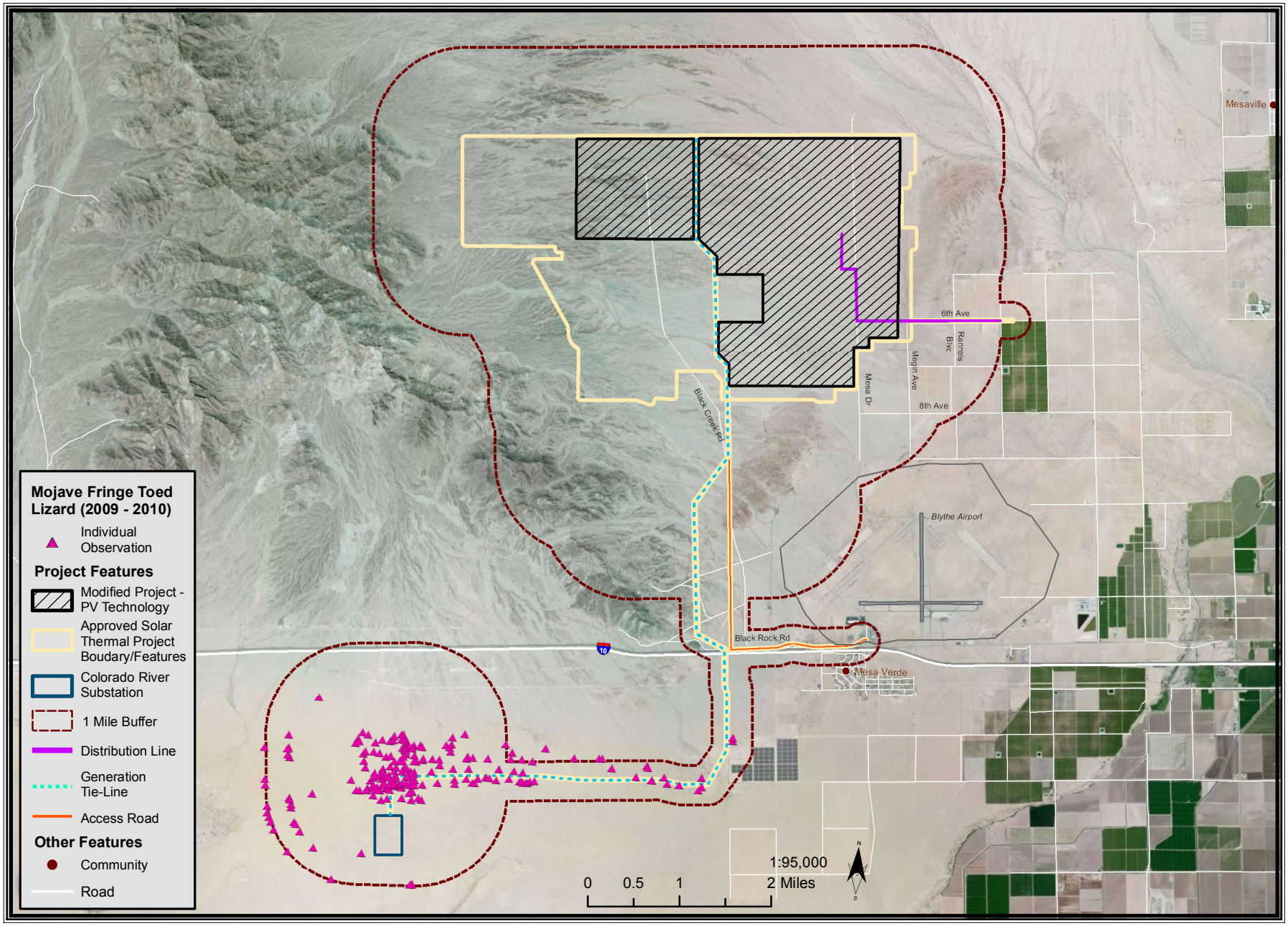
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH (2012), AECOM Figure DR-BIO-47-3 Desert Tortoise Observations (2010), BING Aerial, and OpenStreetMap (June 2013).

BIOLOGICAL RESOURCES - FIGURE 4

Blythe Solar Power Project - Amendment - Mojave Fringe Toed Lizard Observations



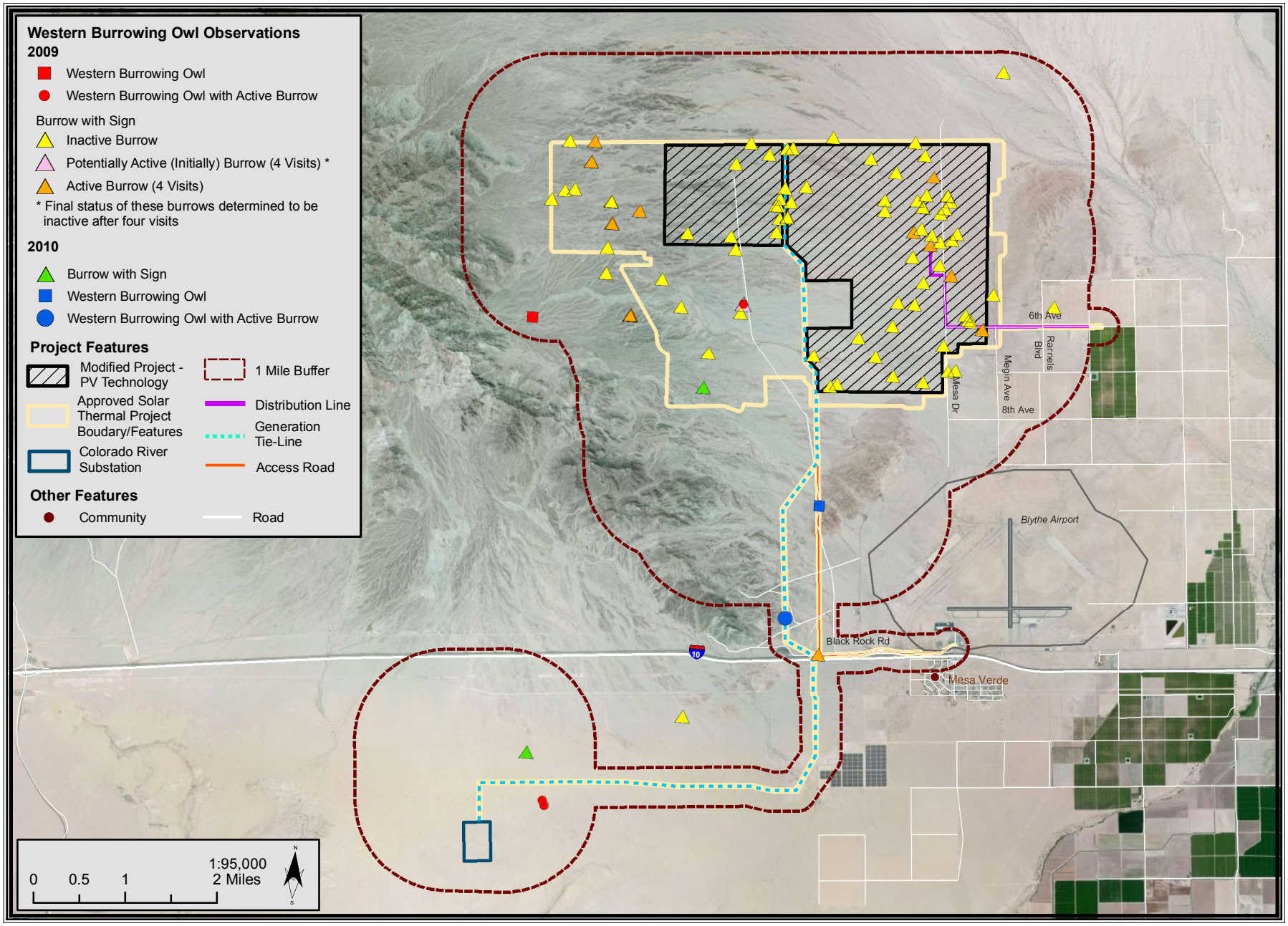
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH (2012), AECOM Figure 20 Mojave Fringe-toed Lizard Suitable Habitat and Observations (2010), BING Aerial, and OpenStreetMap (June 2013).

BIOLOGICAL RESOURCES - FIGURE 5

Blythe Solar Power Project - Amendment - Western Burrowing Owl Observations



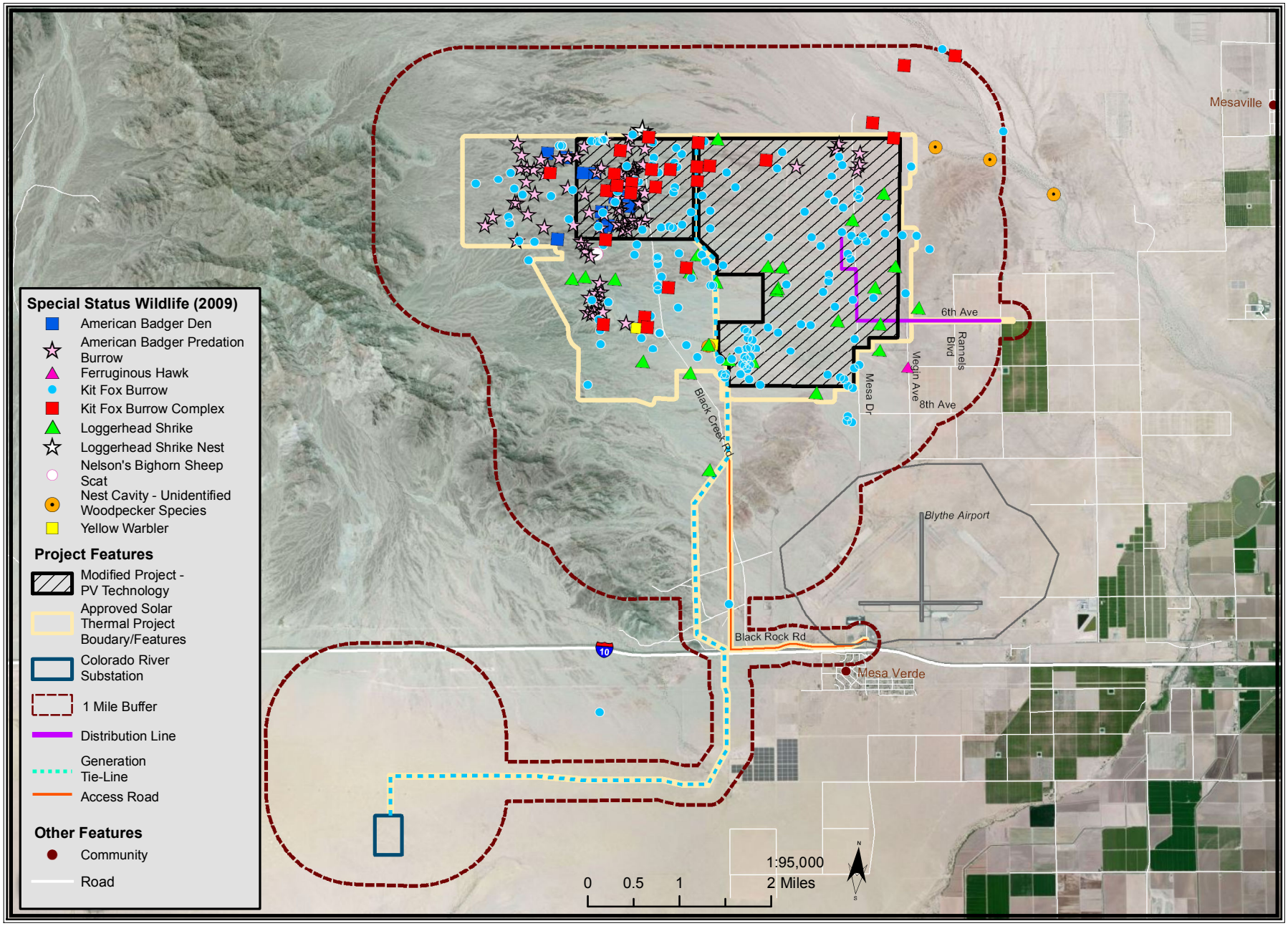
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH (2012), AECOM Figure DR-BIO-51-3 Burrowing Owl Observations/ Figure 7 Recorded Occurrences of Western Burrowing Owl/ Figure 18 Proposed Project Preliminary Burrowing Owl Observations (2010), BING Aerial, and OpenStreetMap (June 2013).

BIOLOGICAL RESOURCES - FIGURE 6

Blythe Solar Power Project - Amendment - Other Special Status Wildlife Observations



BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: TETRA TECH (2012), AECOM (2009), BING Aerial, and OpenStreetMap (June 2013).

CULTURAL RESOURCES[1]

Testimony of Thomas Gates, PhD., Michael D McGuirt, and
Melissa Mourkas, M.A., ASLA.

SUMMARY OF CONCLUSIONS

Energy Commission cultural resources staff has analyzed cultural resources data currently available for the NextEra Blythe Solar Power Project (BSPP) Revised Petition for Amendment (2013 Amendment) and has concluded that the amended project would cause significant direct impacts to approximately 142 known archaeological resources eligible or assumed eligible for the California Register of Historical Resources. As in the original Palo Verde Solar 1 Application for Certification (09-AFC-6) that was licensed by the Energy Commission in 2010, staff has also concluded that the BSPP, in conjunction with the Genesis Solar Energy Project and the Palen Solar Power Project, would have a significant cumulatively considerable impact on two staff-identified cultural landscapes, the Prehistoric Trails Network Cultural Landscape, encompassing region-wide prehistoric trails and the resources and destinations they connected, and the Desert Training Center California-Arizona Maneuver Area Cultural Landscape **(**DTC/C-AMA), comprehending the archaeological remains of the U.S. Army's WWII Desert Training Center.

In the original project application, in order to mitigate the significance of that project's direct physical impacts to archaeological resources to a less-than-significant level, staff recommended, and the Commission's Final Decision (CEC 2010e) included, conditions of certification providing for data recovery from prehistoric archaeological sites identified as contributors to the Prehistoric Trails Network Cultural Landscape, including an archaeological district and other prehistoric archaeological sites with features (**CUL-6**) and small non-habitation prehistoric archaeological sites (**CUL-7**). Alternatively, staff recommended that the applicant adjust the plant site's eastern boundary to avoid impacting the archaeological district by moving the boundary to the west. The Revised Petition to Amend - Conversion to PV, 2013 (2013 Amendment) responds to this recommendation by designing the footprint of the amended project to avoid the majority of these resources. Staff also recommended conditions of certification providing for data recovery from historic-period resources, including historic-period archaeological sites with features (**CUL-8**), historic-period archaeological sites with structural remains (**CUL-9**), historic-period archaeological dump sites (**CUL-10**), historic-period roads (**CUL-11**), and built-environment resources (**CUL-13** and **CUL-14**). These data recovery activities have been conducted by the project owner and monitored by Energy Commission cultural resources staff throughout the compliance process.

[1] The text of the present analysis borrows liberally from the *Cultural Resources* section of the July 2010 Revised Staff Assessment, Part 2 (Bastian 2010). Staff decided to bring a lot of the contextual material forward from that document into this one primarily as a convenience to the reader in order to avoid excessive cross-references to another document.

The 2013 Amendment describes a reduced grading requirement compared to the original project that may provide the potential to avoid some archeological sites. The 2013 Amendment suggests that would be evaluated during the design phase.
Staff felt that it was not possible to reduce the level of significance of the original project's cumulative impact on region-wide cultural resources of both the prehistoric and the historic period, but to achieve mitigation for those impacts to the extent possible, staff recommended conditions of certification that would have the project owners of the Blythe Solar Power Project, the Genesis Solar Energy Project, and the Palen Solar Power Project fund programs to document and possibly nominate to the National Register of Historic Places the Prehistoric Trails Network Cultural Landscape (PTNCL) (**CUL-1**) and the DTC/C-AMA Cultural Landscape (**CUL-2**). These conditions were adopted by the Commission in its Final Decision (CEC 2010e) for the original siting case and progress has been made on the related programs.

To provide for the appropriate treatment of additional cultural resources that could be encountered during construction, staff recommended, and the Commission adopted in its Final Decision (CEC 2010e), additional conditions of certification. **CUL-3** identifies the personnel and their qualifications who would implement the balance of the conditions, and **CUL-4** specifies the licensing approval documents and supporting information the project owner will supply to them. **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation and coordination of the broader treatment program. **CUL-15** would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the amended project's construction area. **CUL-16** and **CUL-17** would provide construction monitoring and cultural resources discovery protocols. **CUL-18** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the whole BSPP cultural resources management program.

Because the amended project, as proposed, does not increase potential impacts to subsurface, surface and distant (visual) cultural resources, staff did not feel additional and new analyses would be required, that a project of this size and scale might otherwise warrant.

With the implementation of the revisions below to the original Conditions of Certification **CUL-1** through **CUL-19** in this analysis, the BSPP would remain in conformity with all applicable laws, ordinances, regulations, and standards. **CUL-1** and **CUL-2** would reduce the significance of the amended project's cumulative impacts to the greatest extent possible, but those impacts would still be cumulatively considerable. **CUL-3** through **CUL-18** would reduce the significance of the project's direct physical impacts to less than significant. Staff recommends **CUL-19** be eliminated.

INTRODUCTION

Staff's cultural resources assessment, published in the 2010 Revised Staff Assessment, Part 2 (2010 RSA) (Bastian 2010) identified the potential impacts of the Blythe Solar

Power Project (BSPP) project on cultural resources. Those potential impacts are revaluated for the 2013 Amendment. Cultural resources considered under federal National Historic Preservation Act are summarily called “historic properties” and are further categorized as objects, buildings, sites, structures, and districts. Historical resources are defined under California state law as including, but not necessarily limited to, any object, building, structure, site, place, area, record, or manuscript that is historically or archaeologically significant, or is 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)).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 sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. Groupings of cultural resources are also recognized as archaeological districts, places, areas or 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 permanently 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 ceremonial sites, traditional cultural properties or places, traditional resource-collecting areas, and value-imbued landscapes and related features, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources can be variations of natural resources and standard cultural resources types. They are subsistence and ceremonial areas, places, sites, structures, and objects assigned cultural significance by traditional users. The decision to call resources “ethnographic” depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their life ways.

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 or 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 BSPP, staff provides an overview of the environmental setting and history of the amended project area, an inventory of the cultural resources identified in the project

vicinity, an analysis of the amended project's potential impacts to significant cultural resources, and recommendations of measures by which the amended project's adverse impacts to significant cultural resources may be resolved or mitigated.

CULTURAL RESOURCES LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects licensed by the Energy Commission are reviewed to ensure compliance with all applicable federal state, and local laws, ordinances, regulations, and standards (LORS). The LORS applicable to the proposed project are listed below in **Cultural Resources Table 1**.

Cultural Resources Table 1
Laws, Ordinances, Regulations, and Standards

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 of Native American remains or funerary artifacts. 5097.991 establish 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	Outlines mitigation measures for cultural resources monitoring programs.

SETTING

Information provided regarding the setting of the amended 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 NRHP and CRHR eligibility of any identified cultural resources within staff's area of analysis for this project.

REGIONAL SETTING

The proposed BSPP site is located in the northeastern corner of the Colorado Desert Geomorphic Province, which includes the Salton Sea and the Imperial Valley to the south and the Coachella Valley to the north. The region consists of broad, low-elevation basins, filled with alluvium, separated by isolated mountain ranges. The sources of the alluvium in these basins are the local mountain ranges and, on the east, the Colorado River, whose flood plain forms the eastern edge of the province. The proposed BSPP site is on the Palo Verde Mesa, west of and above the Colorado River flood plain. The mesa is a large, gradually sloping abandoned alluvial terrace of the Colorado River. The BSPP site elevation ranges between 670 feet above mean sea level on the west and

420 feet above mean sea level on the east. The site slopes gently from the west to the southeast, with a gradient of less than 1 percent. The Palo Verde Mesa is bounded by the McCoy Mountains to the west, the Little Maria Mountains to the northwest, the Big Maria Mountains to the northeast, and the Palo Verde Valley to the east and southeast (Solar Millennium 2009a, pp. 2-4; 5.5-4–5.5-5;. 5.9-7–5.9-8; Westec 1982, p. 5).

The temperature range in the Colorado Desert is extreme, from 105°F in the summer to a winter average in the low 40s, and the area averages 2-4 inches of rainfall a year (Solar Millennium 2009a, p. 5.4-9). The local terrain consists of nearly flat expanses of sandy soil. Native vegetation on these flats is sparse and includes mostly creosote scrub brush, with white bursage, saltbushes, and ocotillo present in lesser quantities. Mesquite, ironwood, agave, and palo verde are present in and near the washes (Solar Millennium 2009a, p. 5.4-10). The commonest animals are reptiles, including many kinds of lizards and the endangered desert tortoise, and small mammals such as rabbits, the kit fox, and many varieties of rodents, including squirrels, rats, and mice. Ravens, roadrunners, doves, and a variety of lark, a variety of hummingbird, and a variety of sparrow are the common birds (Solar Millennium 2009a, p. 5.4-10).

PROJECT, SITE, AND VICINITY DESCRIPTION

The BSPP site is located about 8 miles west of the city of Blythe and two miles north of Interstate Highway 10 (I-10), in eastern Riverside County, and was approved by the Energy Commission on September 15, 2010, as a facility utilizing solar parabolic trough technology to generate electricity. The Commission decision authorized construction of four adjacent, independent, and identical units of 250-megawatt (MW) nominal electrical generating capacity each, for a total nominal capacity of 1,000 MW. The proposed total acreage for the site was approximately 7,043 acres, comprised of 5,950 acres containing the main project facilities (parabolic solar trough fields, generating stations, switchyard, buildings, parking, and on-site infrastructure) and approximately 1093 acres containing linear infrastructure for the project including access roads, utility lines, transmission lines, and temporary power lines.

The 2013 Amendment proposes a 2,761 acre reduction in the overall site area of disturbance, and the substitution of solar photovoltaic panel technology in lieu of the approved solar parabolic trough technology. Generating capacity would also be reduced, to a nominal 485 MW disbursed through four operational units (phases). Interconnect to the regional transmission grid is proposed via a new gen-tie to the Southern California Edison (SCE) Colorado River Substation, in the same manner as the approved 2010 project. A complete description of the project components as approved by the Commission in 2010 and as proposed in the 2013 Amendment is provided in the Project Description section of the Staff Assessment Part A.

The 2013 Amendment predicts that while grading and blading would still be required on the project site, the previous estimation of up to seven feet of sediment removal is unlikely with the PV technology, as the site does not need to be completely level. The owner suggests that the reduced grading requirement may provide the potential to avoid

some archeological sites. The 2013 Amendment suggests that would be evaluated during the design phase[2].

Located immediately north of the proposed BSPP is the planned Next Era Energy McCoy Solar Energy Project (McCoy). McCoy will be an approximately 4,437-acre photovoltaic solar project producing 750 megawatts (MW) of electric power; situated primarily on Bureau of Land Management (BLM) land with a small portion of 477 acres on private land. Approved by the BLM in March 2013, Next Era plans to begin construction in mid- to late 2014. The transmission line and access road serving the proposed BSPP will also serve the McCoy project.

ENVIRONMENTAL SETTING

Geology

The landforms in and around the proposed BSPP date, at the earliest, from the Miocene Epoch (23–5.2 million years ago), but all subsequent epochs, the Pliocene (5.2–1.8 million years ago), the Pleistocene (1.8 million–10,000 years ago), and the Holocene (10,000 years ago to the present) are represented (Galati & Blek 2010m, p. 8).

The latter two epochs are the time periods in which humans reached and spread over the northern and southern American hemispheres, so landforms remaining from or created during the very late Pleistocene or throughout the Holocene are possible locations for surface or buried archaeological deposits. The surface of the BSPP plant site and environs are predominately Holocene in age (Galati & Blek 2010m, p. 16).

Geologically, the region in which the BSPP would be built consists of broad basins, filled with alluvium, and separated by isolated mountain ranges. The deposition of alluvium in the basins has been ongoing since some 25 million years ago, with the sources being the local mountain ranges and, on the east, the Colorado River. The erosion of the flanking mountains has also resulted in the creation of alluvial fans at the bases of the mountains (Solar Millennium 2009a, pp. 5.5-4–5.5-5).

During the Pleistocene, the Colorado River, now located some 15 miles east, ran through the BSPP site, depositing sands and silts. Its periodic flooding also created terraces along what is now the east side of BSPP site, composed of water-rounded cobbles, referred to by archaeologists as “pebble terraces.” As the river moved to the east, these terraces were left behind. These deposits of rocks transported by the river from all along its length, consisting of quartzite, chert, and chalcedony, were a source of material for Native American flaked stone tools throughout the Holocene (Solar Millennium 2009a, p. 5.4-9).

[2] NEBS2013a. NextEra Blythe Solar Energy Center, LLC (TN 70318). Revised Petition to Amend (Conversion to PV). Dated April 12, 2013. Submitted to CEC on April 12, 2013.

, Page5.3-3.

Geomorphology

The dominant geomorphic feature at the BSPP plant site is a broad alluvial fan bajada[3] cut by dry washes. The site slopes from the northwest to the southeast, and the sediments deposited by the parallel drainages grade from coarse to fine in the same direction. The next most prominent geomorphic feature is the raised, remnant gravel (pebble) terraces along the eastern and southern site boundaries (Galati & Blek 2010m, p. 8). These terraces are abandoned gravel deposits of former channels of the Colorado River, dating from the Pleistocene epoch, as noted above, in the Geology subsection. Surface water at the BSPP site drains from the northwest to the southeast, with numerous dry washes located on the west side of the site. These washes originate in the McCoy Mountains and either coalesce into a larger wash at the southwest corner of the site or dissipate into the sandy alluvium of the northern part of the site (Solar Millennium 2009a, p. 5.5-5).

Most of the surface of the project site is Holocene in age, dating from 10,000 years ago to the present. AECOM's geoarchaeologist describes the historical geomorphology of the BSPP as follows (Galati & Blek 2010m, p. 16):

> …[T]he BSPP has undergone four episodes of deposition: initially fluvial[4] sands of the ancestral Colorado River, then lacustrine[5] clays, followed by sands and gravels of advancing alluvial fans, and finally re-worked sands and gravels originating from alluvial sands.

Paleoclimate[6]

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 amended 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 amended 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.

The Pleistocene (1.8 million–10,000 years ago), and the Holocene (10,000 years ago to the present) environmental record from the Mojave Desert provides a model for the Colorado Desert. Summaries of the development and changes in vegetation in the Mojave Desert and surrounding region in these periods are provided by Grayson (1993, pp. 119–128; 139–143; 194–195; 199–202, 215), Spaulding (1990), Tausch et al. (2004), Thompson (1990), and Wigand and Rhode (2002, pp. 332–342). All note the vegetation history of this region have been primarily studied by analysis of plant

[3] An alluvial plain formed as a result of lateral growth of adjacent alluvial fans until they finally coalesce to form a continuous inclined deposit along a mountain front, in this case along the front of the McCoy Mountains.

[4] River flooding.

[5] Associated with a lake environment.

[6] This subsection written by Dwight Simons of Tremaine and Associates.

macrofossils contained in prehistoric packrat middens. Pollen studies from this region are largely lacking.

In general, Tausch et al. (2004, (fig 2.3); see also Wigand and Rhode 2002, pp. 321–332) note the Early Holocene (8,500–5,500 BC) in the Mojave Desert was characterized by a post-glacial warming trend, accompanied by periods characterized by variable moisture. The subsequent Mid-Holocene (5,500–3,000 BC) was the warmest, driest part of the entire Holocene. During the post-Mid-Holocene transition (3,000–1,500 BC), relatively warm, dry conditions prevailed.
In the approximate period from 1,500 to 600 BC, a cool, wet interval has been termed the Neoglacial by climate scientists. It was followed by a much drier, and possibly relatively cooler, period, the Post-Neoglacial Drought (600 BC–400 AD). The next interval, the Medieval Climatic Anomaly (400–1350 AD) was characterized by intensified drought and relatively warm conditions (Meko et al. 2001; Stine 1994, 1996, 1998, 2000). A period called the Little Ice Age followed (1350–1850 AD) that was cold and somewhat dry (Fagan 2000; Grove 1988; Meko et al. 2001; Scuderi 1987a, 1987b, 1990, 1993). The present climate conditions then commenced.

During the wetter periods (the Late Pleistocene, the Neoglacial, and the Little Ice Age), some of the basins in the Mojave Desert Region (and in the Colorado Desert region, as well) became shallow lakes, with extensive marshy shorelines. Being sources of food and materials, these lakes would have drawn Native Americans to them and perhaps would have encouraged settlement (Gallegos et al. 1980, p. 93). The elevation of the Palo Verde Mesa prevented a lake from forming where the BSPP is to be located, but within a few miles to the west, two lakes, Ford Dry Lake and Palen Dry Lake, are known to have formerly existed.

Prehistoric Background[7]

The paucity of data prior to the Late Prehistoric period (discussed below) in the Colorado Desert has hindered development of a comprehensive scheme detailing the cultural chronology for the region. The following chronology is extrapolated from Sutton et al.'s (2007, p. 236, table 15.4) concordance of terms for temporal periods and complexes in the Mojave Desert. Other pertinent chronological schemes for the Colorado Desert occur in Love and Dahdul (2002, p. 69, fig. 2), Warren (1984, pp. 409–430, fig. 8.27), and Weide (1976, p. 82, table 3).

Late Pleistocene, Paleo-Indian

The Late Pleistocene Paleo-Indian Period (about 10,000–8000 BC) is better represented in the Mojave Desert than in the Colorado Desert (Beck and Jones 1997). 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.

[7] This subsection written by Dwight Simons of Tremaine and Associates.

Early Holocene, Lake Mojave Complex

The Lake Mojave complex, about 8000–6000 BC, is also known as the Western Pluvial Lakes/Western Stemmed Tradition (see 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). As with the preceding Paleo-Indian Period, the Lake Mojave Period is better represented in the Mojave Desert than in the Colorado Desert. It is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake), 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 life ways may result 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.

Middle Holocene

Pinto Complex

The Pinto complex, dated at about 8000–3000 BC, appears to overlap the Lake Mojave complex. During the Lake Mojave and Pinto complexes, stone tools had been made from 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 complex sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Large apparent residential bases occur. They were probably occupied for prolonged periods by moderate to large numbers of people, practicing a collector subsistence strategy. Logistical forays into surrounding resource patches were probably made from these sites.

Deadman Lake Complex

Currently, the Deadman Lake complex, dating about 7500–5200 BC, 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.

Late Holocene

In the approximate period of 3000–2000 BC, environmental 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.

Gypsum Complex

Dating between about 2000 BC and 200 AD, the Gypsum complex 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 complex components are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities includes quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum complex sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex

Around 200–500 AD, cultural systems profoundly changed in the southern California deserts. Introduction of the bow and arrow, represented by Rosegate Series points, occurred. Previously, at about the beginning of the first millennium AD, moister conditions may have increased wetlands. During Rose Spring complex times, a major population increase, significant changes in artifact assemblages took place. Well-developed middens 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.

Rose Spring sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of pit houses and other types of structures. Human populations appear to have peaked, possibly resulting from a more productive environment and a more efficient hunting technology. During the middle of Rose Spring times, climatic conditions became warmer and dryer. Increased populations, the warmer, drier climate, and increased hunting efficiency may have produced resource depletion. This may have resulted in changes ending the Rose Spring complex around 1100 AD.

Late Prehistoric

Starting at approximately 1000–1100 AD, the Late Prehistoric period began. During this time, new technologies were introduced; populations appear to have declined, and historic Native American cultures became established. Lake Cahuilla was a focal point of settlement-subsistence. A complex cultural landscape composed of rock art, trails, and geoglyphs[8] developed. 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 type of stone used for stone tools.

[8] 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.

In the Late Prehistoric period, too, agriculture and pottery were introduced to the native peoples of the Colorado Desert. Agriculture probably began around 700 AD in the Colorado Desert. It most likely was introduced from the Hohokam area in southern Arizona or from northern Mexico and had its greatest impact along the Lower Colorado River (McGuire and Schiffer 1982; Schaefer 1994, pp. 65–74; Schaefer and Laylander 2007, pp. 253–254). However, some Native Americans of the lower Colorado River basin insist that indigenous agriculture has a longer presence than what the archaeological record supports. At approximately the start of the first millennium AD, ceramic artifacts began to appear in the Colorado Desert. They included pottery types assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions (Lyneis 1988; Waters 1982). At the time of the advent of sustained Euroamerican contact in 1769 AD, a number of Native American groups inhabited the Colorado Desert, using a complex cultural landscape, which appears to have been largely developed during the preceding millennium. This document's ethnographic section more fully describes the cultural and tribal groups that have occupied the area over the last several centuries.

Prehistoric Settlement in 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.

The Chuckwalla Valley may have been a relatively closed resource exploitation zone. It also may have served as an east-west oriented trade corridor between the Pacific Ocean and the Colorado River and 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 unilinear corporate 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, mesquite dunes and groves, and other obvious important features or resources. Sites include villages, 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, intaglios and cleared areas, and a vast network of trails, trail segments, markers and shrines, and quarry sites. Possible village locations are present at 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 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 only may 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.

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 a prehistoric-ethno historic cultural landscape[9] (Schaefer and Laylander 2007, pp. 254–255; Cleland and Apple 2003). Specific resources include 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 routes 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. 1986).

Trails

During Late Prehistoric and ethno historic 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; Melmed and Apple 2009; Von Werlhof 1986). Segments of many trails are still visible, connecting various important natural (for example, springs) and cultural (for example, rock art/petroglyph sites) elements of the landscape. Trail segments no longer visible are often marked by votive rock piles (cairns) and ceramic sherd scatters (“pot drops”).

A Late Prehistoric-early historic Native American trail has been recorded traversing roughly east/west through the Chuckwalla Valley (Johnston and Johnston 1957, map 1). Johnston (1980, pp. 89–93, fig. 1) identifies this route as part of the Halchidhoma 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 community of Desert Center, then eastward, south of Palen Dry Lake towards Ford Dry Lake, and then on to the Colorado River[10]. Various other trail networks, both local and regional north – south routes, intersect with the major east west trending trail network.

Rock Alignments and Geoglyphs

Rock alignments and geoglyphs—“gravel pictographs”—occur throughout the deserts of southeast California and adjacent portions of southern Nevada and western Arizona (Harner 1953). Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River.

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[9] “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).

[10] A more direct trail route went southeast from Hayfield Dry Lake via Aztec Well/Corn Spring and south from Ford Lake, rejoining the northern route at the south end of the McCoy Mountains.

Colorado River geoglyphs include the Topock 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 Topock 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[11] of desert varnish has provided estimated ages of approximately AD 800–AD 1000 for the Colorado geoglyphs (Dorn et al. 1992; Schaefer 1994, p. 63; von Werlhof 1995), although use of this dating 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[12]

It is unclear which historic Native American group or groups occupied or used the region around the amended project, but the Chemehuevi, Mohave[13], Quechan, Maricopa, and Halchidhoma may at different times all have used the area. Other tribes such as the Cahuilla and Serrano may have utilized the transportation routes as thoroughfares through other tribes' territories.

Singer (1984, pp. 36–38) concluded the Chuckwalla Valley, located to the west of the project site, was not clearly assigned to any Native American group on maps depicting group territories. Following Johnston and Johnston (1957), Singer 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.

[11] 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.

[12] This subsection written by Dwight Simons of Tremaine and Associates and Sarah Allred of the California Energy Commission. Thomas Gates, CEC ethnographer, has reviewed this ethnographic section and has made minor edits but has not changed the text in any significant way.

[13] ''Mohave' is routinely spelled with a 'j' when referencing the "Mojave Desert". In addition the Mojave Tribe also retains the 'j' spelling. However the Mohave contingency of the Colorado River Indian Tribes (CRIT) prefers to spell 'Mohave'with an 'h'. Consequently the reader may notice different spellings based upon the context within which the word is used in this document.

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

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978, p. 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 stalked/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), Johnston (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 at the base and north of the San Bernardinos in the desert near Victorville, and territory extending east in the desert to Twentynine 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, arrow 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 lineage. 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 and Pahrump groups 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 and Halchidoma, They 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, rabbit, Chuckwalla lizard 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 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 life ways 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 consisted 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 and pottery was basic and utilitarian (Stewart 1983b, p. 59). Since hunting was of less 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 was 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 is 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 dress, 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 Bonytail chub, 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 the 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 Halichidhoma lay along the lower Colorado between the Mohave and the Quechan territories. They were later driven from that area under pressure from their 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.

Historical Background[14]

The Colorado Desert area, in which the BSPP 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, the exploitation of resources in the area, and the establishment of permanent settlement. The major historical themes for the Colorado Desert region and the BSPP area in eastern Riverside County, in particular, are centered on the establishment of transportation routes, water access and control, mineral exploitation, and military uses. The following brief historical background of the Colorado Desert area in eastern Riverside County is derived from the following sources: Bischoff 2000; Castillo 1978; Farmer et al 2009; Solar Millennium 2009a; von Till Warren et al. 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 Colorado 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, and 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, some choosing the southern overland route through the desert, many of whom were unprepared and suffered extreme hardships. The construction and expansion of the Southern Pacific Railroad into the desert in the late 1870s was a major factor in

[14] This subsection written by Sarah Allred of the California Energy Commission for the original 2010 project..

facilitating travel and transport of supplies to the remote areas of eastern Riverside County, enabling further development of mines, irrigation, and settlement in the area.

The 1880s and 1890s were years of relative prosperity for mining regions of eastern Riverside County. Intermittent mining activity has occurred in the area since that time; however, in the Palo Verde Valley area, mining has remained a relatively small part of the local economy. While no mines or significant prospects exist within the BSPP area, evidence of past mining activity in the region is evidenced by a scattering of abandoned prospecting pits, collections of food trash and other debris, and a handful of prospect claim markers in the form of wooden stakes, small stone cairns, and metal cans, which may have originally contained claim papers.

Automobile travel across and within the Colorado Desert area initially developed using existing wagon roads or following railroad rights of way. By the early twentieth century, the automobile became the preferred mode of transportation. In 1914, Riverside County established the route from Mecca to Blythe as an official county road, which served as a main route across the desert. County officials dug wells and erected signposts along this road to serve its few travelers. In the early 1920s, Highway 60 was built to the south of the original route through Shavers Valley and Chuckwalla Valley. In the 1960s, the current Interstate Highway 10 was constructed along the old route of Highway 60. With the arrival of roads, settlement patterns changed from occasional miner's camps to roadside businesses serving travelers.

With the passage of the Homestead Act in 1862, vast areas of public land were opened up to private citizens, and agriculture became an economically important industry in California. Although much of the desert lands were poorly suited to farming, the Palo Verde Valley of the lower Colorado River was an exception. Thomas H. Blythe, who is known as "the father of the Palo Verde Valley," was the first to develop large tracts of land along the west bank of the Colorado River, across from the established portage point at Ehrenberg, Arizona, near the present-day town of Blythe. Blythe died in 1883 before his development could be fully completed, but agricultural practices had already begun to take place and continued to be developed in the area. The town of Blythe was incorporated in 1916. By the late 1920s, the Palo Verde Irrigation District Act was passed, and the region's irrigation and drainage needs were facilitated by one district. Farming continues to be a commercial industry in Blythe. On the Palo Verde Mesa, however, in the vicinity of the BSPP, agriculture was never a significant pursuit due to the poor soils and lack of readily accessible water. In the early twentieth century, some ranching activities were attempted on the mesa, as evidenced by ranch remains identified during the inventory of the BSPP area.

The BSPP area falls within the limits of General George S. 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 Patton 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.

CULTURAL RESOURCES INVENTORY

A project-specific cultural resources inventory is a necessary step in staff's effort to determine whether the amended 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 a proposed project, assessing the results of any geoarchaeological studies or environmental assessments completed for a 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 staff (in developing its Revised Assessment, July, 2010 (CEC 2010b) 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 summary of the cultural resource types identified by the applicant. For this project, staff has used the analytic process of Approach 3 (defined above under "Methodology and Thresholds for Determining Environmental Consequences"), so the inventory consists of the body of resources the applicant identified in the Application for Certification (AFC), (sent by the applicant to the Energy Commission), and the descriptions are limited to what the applicant provided, either with the AFC or in response to staff's data requests. Additional survey information was provided post-licensing by AECOM (AECOM 2011**)** for the portion of the Gen Tie alignment that was shifted.

Staff's assessments of the amended 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 Areas 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 a 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, staff has defined the PAA as the project site footprint, outflow zones of the drainage system outlets, the 100-foot-wide project linear facilities route corridors, the maximum depth that would be reached by all foundation excavations and by all pipeline installation trenches, and the maximum height reached by all above-ground structures.

For this project, the PAA for ethnographic and built-environment resources are the project footprints (plant site and linear facilities corridor) plus a 0.5-mile buffer from the plant site, and from any above-ground linear facilities, to take into consideration resources whose setting could be adversely affected by industrial development.

Adjustments to the project plant site boundaries and adding new linear facilities and others areas to the project's footprint in April, 2010, and again in May, 2010, resulted in changes to staff's defined PAAs from those used in the Staff Assessment (SA)/Draft Environmental Impact Statement (DEIS). The PAA for the Gen Tie line also shifted slightly post-licensing in 2011.

The cultural resources figures submitted for the 2013 Amendment do not include the established PAA for ethnographic and built-environment resources. The PAA for archaeological resources is the equivalent of the amended project boundary. Staff has prepared **Cultural Resources Figure 1** for this BSPP 2013 Amendment Staff Assessment showing the PAA boundaries for Archaeological, Built Environment and Ethnographic resources.

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 or owners acquire information specific to the vicinity of their project from certain repositories and 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 or owner 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.

CHRIS Records Search

The California Historical Resources Information System, or CHRIS, is a federation of 10 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 the BLM's protocol for inventory-level cultural resources investigations on lands for which a Right-of-Way (ROW) grant has been requested, the project applicant or owner 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).

For Palo Verde 1's Class I survey of the proposed BSPP, intended to compile information on known cultural resources and previously conducted cultural resources studies pertinent to the location of the proposed BSPP, the applicant's cultural resources consultant, AECOM, conducted records searches at the Eastern Information Center (EIC, part of the CHRIS) at the University of California, Riverside. Searches conducted on February 11, 2009, and October 15, 2009, were for the area within a 1.0-mile radius of the proposed plant site and within a 0.25-mile radius of the routes of all proposed linear facilities (Solar Millennium 2009a, vol. 1, p. 5.4-18; EDAW 2009b, p. 16).

Additionally, AECOM searched the following sources to identify other known cultural resources (Solar Millennium 2009a, vol. 1, p. 5.4-18):

- National Register of Historic Places (NRHP)
- California Register of Historical Resources (CRHR)
- Local listings
- BLM site files

CHRIS Results

AECOM obtained from the EIC 26 reports of previous investigations covering parts of the area within a 0.1-mile radius of all BSPP components. Ten of these were cultural resources survey reports covering parts of the BSPP PAA (King et al.1973, Greenwood 1977, Cowan and Wallof 1977, BLM 1978, Reed 1984, Wilson 1984, Padon et al. 1990, McDonald and Schaefer 1998, McDougall et al. 2006, and Schaefer et al. 1998). One study was a records search (Schaefer 2003), one reported site sampling and evaluation (Mitchell 1989), and one was a regional overview (Von Till Warren et al. 1980). The

surveys covered only small areas of the proposed BSPP PAA, so the most pertinent of the 13 studies to the BSPP cultural resources assessment are the regional overview by Von Till Warren et al. (1980) and the sampling and evaluation of prehistoric quarry sites by Mitchell (1989).

The overview depicts a region of archaeological resources that, for both the prehistoric and historic periods, represent primarily transportation and resource exploitation. In this landscape, people have mostly left remains indicative of being in transit or of extracting useful or valuable materials. Native Americans sought and removed food, toolstones, and other raw materials for manufacturing, and Euro-Americans sought and removed various minerals or grazed their livestock. The trails and roads that cross the BSPP PAA either took people across the region or went to the places where the desired resources were found (Von Till Warren et al. 1980). An important exception to this generality is the use of the region by the U.S. military for training on a large scale, both early in World War II and just prior to involvement in Vietnam.

The BLM archaeologist who sampled and evaluated ancient Colorado River pebble terraces (two of which are located on the BSPP site and could be impacted by the proposed project) explored Native American extractive behavior at several sites recognized as prehistoric quarries. He analyzed Native American behavior in assaying, roughly preparing, and collecting material appropriate for the manufacture of stone tools elsewhere. Additionally the study identified other nearby sites indicative of other aspects of toolstone acquisition behavior, such as temporary habitation sites. The study also evaluated the NRHP eligibility of the terrace quarries and their integrity, which has suffered in the twentieth century from the removal, sometimes mechanized, of the water-rounded rocks for use in masonry and landscaping—another desert extractive activity (Mitchell 1989).

AECOM obtained from the EIC 71 records of previously known cultural resources located within a 1.0-mile radius of the PAA, including

- 4 prehistoric trail segments, 1 with an associated lithic scatter
- 1 prehistoric rock alignment
- 1 prehistoric geoglyph
- 7 prehistoric quarries, 1 with an associated lithic scatter
- 2 prehistoric cleared areas, both with associated lithic scatters, and 1 with a trail segment
- 1 prehistoric temporary camp
- 6 prehistoric ceramic sherd scatters
- 16 prehistoric lithic scatters
- 1 prehistoric fire-affected rock feature
- 1 prehistoric lithic and ceramic sherd scatter
- 1 historic-period two-track road

1 historic-period refuse deposit, with structural remains

2 historic-period military camps, with tent platforms, animal enclosures, and refuse deposits

9 historic-period refuse deposits

18 isolated finds (10 prehistoric and 8 historic-period).

Eight of these previously known resources were located within or near the boundary of the proposed BSPP. Seven of these resources were prehistoric or historic-period archaeological sites, and one was a prehistoric isolated find. Two of the prehistoric sites were located on a private property in-holding within the proposed plant site. When relocated in 2009, one of the latter (CA-RIV-1464), recorded in 1978 as a prehistoric trail segment, was found to have been replaced by a graded road. Either this resource, which ran along the in-holding boundary, had never been a prehistoric trail, or any prehistoric trail that had been there was now destroyed. Consequently, staff has not included this resource in the inventory. As is common practice in cultural resources management, staff has eliminated the isolated finds from consideration, but has listed the other six known sites (CA-RIV-1136, , CA-RIV-3419, CA-RIV-7175, CA-RIV-9011, and P-33-9670) in Table 2, with all newly identified archaeological sites, as resources located within the BSPP PAAs. Staff has included in that list the other resource located on the private in-holding because it is staff's understanding that the BSPP applicant was negotiating the purchase of the in-holding and so could have eventual responsibility for the site.

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 project applicant owner may include archival information as part of the information provided to staff in the AFC or project modification 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 or owner.

To identify any sites or structures older than 45 years, AECOM reviewed historic maps which could be referenced on-line, dating between 1903 and 1983. They also visited the General Patton Memorial Museum on April 30, 2009, and the Palo Verde Historical Museum and Society on May 4–5, 2009. They also visited the Palo Verde Irrigation District where they reviewed historic aerial photographs from 1938, 1942, 1951, 1953, 1959, 1960, 1965, 1970, 1973, 1992, and 1994, and also examined additional historic maps (EDAW 2010a, p. 87).

Archival and Library Research Results

AECOM acquired historical data on the project vicinity, but identified no additional cultural resources in or near the BSPP PAA (EDAW 2010a, pp. 86–87).

Inquiries to Local Agencies and Organizations

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. Local archaeological and historical organizations may also maintain lists of historically important resources. To facilitate the environmental review of their projects, applicants or owners 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.

On June 1, 2009, AECOM contacted various public agencies and historical and archaeological societies requesting information regarding historic or other cultural resources within or adjacent to the BSPP:

- Riverside County Historical Commission;
- General Patton Memorial Museum;
- Historic Resources Management Programs, University of California, Riverside;
- Palm Springs Air Museum;
- Palm Springs Historical Society; and
- Palo Verde Historical Museum and Society.

Results of Inquiries to Local Agencies and Organizations

The applicant had received no responses to inquires to local agencies and historical organizations by August 24, 2009 (EDAW 2010a, p. 91), and so identified no additional cultural resources.

Native American Consultation

The Governor's Executive Order B-10-11, executed on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. Consistent with Executive Order B-10-11, the California Natural Resources Agency adopted a tribal consultation policy on November 20, 2012. The Energy Commission is a "department" within the Natural Resources Agency and is required to consult with tribes consistent with the Natural Resources Agency tribal consultation policy as well as Energy Commission regulation and policy. The Energy Commission Siting Regulations require applicants or owners to contact the Native American Heritage Commission (NAHC) for information on Native American sacred sites and a list of Native Americans interested in the project vicinity. The applicant or owner is then required to notify the Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans and any written responses received, as well as a written summary of any oral responses in the AFC (CEC Regs 2007:App. B(g)(2)(D):87).

The NAHC is the primary California government agency responsible for identifying and cataloging Native American cultural resources, providing protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction, and preventing irreparable damage to designated sacred sites and interference with the

expression of Native American religion in California and specifically regarding actions on private or state lands. It also provides a legal means by which Native American descendents can make known their concerns regarding the need for sensitive treatment and disposition of Native American burials, skeletal remains, and items associated with Native American burials.

The 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's 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. Their 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 the project owner and staff requested information on the presence of sacred lands in the vicinity of the Blythe Amendment project area, as well as a list of Native Americans to whom inquiries should be sent to identify both additional cultural resources and any concerns the Native Americans may have about the amended project.

On April 13, 2009, AECOM asked the NAHC to search its Sacred Lands File for any Native American traditional cultural properties and to send to the applicant a list of Native Americans who had heritage ties to Riverside County and wanted to be informed about new development projects there. The NAHC responded on April 20, 2009, indicating a negative return from the search of their Sacred Lands File, but cautioning that many Native American cultural resources were known for the project area (EDAW 2010a, p. 88). The NAHC also provided contact information for 15 Native American individuals or groups, representing the Cahuilla, the Serrano, the Chemehuevi, the Mojave, and the Luiseño. The applicant sent letters to these persons on May 1, 2009, describing the proposed BSPP and requesting information on known cultural resources that could be affected by the original project, and at various later dates AECOM made follow-up contact by telephone calls, faxes, and emails. Upon the recommendation of one of their initial contacts, AECOM also contacted a representative of the Cocopah on August 14, 2009 (EDAW 2010a, p. 88).

AECOM received no response from nine Native American contacts. The responses received included indications of no comment from representatives of the Mojave and the Luiseño, requests for additional information from representatives of two Cahuilla groups and of the Cocopah, and three letters expressing concern about cultural resources that could be present and about project impacts.

Bennae Calac, Tribal Council Member of the Pauma Valley Band of Luiseño Indians, stated that the Luiseño had no comment, but she recommended that AECOM and the BLM contact other regional tribes that might be interested in the project. Esadora Evanston, Environmental Coordinator for the Fort Mojave Indian Tribe, responded that

her department has no comment on the BSPP, but other representatives of the tribe could comment independently. Patricia Tuck, Tribal Historic Preservation Officer for the Agua Caliente Band of Cahuilla Indians, requested a summary report of the BSPP archaeological survey to review before commenting on the project.

Joseph R. Benitez, an individual of Chemehuevi descent, in his June 14, 2009 letter, provided the information that the Chemehuevi and Halchidhoma used locations in the project vicinity "as gathering places," which AECOM interpreted to mean places where people got together "for social functions and ceremonial activities." Staff suggests, alternatively, that Mr. Benitez meant places where various plant foods were gathered by these groups. Mr. Benitez also suggested that AECOM contact the Chemehuevi Indian Tribe directly, which AECOM had previously done (EDAW 2010a, p. 88).

Writing on July 27, 2009, Diana L. Chihuahua, Cultural Resources Coordinator for the Torres-Martinez Desert Cahuilla Indians, explained that the original project area was not located within the Torres-Martinez Reservation and was outside of the Cahuilla's traditional use areas. She suggested the Cocopah Tribe should be contacted for comment, as the originally proposed project was closer to their traditional use area. She explained that the greatest concern of the Cahuilla Tribe was the potential for inadvertent discovery of human remains in the project area. In addition, she made several recommendations (Galati & Blek 2010a, att. 3):

- Any cultural resources documentation or assessment of Cocopah cultural, sacred, or traditional cultural property sites should be made available to local tribes.
- A qualified archaeologist, accompanied at all times by a cultural resources monitor (staff understands this to mean a qualified Native American monitor), should complete a 100 percent cultural resources inventory of the project area.
- Approved cultural resources monitors (staff understands this to mean qualified Native American monitors) should be present during all ground-disturbing activities and be authorized to halt construction if buried cultural deposits are encountered and to bring in an archaeologist meeting the Secretary of the Interior's Professional Standards to investigate and prepare a mitigation plan for county and tribal approval.
- The project should comply with state law and notify the coroner, if human remains are found, and notify the Native American Heritage Commission if the coroner identifies the remains as Native American.
- Copies of any documentation of cultural resources should be sent to the Torres-Martinez Desert Cahuilla Indians.

Following Ms. Chihuahua's recommendation, AECOM contacted representatives of the Cocopah Indian Tribe on August 14, 2009. Jill McCormack, Cultural Resources Manager for the Cocopah Indian Tribe responded in a letter dated August 28, 2009, and requested more information and further discussion of the original project (EDAW 2010a, p. 88). AECOM spoke on the telephone to Ms. McCormick on September 24, 2009,

answering her questions about the project schedule, the completeness of the cultural resources survey, and a preliminary description of the newly identified cultural resources. Ms. McCormick stated that she would contact the BLM for more information on the project (Solar Millennium 2009b, att. 3).

With the filing of the application for a ROW, the BLM took the lead in formal, government-to-government tribal consultation pursuant to the NHPA as well as other laws and regulations. The NAHC was contacted by letter about the original project, and they provided a list of Native American contacts. BLM then initiated Section 106 consultation in the early stages of project planning by letter to the Agua Caliente Band of Cahuilla Indians and informational copies to 12 other Native Americans groups on November 23, 2009. The letter noted the *Federal Register* publication of the Notice of Intent (NOI) for the original 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 BSPP. In this same notice the BLM announced its intention to use the NEPA commenting process to satisfy the public [and Native American] 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 BLM followed up with an additional letter and other information since then. BLM identified and invited to consult on the project 13 tribes or related entities, including those listed below. Tribes were also invited to a general information meeting and a site visit, held on January 25, 2009. BLM has thus far received one written comment letter, from Ms. Diana L. Chihuahua, Cultural Resources Coordinator for the Torres-Martinez Desert Cahuilla Indians.

On February 10, 2010, the BLM Palm Springs Field Office Manager, John Kalish, and Palm Springs Field Office Archaeologist George Kline met with the Ft. Yuma Quechan Tribal Council. They provided information on several solar energy projects, including the BSPP, and answered questions. Communications have been ongoing between concerned parties since the early planning efforts in the summer of 2009, and consultation will continue throughout the process. Letters to request consultation to develop a programmatic agreement (PA) with tribes, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation were mailed out to the below-listed tribes on February 25, 2010:

- Cabazon Band of Mission Indians
- Augustine Band of Cahuilla Mission Indians
- Agua Caliente Band of Cahuilla Indians Tribal Historic Preservation Officer
- Morongo Band of Mission Indians
- Chemehuevi Reservation

- Colorado River Reservation
- Fort Mojave Indian Tribe
- Colorado River Indian Tribes
- Cocopah Tribal Council
- San Manuel Band of Mission Indians
- Fort Yuma Quechan Indian Tribe
- Torres-Martinez Desert Cahuilla Indians
- Twenty-Nine Palms Band of Mission Indians

Energy Commission staff attended a meeting organized by BLM on April 23, 2010, in Palm Desert, to formally initiate the NHPA Section 106 consultation for PAs for four solar projects proposed for Chuckwalla Valley locations north of the I-10 freeway including the BSPP.[15] Attending or calling in were Energy Commission staff, representatives of the applicants for the four projects, representatives of the interveners in the three Energy Commission cases (BSPP, Genesis Solar Energy Project, and Palen Solar Power Plant), representatives of Native American tribes, and a representative of the Office of Historic Preservation. The description and status of cultural resources inventory and evaluation for the four projects were presented by project representatives and their cultural resources consultants. Rolla Queen, archaeologist for the BLM's California Desert District Office described the Section 106 consultation process for the development of PAs, gave a preliminary timeline for the PAs, and suggested the general form the PAs would probably take, indicating the likelihood that they would be based on the PA that had been developed for the Imperial Valley Solar Project. Representatives of the San Mañuel Band of Mission Indians, the Twenty-Nine Palms Band of Mission Indians, and the Agua Caliente Band of Cahuilla Indians were present. They expressed concerns about the great number of desert projects and the difficulties of Native Americans in trying to respond to these developments and participate in the Section 106 process.

Staff held a workshop in Palm Springs on April 28, 2010, to receive comments from the applicant, the intervenors, and the public, and to answer questions on all aspects of the joint Energy Commission staff-BLM BSPP SA/DEIS. Patti Tuck-Garcia, Tribal Historic Preservation Officer, and Sean Milanovich, Cultural Resources Specialist, for the Agua Caliente Band of Cahuilla Indians both attended this workshop. Ms. Tuck-Garcia again requested from the applicant a summary report of the BSPP archaeological survey to review before commenting on the original project.

The cultural resources consultant for the BSPP and Palen Solar Power Plant summarized more recent applicant consultation with Native Americans at the BLM-

[15] The four were: BSPP, Genesis Solar Energy Project, Palen Solar Power Plant, all of which would utilize solar concentrating technology, and First Solar Desert Sunlight Solar Farm, which would use photovoltaic technology.

sponsored meeting in Palm Desert on April 23, 2010, mentioning an ethnographer conducting meetings with 20 or more Native American groups, for educational, public relations, and marketing purposes for the two projects. Staff spoke with the AECOM ethnographer and learned that there was no expectation that the collected Native American comments on the two projects would be provided to the Energy Commission. Subsequently, staff sent an email to the ethnographer on April 27, 2010, and again on May 30, 2010, asking that the applicant permit the ethnographer to provide to staff summarized Native American comments, but to date, staff has received no response to this request.

The Quechan Tribe expressed the most interest in BSPP, and contacted BLM multiple times. Their concerns were summarized in a formal September 3, 2009 letter, to BLM from Mike Jackson, Sr., Tribal Council President. The letter was in response to the proposed Programmatic Environmental Impact Statement for Solar Energy Development for the six southwestern states. The Quechan consider the area around Blythe, presumably including the BSPP 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 requested to be consulted prior to any plans being finalized. They further requested that the clustering of the 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 emphasized their concern over indirect as well as direct impacts to cultural resources. They requested 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, to John Kalish, Field Manager of the BLM Palm Springs Field Office. In this letter, President Jackson expressed doubt that the appropriate Section 106 consultation process could be completed within the "fast-track" timeframe that requires a final Record of Decision from the BLM by September 2010. He further commented that the Tribe does not believe that the "fast-track" projects meet the regulatory criteria for the use of a programmatic agreement (QIT 2010).

In response to the BSPP amendment, staff contacted the NAHC on June 17, 2013, and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded on June 19, 2013, by indicating that the Sacred Lands Files did not contain information concerning sacred sites in the project area and provided staff with a list of Native Americans interested in consulting on development projects in the project area. As a courtesy to the BLM, staff also obtained a BLM tribal contact list pertaining to the project area and merged the NAHC list and the BLM list. On July 24, 2013 staff sent letters to all of the NAHC and BLM listed tribal entities, consisting of fifteen tribes, one tribal foundation and one tribal individual, inviting them to learn more about the project as proposed for amendment and encouraging tribes to provide additional cultural resources information to staff. On August 2nd and August 5th, 2013, staff made attempts to contact via phone and email, all of the tribes that had received July 24, 2013 letters. During these communication attempts staff left messages informing tribal staff that

Energy Commission staff would be in the project vicinity during the week of August 12th, 2013, and was available for office or project vicinity meetings.

Results of Inquiries Made to Native Americans to the BSPP Amendment

On July 30, 2013, staff received an email from the San Manuel Band of Mission Indians cultural resources staff stating that the amended project is outside of the tribe's territory.

On August 1, 2013, staff received an email letter from the Soboba Tribe of Luiseno Indians requesting a face to face meeting.

On August 2, 2013 staff was informed by the Cabazon Band of Mission Indian's cultural staff that the tribe was not requesting any further consultation regarding the BSPP project.

On August 2, 2013 staff was informed via an email that the Cocopah Tribe would defer to other tribes residing closer to the amended project area.

On August 5, 2013, staff received a letter response from the Chemehuevi Indian Tribe that states, "having reviewed the modifications, we have no specific comments. However, if, during construction, there is evidence of a burial site or material objects during excavation, we request all activity cease and for us to be contacted immediately."

On August 12, 2013, staff met with the Colorado River Indian Tribes' tribal staff to provide updates on several projects including the BSPP. The project amendment reductions, compared to what was previously licensed in 2010, were highlighted.

On August 12, 2013, staff met with the Quechan Tribe's tribal staff and committee members to provide updates on several projects including the BSPP. The project amendment reductions, compared to what was previously licensed in 2010, were highlighted.

On August 14, 2013, staff met with the Soboba Band of Luiseno Indians' tribal staff to provide updates on the BSPP in direct response to the tribe's email letter (received August 1, 2013) request to hold such a meeting. The project amendment reductions compared to what was previously licensed in 2010 were highlighted. The tribe's cultural resources director requested that tribal monitoring be, at a minimum, required as a cultural resource condition to the license modification.

On August 15, 2013, staff met with the Fort Mojave Indian Tribe's AhaMakav staff to provide updates on several projects including the BSPP. The project amendment reductions, compared to what was previously licensed in 2010, were highlighted.

On October 4, 2013, staff received an email letter response from the Agua Caliente Band of Cahuilla Indians that stated the project was in the tribe's traditional use area, that the tribe wanted to continue to be consulted concerning the project and requested an informational meeting be held to discuss cultural compliance. Staff is working to

schedule such a meeting which will likely be held after publication of this staff resource assessment.

As a result of the most recent communications listed above, staff was not informed of any ethnographic resources located in the BSPP ethnographic PAA.

Other Interested Groups with Native American Concerns

In a February 8, 2010 e-mail to Allison Shaffer of the BLM's Palm Springs Field Office, Patti Pinon, Chairperson of the La Cuna de Aztlan Sacred Sites Protection Circle, expressed concern that the proposed BSPP would be constructed on a Kokopelli geoglyph and numerous other images and ancient trails that lead to other geoglyphs a few miles away. The BLM Palm Springs Field Office archaeologist forwarded this email to Energy Commission staff.

The BLM Palm Springs Field Office archaeologist provided Energy Commission staff with a Google Earth location for the Kokopelli geoglyph and another nearby geoglyph identified as Cicimitl.[16] It appeared to staff that the two geoglyphs were located within the BSPP PAA for ethnographic resources. In the SA/DEIS, staff considered the two geoglyphs as potential cultural resources subject to impacts from the BSPP.

Alfredo Acosta Figueroa, a member of Californians for Renewable Energy (CARE) and a member of the La Cuna de Aztlan Sacred Sites Protection Circle opposes the desert solar projects in general and on May 28, 2010, provided to CARE, for submission to the Energy Commission in case 10-CRD-01 (Consolidated Hearing on Issues Concerning U.S. Bureau of Land Management Cultural Resources Data), a packet of materials that identified a number of sacred sites (see below).

The BLM Palm Springs Field Office Field Manager and archaeologist met earlier with Alfredo Acosta Figueroa and other representatives of the La Cuna de Aztlan Sacred Sites Protection Circle on March 2, 2010, to tour the location of the two geoglyphs and some other sacred sites identified by Mr. Figueroa, including the Creator's Throne (a rock masonry feature), and some ancient trails Mr. Figueroa says connected these two geoglyphs and the throne to the Blythe Intaglios[17] and other sacred sites (Figueroa 2010a, att. 4; Kelly 2010). The locations of the trails was not established in the landscape, but were indicated as lines on a map provided by Mr. Figueroa. The map was of too large a scale for the trail locations to be checked on the ground. AECOM identified no additional cultural resources from their consultation with Native Americans, but Mr. Figueroa has identified in the field to BLM Palm Springs Field Office personnel two geoglyphs, and has provided a map of the prehistoric trails about which he expressed concern. Additionally, in his signed June 15, 2010 Declaration, he states (Figueroa 2010b, p. 2),

[16] Kokopelli is the now familiar hump-backed, dancing, flute-playing figure known from petroglyphs and pottery of Puebloan origins, who was associated with agriculture and fertility. According to Alfredo Acosta Figueroa, Cicimitl is "the spirit of the underworld." The deity is part of the Aztec pantheon.

[17] Well-known prehistoric geoglyphs of anthropomorphic and zoomorphic figures located several miles north of the BSPP.

> "The proposed Blythe Solar Power Project is overlaid on more than 25 large geoglyphs that we have found throughout the area. They include the world known image Kokopilli, [sic] Cicimitl (the Great Spirit that takes human spirits to their final resting place in Topock Maze, "Mictlan"). Included in the area is the image of El Tosco, over 5 large windrow mazes, a 9-level pyramid and over 24 sacred images that have not yet been deciphered."
>
> "The main East/West & North/South trails all lead to and from the Blythe Giant Intaglios. One trail leads to Kokopili and Cicimitl which traverse west through the south end of the McCoy Mountains to the McCoy Springs [sic]."

The site visit and analysis of the geoglyphs and throne determined that these geoglyphs are recent in origin (Kline 2010). These conclusions were based on reviews of historic maps and aerial photography, showing that these geoglyphs did not exist prior to 1994.

Field Inventory Investigations

To facilitate the environmental review of their projects, applicants or owners conduct surveys to identify previously unrecorded cultural resources in or near their proposed project areas. These surveys include a pedestrian archaeological survey and a built-environment windshield survey. The project applicant or owner includes the acquired new survey information as part of the information provided to staff in the AFC or petition to amend application 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 or owner.

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 or owner 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).

AECOM obtained BLM Fieldwork Authorizations on March 27, 2009 and August 5, 2009, for cultural resources field investigations in an approximately 7,850-acre ROW within which the proposed BSPP would be sited (EDAW 2009b, att.3, BLM Contacts).

AECOM reported no Class II cultural resources survey for the proposed BSPP, but reported the methods and results of a Class III pedestrian archaeological survey The

survey was conducted in two phases. The first, between March 30 and June 26, 2009, was of the proposed plant site (plus 200 feet around the site perimeter). The second, between October 13 and 16, 2009, was of a newly defined 100-foot-wide corridor in which would be located the routes of the plant access road, the natural gas pipeline, and the transmission gen-tie line (EDAW 2010a, p. 93; EDAW 2009b, p. 2). The typical, sparse desert vegetation made ground visibility “extremely good” (EDAW 2010a, p. 109).

The survey methods for all archaeological survey entailed four-to eight-person survey teams walking at 20-meter intervals looking for archaeological remains. The survey team sought to relocate previously recorded sites and assess their current condition. For new resources, they defined four or more artifacts as a site and three or fewer as an isolate. They used an arbitrary distance of 30 meters (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 and flagged finds for the recording team that would follow them. The recording team recorded 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 recording team removed all flagging tape. AECOM undertook no subsurface testing and collected no artifacts (EDAW 2010a, pp. 93–95).

The applicant conducted additional pedestrian archaeological survey, using the same methods as described above, in late April and early May 2010, to cover several changes in the original project area, including:

- approximately 1.0-mile-long (off-site) temporary construction power line route, 100-foot-wide corridor;
- newly purchased private in-holding in the center of the BSPP plant site area;
- approximately 1.5-mile-long (off-site) stretch of Black Rock Road to be paved between the truck weigh station and the new project access road, 250-foot-wide corridor;
- modified, approximately 6.5-mile-long (off-site) route gen-tie transmission line tying into the Colorado River Substation, 300-foot-wide corridor; and
- modified plant site boundaries in various perimeter locations (Tennyson and Meiser 2010, p. 1).

This survey did not cover a more recent change in the gen-tie transmission line route, which is proposed to jog to the west away from the access road and natural gas line routes, then drop south, and then jog back to the east to rejoin the access road and natural gas line routes, going around a private parcel known as the Ashton parcel. This route change has been surveyed for cultural resources, but BLM has not released the confidential cultural resources data, so staff cannot at this time analyze any impacts to cultural resources from this changed route. This is slated to be surveyed for Project

Construction Phase 2. Staff has determined that a Class III Survey of the revised gen-tie line was completed and included in Class III Survey Addendum 1, received by the Energy Commission in 2013.

A post-licensing shift in the g gen-tie alignment leading to the Colorado River Substation resulted in a 4.2-acre area that had not been previously surveyed. AECOM completed a Class III pedestrian survey of the area in 2011 and did not identify any cultural resources either along the proposed transmission line route or in the 50-foot buffer for that area (AECOM 2011, page 9). This survey report was submitted to the Energy Commission and BLM under confidential cover in June 2011. The survey was completed under Use Permit CA-09031 and a BLM Fieldwork Authorization dated September 8, 2010. The survey was completed on April 29, 2011. The survey did not identify any cultural resources in the 4.2-acre survey area.

On May 8, 2009, AECOM also completed a built-environment field survey with a PAA extending out 0.5 mile beyond the proposed BSPP plant. In October 2009, AECOM conducted an additional built-environment survey with a PAA extending out 0.5 mile beyond the newly defined linear facilities corridor (EDAW 2009d, p. v; EDAW 2009e, p. 21). In late April and early May 2010, additional built-environment survey was conducted to cover several changes in the project areas, as listed above. All built-environment surveys were primarily “windshield” surveys to field-check built-environment resources 45 years of age or older as identified from historic maps. Additionally, for the linear facilities corridor survey, AECOM met with Art Wilson, author of *Runways in the Sand: The History of Blythe Army Air Base in World War II* (Wilson 2008), who provided a guided tour and shared his extensive knowledge of that resource (EDAW 2009e, p. 21). In accordance with Conditions of Certification **CUL-12**, **CUL-13** and **CUL-14**, built environment resources identified in the earlier surveys have been recorded and evaluated on Parks and Recreation DPR 523 forms and associated reports. These were completed in September and October, 2010.

Results of Pedestrian Archaeological Survey

Adjustments to the project plant site boundaries and to the linear facilities corridor avoided direct physical impacts to some archaeological sites but subjected some additional archaeological sites, both previously known and newly identified in the April-May, 2010 survey, to potential direct project impacts.

Staff’s total for archaeological sites in the BSPPs archaeological PAAs at the time of the certification of the original project, including previously known sites and sites identified in AECOM’s three surveys, was 201, of which 176 date to the historic-period and 25 to the prehistoric period. Of the historic-period sites, seven also have a prehistoric component.

Cultural Resources Table 2, below, provides a list and brief description of the archaeological sites known to staff at that time.

Site types broadly characterize the content and arrangement of the observed archaeological remains at sites and inform interpretations of a site’s function(s). Below,

staff retains the originally recommend protocols for site evaluation and data recovery mitigation based on site types.

AECOM reported four prehistoric site types as present on the BSPP, (EDAW 2010a, pp. 137–142), and staff added a fifth type:

- Prehistoric Lithic Scatters (debris from the production of one or more flaked stone tools, possibly tools used to make flaked stone tools, and occasionally the flaked stone tools themselves);
- Prehistoric Quarry Sites (a geological deposit of stone material suitable for the manufacture of flaked stone tools);
- Prehistoric Sites with Features (features are remains of non-residential human modifications or additions to the natural landscape, such as hearths, arrangements of stones, cleared areas), all but one of which in the BSPP project areas were “thermal cobble features”—probably the remains of roasting pits;
- Prehistoric Trails (footpaths evidencing denuding of desert pavement, with possible shallow depression from compaction of soils); and
- “Pot Drop” (isolated scatter of sherds from a single pot, possibly associated with sacred activity).

AECOM defined three broad categories of historic-period sites, Early Twentieth-Century Mining and Ranching Sites, World War II-era DTC/C-AMA Sites, and Other Historic-period Sites (EDAW 2010a, pp. 127, 144–156), under which they identified 10 site types.

The Early Twentieth-Century Mining and Ranching Sites consisted of:

- Early twentieth-century habitation sites (residential structural remains and domestic non-biodegradable refuse);
- Early twentieth-century sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as non-residential structural remains, mining claim markers, prospecting, refuse, and privy pits); and
- Early twentieth-century refuse scatter sites (deposits of non-biodegradable refuse of all kinds).

The World War II-era DTC/C-AMA Sites consisted of:

- World War II-era sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as fortified positions, cleared areas for tent pads, and hearths);
- World War II-era refuse dump sites (distinguished from refuse scatter sites by the greater volume of material and multi-episodic deposition); and

- World War II-era refuse scatter sites (recognized by the presence of military-issued rations containers or cans opened with the military-issued P-38 can-opener or a bayonet).

The Other Historic-period Sites consisted of:

- Transportation routes (pre-1967 dirt roads traversing the proposed plant site);
- Non-specific twentieth-century sites with features (these lacked materials that could be dated or associated with a specific activity);
- Non-specific twentieth-century refuse dump sites; and
- Non-specific twentieth-century refuse scatter sites.

Results of Geoarchaeological Investigations

Between July 29, 2009 and August 5, 2009, AECOM's geoarchaeologist observed the drilling of 22 geotechnical borings on the BSPP site, located throughout the proposed plant site. The geoarchaeologist sorted and examined all the removed sediments for evidence of paleosols, archaeological deposits, or isolated finds. The sediments were also hand-sampled at 5-foot intervals as the borings progressed. The geoarchaeologist recorded the sediments and stratigraphy before the borings were backfilled (Galati & Blek 2010m, p. 3). The geotechnical investigations also included the excavation of test pits (no details provided), but the geoarchaeologist did not observe that activity.

The distribution of the borings was sufficient to provide the geoarchaeologist with an adequate characterization of the subsurface stratigraphy of the BSPP plant site. The site is underlain by (from the oldest to the youngest): ancestral Colorado River sands, lake-deposited clays, alluvial fan sands and gravels, and moderately well-developed soils based on alluvial fan sands and gravels.
The geoarchaeologist reasoned that when the cool, wet Pleistocene gave way to the drier Holocene climate, alluvial fan growth was probably accelerated, so the lake-deposited clays that underlay the alluvial fan deposits could represent the Pleistocene. Therefore, evidence of human use of this area would be found no deeper than the contact between the upper part of the Pleistocene clay deposit and the lower part of the Holocene sand and gravel deposit. That contact generally occurs at about 10 feet, so the geoarchaeologist concluded that buried archaeological deposits, if any, would be limited to the upper 10 feet of the BSPP site (Galati & Blek 2010m, p. 17).

The geoarchaeologist observed no paleosols or buried archaeological deposits, but reported that a buried A horizon was recorded by the geotechnical staff in two of the test pits at a depth of 1 meter below the surface in the northeastern part of the plant site. This indicates that a stable surface existed for long enough for soil development to take place, so human occupation would also have been possible on such a surface (Galati & Blek 2010m, p. 17).

Based on the locations where the lake clay-alluvial fan contact and the buried A horizon were observed in the borings, the geoarchaeologist recommended archaeological monitoring, down to the depth of 10 feet, during ground-disturbing construction along

the northern BSPP boundary, in a zone extending along the eastern two-thirds of the boundary and to the south about 0.5 mile. Noting that the potential for buried deposits is high near drainages, the geoarchaeologist also recommended archaeological monitoring during construction around the dry wash, particularly the north side that runs diagonally across the southwest part of the BSPP plant site (Galati & Blek 2010m, p. 17; fig. 5).

Results of Windshield Survey for Built-Environment Resources

AECOM's April-May 2010 built-environment survey, covering changes in the project's linear facilities routes, identified no additional built-environment resources (Tennyson and Meiser 2010, p. 4).

The AECOM archaeological survey of the same dates and coverage, however, identified an additional built-environment resource, the Blythe-Eagle Mountain 161-kV transmission line, to which AECOM gave the temporary resource number, SMB-H-MT-104. This transmission line was built in the 1950s and runs 52.1 miles from Blythe-Eagle Mountain Substation to Dunes Substation in Blythe. Its supports are H-frame wooden poles, some of which were replaced in 2002. This linear resource intersects with the proposed BSPP linear facilities corridor just south of the I-10 freeway. AECOM recorded an approximately 1,000-foot-long segment of this line, which is currently in use.

In their previous surveys, AECOM's architectural historian identified two built-environment resources, aged 45 years or older, that are located within 0.5-mile of the linear facilities corridor: a reservoir to the west that was constructed to serve the former Blythe Army Air Base (BAAB) of World War II vintage, and a radio communications facility, built in 1950, to the south of the corridor (EDAW 2009e, p. 22; fig. 3).

The BAAB reservoir is in the foothills of the McCoy Mountains and more than 0.5 mile west of the BSPP proposed linear facilities corridor. Water from on-base wells was pumped to the reservoir, then returned to the base by gravity flow. The reservoir is no longer in use, and associated nearby structures and a covering structure are no longer present. The reservoir is an open concrete bowl with a 557,000-gallon capacity (EDAW 2009e, p. 25). No information was provided on the location of the two pipelines that connected the reservoir to the BAAB.

The radio communications facility is nearly one-half mile south of the linear facilities corridor. The building is one-story, square, and constructed of concrete blocks. A tower in the shape of a truncated cone rises from the middle of the flat, circular roof, around which instruments are installed. An antenna tower is located nearby. The AECOM recorder of this building stated that it appeared that significant alterations had been made in the 1980s (EDAW 2009e, p. 26). No information was provided on its current status, but it may still be in use.

Cultural Resources Table 2, below, provides a list and brief description of the built-environment resources identified by AECOM as located within the BSPP built-environment PAA.

Ethnographic Field Investigations

Staff visited the Creator's Throne on May 20, 2013. The cluster of sites (throne, petroglyphs and trail) are within the PAA. The throne, consisting of a large slab rock with quartz rocks that are cemented in place to form two sides and a back, with an open front facing in a westerly direction, also appears to be of modern construction, or at least was substantially repaired (perhaps twice) with modern masonry materials. (concrete). Several of the rocks along the top, and a portion of one side, of the throne have been removed. A trail and two petroglyphs were also observed in the vicinity of the throne. One petroglyph is of the diamond or rattlesnake motif and some petroglyph experts suggests that the diamond motif is associated with female puberty rites (Whitely 2001:11-12). A second petroglyph is of a type labeled "dot pattern" and is marred with modern graffiti. Similar petroglyph patterns are represented at other nearby (within 10 miles) petroglyph locales. A trail runs between a dirt parking area and the throne. The location of the throne and petroglyphs are clustered on a rock outcrop that is immediately adjacent to Interstate 10 and a transmission line that parallels the interstate. Four wheel drive roads cross over the rock outcrop. A local (unauthorized) garbage dumping area is immediately to the other side of the rock outcrop. Within a two mile radius are two radio facilities and the western edge of the Blythe Airport.

Representatives of La Cuna de Atzlan claim that the throne is a sacred site that marks the place where an Aztec God, Quetzalcoatl, and his "helper bird" the woodpecker (also representing the wind) left, at the height of the summer solstice, westerly towards Corn Springs. The God's exit marked the end of the Fifth Sun, a period of time denoted in the Aztec calendar (Figueroa 2013: 33, 43).

The geoglyphs and throne are further discussed in this assessment in a subsectionsection titled "Ineligible Cultural Resources.."

Additional Staff-Identified Cultural Resources

Based on an analysis of the BSPP archaeological data from previous and present surveys, staff identified an archaeological district that staff has assumed is CRHR-eligible, parts of which are located on the BSPP plant site and on or near the BSPP's linear facilities corridors. This historical resource is the Prehistoric Quarries Archaeological District (PQAD), located along the east side of the proposed BSPP plant site. As defined by staff, additional contributors include thermal cobble features and lithic reduction stations. Staff believes this district could evidence the repetitive visits by Native Americans to the quarries to assay and mine toolstone and the activities associated with these visits. Staff recognizes this assumed-eligible discontiguous archaeological district as inclusive of the quarries, the thermal cobble/roasting pit features, and nearby chipping stations.

The primary contributors are five previously recorded prehistoric quarry sites (two small—CA-RIV-3417 and CA-RIV-3672)—and three large—CA-RIV-2846, CA-RIV-3418, CA-RIV-3419—recognized as coincident with geological features known as dissected pebble terraces. These terraces are remnants of abandoned gravel deposits of former channels of the Colorado River, dating from the Pleistocene epoch, on which

desert pavements have developed. These terraces have been a source of abundant material for stone tools throughout California prehistory for Native Americans in this area. The revised footprint of the 2013 Amendment now places some of these resources outside the PAA. The large quarry site CA-RIV 2846 is now located east of the PAA and will not be impacted by the amended project.

The thermal cobble features, nine known examples of which are located on the BSPP plant site (SMB-P-434, SMB-P-435, SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, and SMB-P-441, SMB-H-452, and SMB-P-454), would also include two additional examples identified by the applicant but now located outside the amended project boundaries: SMB-P-445 and SMB-P-448. Additionally, the CHRIS record for quarry site CA-RIV-3418 also noted the presence of four associated roasting pit features. These roasting pit features are almost certainly the same as the “thermal cobble features” AECOM identified along the west side of quarry site CA-RIV-2846. Other thermal cobble features may exist in unsurveyed areas adjacent to other quarry sites. Additionally, if the PQAD were formally evaluated as not CRHR and NRHP eligible, these features could be contributors to a separate thermal cobble archaeological district. The revised footprint of the 2013 Amendment now places some of these resources outside the PAA. SMB-P-436, SMB-P-437, SMP-P-438, SMB-P-400 and SMB-P-441are now located east of the PAA and will not be impacted by the amended project.

Also based on staff’s analysis of the BSPP archaeological survey data, and considering the similar archaeological data staff accessed from the Genesis Solar Energy Project and the Palen Solar Power Project, staff additionally identified two cultural landscapes (historic districts): the Prehistoric Trails Network Cultural Landscape (PTNCL), to which all the BSPP prehistoric archaeological resources contribute; and the DTC/C-AMA Cultural Landscape (DTCCL), to which many of the BSPP historic-period archaeological resources contribute. Staff has not attempted to definitively establish the boundaries of these cultural landscapes, but at this time staff considers the boundaries to roughly coincide with the geographic boundaries of the Chuckwalla Valley and the Palo Verde Mesa, encompassing the BSPP, the Genesis Solar Energy Project ,and the Palen Solar Power Project identify additional contributors to the PTNCL, on all of which archaeological sites considered to be contributors to these landscapes are located.

The Prehistoric Trails Network Cultural Landscape consists of the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected. These loci included springs (and the dry lakes when they were not dry), food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, petroglyphs). The Halchidhoma Trail (CA-RIV-53T) does not run through the BSPP plant site, but BSPP contributors to this cultural landscape include a trail segment (SMB-P-410), three pot drops (CA-RIV-1136, SMB-M-TC-101, and SMB-M-WG-102), and an archaeological district consisting of four prehistoric quarries and associated features (see above). Also, outside the BSPP boundaries are additional potential contributors, including previously recorded resources:

- trail segments CA-RIV-53T, CA-Riv-885, CA-RIV-3673, CA-RIV-4568;

- a rock alignment CA-RIV-661;
- a geoglyph CA-RIV-662; and
- possible pot drops CA-RIV-1481, CA-RIV-7176.

Additional prehistoric cultural resources identified by the applicant but located outside of areas that would be impacted by BSPP activities are also contributors to the PTNCL, including:

- possible quarries SMB-P-270, SMB-P-272, SMB-P-275;
- thermal cobble features SMB-P-435, SMB-P-445, SMB-P-448, SMB-H-452, SMB-P-454; and
- lithic scatters SMB-P-237, SMB-P-242, SMB-M-512 (multi-component site), SMB-P-453, SMB-P-511.

The Revised Staff Assessments (RSAs) for the Genesis Solar Energy Project and the Palen Solar Power Project identify additional contributors to the PTNCL.

The DTC/C-AMA Cultural Landscape (a.k.a. the Desert Training Center Cultural Landscape or DTCCL) consists of all the archaeological remains of the WWII military training activities that were conducted across the entire region. These sites are highly significant for their association with General George S. Patton and for their ability to contribute to our understanding of how American soldiers were trained during WWII. The period of significance would be 1942–1944, but associated resources could date from 1942–1955, as it is known that the Army carried on de-commissioning activities at the DTCCL, particularly the recovery of live ordnance, in the early 1950s. As represented at the BSPP, these remains consist primarily of refuse scatters and dumps, with some fortified positions, cleared areas, and possible tent camps, plus the remains of a structure evidencing possible weapons testing. Also, outside the BSPP boundaries additional potential contributors have been previously recorded, for example, CA-RIV-7174H, which consists of tent platforms and animal enclosures, as well as refuse. Additional historic-period archaeological resources identified by the applicant but located outside of areas that would be impacted are also contributors to the DTCCL, including:

- fortified positions SMB-H-285, SMB-H-286;
- historic-period refuse dump SMB-H-269; and
- historic-period refuse scatters SMB-H-195, SMB-H-253, SMB-H-254, SMB-H-263, SMB-H-266, SMB-H-267, SMB-H-268, SMB-H-271, SMB-H-276, SMB-H-279, SMB-H-282, SMB-M-512 (multi-component site), SMB-H-515, SMB-H-516, SMB-H-517, SMB-H-701,and SMB-H-702.

The RSAs for the Genesis Solar Energy Project and the Palen Solar Power Project identify additional contributors to the DTCCL.

Cultural Resources Table 2, below, provides a list and brief description of the district and cultural landscape resources identified by staff as located within and surrounding the BSPP.

Summary of Identified Cultural Resources in the PAAs

Cultural Resources Table 2 presents the inventory of the cultural resources that staff had determined would be impacted by the originally proposed BSPP.

Cultural Resources Table 2
Cultural Resources Subject to Potential Impacts from the Proposed Project

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
Prehistoric Archaeological Resources[20]			
CA-RIV-1136	"pot drop" 13 ceramic sherds	Prehistoric	Buffer (private in-holding)
CA-RIV-2846	Toolstone quarry tested cobbles, testing debris over extensive area on a remnant Pleistocene-era Colorado River terrace	Prehistoric	Plant site
CA-RIV-3419	Toolstone quarry tested cobbles, testing debris over extensive area on a remnant Pleistocene-era Colorado River terrace	Prehistoric	Plant site
SMB-P-160	Lithic scatter 11 chert flakes	Prehistoric	Plant site
SMB-M-214	Thermal cobble feature (possible roasting pit) 100 quartz cobbles (2 thermally altered), slightly embedded in ground surface 1 food can	Prehistoric and 20th century historic site	Plant site
SMB-P-228	Lithic scatter 5 quartz flakes, 1 quartzite hammerstone	Prehistoric	Plant site
SMB-P-238	Lithic scatter 30 quartz flakes, quartz flake core, 1 quartzite hammerstone	Prehistoric	Plant site
SMB-P-241	Lithic scatter and cairn 100 quartz flakes, 1 quartzite hammerstone	Prehistoric	Plant site

[18] Note that all "SMB" sites are newly identified as a result of applicant's surveys.

[19] Identifications and descriptive terms are from the site forms prepared by AECOM and from EDAW 2010a, Table 12.

[20] Sites with both prehistoric and historic-period components are listed according to which remains are the most abundant.

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-P-244	Lithic scatter 14 quartz flakes, 1 quartzite flake core, 2 quartzite hammerstones (site size not recorded; site plan scale incorrect)	Prehistoric	Plant site
SMB-P-249	Lithic scatter 8 quartzite flakes, 5 pieces of quartzite shatter, and 1 quartzite hammerstone	Prehistoric	Plant site
SMB-P-252	Lithic scatter, in 2 flaking stations about 18 meters apart station 1: 50 quartzite flakes, 2 quartzite hammerstones station 2: 50 quartzite flakes	Prehistoric	Plant site
SMB-P-410	Prehistoric trail north-south running trail segment, 200 meters long observed and recorded	Prehistoric	Plant Site
SMB-P-434	Thermal cobble features 3 concentrations of fire-affected cobbles; possible roasting pits; subsurface materials may be present no associated artifacts	Prehistoric	Plant site
SMB-P-435	Thermal cobble features 3 concentrations of fire-affected cobbles; possible roasting pits; subsurface materials may be present	Prehistoric	In path of drainage outlets
SMB-P-436	Thermal cobble features 2 concentrations of fire-affected cobbles; possible roasting pits; subsurface materials may be present	Prehistoric	Plant site
SMB-P-437	Thermal cobble feature concentration of fire-affected cobbles; possible roasting pit; subsurface materials may be present	Prehistoric	Plant site
SMB-P-438	Thermal cobble feature 1 concentration of fire-affected cobbles; possible roasting pit; subsurface materials may be present	Prehistoric	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-P-440	Thermal cobble feature 1 concentration of fire-affected cobbles; possible roasting pit; eroding out a wash bank; subsurface materials may be present	Prehistoric	Plant site
SMB-P-441	Thermal cobble features 3 concentrations of fire-affected cobbles; eroding out a wash bank; possible roasting pits; subsurface materials may be present	Prehistoric	Plant site
SMB-H-452[21]	Cobble feature (no information recorded on whether rocks fire-affected) 1 concentration of cobbles; possible roasting pit; subsurface materials may be present 2 cans: military ration can, other food can	Prehistoric	In path of drainage outlet
SMB-P-453	Lithic scatter 37 quartzite or chert flakes, 3 quartzite or chert flake cores, 10 quartzite or chert assayed cobbles, and 3 quartzite hammerstones	Prehistoric	In path of drainage outlets
SMB-P-454	Thermal cobble feature, ceramic scatter, faunal remains ceramic sherds, tentatively identified as Colorado Buffware 1 concentration of fire-affected cobbles; possible roasting pit; subsurface materials may be present bone fragments; not cut or burned; good conditions suggests recent age	Prehistoric	In path of drainage outlets
SMB-P-530	Lithic scatter 50 quartz flakes, 7 quartz flake cores	Prehistoric	Plant site
SMB-P-531	Lithic scatter 100 quartz flakes, shatter pieces, and flake cores	Prehistoric	Plant site
SMB-P-532	Lithic scatter 60 quartz flakes and 8 quartz flake cores	Prehistoric	Plant site

[21] AECOM categorized this site as historic-period because of the presence of two cans, but staff has included it among the prehistoric sites because the possible prehistoric cobble feature is of greater importance than the historic-period component.

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
Historic-Period Archaeological Resources			
CA-RIV-9011	Historic-period refuse scatter, 2 concentrations original 2008 recordation: concentration 1: 7 cans: rotary-opened cans, knife-opened cans glass jar with 1938-1977 date concentration 2: 7 cans: key-wind meat cans, sanitary cans 2009 AECOM revisit: 16 cans: P-38-opened food cans, key-wind meat cans, knife-cut beverage cans glass jar	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Substation
SMB-H-002	Historic-period refuse scatter 3 cans: military ration cans amber beer bottle	DTC/C-AMA 1942-1944 (WWII)	Substation
SMB-H-109	Historic-period refuse scatter 6 cans: Military ration can, other food cans, aluminum soft-top beer can	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-110	Historic-period refuse scatter 4 military ration cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-113	Cairns (probably mining claims) and historic-period debris scatter aircraft parts	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-114	Historic-period refuse scatter 8 cans: military ration cans, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-115	Historic-period refuse scatter 8 cans: military ration cans, key-wind meat can, church-key-opened beer can bullet casing, braided wire	DTC/C-AMA, 1942-1944 (WWII)	Plant site
SMB-H-116	Historic-period refuse scatter 19 cans: hole-in-cap milk cans, food cans, one embossed “SANITARY,” a practice dating to the 1800s	Prospecting/ranching Early 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-118	Historic-period refuse scatter 29 cans: military ration cans, milk cans, beer cans, juice can, sardine can, fuel can glass liquor bottle embossed “Federal Law Forbids Sale or Re-Use of This Bottle” military mess-kit spoon (embossed with, "U.S."), bullets, wire	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-119	Historic-period refuse scatter 5 cans: hole-in-cap milk cans, key-wind meat can	Prospecting/ranching Early 20th century	Plant site
SMB-H-120	Historic-period refuse scatter 4 cans: church-key-opened sardine cans, key-wind sanitary can	Prospecting/ranching Early 20th century	Plant site
SMB-H-121	Historic-period refuse scatter 15 cans: military ration cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-122	Historic-period refuse scatter 5 cans: military ration cans, other can military mess-kit spoon embossed with "U.S."	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-123	Historic-period refuse scatter 4 cans: military ration cans, church-key-opened beer can, other can, can lids glass bottle	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-124	Historic-period refuse scatter 11 cans: key-wind sardine cans, other food cans, can lid	Prospecting/ranching Early 20th century	Plant site
SMB-H-125	Historic-period refuse scatter 5 cans: military ration cans, key-wind meat can, other food can	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-126	Historic-period refuse scatter military ration cans, other food can glass jar	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-127	Historic-period refuse scatter 4 sanitary cans	Other historic site 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-129	Historic-period refuse scatter military ration can, key-wind sardine can, hole-in-cap can, other food cans 3 glass bottles with 1938 and 1941 maker's marks piece of wooden lath	Prospecting/ranching and DTC/C-AMA Early-to-mid 20th century and 1942-1944 (WWII)	Plant site
SMB-H-130	Historic-period refuse scatter 2 cans: P-38-opened can, aluminum soft-top beer can glass jugs with 1948 and 1952 maker's marks	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-131	Historic-period refuse scatter 5 cans: military ration can, P-38-opened can, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-132	Historic-period refuse scatter 8 cans: military ration cans, military-issue soluble coffee can, other food cans, can lid	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-133	Historic-period refuse scatter and rock ring (historic hearth) 2 cans: military ration can, other can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-134	Historic-period refuse scatter 3 cans: military ration cans, sardine can glass bottles	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-135	Historic-period refuse scatter 19 cans: military ration cans, other food cans, milk cans, beer cans, paint can glass bottle fragments metal band, smoke landmine	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-136	Historic-period refuse scatter 16 cans: military ration cans, meat cans, other food cans, can lids glass jar embossed with 1943 date brass munitions casing, sheet metal	DTC/C-AMA 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-137	Historic-period refuse scatter U.S. General Land Office survey marker dated 1917 9 cans: military ration cans, sardine can, beer can, wooden lath pieces	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-138	Historic-period refuse scatter 4 cans: military ration can, military-issue soluble coffee cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-139	Historic-period refuse scatter 8 cans: military ration can, key-wind-opened cans, other cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-140	Historic-period refuse scatter 20 cans: military ration cans, military-issue soluble coffee can, milk can, beer cans, aerosol can, other cans, can lids military mess-kit spoon embossed “U.S.,” munitions casings, lath pieces	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-143	Historic-period refuse scatter and well head 3 cans: key-wind-opened meat can, hole-in-cap can, sanitary can milled lumber, galvanized sheet metal piece	Prospecting/ranching Early 20th century	Plant site
SMB-H-144	Historic-period refuse scatter 6 cans: military ration can, hole-in-cap can, other food cans, two can lids	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-145	Historic-period refuse scatter 4 cans: church-key-opened cans, hole-in-cap milk can, other food can, can lid glass jar, glass bottle with 1938 maker’s mark	Prospecting/ranching Early-to-mid 20th century	Plant site
SMB-H-147	Historic-period refuse scatter 6 cans: military ration can, other food cans, milk can, baking powder can, aluminum soft-top beer can	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-148	Historic-period refuse scatter 6 cans: military ration can, hole-in-cap milk can, other food cans, can lid	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-151	Historic-period refuse scatter 10 cans: military-issue soluble coffee can, rotary-opened food cans, can lid	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-152	Historic-period refuse scatter 13 cans: military ration can lid, key-wind meat cans, other food cans	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-153	Historic-period refuse scatter 4 cans: milk cans, tapered meat can, other food can, metal bracket with military-style coating	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-154	Historic-period refuse scatter (two concentrations 14 cans (east concentration): military ration cans, military-issue soluble coffee cans, P-38-opened can, other food cans saw-cut bone fragments (large mammal) boot sole flat glass fragment 23 cans (west concentration): solder-dot cans, other food cans	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-155	Historic-period refuse scatter 5 cans: military ration cans, can adapted as a pail, coffee can, paint can glass canning jar wooden lath pieces, plank, embossed sheet metal	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-156	Historic-period refuse scatter 38 cans: military ration cans, military soluble coffee can, milk cans, sardine can, other food cans, beer cans (some church-key-opened, some aluminum soft-top type), can lids glass bottles with maker's marks	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII)	Plant site
SMB-H-157	Historic-period refuse scatter 7 cans: military ration can, army-issued garbage can lid embossed with 1942 date, milk cans, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-158	Historic-period refuse scatter 4 cans: military ration can, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-159	Historic-period refuse scatter 7 cans: military ration can, baking powder cans, milk can, key-wind-opened meat can, other food can	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-161	Historic-period refuse scatter 6 cans: hole-in-cap milk can, key-wind-opened meat can, other food cans, metal band	Prospecting/ranching Early 20th century	Plant site
SMB-H-162	Historic-period refuse scatter 5 cans: hole-in-cap milk can, other food cans (one P-38-opened) glass fragments with maker's	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-163	Fortified positions (4) 37 cans: military ration cans, other food cans (some church-key-opened and P-38-opened), milk can, beer cans, tobacco tin, can lids, fuel can, oil cans auto part, bailing wire coils	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-164	Historic-period refuse scatter 36 cans: military ration cans, other food cans, beer cans (some aluminum soft-top beer cans), milk can, baking powder can glass bottle fragments, one embossed "CLOROX" car hood spring, bottle cap, metal sign post, metal band, and wire (Under **Features**, a "deflated hearth" (thermal cobble feature?) is noted, but the site plan shows "F. 1" and "F. 2" with no further information provided))	Prospecting/ranching, DTC/C-AMA, and possibly prehistoric Early 20th century, 1942-1944 (WWII), and mid-20th century Prehistoric (?)	Plant site
SMB-H-165	Historic-period refuse scatter 35 cans: military ration cans, sardine can, key-wind-opened meat can, milk cans, church-key-opened beer cans, other food cans (some P-38-opened), can lids	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-166	Historic-period refuse scatter 38 cans: hole-in-cap milk cans, key-wind-opened meat can, other food cans (including one knife-cut-X-opened, dating to the early 20th century), can lid glass jar	Prospecting/ranching Early 20th century	Plant site
SMB-H-167	Historic-period refuse scatter 36 cans: hole-in-cap milk can, key-wind-opened meat can, knife-cut-X-opened can, other food cans (some P-38-opened), can lids, fuel can glass jars metal bucket military ration can, smoke landmine	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-168	Historic-period refuse scatter 62 cans: milk cans, sardine cans, key-wind-opened meat cans, spice can, other food cans (some rotary-opened), fuel cans historic ceramic fragment glass bottle fragments, glass stemware miscellaneous metal military ration cans, other food cans (some P-38-opened)	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-169	Historic-period refuse scatter 5 cans: hole-in-cap milk can, military ration can, other food cans (some P-38-opened)	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-170	Historic-period rock ring hearth with charcoal and a refuse scatter 1 sanitary can (post-dates 1904)	Other historic site 20th century	Plant site
SMB-H-171	Historic-period refuse dump 166 cans: military ration cans, milk cans, sardine cans, military-issue soluble coffee cans, key-wind-opened meat can, tobacco tin, other food cans, can lids, beer cans (some church-key-opened, some aluminum soft-top type), oil and fuel cans glass bottle fragments, glass jar threaded metal jar lid, mess-kit spoon embossed “U.S.”	DTC/C-AMA 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-173	Historic-period refuse scatter 13 cans: hole-in-cap milk cans, key-wind-opened meat can, other food cans	Prospecting/ranching Early 20th century	Plant site
SMB-H-175	Historic-period refuse scatter 13 cans: military ration cans, other food cans, can lids, beer cans glass fragments from bottles and jars (hearth was mentioned on original form and in Table DR-CR-131, but not on new site form, or on revised Class III report p. 163; of concern is whether a hearth, if present, is prehistoric or historic)	DTC/C-AMA 1942-1944 (WWII) Prehistoric?	Plant site
SMB-H-176	Historic-period refuse scatter, hearth (charcoal, no rocks), and wood pile (pieces of native wood) 2 cans wire, metal bar	Prospecting/ranching Early 20th century	Plant site
SMB-H-177	Historic-period refuse scatter 12 cans: sardine can; milk cans, other food cans, beer cans (some church-key-opened beer, some aluminum soft-top type)	Prospecting/ranching and possibly Desert Strike Early 20th century and late 20th century	Plant site
SMB-H-178	Historic-period refuse dump and rock alignment (interpreted as an aerial marker pointing at a survey monument) 226 cans: food cans, beverage cans, oil cans, fuel cans glass bottle with probable 1970s embossing pail, propane tank, jack, hack saw, vehicle tire	Other historic site 20th century AECOM dates this to the DTC/C-AMA, 1942-1944 (WWII) (EDAW 2010a, p. 188)	Plant site
SMB-H-179	Historic-period refuse scatter 4 cans: hole-in-cap cans, other food cans	Prospecting/ranching Early 20th century	Plant site
SMB-H-180	Historic-period refuse scatter 5 cans: military ration can, P-38-opened food cans, other food can, aluminum soft-top beer can	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-181	Historic-period refuse scatter 30 cans: hole-in-top milk can, other cans, aluminum soft-top beer can glass jar with 1920-1964 maker's mark	Other historic site and possibly Desert Strike 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-182	Historic-period refuse scatter 38 cans: food cans (some P-38-opened), key-wind-opened meat can, tapered meat can, spice can, can lid ceramic fragments flat glass fragments, glass jar with 1920-1964 maker's mark, glass bottle with 1929-1954 maker's mark tape dispenser	Prospecting/ranching and DTC/C-AMA Mid-20th century 1942-1944 (WWII)	Plant site
SMB-H-183	Historic-period refuse scatter 4 cans: food cans, church-key-opened beer cans	Other historic site Mid-20th century	Plant site
SMB-H-184	Historic-period refuse scatter 18 cans: hole-in-top milk cans, military ration can, other food cans (some P-38-opened), can lids, aluminum soft-top beer cans	Other historic site and possibly Desert Strike Staff dates this to the DTC/C-AMA, 1942-1944 (WWII) 20th century	Plant site
SMB-H-185	Historic-period refuse scatter 4 cans: food cans (some P-38-opened), fuel can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-186	Historic-period refuse scatter 8 cans: bayonet-opened food cans, hole-in-cap milk can, coffee can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-189	Historic-period refuse scatter 12 cans: military ration can, military-issue soluble coffee can, beer cans (church-key-opened and aluminum soft-top type), knife-cut-X-opened cans, oil can glass bottles with post-1932, 1942, 1970s maker's marks	Other historic site and possibly Desert Strike Staff dates this to the DTC/C-AMA, 1942-1944 (WWII) 20th century	Plant site
SMB-H-190	Historic-period refuse scatter 6 cans: military ration can, other food cans, key-wind-opened meat can, church-key-opened beer can, aluminum soft-top beer can	Other historic site Staff dates this to the DTC/C-AMA, 1942-1944 (WWII) Early-to-mid 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-191	Historic-period refuse scatter 4 bayonet-opened cans glass bottle with 1858-1895 maker's mark, glass jar with1932-1942 maker's mark	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-192	Historic-period refuse scatter 4 cans: P-38-opened cans, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-193	Historic-period refuse scatter 4 cans: bayonet-opened cans, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-194	Historic-period refuse scatter 5 cans: hole-in-top milk can, church-key-opened cans, other food cans glass jar with 1920-1964 maker's mark	Prospecting/ranching Mid-20th century	Plant site
SMB-H-197	Historic-period refuse scatter 3 cans: hole-in-cap milk can, church-key-opened beer can, fuel can glass bottle fragments (several pint liquor bottles represented) with 1930s-1940s maker's marks	Prospecting/ranching Early-to-mid 20th century	Plant site
SMB-H-198	Historic-period refuse scatter 7 cans: milk can, sanitary cans, church-key-opened beer cans, aluminum soft-top beer can, fuel can piece of steel pipe, steel cable pieces	Other historic site Mid-20th century	Plant site
SMB-H-199	Historic-period refuse scatter 22 cans: milk can, oval sardine can, other food cans, church-key-opened beer can, aluminum soft-top beer can	Other historic site and possibly Desert Strike 20th century	Plant site
SMB-H-200	Historic-period refuse scatter 3 cans: rotary-opened tuna can, other food cans (one rotary-opened) munitions casing, wire	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-202	Historic-period refuse scatter 12 cans: hole-in-top milk can, other food can, church-key-opened beer cans; beer can marker "COORS" wooden post, braided wire	Prospecting/ranching Early-to-mid 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-203	Historic-period cleared areas, possible aerial marker 16 approximately 7-foot-x-2–3-foot rectangles cleared of the top layer of desert pavement and laid out in a line, with their long sides parallel	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-204	Historic-period refuse scatter 4 cans: key-wind-opened meat can, other food cans, oil can	Prospecting/ranching Early 20th century	Plant site
SMB-H-205	Fortified positions (site plan indicates 13, but that may be schematic rather than actual) 31 cans: military ration cans, 24 oil cans, food cans, beverage can glass fragments with post-1916 and 1940s maker's marks wire	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-206	Historic-period refuse scatter 37 cans: sardine can, military-issue soluble coffee can, beer cans (one church-key-opened), tobacco cans, can lids glass bottle fragments with 1924-1968 and post-1945 maker's marks historic ceramic sherd boot sole wash basin, stove parts, automobile parts	Other historic site Staff dates this to the DTC/C-AMA, 1942-1944 (WWII) Mid-20th century	Plant site
SMB-H-207	Fortified positions, 22 of them, associated historic-period refuse scatter 6 cans: military-issue soluble coffee can, food cans, can embossed "GRENADE," can lids grenade spoons, shell casing, metal strapping	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-208	Historic-period refuse scatter 9 cans: military ration can, key-wind-opened meat can, other food cans, aluminum soft-top beer can glass ink well-shaped bottle with metal threaded cap	Prospecting/ranching and DTC/C-AMA and possibly Desert Strike 20th century and 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-209	Historic-period refuse and debris scatter 5 cans: food cans, church-key-opened beer can, can lid cement block with rebar, wooden lath pieces	Other historic site 20th century	Plant site
SMB-H-210	Fortified positions, 8 of them, and 2 cairns 7 cans: military ration cans, military-issue soluble coffee cans, can lids munitions clips, milled lumber, metal strapping	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-212	Historic-period refuse scatter 6 cans: military ration cans, military-issue soluble coffee cans, can lids	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-213	Historic-period refuse scatter 1 food can glass jar with post-1925 maker's mark metal pipe fragment, metal spring, metal rod	Other historic site Early 20th century	Plant site
SMB-H-215	Historic-period refuse scatter 26 cans: military ration cans, oil cans, other food cans, beer can, can lids grenade part	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-216	Historic-period refuse scatter 49 cans: military-issue soluble coffee can, hole-in-top milk can, other food cans (some P-38-opened), oil cans, can lids glass bottle fragments with 1940s and 1939-1957 maker's marks metal band, wire, electrical conduit	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-218	Historic-period refuse scatter and rock ring hearth containing charcoal 4 cans: "vent-hole" milk can, other food can, oil cans flat glass bone button 1940s delivery van nails, bolt, washers, wire, milled lumber plastic (no details)	Prospecting/ranching Early 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-219	Historic-period refuse scatter 4 cans: military ration cans and lids	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-220	Historic-period refuse scatter 8 cans: military ration cans, military-issue soluble coffee can, can lids glass bottle with 1920-1963 maker's mark: "JERGENS LOTION"	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-221	Historic-period refuse scatter 3 cans: other food cans glass bottle fragments 1/8-inch metal rods	Other historic site 20th century	Plant site
SMB-H-222	Historic-period rock alignments forming letters and figures, rock hearth containing charcoal and pieces of wood, tank tracks 1 military ration can lid	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-223	Fortified positions, 8 of them 4 cans: military ration can, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-224	Historic-period refuse dump 110 cans: military ration cans, lantern globe (Dietz, post-1918), Clorox bottle glass (1929-1950), other bottle glass historic ceramic fragments metal teapot, metal tray, metal plate, metal screen, wire, miscellaneous metal bands and sheets (site plan indicates site just sampled, so was not completely recorded)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-227	Historic-period refuse scatter 9 cans: food cans (some rotary-opened), can lids (no detailed can recordation)	Other historic site 20th century	Plant site
SMB-H-229	Historic-period refuse scatter 6 cans: military ration can, paint can, other food cans, pull-top beverage cans	Other historic site Staff dates this to the DTC/C-AMA, 1942-1944 (WWII) 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-230	Historic-period refuse scatter 4 cans: military ration can, other food cans, key-wind-opened meat can, can lid (no detailed can recordation)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-231	Historic-period refuse scatter 4 cans: key-wind-opened sardine can, other food cans (one rotary-opened), baking powder can	Prospecting/ranching Early 20th century	Plant site
SMB-H-232	Historic-period refuse scatter 8 cans: military ration can, other food cans, can lids glass bottle with post-1938 maker's mark	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-233	Historic-period refuse scatter 11 cans: military ration cans, other food cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-234	Historic-period refuse scatter and cairn 19 cans: military ration cans, other food cans, beer cans (most aluminum soft-top type), can lid	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-235	Historic-period refuse scatter 8 cans: military ration cans, milk can, meat can, other food cans wire, sheet metal, munitions casing	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-236	Historic-period refuse scatter 12 cans: military ration cans, milk can, other food can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-243	Historic-period refuse scatter and hearth containing charcoal and can 2 cans: military ration cans and can lid bottle crown cap, braided wire (site plan scale incorrect)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-245	Historic-period refuse scatter, rock ring hearth, and 2 rock cluster features 15 cans: military ration cans, military-issue soluble coffee cans, milk cans, other food cans, can lids	DTC/C-AMA 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-246	Historic-period refuse scatter 10 cans: key-wind-opened meat can, other food cans, fuel cans, beer can glass jar with 1942 maker's mark	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-247	Historic-period cleared areas (3 probable tent pads) 1 P-38-opened can (site form site plan shows a "possible mining claim" and associated piece of milled lumber northeast of the tent pads, but form provides no description or discussion and EDAW 2010a, Table 12 does not mention it or include it in the use/date for the site)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-248	Historic-period refuse scatter 6 cans: milk can, church-key-opened beer can, P-38-opened can, other food cans	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-250	Historic-period cleared area, circle with 2 ear-like projections no artifacts	Other historic site 20th century	Plant site
SMB-H-251	Historic-period cleared areas, 1 oval, 1 circle no artifacts	Other historic site 20th century	Plant site
SMB-H-255	Historic-period refuse scatter 18 cans: sardine can, other food cans, beer cans (some church-key-opened, 1 aluminum soft-top type), can lids	Prospecting/ranching Early 20th century and late 20th century	Linear facilities corridor
SMB-H-256	Historic-period refuse scatter ? cans: military-issue soluble coffee cans glass medicine bottle milled lumber	DTC/C-AMA 1942-1944 (WWII)	Linear facilities corridor
SMB-H-257	Historic-period refuse scatter 9 cans: 7 military ration cans 1 food can 1 liquid can	DTC/C-AMA 1942-1944 (WWII)	Modified linear facilities corridor
SMB-H-258	Historic-period refuse scatter 3 cans: military ration can, church-key-opened beer can, other can glass bottle	DTC/C-AMA 1942-1944 (WWII)	Linear facilities corridor

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-259	Historic-period refuse scatter 4 cans: 2 church-key-opened beer cans 2 aluminum top pull-tab beer can 2 glass bottle fragments	Other historic site, possibly Desert Strike Mid-to-late 20th century	Modified linear facilities corridor
SMB-H-261/262 (AECOM combined sites SMB-H-261 and SMB-H-262 as a result of additional survey (Tennyson and Meiser 2010, p. 3)	Historic-period refuse scatter, bomb crater, 2 historic-period rock and cinder block hearths, burn area 100+ cans: evaporated milk cans, military ration cans, key-wind-opened meat can, pocket tobacco tin with hinged lid china fragment glass bottles with post-1938 maker's mark milled lumber, cinder blocks metal pipe, stove parts, refrigerator, air conditioner parts, automobile parts, bucket, dummy bomb fragments, wire	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Linear facilities corridor
SMB-H-265	Historic-period refuse scatter 75 cans: military ration cans, other food cans glass fragments with 1941 maker's mark	DTC/C-AMA 1942-1944 (WWII)	Linear facilities corridor
SMB-H-283	Historic-period refuse scatter 12 cans: milk cans, other food cans, church-key-opened beer can, fuel can glass bottle with 1935 or 1945 maker's mark	Prospecting/ranching Early 20th century	Plant site
SMB-H-284	Historic-period refuse scatter 11 cans: food cans, fuel can, baking powder can	Prospecting/ranching Early 20th century	Plant site
SMB-H-287	Historic-period refuse scatter 82 car parts 21 glass fragments suggestion that these associated with ranch site 404	Other historic site 20th century Staff assumes this is associated with site SMB-H-404, categorizes this as a Mining and Ranching site and dates it to the 1930s	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-288	Historic-period refuse scatter 2 cans: milk can, other food can car parts, alarm clock parts, gasket suggestion that these associated with ranch site 404	Prospecting/ranching Early 20th century Staff assumes this is associated with site SMB-H-404 and dates it to the 1930s	Plant site
SMB-H-290	Historic-period refuse scatter 10 cans: hole-in-cap milk cans, church-key-opened cans, other food cans (some P-38-opened)	Prospecting/ranching, DTC/C-AMA, and possibly Desert Strike Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-291	Historic-period refuse scatter 5 cans: 1 hole-in-cap milk can 1 church-key-opened beer can 1 fruit or vegetable can, bayonet-opened 1 aluminum top pull-tab beer can 1 fuel can	DTC/C-AMA, possibly Desert Strike 1942-1944 (WWII) mid-late 20th centure	Plant site
SMB-H-401	Historic-period refuse scatter 4 cans: food cans (opened with lever-type, or "jab and lift," opener, 1855-present), can lid, tobacco can with hinged lid	Prospecting/ranching Early 20th century	Plant site
SMB-H-402	Historic-period refuse scatter 4 cans: hole-in-cap milk cans, other food can cans partially embedded in ground, suggesting possible additional remains subsurface	Prospecting/ranching Early 20th century	Plant site
SMB-H-403	Historic-period oil can dump 67 motor oil cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-404	Historic-period ranch 3 stone and concrete structures, watering trough cans (no count or description provided, except that aluminum soft-top beer cans were noted) glass and ceramic fragments vehicle parts sheet metal, pipes, chicken wire cinder blocks, milled lumber, fencing components military ration cans, smoke landmines, munitions casings and clips	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-406	Historic-period refuse scatter 6 cans: sanitary cans, key-wind meat cans, tobacco can with hinged lid wood pile, cluster of quartz rocks	Prospecting/ranching Early 20th century	Plant site
SMB-M-407	Historic-period refuse scatter 7 cans: military ration can, milk can, other food cans, church-key-opened beer can, can re-used as pail milled lumber one lithic flake isolate	Prospecting/ranching Early 20th century Staff dates this to the DTC/C-AMA, 1942-1944 (WWII)	Plant site
SMB-H-408	Historic-period refuse scatter and possible historic-period rock hearth (rocks thermally altered, no charcoal present) 4 cans: sanitary food cans (knife-cut-circle-opened or rotary-opened) saw-cut faunal bone fragment	Prospecting/ranching Early 20th century	Plant site
SMB-H-409	Historic-period refuse scatter 3 cans: food cans, tobacco can with hinged lid glass soda bottle embossed with “1938” date (no detailed can recordation)	Prospecting/ranching Early 20th century	Plant site
SMB-H-411	Historic-period geoglyph, long narrow oval (possible aerial marker) no associated artifacts	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-413	Historic-period refuse scatter 3 cans: hole-in-top milk cans, coffee can glass jars and glass jar fragments (condiments)	Prospecting/ranching Early 20th century	Plant site
SMB-H-414	Historic-period refuse scatter 5 cans: key-wind meat can, “matchstick filler”-type milk can, other food cans, can lids wire bundle, ironwood firewood pile	Prospecting/ranching Early 20th century	Plant site
SMB-H-415	Historic-period refuse scatter 26 cans: P-38-opened cans, hole-in-cap milk cans, military-issued soluble coffee can, baking powder can, pocket tobacco tin with hinged lid solarized bottle glass fragments	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-416	Historic-period refuse scatter; wooden ramp 5 cans: military ration cans, other food can, milk can, oil can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-417	Historic-period refuse scatter 6 cans: food can, “matchstick filler”-type milk can, oil cans	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-M-418	Historic-period refuse scatter and rock hearth (rocks thermally affected; 1 rock an assayed cobble) 7 cans: food cans, hinged-lid tobacco cans, milk can, lard pail glass catsup bottle with post-1888 maker’s mark and metal threaded cap	Prospecting/ranching Early 20th century	Plant site
SMB-H-419	Historic-period refuse scatter in 2 loci; wooden ramps locus 1 6 cans: 1 food can, 1 fuel can window glass fragments wire, munitions clips, horseshoe nails, miscellaneous hardware locus 2 5 cans: food cans, hinged-lid can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-420	Historic-period refuse scatter 9 cans: oval sardine cans, milk cans, other food cans milled lumber piece	Prospecting/ranching Early 20th century	Plant site
SMB-H-423	Historic-period refuse and airplane crash debris scatter 28 cans: military ration cans, military soluble coffee can, milk cans, other food cans (P-38-opened, knife-cut-opened, punched-hole opened, bayonet-opened), fuel can, aluminum soft-top beer cans 300 airplane fragments	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-424	Historic-period refuse scatter 37 cans: military ration cans, other food cans, military-issue soluble coffee can, milk cans, sardine can, aluminum soft-top beer can, fuel can glass jar wooden lath piece	DTC/C-AMA and possibly Desert Strike 1942-1944 (WWII) and late 20th century	Plant site
SMB-H-426	Historic-period refuse scatter 13 cans: knife-cut-opened sanitary cans (11 probably contained liquid, such as fruit juice) modern glass bottle (Anheiser Busch) (partially or nearly entirely buried "in desert pavement"—suggests aggrading environment)	Prospecting/ranching Early 20th century	Plant site
SMB-H-427	Historic-period refuse dump 93 cans recorded (all?): military ration cans, cocoa powder can, other food cans (almost all P-38-opened), spice cans, beer or beverage cans, oil cans glass condiment jar, glass fragments with circa 1939 maker's mark munitions casings (.22 caliber)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-432	Historic-period structure foundation concrete slab foundation of a cinder-block structure (only stubs of walls left) 1 church-key-opened beer can	Other historic site Mid-20th century	Plant site
SMB-H-439	Historic-period refuse scatter 7 cans: military ration cans, meat can, milk can, other food cans, can lid	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-442	Historic-period refuse scatter 25 cans: military ration can, other food cans (most P-38-opened), spice can, tobacco can with hinged lid, can lids glass bottle fragments, flat glass fragments bucket, crown bottle caps, wire, nail, bucket handles, wire	Prospecting/ranching and DTC/C-AMA Early 20th century and 1942-1944 (WWII)	Plant site
SMB-H-447	Historic-period refuse scatter 10 cans: meat cans, hole-in-cap food cans, Coors beer can	Other historic site 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-450	Historic-period refuse scatter 7 cans: hole-in-cap food cans, military ration cans, other food cans (most P-38-opened) glass jar with Ball maker's mark (not dateable)	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-460	Historic-period refuse scatter 8 cans: military ration cans, sardine can, other food can, baking soda can, fuel cans braided wire	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-505	Historic-period refuse scatter 27 cans: military ration can, key-wind meat can, other food cans, milk cans, coffee can, seasoning can, can lid, church-key-opened beer cans, tobacco can with hinged lid 1 glass jar 4 glass bottles 1 glass cup ceramic fragment	Prospecting/ranching Early 20th century Staff dates this to the DTC/C-AMA, 1942-1944 (WWII)	Plant site
SMB-H-507	Historic-period refuse scatter 5 cans: hole-in-cap can, military ration can, aluminum soft-top beer can	Other historic site and possibly Desert Strike 20th century Staff dates this to the DTC/C-AMA, 1942-1944 (WWII)	Plant site
SMB-H-508	Historic-period refuse scatter 5 cans: aluminum soft-top beer cans, food can	Other historic site and possibly Desert Strike 20th century	Plant site
SMB-H-509	Historic-period refuse scatter 3 cans: military ration can, other food can, milk can glass jar fragment with post-1940 maker's mark	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-513	Historic-period refuse scatter 6 cans: hole-in-cap milk can, key-wind meat cans, other food can, aluminum-top pull-tab beer can	Prospecting/ranching and possibly Desert Strike Early and late 20th century	Plant site

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-514	Historic-period wood-frame structures (2), cinder block hearth, arranged cobble feature 1 unidentified wood-frame structure represented by 3 upright posts and baling wire 1 wood-frame outhouse represented by an upright post and a wooden chair with a hole cut out of the plywood seat (no details on shape or mode of construction of the cinder block hearth) 3 circular piles of cobbles aligned N-S sanitary cans* milled lumber, nails, wire (no photographs or drawings of structures or features provided) *(EDAW 2010a, Table 12 indicates cans are present, but site form makes no mention of them)	Prospecting/ranching Early 20th century	Plant site
SMB-H-522/525 (AECOM combined sites SMB-H-522 and SMB-H-525 as a result of additional survey (Tennyson and Meiser 2010, p. 3)	Historic-period refuse scatter and excavated pits with berms 1,000+ cans: military ration cans, other food cans (some P-38-opened), can lids, church-key-opened and aluminum-top pull-tab beer cans, hinged-lid pocket tobacco can, hole-in-cap milk cans, aluminum soft-top beer can, kerosene cans 30 historic-period ceramic fragments 33 glass bottles and fragments bottle caps, cable, scrap metal, lantern, buckets, metal conduit, wash basin, bed frame, car seat, wire, bricks, metal lock, license plate, metal tray, sheet metal milled lumber (no detailed can recordation; glass container maker's marks not noted and/or not researched or dates not provided; and no ceramic identification or dating) 1 cryptocrystalline silicate material (CCS) hammerstone 2 CCS flakes	Prospecting/ranching, DTC/C-AMA, other historic site, possibly Desert Strike, and prehistoric 20th century and 1942-1944 (WWII) Prehistoric	Linear facilities corridor

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-527	Historic-period refuse scatter 10 cans: military ration cans, key-wind meat cans, other food cans, hole-in-cap milk can, church-key-opened beer can, aluminum soft-top beer cans, fuel can	Other historic site (possibly Desert Strike(?)) Mid-to-late 20th century	Plant site
SMB-H-528	Historic-period refuse scatter 15 cans: military ration cans, key-wind meat cans, other food cans, can lid, hole-in-cap milk can, fuel can	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-529	Historic-period refuse scatter 33 cans: military ration cans, other food cans (some p-38-opened), milk can, beer cans milled lumber	DTC/C-AMA 1942-1944 (WWII)	Plant site
SMB-H-600	Historic-period road, N-S-running dirt two-track; site forms says, "associated with the gypsum mines in Midland"	Early 20th century roads Early 20th century	Plant site
SMB-H-601	Historic-period road, N-S-running along a section line between Blythe Airport and a road south of McCoy Wash scattered refuse deposits occur along the road, many dating to the early 20th century and thought to represent sheep ranching in this area	Early 20th century roads Early 20th century	Plant site
SMB-H-CT-001 (Only the incomplete draft site form was available; staff made the cultural component and date determinations.)	Historic-period refuse scatter and four lithic debris concentrations 1 church-key-opened beer can 11+ glass fragments (bottle bases with Owens-Illinois, Hazel Atlas, and Anchor Hocking marks) (glass container maker's marks not researched, dates not provided) Lithic concentration 1: 14 CCS flakes Lithic concentration 2:5 CCS flakes Lithic concentration 3: 11 CCS debitage Lithic concentration 4: 1 biface, cores, debitage, tested cobbles (materials not noted)	Other historic site and prehistoric 20th century Prehistoric	Modified linear facilities corridor
SMB-H-CT-002	Historic-period refuse scatter 11 cans: "primarily food cans" 2 glass jars (Owens-Illinois and Anchor Hocking marks) 2 D-cell batteries, marked, "Mar 1943"	DTC/C-AMA 1942-1944 (WWII)	Modified linear facilities corridor

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-MT-002	Concrete slabs, well head, refuse piles, gravel pile, prehistoric isolate buried materials present—possibly purposeful burial of refuse 100+ cans: oil, food, beverage, meat glass fragments historic-period ceramic fragments building debris dump (no accurate can count, no can recordation, no glass dating, no ceramic identification and dating) 1 basalt scraper	Prospecting/ranching, prehistoric 20th century Prehistoric	Black Rock Road
SMB-H-TC-101 (Only the incomplete draft site form was available; staff made the historic-period cultural component and date determinations.)	Historic-period refuse scatter and round milled post; prehistoric lithics and ceramics (pot drop?) 3 cans: military ration can, knife-tip-opened evaporated milk can, jab-lift-opened sanitary can 1 quartzite flake 10 Colorado Buffware sherds	DTC/C-AMA and prehistoric 1942-1944 (WWII) Prehistoric	Modified linear facilities corridor
SMB-H-TC-102 (Only the incomplete draft site form was available; staff made the cultural component and date determinations.)	Historic-period refuse scatter 13 cans: 2 military ration cans 3 evaporated milk cans (1 knife-tip-opened, 1 ice-pick opened) 1 jab-lift-opened sanitary can 2 coffee cans (1 interior friction lid, 1 key-strip-opened) 1 shoe polish can 1 paint can	DTC/C-AMA 1942-1944 (WWII)	Modified linear facilities corridor
SMB-H-TC-103 (Only the incomplete draft site form was available; staff made the historic-period cultural component and date determinations.)	Historic-period refuse scatter; prehistoric isolate 9 cans: 3 knife-tip-opened evaporated milk cans 1 military ration can 2 sanitary cans, 1 circle-slice-opened, 1 center-opened 1 film can 1 quartzite mano	DTC/C-AMA and prehistoric 1942-1944 (WWII) Prehistoric	Modified linear facilities corridor

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
SMB-H-TC-104	Historic-period refuse scatter 17 cans: evaporated milk, beverage, sanitary, oil .30 caliber rifle cartridges (no count) 1 baking pan	DTC/C-AMA 1942-1944 (WWII)	Modified linear facilities corridor
SMB-H-WG-101 (Only the incomplete draft site form was available; staff made the cultural component and date determinations.)	Historic-period refuse scatter 120+ cans and glass fragments: 2 military ration cans 25 sanitary cans 3 internal friction lid cans 7 evaporated milk cans 2 rotary-opened cans 1 fruit juice can 5 beverage cans 1 coffee can 1 tobacco tin 1 paint can 4 gasoline cans 1 amber glass liquor bottle 1 aqua glass soda bottle 1 clear glass molasses bottle 4 green glass bottle fragments 1 sauce pan 2 buckets	DTC/C-AMA 1942-1944 (WWII)	Modified linear facilities corridor
SMB-H-WG-102	Historic-period refuse scatter and prehistoric pot drop 80+ cans: 23 military ration cans and 7 can lids 18 evaporated milk cans 12 sanitary cans 9 bayonet-opened 1 P-38-opened 1 external friction lid 1 bayonet-opened oval sardine can 1 church-key-opened meat can 1 screw-top baking powder can 2 church-key-opened beverage cans 1 cone-top beer can 1 crown bottle cap 1 fuel can 11 oil cans 15 Colorado Buffware sherds	DTC/C-AMA and prehistoric 1942-1944 (WWII) Prehistoric	Modified linear facilities corridor
Ethnographic Resources			

Resource Type and Identifying Number[18]	Resource Description[19]	Cultural Components and Dates	Location
Kokopelli and Cicimitl geoglyphs and possible trails	geoglyphs, trail segments (?)	Prehistoric or ethnographic	Linear facilities corridor
Creator's Throne	Masonry rock seat, petroglyphs, and trail	Prehistoric, ethnographic	Linear facilities corridor
Built-Environment Resources			
Blythe Army Air Base reservoir	water storage facility	DTC/C-AMA 1942-1944 (WWII)	linear facilities corridor
Radio communications facility	building and equipment	Other historic site Mid-to-late 20th century	linear facilities corridor
SMB-H-MT-104	Blythe-Eagle Mountain electrical transmission line segment (approximately 1.500 feet long) wooden H-frame supports	Other historic site Mid-late 20th century	Modified linear facilities corridor
Archaeological District			
Prehistoric Quarries Archaeological District (PQAD)	Gravel deposits used as toolstone sources and associated fire features and lithic reduction loci.	Prehistoric	Plant site
Cultural Landscapes			
Prehistoric Trails Network Cultural Landscape (PTNCL)	Halchidhoma Trail, the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected	Prehistoric	In and around BSPP
DTC/C-AMA Cultural Landscape (DTCCL)	Archaeological remains of WWII military training activities across the entire region	1942-1944 (WWII)	In and around BSPP

DETERMINING THE HISTORICAL SIGNIFICANCE OF CULTURAL RESOURCES

The California Environmental Quality Act (CEQA) requires the Energy Commission, as a lead agency, 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,[22] 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 Historical Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and up 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).

The assessment of potentially significant impacts to historical resources and the mitigation that may be required of a proposed project to ameliorate any such impacts depend on CRHR-eligibility evaluations.

APPROACHES TO CRHR ELIGIBILITY EVALUATIONS OF CULTURAL RESOURCES IN THE BSPP PROJECT AREAS OF ANALYSIS

Under CEQA, only CRHR-eligible cultural resources that a proposed project could potentially impact need be considered in staff's recommendations for mitigation

[22] 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.

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 or owner'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 a project's inventory are eligible for the CRHR, staff usually obtains additional data on the resources likely to be impacted by a 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 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 in November 2009, this approach 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. In December 2009, the applicants for these four projects 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)[23], 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.

[23] 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.

In staff's BSPP 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 original 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 for the BSPP, the Genesis Solar Energy Project, the Palen Solar Power Project, and the Ridgecrest Solar Power Project separate final environmental documents 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 Energy Commission cultural resources staff's plan, under the approach discussed above, to incorporate into the BLM's PA the BSPP impact mitigation measures required under CEQA. Instead, staff recommended that the Energy Commission adopt for the original BSPP, conditions of certification to mitigate for the project's impacts staff had identified. These conditions remain largely unchanged in this Staff Assessment.

The conditions of certification in the Final Decision (CEC 2010e) provide 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.

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 project owner 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 BSPP 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 Energy Commission staff 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 field work 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 BSPP cultural resources evaluations in this document. 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 SA, staff is not required to make NRHP determinations for CEQA purposes. But for some cultural resources located within BSPP'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 regional 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.

CRHR EVALUATIONS OF CULTURAL RESOURCES IN THE BSPP PAAS

Energy Commission staff has determined for each cultural resource subject to potential impacts from the BSP its CRHR eligibility and for some, additionally, their NRHP eligibility. Staff has considered only archaeological sites, and has not considered archaeological isolates, as distinguished by AECOM.

Energy Commission staff assumed that all archaeological sites that would be impacted would be eligible for one or both registers (see previous subsection), so staff focused its

evaluation efforts on the 203 resources (2 cultural landscapes, 1 archaeological district, and 201 individual archaeological resources) expected to be directly impacted by the BSPP. The goal of this evaluation was to determine if any of these 203 resources were not eligible so avoidance or mitigation would be unnecessary.

Ineligible Cultural Resources

Historic-Period Archaeological Sites

On the basis of the information provided in the site forms, staff was able to determine some identified individual historic-period archaeological resources ineligible for the CRHR. It is staff's professional opinion that the majority of historic-period refuse scatters, once sufficient data have been recorded to establish their accurate location, their age, and their general contents, have little more to contribute to our knowledge of the use of the Palo Verde Mesa in the historic period. Thus staff has determined that the 28 sites AECOM categorized as "Twentieth-Century Prospecting and Ranching" and the 13 sites AECOM categorized as "Other Historic Period" refuse scatters, when no other features or structures are present, are not eligible for the CRHR because they do not qualify under Criterion 4.

These ineligible sites are listed in **Cultural Resources Table 3**. Those Twentieth-Century Prospecting and Ranching sites that staff did assume eligible and the assumed-eligible DTC/C-AMA/ DTCCL sites are listed in **Cultural Resources Table 4**.

Cultural Resources Table 3
Ineligible Historic-Period Archaeological Sites (Refuse Scatters)

Twentieth-Century Prospecting and Ranching	Other Historic Period
SMB-H-116	SMB-H-127
SMB-H-119	SMB-H-170
SMB-H-120	SMB-H-183
SMB-H-124	SMB-H-198
SMB-H-145	SMB-H-199
SMB-H-161	SMB-H-209
SMB-H-173	SMB-H-213
SMB-H-176	SMB-H-221
SMB-H-177	SMB-H-227
SMB-H-179	SMB-H-250
SMB-H-194	SMB-H-255
SMB-H-197	SMB-H-259
SMB-H-202	SMB-H-447
SMB-H-204	
SMB-H-218	
SMB-H-231	
SMB-H-401	
SMB-H-402	
SMB-H-406	
SMB-H-408	
SMB-H-409	
SMB-H-413	
SMB-H-414	

Twentieth-Century Prospecting and Ranching	Other Historic Period
SMB-H-418 (historic component only)	
SMB-H-420	
SMB-H-426	
SMB-H-513	
SMB-H-CT-001 (historic component only)	

Built-Environment Resources

AECOM's recorder of the archaeological site form for the Blythe-Eagle Mountain transmission line initially made no recommendations regarding the eligibility of this built-environment resource for the CRHR. However, in Addendum 1 of the Class III report (AECOM 2010-A1), it was found by AECOM to be ineligible for listing on either the NRHP or CRHR. It was assigned a resource identifier of SMB-H-MT-104.

Energy Commission staff in the Genesis Solar Energy Project RSA provided historical background information and a CRHR eligibility determination for this resource, as excerpted below.

The Blythe-Eagle Mountain transmission line is associated with regional population growth in the Colorado River Valley during the 1950s. In 1940, the population of Blythe was approximately 2,350, and by 1950, the population was over 4,000, reflecting a post-WW II boom in population occurring 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's fertile agricultural lands and the expansion of rail and automobile transportation brought new residents to the area (Bagwell and Bastian 2010, p. C.3-138).

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 1 and/or Criterion 2 by way of an association with a significant facility (Bagwell and Bastian 2010, p. C.3-138).

Staff, in the Genesis Solar Energy Project RSA, concluded that the 161-kV Blythe-Eagle Mountain Transmission Line was not eligible for inclusion in the CRHR. Evaluated under Criterion 1, this linear resource was not associated with events that have made a significant contribution to broad patterns in our history. Rather it represented 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 did 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 (Bagwell and Bastian 2010, p. C.3-138).

Ethnographic Resources

On the basis of the information provided by AECOM or otherwise gathered, staff determined ineligible for the CRHR the Kokopelli, Cicimitl geoglyphs and the Creator's throne identified by representatives of La Cuna de Aztlan Sacred Sites Protection Circle as sites or places possibly subject to impact from construction in the BSPP's linear facilities corridor.

The BLM's Palm Springs Field Office archaeologist informed staff that two studies of the Kokopelli and Cicimitl geoglyphs, one done by AECOM, for the applicant, and the other by LSA, for BLM, concluded that these geoglyphs are recent in origin (Kline 2010). These conclusions were based on reviews of historic maps and aerial photography, showing that these geoglyphs did not exist prior to 1994. Additional evidence for a recent origin was observed in the lack of desert patina on many rock surfaces and in the superimposition of the rocks composing the geoglyphs over wheeled vehicle tracks and over the scars left by mechanized gravel removal (assumed to be for landscaping purposes).

On the basis of a site visit to the Creator's Throne, staff determined ineligible for the CRHR the Creator's throne identified by representatives of La Cuna de Aztlan Sacred Sites Protection Circle as a site or place possibly subject to impact from construction in the BSPP's linear facilities corridor.

To be eligible for the CRHR, a cultural resource must be 50 years old or older unless exceptionally significant, and the evidence is conclusive that the Kokopelli and Cicimitl geoglyphs are less than 50 years old. No evidence is currently available to make the case for these features to be considered exceptionally significant. They are also not listed as sacred sites with the Native American Heritage Commission.

While an original throne may have been situated where the current throne is currently located, and may have been older than 50 years of age, the cement appears to be much more recent and overwhelms the physical construction of the throne. No evidence is currently available to make the case for the throne feature to be considered exceptionally significant. The throne is not listed as a sacred site with the Native American Heritage Commission. No Native American Tribe to date has identified the throne as a cultural resource important for the continuance of cultural traditions. In addition, historical resources must maintain integrity based upon seven criteria of feeling, association, setting, location, design, materials and workmanship. Staff finds that the more modern use of cement to hold the throne together is inconsistent with materials that would have been traditionally been available and used to construct such a

site feature, were the feature to be indeed so old to have accommodated or launched an Aztec deity's ancient mythological journey. In addition, staff notes the close proximity of the throne to multiple and incompatible modern developments such as an interstate highway, transmission lines, four wheel drive roads, cell towers, an illegal trash dump and a nearby airport that mar the integrity of setting, feeling, and association, that, were the throne to be indeed a historical resource, would no longer convey its significance. Further, the two individual petroglyphs, while more likely of greater age than 50 years have also lost integrity due to similar reasons stated above. It is noted that the dot pattern petroglyph has scratched modern graffiti overlayed on top of the more archaic etchings. While the diamond shaped or rattlesnake motif petroglyph does not have modern graffiti overlaying the more archaic images, staff still notes that the integrity of the encompassing site is greatly compromised by the modern developments stated above. While the two petroglyphs have lost considerable integrity, there is some information potential that can be gleaned from the petroglyphs. However, the project as proposed would not physically damage, alter or destroy the petroglyphs' information potential.

For these reasons staff has determined the Kokopelli and Cicimitl geoglyphs and the Creator's Throne (and the associated trail) are ineligible for the CRHR. The petroglyphs are recommended eligible to the CRHR for their information potential but would not be impacted by the project as proposed.

While the members of La Cuna de Aztlan Sacred Sites Protection Circle consider the Kokopelli and Cicimitl geoglyphs and the Creator's Throne to be sacred sites and may conduct spiritual activities associated with them, the protections afforded by California cultural resources law do not apply to these features, and accordingly Energy Commission staff is not recommending any conditions of certification related to ethnographic resources.

Eligible Cultural Resources

Staff was unable, on the basis of the information provided in the site forms, to determine any identified individual archaeological resources eligible for the CRHR. Data insufficiencies contributing to staff's assuming eligibility for archaeological resources included inconsistent or incongruous field recording and site form data omissions.

Entry A13, "Site Interpretation" on the DPR 523A site forms, was consistently truncated on all forms after two lines of discussion. So, some of the most important information about the archaeological sites was often missing from the forms.

For prehistoric lithic scatter sites, some lacked site size data and/or had indecipherable site plan scales that made it impossible to determine if the Office of Historic Preservation's recordation program for small lithic scatters (called CARIDAP) would apply to them. Since CARIDAP recordation was AECOM's recommended mitigation for impacts to these sites, the lack of site size data made it impossible for staff to determine whether AECOM's recommended mitigation was appropriate. An additional problem was that some lithic scatter sites had site plans that seemed to indicate that recordation

at the sites was done only on sample units, leaving the possibility that the entire sites were not recorded. The site forms did not elucidate this situation, but rather reported artifact counts as though they were totals for the entire site.

If staff's standard cultural resources evaluation process had been applied to this project, the great majority of these site form data deficiencies would have been corrected by means of data requests, and staff would then have made eligibility determinations. But because, for the SA/DEIS, staff was assuming all identified resources were register-eligible, the data in the site forms were all that staff had on which to base eligibility determinations for the previous SA. These data were not and are not sufficient for a definitive determination. In fairness to AECOM, when they did their fieldwork they were operating under the usual cultural resources management survey and evaluation protocols, and so they carried out their site recordation with the entirely reasonable expectation of conducting additional fieldwork to gather data for site eligibility determinations. Under the eligibility assessment approach staff used for the SA/DEIS, AECOM did not have that opportunity, prior to Energy Commission certification.

AECOM's architectural historian recommended the WWII Blythe Army Air Base (BAAB) as potentially eligible for both the NRHP and the CRHR under two eligibility criteria. Under Criterion A (NRHP)/Criterion 1 (CRHR), it is potentially eligible for its association with the early stages of the Desert Training Center and for its association with an important and unique period of development for the Blythe community and the Palo Verde Mesa. The possibility that the BAAB may contain archaeological deposits holding data important in history makes it also potentially eligible under CRHR Criterion 4[24]. The BAAB reservoir, as one of the components of the base, is therefore potentially eligible for both the NRHP and the CRHR (EDAW 2009d, pp. 26–27). Staff accepted this recommendation and determined this resource eligible for the CRHR.

Cultural Resources Assumed Eligible for the CRHR

Cultural Landscapes and an Archaeological District

As discussed above, through its examination of the archaeological data, staff identified two assumed-register-eligible cultural landscapes (historic districts) and an assumed-register-eligible archaeological district. All of the prehistoric archaeological sites and the archaeological district contribute to the Prehistoric Trails Network Cultural Landscape (PTNCL). Specific prehistoric archaeological sites (quarries, thermal cobble features, and lithic chipping stations) contribute to the Prehistoric Quarries Archaeological District (PQAD). All of the World War II-era DTC/C-AMA historic-period archaeological sites contribute to the DTC/C-AMA Cultural Landscape (DTCCL).

Staff did not have sufficient data to determine the register eligibility of the PTNCL, the DTCCL, or the PQAD. So staff assumed the PTNCL, the DTCCL, and the PQAD are eligible for both the NRHP and the CRHR, and BSPP impacts to them must be avoided or mitigated.

[24] EDAW 2009d—AECOM : Blythe Solar Power Project Historic Architecture Field Survey Report, August, 2009.

The Prehistoric Trails Network Cultural Landscape

The PTNCL consists of the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected. These loci include springs (and the dry lakes when they were not dry), food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, petroglyphs).

Staff did not have sufficient information to determine the boundaries and period of significance of the assumed-eligible PTNCL, nor was staff able to specify definitively all of the contributors to the district. But BSPP cumulative impacts (see **"Cumulative Impacts and Mitigation,"** below) to this resource and direct physical impacts to its contributors must be mitigated. The 2010 Commission Decision (CEC 2010) included mitigation for cumulative impacts which would entail further research to determine the PTNCL boundaries, its period of significance, and contributing resources.

Prehistoric Quarries Archaeological District

Staff also identified a discontiguous prehistoric archaeological district, described above, encompassing prehistoric quarry sites and associated thermal cobble and chipping station features.

BLM archaeologists in the late 1980s conducted field studies on a number of prehistoric pebble terrace quarries on the Palo Verde Mesa and recommended to the State Historic Preservation Officer (SHPO) that, due loss of integrity from modern disturbances, these sites, among them CA-RIV-2846 and CA-RIV-3419 (identified by staff as contributors to the PQAD), were not individually eligible for the NRHP. The SHPO concurred on July 5, 1989, with BLM's determination. Ineligibility for the NRHP does not automatically make a cultural resource ineligible for the CRHR, however, and a contributor to an eligible cultural landscape or archaeological district does not have to be individually eligible. Moreover, staff believes this 20+-year-old determination should be re-considered, as should any determination more than five years old of an extant archaeological resource.

Staff did not have sufficient information to determine the boundaries and period of significance of this assumed-eligible district, nor was staff able to specify definitively all of the contributors to the district. But BSPP impacts to this district must be avoided or mitigated. The 2010 Commission Decision provided mitigation for project impacts on this resource which would entail further field work to determine the district boundaries, the period of significance, and any additional contributing resources, and if appropriate, nominate the PQAD to the CRHR and NRHP as an archaeological district.

The DTC/C-AMA Cultural Landscape

The DTC/C-AMA is a designated California Historical Landmark (#985). As defined by staff, the DTC/C-AMA Cultural Landscape (DTCCL) consists of all the archaeological remains of the DTC/C-AMA WWII military training activities that were conducted across the entire region. These sites are highly significant for their association with General George S. Patton and for their ability to contribute to our understanding of how American soldiers were trained during WWII. As represented at the BSPP, these remains consist primarily of refuse scatters and dumps, with some fortified positions,

cleared areas, and possible tent camps, plus the remains of a structure evidencing possible weapons testing.

The DTC/C-AMA was nominated as a historic district for listing in the NRHP in 1980, but at that, time the resource was not yet 50 years old, and it was not listed. Staff has assumed an eligible DTC/C-AMA cultural landscape exists in and around the BSPP. The period of significance would be 1942–1944, but associated resources could date from 1942–1955, as it is known that the Army carried on de-commissioning activities at the DTC/C-AMA particularly the recovery of live ordnance, in the early 1950s.

The DTCCL extends beyond the boundaries and impacts of the BSPP, and its definition and management must encompass the remaining BLM-managed land where the landscape exists. Staff did not have sufficient information to determine the boundaries of the assumed-eligible DTC/C-AMA Cultural Landscape (historic district), nor was staff able to specify definitively the contributors to the district. But BSPP cumulative impacts (see "Cumulative Impacts and Mitigation," below) to this resource and direct physical impacts to its contributors must be mitigated. The author of a recent and much-consulted study, Matt C. Bischoff, has proposed the re-nomination of the DTC/C-AMA (Bischoff 2009). The nomination process and definition of the boundary of the DTCCL are ongoing in 2013. The 2010 Commission Decision provided mitigation for cumulative impacts which would entail further research to document the resource, determine its boundaries, its period of significance, and the contributing resources, and, if appropriate, nominate the DTC/C-AMA to the NRHP as a cultural landscape.

Assumed-Eligible Individual Resources in the BSPP PAAs

Staff had insufficient information to make a determination on the CRHR eligibility of the identified resources and so assumed CRHR eligibility for the resources discussed below. Impacts to these resources would have to be avoided or mitigated by means of data recovery.

Because of data insufficiency, staff had to originally assume the eligibility for the following 10 prehistoric lithic scatter sites: SMB-P-160, SMB-P-228, SMB-P-238, SMB-P-241, SMB-P-244, SMB-P-249, SMB-P-252, SMB-P-530, SMB-P-531, and SMB-P-532. They all now appear to be outside the boundary of the amended project area.

Because they are contributors to the PTNCL, staff has also assumed the eligibility of the prehistoric trail site (SMB-P-410) and of the three prehistoric "pot drop" sites (CA-RIV-1136, SMB-M-TC-101, and SMB-M-WG-102). The former two such sites are now outside the boundary of the amended project area.

The hearth feature at SMB-H-164, while not in the PQAD, is an example of a rare prehistoric site type in the desert—the fire feature—and has been assumed eligible for the CRHR.

For historical archaeological sites, site form recording inconsistencies between recorders and seeming incongruities in the co-occurrence of certain can types and can traits caused staff concern as to whether dateable can traits were correctly identified in

the field. Misidentification could have resulted in a number of sites that may date to the DTC/C-AMA period being incorrectly interpreted as dating to the early twentieth century or to the Desert Strike use of the mesa. Misidentification would also result in multi-component sites with some cans ostensibly dating to the early 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 the DTCCL that staff identified and determined CRHR-eligible, if sites that could be contributors are not considered and if the basis for determination of contributors is the number of artifacts representing the period of significance, and that count is incorrect.

The above data problems, and the need for all contributors to DTCCL to be correctly identified, led staff in the SA/DEIS to assume eligibility for all of the refuse deposit sites having artifacts predating 1955. In the RSA, staff opted to attribute any historic-period refuse deposit whose site form has clearly identifiable DTC/C-AMA-era artifacts to the DTC/C-AMA and DTCCL, regardless of the accuracy of dating any other materials at a refuse scatter site and regardless of their age and association. This was justified because only the DTCCL contributing refuse scatters can be assumed NRHP-eligible. Thus, staff revised earlier evaluations and determined a number of historic-period refuse scatters ineligible for the CRHR (see above).

AECOM identified two historic roads dating to the early twentieth century, according to historic maps. They (SMB-H-600 and SMB-H-601) are both dirt two-tracks, and AECOM recorded them in a minimal way on a DPR 523A—the archaeological site form. This did not provide sufficient information for staff to make a determination on the eligibility of the two roads, so staff assumed they are eligible for the CRHR, and BSPP impacts to them must be avoided or mitigated. Additional research and an evaluation of both roads proceeded in the compliance phase of the originally licensed project. Condition of Certification **CUL-12** required that a qualified architectural historian conduct research and create a report on the roads, with particular attention paid to their role during the DTC/C-AMA years. The conclusion reached by Solar Millennium's consultant, AECOM, was that the two roads are not eligible for listing on the CRHR. It was found that the roads had multiple uses over many years and while in use during the military exercise in the region, are not necessarily contributors to the DTCCL (AECOM 2010-CUL 12). Staff concurred with this conclusion in the compliance phase.

AECOM's architectural historian recommended the built-environment resource, the 1950 radio facility, as not eligible for the NRHP or the CRHP. The only justification for the recommendation was that the facility appeared to have undergone significant alteration and did not retain sufficient integrity to be eligible (EDAW 2009e, p. 27). Insufficient information was provided on the facility for staff to make an independent determination on the facility's eligibility, so it was assumed eligible for both the NRHP and the CRHR, and any BSPP impacts to it must be avoided or mitigated As required in Condition of Certification **CUL-14**, a report was prepared documenting the history of the radio facility and it was found to be ineligible for listing on the CRHR (AECOM 2010-CUL 14). Staff concurred with this conclusion in the compliance phase.

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. However, under the previous evaluation approach used for the SA/DEIS, staff assumed all project-related direct, indirect, and cumulative construction impacts, to known cultural resources located in the PAAs, that staff did not determine to be ineligible for either the NRHP or the CRHR, would be significant. Staff, however would not assume that all direct, indirect, and cumulative construction impacts to yet-to-be-discovered cultural resources would also be significant. Rather, those impacts would be assessed at the time of discovery, applying the above criteria.

Identification and Assessment of Direct Construction Impacts

To determine the BSPP's impacts, staff developed an alternate concept of the area in which cultural resources would be impacted by the original 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's assessment of the BSPP's impacts to register-eligible and assumed-register-eligible cultural resources entails assuming as well that all cultural resources located within the impact block would be significantly impacted by the project and that these impacts would require mitigation.

For the original project, staff asked Palo Verde 1 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 submittals from the original project, (Solar Millennium 2010b, figs. DR-CR-120a and b), staff concluded that:

- General cutting and filling would disturb the overall BSPP plant site to a maximum depth of 7 feet.
- In the solar array fields, BSPP collector foundation excavations would cause ground disturbance down to a maximum depth of 16 feet, and the collectors would intrude into the flat landscape to a maximum height of 24 feet.
- In the power blocks, BSPP equipment foundation excavations would cause ground disturbance down to a maximum depth of 7 feet, and the equipment would intrude into the flat landscape to a maximum height of 80 feet.
- Along the linear facilities corridor, BSPP natural gas pipeline trench excavations would cause ground disturbance down to a maximum depth of 10 feet, and the transmission line supports would create an intrusion into the flat landscape to a maximum height of 140 feet. (The applicant did not provide the depth of ground disturbance resulting from transmission line support foundation excavations for either the original project's gen-tie transmission line or its temporary construction power line, nor for the two telecommunications lines.)

The 2013 Amendment proposes new projections for grading of the site and the depth of disturbance for support structures. The amended project would not require a leveled surface as the solar thermal technology required. The 2013 Amendment states that "due to the reduced blading and depending upon the Modified Project PV layout and design, there is the potential to avoid some smaller archaeological sites." However, the amendment is not specific about the need for grading and provides no estimate of the depth of disturbance due to site grading activities. In addition to site grading, the project description discusses the PV systems foundations. Utilizing either single-axis tracking, or fixed tilt systems, the support posts are typically driven to a depth of 8 to 10 feet to support an above-ground projection of 5 to 6 feet (NEBS2013a, Project Description, Section 2.2.2.3,). The degree of excavation and disturbance would not be determined until the final PV technology is chosen. The installation of the support posts would require lesser ground penetration than the technology used in the original project.

The 2013 Amendment eliminates the natural gas pipeline, therefore the trench excavations noted above would not occur in the current scenario. Transmission line support foundations impacts would be the same as the originally licensed project, with an approximately 50 x 50 foot area of temporary disturbance at each structure. An area of 100 x 300 feet would be temporarily disturbed for the pull sites (NEBS2013a, Project Description, Section 2.4).

In both the original project and the 2013 Amendment, staff has determined that all archaeological resources, determined and/or assumed register-eligible, known and possibly yet to be discovered during construction, and located within the BSPP's impact block, would be significantly impacted by the BSPP's construction. Staff has also determined that the integrity of setting and integrity of feeling of all known built-environment resources, determined and/or assumed register-eligible and located within the BSPP's impact block, would be significantly impacted by the construction of the BSPP.

The original licensed project included adjustments to the BSPP's eastern plant site boundary, which resulted in a re-routing of the project's four proposed drainage channels. The drainage had the potential to impact buried archaeological sites. According to the current 2013 Amendment, the reduction of the site grading needed for the PV versus solar trough technology would result in less storm water runoff exiting the site (NEBS2013a, Biological Resources, Section 5.1.1.2). Much of the storm water would be able to flow through the site more naturally and without the use of significant drainage structures. This has the potential to minimize disturbance to the eastern cobble quarry area and resources noted above. The large quarry identified as CA-RIV-2846 and smaller related sites would now be outside the amended project boundary.

Mitigation necessary to reduce the project's impacts to Worker Safety and Fire Protection may result in the construction of a new fire station somewhere along I-10 near the Ford Dry Lake Road interchange. Because the exact location of the fire station has not yet been determined, any impacts resulting from this eventuality are speculative at this time. In general, impacts resulting from the construction and operation of such a fire station could include direct physical and indirect impacts to archaeological sites, built-environment resources, and ethnographic resources, and cumulative impacts to the two cultural landscapes identified by staff as region-wide CRHR-eligible resources. The fire station would be outside the jurisdiction of the Energy Commission and would likely be constructed by the Riverside County Fire Department, subject to environmental review and permitting by Riverside County. Staff recommends that if significant impacts are identified, that the county require mitigation to reduce such impacts to less than significant.

Condition of Certification **WORKER SAFETY-7** in the Final Decision (CEC 2010e) required that the project owner shall either: reach an agreement, either individually or in conjunction with a power generation industry association or group that negotiates on behalf of its members, with the Riverside County Fire Department (RCFD) regarding funding of its project-related share of capital and operating costs to build and operate new fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services within the jurisdiction; or shall fund its share of the capital costs in the amount of $850,000 and provide an annual payment of $375,000 to the RCFD for the support of new fire department staff and operations and maintenance commencing with the start of construction and continuing annually thereafter on the anniversary until the final date of power plant decommissioning. This condition has not changed from the original project as licensed. Therefore, staff's recommendation above for the local permitting agency(ies) to reduce impacts through mitigation is continued to the 2013 Amendment.

Applicant's Recommended Mitigation Measures for BSPP Direct Impacts

AECOM provided recommendations to the original applicant for mitigation in their revised survey report (EDAW 2010a, Table 18). For prehistoric archaeological sites, they recommended either CARIDAP recordation (for sites without features) or archaeological testing (for sites with features), with two exceptions. They did not recommend mitigation for CA-RIV-1136, which they considered to be outside their

client's original project footprint, or for SMB-H-452, which they did not identify as having a possible prehistoric thermal cobble feature, but which staff did so identify. Staff assumes that had AECOM so identified that site, they would have recommended archaeological testing, as they did for all other thermal cobble feature sites.

For historic-period archaeological sites, AECOM recommended testing for all sites with features, but recommended no mitigation for sites without features. Under that protocol, no further archaeological investigation would be done at the great majority of historic-period refuse deposit sites of whatever age or association, with the exception of six dump sites.

BLM Mitigation for Significant Impacts

BLM cultural resources staff evaluated those cultural resources that BSPP could impact in their Final Environmental Impact Statement that was published on August 20, 2010 (BLM 2010A). BLM staff also entered 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 BSPP potential effects, BLM staff prepared a PA in consultation with the Advisory Council on Historic Preservation, the State Historic Preservation Officer (SHPO), Energy Commission staff, interested Native American groups, (including tribal governments as part of government-to-government consultation) and the public at large. The PA governs the conclusion of the identification and evaluation of cultural resources subject to BSPP 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 BSPP PA was signed by BLM's Manager of the South Coast Field Office, Palm Springs, on October 5, 2010, and by the California SHPO Milford Wayne Donaldson on October 7, 2010 (BLM 2010B). 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 recommended the Commission adopt reflected staff's assessment of what constituted appropriate mitigation, under CEQA, for BSPP's identified impacts to register-eligible cultural resources And is still applicable to the conclusion of the analysis for the amended BSPP that is the subject of the current SA. staff recommended that the BLM adopt comparable mitigation in the Historic Property Treatment Plan (HPTP), a document associated with the BLM's BSPP 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. The PA stated that finalized

HPTPs would be attached to Appendix B of the PA. Staff has not yet located finalized HPTPs for either the original or the amended project.

Energy Commission Staff-Recommended Avoidance of Significant Direct Impacts

CEQA requires that a project's significant impacts to cultural resources be either avoided or mitigated to a less-than-significant level. The applicant modified plant site boundaries and linear facilities corridors for the original project which resulted in the avoidance of some archaeological sites but with some additional sites also becoming subject to project impacts, both in added areas and as a result of the re-routing of drainage channels and outlets.

The 2013 Amendment further reduces the project's footprint (see "Project, Site, and Vicinity Description," above).

The applicant's 2010 adjustment of the eastern plant site boundary avoided construction impacts to five contributors to the PQAD (an archaeological district staff assumed to be eligible for the NRHP and the CRHR), but also made four of them subject to significant erosion impacts due to the re-location of drainage outlets. Staff recommended that the applicant move their eastern boundary and drainage outlets even further west to avoid all PQAD contributors in this area: quarry sites CA-RIV-2846 and CA-RIV-3419, thermal cobble features (sites SMB-P-434, SMB-P-435, SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, and SMB-P-441, SMB-H-452, and SMB-P-454), and lithic scatter site SMB-P-453. The 2013 Amendment reflects this recommendation in the removal of CA-RIV-2846 SMB-P-434, SMB-P-435, SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, and SMB-P-441 from the project footprint. SMB-H-452, and SMB-P-454, and lithic scatter site SMB-P-453 were all located within the outfall of drainage structures proposed for the original project. These drainage structures are no longer proposed in the 2013 Amendment and these three sites are located beyond the current project footprint.

Given the consistent and even distribution of resources across the site, requiring further reduction of the project footprint to avoid resources is not a pragmatic course of action. Staff's recommended mitigation for the modified BSPP, therefore, is primarily data recovery at impacted sites, to be put into effect through Energy Commission conditions of certification.

Energy Commission Staff-Recommended Mitigation for Significant Direct Impacts

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. Data recovery for built-environment resources can entail detailed recordation of all aspects of the physical structure of the resource and documentation of it from historical resources. For the successful mitigation of an archaeological resource, the recovered

data must be pertinent to answering questions important in history or prehistory. 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.

Performance Standards for Direct Impact Mitigation Measures

For mitigation of BSPP impacts to cultural resources, staff applies performance standards in three contexts with respect to archaeological sites:

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

Mitigation Measures for Direct Impacts to the Prehistoric Quarries Archaeological District

Staff identified a prehistoric archaeological district, the PQAD, contributors to which that were subject to direct BSPP impacts included the two quarry sites on the remnant Pleistocene Colorado River terraces on the east side of the proposed plant site and linear facilities corridor (CA-RIV-2846 and CA-RIV-3419), nine thermal cobble feature sites (SMB-P-434, SMB-P-435, SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, and SMB-P-441, SMB-H-452, and SMB-P-454) near the more northerly quarry site, and a lithic scatter site SMB-P-453. With exception of CA-RIV-3419, under the 2013 Amendment, these sites would either be no longer within the project footprint or subject to impacts from construction of drainage structures. CA-RIV-3419 remains within the path of the access road and the transmission line corridor.

Project plant site grading would no longer directly impact the northeastern tip of quarry site CA-RIV-3419, as it is no longer within the project footprint; however, the construction of the access road and the excavation for the footings of the telecommunications lines would directly impact portions of the southern and western parts of quarry site CA-RIV-3419 in a corridor approximately ¾ mile long by 1 mile wide.

At the time of the 2010 RSA, staff did not have sufficient information to determine the boundaries and period of significance of this assumed-eligible district, nor was staff able to specify definitively all contributors to the district because some are located outside of the areas surveyed for the BSPP, but staff recommended that the mitigation for project impacts on this resource entail further field work to determine the district boundaries, the period of significance, and any additional contributing resources, and the completion of a DPR district record and CRHR and NRHP nominations, if appropriate.

For mitigation of BSPP impacts to the PQAD as a district, **CUL-6** sets out research activities and performance standards for individual resource and district evaluation and

data recovery. Staff recommends **CUL-6** for the modified BSPP, and proposes changes to this condition to reflect changes in the footprint of the project.

CUL-6 includes protocols simultaneously to recover data from the parts of the two quarry sites that the amended project would impact and from the thermal cobble features and the lithic scatter, the amended project would impact. The protocol for the quarries details a 100 percent pedestrian survey of the parts of the quarry sites that the amended project activities would disturb, in which all artifacts would be mapped and field-recorded as to numbers and types of flakes, cores, and hammerstones, and the material types of each, any differential distribution of artifacts would be mapped and explanations for the distribution suggested, and the integrity of the site and the evidence substantiating that opinion would be noted. The protocol for the thermal cobble features includes Phase I identification of possible additional subsurface contributors and compressed Phase II-Phase III evaluation and data recovery from a sample of intact sites. The protocol entails efforts to either locate intact buried examples, which would automatically be register-eligible, and to recover data from them, or, failing that, to excavate parts of the surface examples, assumed eligible due to their rarity, to determine if they have a subsurface presence. If a feature is only present on the surface, it would be considered ineligible and the existing recordation, updated to reflect the test excavation, would be adequate data recovery. If a feature has subsurface deposits, data recovery would ensue. The protocol for the lithic scatter would be that in **CUL-7**.

Also in **CUL-6**, a five percent sample of 10 X 10-meter units randomly selected on the unimpacted portion of the quarry sites would be surveyed and artifact data gathered using methods identical to those used in the impacted parts of the quarry sites. These data would better characterize the data sets available at the quarry sites. Also, comparison of these data with those gathered in the project-impacted parts of the sites would indicate whether the parts of the sites that would be destroyed contribute significantly to the CRHR- and NRHP eligibility of the sites. If the data from the impacted parts and the data from the unimpacted parts are demonstrably the same, then the impacted parts do not make a significant contribution to the eligibility of the sites and the project's impacts to these sites is proved to be insignificant. Also, comparison of the data from lithic scatter site SMB-P-453 with the data from quarry sites CA-RIV-2846 and CA-RIV-3419 (the lithic scatter is located about halfway between the two quarries) would perhaps validate or invalidate the merging of the quarries and the lithic scatter in a district.

CUL-6 also requires additional survey of a zone 150 meters wide running along the western edge of quarry site CA-RIV-3419, from the BSPP plant site's southern boundary to the eastern boundary of the linear facilities corridor. The survey methodology of the original survey would be used. The purpose of this survey is to locate, if any are present, additional thermal cobble features in a geomorphic zone analogous to that in which they were previously found as a means of demonstrating a predictable relationship between the two site types, thus validating the merging of the quarries and the thermal cobble features in a district.

CUL-6 also requires analysis of all collected data to reach a conclusion on the validity of the district and to make a recommendation on the NRHP and CRHR eligibility of the PQAD. If the recommendation is positive, the completion and submission to the Office of Historic Preservation of nominations for the district would be required. If the recommendation is negative, the NRHP and CRHR eligibility of a separate archaeological district, consisting of a thermal cobble feature cluster, would be considered and a recommendation made, with nominations to follow if the recommendation was positive. The production of a Department of Parks and Recreation (DPR) 523 district form, the updating of the contributor site forms to reflect new data, and submission of the forms to the local CHRIS would also be required.

This staff-assumed register-eligible resource and recommended mitigation are listed in **Cultural Resources Table 4**, below. The 2010 Commission Decision included the staff-recommended mitigation for the resources in **Cultural Resources Table 4**.

Mitigation Measures for Direct BSPP Impacts to Individual Sites and Cultural Landscape Contributors

Staff identified all prehistoric and many historic-period archaeological sites as contributors to the PTNCL or to the DTCCL. While staff recommended measures to mitigate cumulative impacts to these cultural landscapes below, direct BSPP impacts to their contributors must also be mitigated. Consequently, staff recommended data recovery for all individual archaeological sites, including cultural landscape contributors. The staff-assumed register-eligible individual resources and recommended mitigation are listed in **Cultural Resources Table 4**, below.

For the PTNCL and DTCCL, staff identified contributing resources located outside of areas that would be impacted by BSPP activities, including, for the PTNCL, previously recorded trail segments, a rock alignment, a geoglyph, and possible pot drops, and for the DTCCL, a previously recorded tent camp. Staff also listed additional contributors to the PTNCL (all lithic scatters) and the DTCCL (fortified positions, a historic-period refuse dump, and historic-period refuse scatters) that are cultural resources identified by the applicant during BSPP surveys. As these resources are all located outside of the areas where BSPP construction and operation activities could impact them, no mitigation for direct physical impacts to them would be required.

The evaluation and data recovery at sites that are contributors to the PTNCL and the DTCCL can only be undertaken once the **CUL-1** and **CUL-2**-funded landscape documentation programs (s “Mitigation Measures for Cumulative Impacts to Two Cultural Landscapes,” below) produce preliminary contexts for the evaluation and data recovery of contributors. This evaluation and data recovery is currently enjoined with reconnaissance, analysis and/or mitigation activities associated with the Palen Solar Energy Generating System (PSEGS) and Genesis Solar Energy projects.

Field investigation is needed on all prehistoric archaeological sites and some historic-period archaeological sites to determine if subsurface deposits exist and, if they do, to adequately sample those deposits.

Site types broadly characterize the content and arrangement of the observed archaeological remains at sites and posit a site's function(s) and physical structure. Thus, staff uses site types as the basis for recommending protocols for site evaluation and data recovery as mitigation.

Prehistoric Archaeological Sites

AECOM reported four prehistoric site types as present on the BSPP, (EDAW 2010a, pp. 137–142), and staff added a fifth type:

1. Prehistoric Lithic Scatters (debris from the production of one or more flaked stone tools, possibly tools used to make flaked stone tools, and occasionally the flaked stone tools themselves);
2. Prehistoric Quarry Sites (a geological deposit of stone material suitable for the manufacture of flaked stone tools);
3. Prehistoric Sites with Features (features are remains of non-residential human modifications or additions to the natural landscape, such as hearths, arrangements of stones, cleared areas), all but one of which (a cairn) in the BSPP were "thermal cobble features"—probably the remains of roasting pits;
4. Prehistoric Trails (footpaths evidencing denuding of desert pavement, with possible shallow depression from compaction of soils); and
5. "Pot Drop" (isolated scatter of sherds from a single pot, possibly associated with sacred activity).

CUL-7 includes a protocol for evaluation and data recovery at single or multi-component sites with prehistoric lithic scatters, cairns, and pot drops. This protocol would apply to the following resources located on the proposed plant site: CA-RIV-1136, SMB-P-160, SMB-M-214, SMB-P-228, SMB-H-234, SMB-P-238, SMB-P-241, SMB-P-244, SMB-P-249, SMB-P-252, SMB-P-410, SMB-P-530, SMB-P-531, and SMB-P-532. It would also apply to the following sites, located along the southern part of the gen-tie transmission line route, unless they can be spanned: SMB-H-CT-001 and SMB-H-WG-102.**CUL-7** requires the use of the CARIDAP protocol, if a site qualifies for that treatment. Otherwise, it requires a 5-meter-by-5-meter surface scrape and a 1-meter-by-1-meter excavation unit in the center of the artifact concentration (or rock feature) or in each concentration if multiple concentrations were identified. Consultation between the project owner's Cultural Resources Specialist (CRS) and the Energy Commission Compliance Project Manager (CPM) on site eligibility would be required, as would further excavation and data recovery if subsurface deposits are encountered. Additionally, Department of Parks and Recreation (DPR) 523 archaeological site forms for these sites would have to be updated with the information obtained from the excavations. A preliminary report would have to be submitted to the CPM, and the excavation and resultant data included in the final report for all cultural resources investigations relating to the BSPP. Data recovery would be considered complete when CRS and the CPM agreed that the site was ineligible or a sufficient sample of the significant data had been collected. When the CPM agrees that data recovery for a site is complete, ground disturbance can begin.

For evaluation and data recovery of prehistoric sites with features, **CUL-6** prescribes mitigation for BSPP impacts to the PQAD, including prehistoric quarries. For mitigation of project impacts to three individual multi-component sites each having an isolated potential thermal cobble or hearth feature (SMB-M-418), **CUL-6**, sets out performance standards for individual resource evaluation and data recovery, including Phase I identification of possible subsurface contributors and compressed Phase II-Phase III evaluation and data recovery.

For prehistoric trails, the extant recordation on the only such site within the boundaries of the BSPP, SMB-P-410, is sufficient data recovery, and so no further mitigation was recommended for impacts to this site.

Historic-Period Archaeological Sites

AECOM defined three broad categories of historic-period sites, Early Twentieth-Century Mining and Ranching Sites, World War II-era DTC/C-AMA Sites, and Other Historic-period Sites (EDAW 2010a, pp. 127, 144–156), under which they identified 10 site types.

The Early Twentieth-Century Mining and Ranching Sites consisted of:

1. Early twentieth-century habitation sites (residential structural remains and domestic non-biodegradable refuse);
2. Early twentieth-century sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as non-residential structural remains, mining claim markers, hearths, prospecting, refuse, and privy pits); and
3. Early twentieth-century refuse scatter sites (deposits of non-biodegradable refuse of all kinds).

AECOM's World War II-era DTC/C-AMA site types consisted of:

1. World War II-era sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as fortified positions, cleared areas for tent pads, and hearths);
2. World War II-era refuse dump sites (distinguished from refuse scatter sites by the greater volume of material and multi-episodic deposition); and
3. World War II-era refuse scatter sites (recognized by the presence of military-issued rations containers or cans opened with the military-issued P-38 can-opener or a bayonet).

AECOM's Other Historic-period site types consisted of:

1. Transportation routes (pre-1967 dirt roads traversing the proposed plant site);
2. Non-specific twentieth-century sites with features (these lacked materials that could be dated or associated with a specific activity);
3. Non-specific twentieth-century refuse dump sites; and

4. Non-specific twentieth-century refuse scatter sites.

Above, staff determined that the historic-period refuse scatters and dumps that AECOM categorized as Twentieth-Century Prospecting and Ranching sites and Other Historic-Period sites, when no other features or structures are present, are not eligible for the CRHR. Consequently, no mitigation would be required for BSPP impacts to them.

Staff identified refuse scatter sites that date to the DTC/C-AMA use of the area as contributors to the DTCCL, and therefore they are eligible for the CRHR and for the NRHP. Consequently, staff recommended, and the Commission adopted in the 2010 Commission Decision, data recovery as mitigation for the BSPP's impacts on these sites. But staff believes that the data that make these sites eligible consist of those data that establish the sites' locations, contents, and association with the DTC/C-AMA, and that evidence the possible functions of the sites. Thus, for DTCCL refuse scatters, when no other features or structures are present, staff believes the existing recordation sufficient to be considered adequate data recovery, once existing additional data (held, staff assumes, by AECOM), such as photographs and detailed artifact recording forms, are incorporated into the site forms.

So, the remaining historic-period archaeological site types which staff assumes are NRHP- and/or CRHR-eligible, and for which staff must therefore recommend measures to mitigate BSPP impacts, are:

- Early-to-mid-twentieth-century sites with structural remains,
- Early-to-mid-twentieth-century and DTCCL sites with features,
- DTCCL refuse dump sites, and
- Unimproved roads.

Additionally, staff recommends that some historic-period refuse scatter sites be revisited to upgrade their recordation.

In **CUL-8**, staff recommends a protocol for evaluation and data recovery at historic-period archaeological sites with features (SMB-H-143, SMB-H-416, and SMB-H-419), all of which are located on the proposed plant site. The protocol includes additional mapping and artifact recordation, a metal detector survey, the excavation of the features (if appropriate) and their detailed recordation.

In **CUL-9**, staff recommends a protocol for the evaluation and data recovery at historic-period archaeological sites with structural remains (SMB-H-404), all of which are located on the proposed plant site. The protocol includes additional mapping and artifact recordation, a metal detector survey, the detailed recordation of the structural remains, the excavation of all associated features (if appropriate) and their detailed recordation.

In **CUL-10**, staff recommends a protocol for the evaluation and data recovery at historic-period dump sites located on the proposed plant site (SMB-H-178, SMB-H-403, and

SMB-H-427) and along the linear facilities corridor (SMB-H-522/525), if impacts to the latter site cannot be avoided by spanning it. The protocol includes additional mapping and photography, the detailed recordation of a random sample of 10 percent of the dump contents, the excavation (if appropriate) of any features encountered in the sampling units and their detailed recordation.

In **CUL-11**, staff recommends a protocol for upgrading the recordation of some historic-period refuse scatter sites (SMB-H-166, SMB-H-287, SMB-H-288, and SMB-H-423), all of which are located on the proposed plant site, in order to refine the attribution of these sites, which staff believes could be DTCCL contributors. A metal detector survey is also required.

In **CUL-12**, staff recommends a protocol for the documentation, as data recovery, of two historic-period, unimproved roads (SMB-H-600, SMB-H-601). A qualified historian would conduct archival research to document the age and associations of these roads, with particular attention to their role in DTC/C-AMA activities. Additional research and an evaluation of both roads proceeded in the compliance phase of the original licensed project. Condition of Certification **CUL-12** required that a qualified architectural historian conduct research and create a report on the roads, with particular attention paid to their role during the DTC/C-AMA years. The conclusion reached by Solar Millennium's consultant, AECOM, was that the two roads are not eligible for listing on the CRHR. It was found that the roads had multiple uses over many years and while in use during the military exercise in the region, are not necessarily contributors to the DTCCL (AECOM 2010-CUL 12). Staff concurred with this conclusion in the compliance phase.

Mitigation Measures for Direct and Indirect Impacts to Built-Environment Resources

The Blythe Army Air Base (BAAB) reservoir was recommended as eligible for the NRHP and the CRHR, and staff concurred and determined the reservoir eligible. At a distance of nearly three-quarters of a mile away, the BSPP's construction would not have a physical impact on the reservoir. Nor would the amended project's intrusion in the landscape have an impact on the reservoir's integrity of setting or integrity of feeling, since these are already compromised by already-constructed infrastructure in the form of the I-10 freeway. The two pipelines connecting the reservoir to the base, however, if still present, must pass across the linear facilities corridor.

Archival research was also needed to establish where the two pipelines connecting the BAAB reservoir to the former air base pass across the linear facilities corridor, so that impacts to them can be avoided. Transmission line pole placement may need to be changed to avoid these pipelines. **CUL-13** required the project owner to conduct of this research and generate a plan to avoid impacts to these pipelines. Research and evaluation conducted by AECOM on behalf of Solar Millennium was submitted to the Energy Commission in the compliance phase of the original project on October 21, 1010. As directed by **CUL-13**, the pipeline was evaluated and found to be a contributing resource to the Blythe Army Base. Therefore, it should be considered as part of a resource (Blythe Army Base) considered eligible for both the CRHR and the NRHP.

Research included right-of-way maps from the War Department in 1946 and provided approximate coordinates for the pipeline locations.

Staff assumed a radio communications facility eligible for the NRHP or CRHR because AECOM EDAW provided insufficient information to justify their architectural historian's recommendation that it was ineligible because the building appeared to have been altered in the 1980s (EDAW 2009e, p. 26). This building could be subject to impacts to its integrity of setting and integrity of feeling from the installation of the BSPP transmission line in the linear facilities corridor, one-half mile south. **CUL-14** required the project owner to conduct this research and generate a plan to avoid or mitigate to a less than significant level impacts to the radio communications facility . As required by **CUL-14**, a report was prepared documenting the history of the radio facility and it was found to be ineligible for listing on the CRHR (AECOM 2010-CUL 14). Staff concurred with this conclusion in the compliance phase

Staff determined and the Commission concurred the Blythe-Eagle Mountain 161-kV transmission line to be ineligible for the CRHR, so no mitigation was required for BSPP impacts to this resource.

The staff-assumed register-eligible built-environment resources and recommended mitigation are listed in **Cultural Resources Table 4**, below.

Cultural Resources Table 4 (below) has been updated to reflect the 2013 Amendment reduced project footprint. Those resources that were originally in the archaeological PAA and listed in the Conditions of Certification **CUL-6** through **CUL-11**, and which are no longer within the PAA, are listed in the table in strikethrough text (~~strikethrough~~).They have also been removed from the appropriate conditions of certification.

Cultural Resources Table 4
Staff-Recommended Mitigation for BSPP Impacts to Known Cultural Resources Eligible or Assumed Eligible by Staff

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
Cultural Landscapes		
Prehistoric Trails Network Cultural Landscape (not all contributors located in BSPP PAAs)	Cumulative	Documentation and possible NRHP nomination, funded by **CUL-1**
DTC/C-AMA Cultural Landscape (not all contributors located in BSPP PAAs)	Cumulative	Documentation and possible NRHP nomination, funded by **CUL-2**
Archaeological District		
Prehistoric Quarries Archaeological District (not all contributors located in BSPP PAAs): ~~CA-RIV-2846,~~ CA-RIV-3419, SMB-P-434, SMB-P-435, ~~SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, SMB-P-441,~~ SMB-H-452, SMB-P-453, SMB-P-454	Direct, from plant site and linear facilities corridor construction and from the outflow of the drainage channels	Geophysical prospection, ground-truthing, and data recovery from a sample of resources, under **CUL-6**
Individual Archaeological Sites (and contributors to the PTNCL and the DTCCL)		
Prehistoric Sites		
~~CA-RIV-1136~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-160~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-M-214~~	~~Direct~~	~~Historic-period component assumed eligible and data recovery complete as recorded~~ ~~Assessment and data recovery for prehistoric component under pertinent parts of **CUL-6**~~
~~SMB-P-228~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
SMB-H-234	Direct	Historic-period component assumed eligible and data recovery complete as recorded Assessment and data recovery for prehistoric component under **CUL-7**
~~SMB-P-238~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
~~SMB-P-241~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-244~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-249~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-252~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-410~~	~~Direct~~	~~Extant recordation is sufficient~~
~~SMB-P-530~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-531~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
~~SMB-P-532~~	~~Direct~~	~~Assessment and data recovery under **CUL-7**~~
SMB-H-CT-001	Direct , gen-tie line	Historic-period component ineligible Assessment and data recovery for prehistoric component under **CUL-7**
~~SMB-H-TC-101~~	~~Direct, gen-tie line~~	~~Historic-period component assumed eligible and data recovery complete as recorded~~ ~~Assessment and data recovery for prehistoric component under **CUL-7**~~
~~SMB-H-TC-103~~	~~Direct, gen-tie line~~	~~Historic-period component assumed eligible and data recovery complete as recorded~~ ~~Assessment and data recovery for prehistoric component under **CUL-7**~~
SMB-H-WG-102	Direct, gen-tie line	Historic-period component assumed eligible and data recovery complete as recorded Assessment and data recovery under **CUL-7** and **CUL-8**
Historic-Period Sites		
CA-RIV-9011	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-002	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-109	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-110	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-113	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-114	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-115	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-118	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-121	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-122	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-123	Direct	Historic-period component assumed eligible and data recovery complete as recorded

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
SMB-H-125	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-126	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-129	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-130	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-131	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-132	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-133	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-134	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-135	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-136	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-137	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-138	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-139	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-140	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-143	Direct	Assessment and data recovery under **CUL-8**
SMB-H-144	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-147	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-148	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-151	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-152	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-153	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-154	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-155	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-156	Direct	Historic-period component assumed eligible and data recovery complete as recorded

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
SMB-H-157	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-158	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-159	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-P-160	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-162	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-163~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-164	Direct	Assessment and data recovery of historic component under **CUL-11**
SMB-H-165	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-166	Direct	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery of historic component under **CUL-11**
SMB-H-167	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-168	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-169	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-171	Direct	Historic-period component assumed eligible and data recovery complete as recorded Assessment and data recovery under **CUL-10**
SMB-H-175	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-178	Direct	Assessment and data recovery under **CUL-10**
SMB-H-180	Direct	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery of historic component under **CUL-11**
SMB-H-181	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-182	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-184	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-185	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-186	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-189	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-190	Direct	Historic-period component assumed eligible and data recovery complete as recorded

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
SMB-H-191	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-192	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-193	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-200	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-203~~	Direct	Assessment and data recovery under **CUL-8**
~~SMB-H-205~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-206	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-207~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-208	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-210~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-212	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-215	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-216	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-219	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-220	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-222~~	Directs	Assessment and data recovery under **CUL-8**
~~SMB-H-223~~	Direct	Assessment and data recovery under **CUL-8**
~~SMB-H-224~~	Direct	Assessment and data recovery under **CUL-10**
SMB-H-229	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-230	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-232	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-233	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-234	Direct	See Prehistoric Sites
SMB-H-235	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-236	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-243	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-245~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-246	Direct	Historic-period component assumed eligible and data recovery complete as recorded

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
~~SMB-H-247~~	Direct	Assessment and data recovery under **CUL-8**
SMB-H-248	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-251	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-256	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-257	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-258	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-261/262~~	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-265	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-283	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-284	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-287	Direct	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery of historic component under **CUL-11**
SMB-H-288	Direct	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery of historic component under **CUL-11**
SMB-H-290	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-291	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-403	Direct	Assessment and data recovery under **CUL-10**
SMB-H-404	Direct	Assessment and data recovery under **CUL-9**
SMB-M-407	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-411	Direct	Assessment and data recovery under **CUL-8**
SMB-H-415	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-416	Direct	Assessment and data recovery under **CUL-8**
SMB-H-417	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-M-418	Direct	Historic-period component CRHR-ineligible Assessment and data recovery for prehistoric component under pertinent parts of **CUL-6**
SMB-H-419	Direct	Assessment and data recovery under **CUL-8**
SMB-H-423	Direct	Assessment and data recovery under **CUL-11**

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
SMB-H-424	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-427	Direct	Assessment and data recovery under **CUL-10**
~~SMB-H-432~~	Direct	Assessment and data recovery under **CUL-9**
SMB-H-439	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-442	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-450	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-460	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-505	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-507	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-508	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-509	Direct	Historic-period component assumed eligible and data recovery complete as recorded
~~SMB-H-514~~	Direct	Assessment and data recovery under **CUL-9**
SMB-H-522/525	Direct, linear facilities corridor	Assessment and data recovery under **CUL-10**
SMB-H-527	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-528	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-529	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-600	Direct	Assessment and data recovery under **CUL-12**
SMB-H-601	Direct	Assessment and data recovery under **CUL-12**
SMB-H-CT-001	Direct	See under Prehistoric Sites
SMB-H-CT-002	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-MT-002	Direct	~~Assessment and data recovery under **CUL-9**~~
SMB-H-TC-101	Direct	See under Prehistoric Sites
SMB-H-TC-102	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-TC-103	Direct	See under Prehistoric Sites
SMB-H-TC-104	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-WG-101	Direct	Historic-period component assumed eligible and data recovery complete as recorded
SMB-H-WG-102	Direct	See under Prehistoric Sites

Resource Identifying Number/Name	BSPP Impact (type and project component—Plant Site unless otherwise noted)	Recommended Mitigation
Built-Environment Resources		
Blythe Army Air Base reservoir	Direct impacts to pipelines connecting to the former air base	Archival research, under **CUL-13** to establish where the two pipelines connecting the BAAB reservoir to the former air base pass across the BSPP linear facilities corridor, so that impacts to them can be avoided. Transmission line pole placement must avoid these pipelines.
Radio communications facility	Direct impacts to integrity of setting and integrity of feeling	Archival research to determine eligibility and document loss of integrity, under **CUL-14.**

Possible Mitigation Measures for the Discovery of Sites during Construction

Because of the possibility that archaeological deposits could be encountered during construction, CEQA advises a lead agency to make provisions for archaeological resources unexpectedly encountered during construction, and the project owner may be required to train workers to recognize cultural resources, fund mitigation, and delay construction in the area of the find (Pub. Resources Code, § 21083.2; Cal. Code Regs., tit. 14, §§ 15064.5(f) and 15126.4(b)). Consequently, staff recommends that procedures for identifying, evaluating, and possibly mitigating impacts to archaeological resources discovered during construction be put in place through conditions of certification to reduce those impacts to a less than significant level.

The site forms for both prehistoric and historic-period archaeological sites in the vicinity of the two remnant Pleistocene Colorado River terraces on the east side of the proposed BSPP plant site mention that observed artifacts were partially embedded in silt. This is evidence for the possibility of buried resources in the area to the west (up-slope) of the terraces, which evidently have served to locally block the sheet flow of water and thus have caused the deposition of sediments. Consequently, as for the original project, staff recommends monitoring during construction in this area to identify buried archaeological deposits encountered during construction.

Staff thus recommends Conditions of Certification **CUL-3** through **CUL-5** and **CUL-15** through **CUL-18**, below, intended to provide for the contingency of discovering archaeological resources during PHPP construction and related activities. Staff's proposed **CUL-3** requires a Cultural Resources Specialist (CRS) to be retained and available during PHPP construction-related excavations to evaluate any discovered buried resources and, if necessary, to conduct data recovery as mitigation for the project's unavoidable impacts on them. **CUL-4** requires the project owner to provide the CRS with all relevant cultural resources information and maps. **CUL-5** requires the CRS to write and submit to the Energy Commission Compliance Project Manager (CPM) a Cultural Resources Monitoring and Mitigation Plan (CRMMP). **CUL-15** requires the

project owner to train workers to recognize cultural resources and instruct them to halt construction if cultural resources are discovered. **CUL-16** prescribes the monitoring, by an archaeologist and, possibly, by a Native American, intended to identify buried archaeological deposits. **CUL-17** requires the project owner to halt ground-disturbing activities in the area of an archaeological discovery and to fund data recovery, if the discovery is evaluated as CRHR-eligible. **CUL-18** requires the CRS to write and submit to the CPM a final report on all PHPP cultural resources data recovery and monitoring and mitigation activities.

In **CUL-16**, staff commonly specifies the parts of a project site where ground disturbance must be monitored by an archaeologist and, possibly also, by a Native American. For BSPP construction, staff recommends archaeological and Native American monitoring of the parts of the plant site where the geoarchaeologist recommended monitoring (Galati & Blek 2010m, fig. 5).

Identification and Assessment of Indirect Impacts and Mitigation

Staff identified no indirect impacts and so recommends no mitigation.

Operation Impacts and Mitigation

If, during operation of the BSPP, the owner should plan any changes or additions entailing significant amounts of ground disturbance, the 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 impacts.

Project Closure and Decommissioning Impacts and Mitigation

As for any changes or additions to the BSPP during operation, as discussed above, the 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.

Cumulative Impacts and Mitigation

This section evaluates the potential for BSPP, and other solar and development projects within the vicinity of BSPP, to have cumulative impacts to cultural resources. As discussed previously, individually minor but collectively significant actions may have a cumulatively considerable impact on cultural resources. These impacts may result in a substantial 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 a quantitative area; however, the area can be envisioned as 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 (**Executive Summary- Figure 1**: Cumulative Impacts). 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 estimate can be derived (see **Cultural Resources Table 5**) 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 (approximately, 1 resource/58 acres), and 0.003 potentially eligible resources per acre (approximately, 1 resource/333 acres). 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 5
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[25]	329 = Average Density of 1 resource/58 acres	58 = Average Density of 1 resource/333 acres
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	1
Subtotal	7,898	133	23

[25] Acreages shown for these three projects were based upon the archaeological PAAs of the original projects. Acreages for Palen and Blythe have changed since the initial projects were licensed in 2010. This change in acreage, however, does not change the conclusions about cumulative impacts assessed by staff in the 2010 RSA for Blythe (CEC 2010b) or found by the Commission in their Final Decision.

Location	Acres	Number of Known Cultural Resources	Number of Potentially Eligible Cultural Resources
Reasonably Foreseeable Future Projects, I-10 Corridor			
13 Solar Projects and Chuckwalla Raceway[26]	47,591	809	143
4 New Transmission Lines	465	17	1
McCoy Solar Energy Project	4,437	114	7
Subtotal	52,493	940	151
Reasonably Foreseeable Future Projects, Southern California Desert Region[27]			
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**. 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 originally proposed project was based upon:

- Renewable energy projects on BLM, state, and private lands, as shown on **Executive Summary Figure 1** (Cumulative Impacts). 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 and other projects currently proposed in California and in nearby Arizona desert regions.
- Foreseeable future projects in the immediate vicinity of the I-10 Corridor Area Cultural Resources Table 5 presents existing and future foreseeable projects in the I-10 Corridor Area.

[26] Chuckwalla Raceway is completed and in operation in 2013.

[27] These acreages are from the 2010 BSPP RSA (CEC 2010b) .While the gross acreage may have increased or decreased modestly since that time, it does not change staff's conclusions of the cumulative impacts for the 2013 Amendment.

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 statutes and regulations. As such, the actual number of cultural resources within each project area and the number of resources destroyed by each 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 re-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 as of 2010. 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 had a significant adverse affect on the cultural resources. Certain site types, however, 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) under General. Patton on the Desert Training Center 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 are assumed to 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 attempted through deliberate project planning. Likewise, the severity of impacts to previously unknown cultural resources has ostensibly been reduced to less-than-significant by implementing reactive 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 and material evidence of military training exercises at the regional level are at least 50 years old and therefore qualify for consideration as 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 now have an overlying veneer of material culture and ground disturbance that constitutes a historic military district, with many individual resources that are known to be, or have the potential to be CRHR- or NRHP-eligible. Subsequent 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 **Executive Summary Figure 1** (Cumulative Impacts) the future construction of projects 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.

The McCoy Solar Energy Project, scheduled to begin construction in 2014, will impact seven NRHP-eligible resources and disturb 4,437 acres immediately adjacent to the

proposed BSPP. The Memorandum of Agreement[28] (MOA) (BLM-MOA 2013) executed in February, 2013, includes mitigation measures for the direct physical destruction of seven indentified eligible resources as well as for adverse cumulative effects on the DTC/C-AMA. The mitigation of adverse effects to the eligible sites require (i) the investigation of CA-RIV-10222 through sampling, scientific study and engineered capping of the site; (ii) extensive and detailed mapping of six other sites (CA-RIV-10194, -10225, -10240, -10242 and -10246); and (iii) development of a 30-minute documentary film to record the memories of WWII veterans who trained at the DTC/C-AMA.

I-10 Corridor

Numerous other projects are proposed and under consideration along the I-10 Corridor. For the purposes of this cumulative analysis, staff assumes that the proposed solar projects and Chuckwalla Raceway project (completed and operational) would destroy all of the cultural resources within the proposed projects' limits. As discussed above, transmission lines are considered to have a smaller effect on cultural resources. Using the same conservative figures used previously, the four 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 would be CRHR- and NRHP-eligible[29].

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 4 percent 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 crude minimum calculation. The disturbance of 1 million acres would result in the destruction of at least 17,000 cultural resources, 3,000 of which would theoretically be 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

[28] Memorandum of Agreement among BLM, McCoy Solar, CA-SHPO and ACHP. Contains the agreed-upon mitigation measures for the McCoy Solar Energy Project.

[29] These acreages and impacted resource totals are from the 2010 BSPP RSA (CEC 2010b) .While the gross acreage may have increased or decreased modestly since that time, it does not change staff's conclusions of the cumulative impacts for the 2013 Amendment.

recovery excavations to mitigate impacts. Although these measures would be said to have reduced most individual site impacts to less-than-significant levels, the archaeological excavation samples typically negotiated in the context of regulatory compliance have historically been too small to yield representative samples of the data contained in the deposits slated for disturbance or destruction. Due to the high cost of archaeological excavation, political efficacy, rather than objective assessment, is most often the basis of the results of negotiations among applicants, state and Federal regulators, the public, and representatives of Native American communities about the size of archaeological samples appropriate for substantive data acquisition. In recognition of the pragmatic nature of these negotiations, the cumulative loss of approximately 17,000 cultural resources can be 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 in the form of degradations to the visual character of traditional use areas due to the intrusive presence of industrial infrastructure.

Contribution of the Blythe Solar Power Project to Cumulative Impacts

The development of the BSPP is expected to result in permanent adverse impacts to cultural resources related to construction activities. These impacts would be expected to contribute a minor amount to the possible permanent *cumulative* impacts related to cultural resources, because relatively few resources may be eligible for the CRHR or NRHP. BSPP would have a significant direct physical impact on many historically significant archaeological resources, most of which are contributors to one of the two historically significant cultural landscapes identified as present in the BSPP region.

If Conditions of Certification **CUL-1** through **CUL-18** are properly implemented, they would reduce the direct, but not the cumulative physical impacts of the proposed BSPP, to a less-than-significant level for known and newly found archaeological resources, including contributors to the PTNCL and the DTCCL. The BSPP construction impacts, when combined with impacts from past, present, and reasonably foreseeable projects, while relatively small, are nonetheless cumulatively considerable at both the local I-10 Corridor and regional levels. The 2010 staff analysis estimated 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. The Energy Commission incorporated these findings into the Final Decision for the original project, and staff does not see any reason to reconsider them here.

Summary of Cumulative Impacts

The direct physical impacts of the BSPP, when combined with impacts from past, present, and reasonably foreseeable projects, are cumulatively considerable 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 proposed project's contribution to the region-wide, significant cumulative impact on cultural resources, staff recommends that BSPP 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, BSPP's incremental contribution to cumulative impacts to cultural resources would nonetheless be cumulatively considerable.

Mitigation Measures for Cumulative Impacts to Two Cultural Landscapes

Consistent with the Commission's previous decision, staff concludes that it can best fulfill its responsibilities under CEQA by designing dual-level strategies to mitigate project-specific direct and indirect impacts on the project level (above) and cumulative impacts on the regional 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. 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. 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.

Staff intends to coordinate the cultural resources mitigation of the shared cumulative impacts of three solar projects originally proposed by Solar Millennium and NextEra for areas north of the I-10 corridor between Blythe and Desert Center: BSPP, Palen Solar Power Project[30], and Genesis Solar Energy Project. Shared funding portion of the mitigation has already been completed for Genesis. Staff intends to expand the number of projects and project owners involved as they enter the permitting process. The three initial projects shared 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, some of these impacts may be considered severe and difficult or impossible to mitigate to less-than-significant levels.

[30] Now a proposed project of Palen Solar Holdings (BrightSource and Abengoa).

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 BSPP 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 in the original assessments for these projects 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 Genesis Solar Power Project, 7,043 for BSPP, and 2,970 for Palen Solar Power Plant; total=11,903), and rounding to the nearest $5.00.

The two landscape documentation and possible nomination programs are also identical for the three projects. These programs are detailed below. 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.

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.

The PTNCL PI-Prehistoric Archaeologist will propose and engage the PTNCL Ethnographer, PTNCL Ethnohistorian, and PTNCL Geoarchaeologist, manage and coordinate the research activities required in this condition, report on progress to staff, and complete Task D. Staff will have final decision making authority regarding budget and technical cultural resources matters.

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), Supplemental Staff Assessment for the project and the 2013 Project Amendment Staff Assessment.

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 BSPP Project Prehistoric Archaeologist and the BSPP Project Ethnographer to develop a monitoring plan for the PTNCL cultural resources subject to indirect BSPP 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.
    c. Specify what kinds of resources have the relevant data
    d. To determine the presence or absence of additional archaeological resources not presently known but likely
    e. 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 decision-making 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), Supplemental Staff Assessment and the 2013 Project Amendment Staff Assessment 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 (BSPP, 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 sites are identified within the project areas of the BSPP, 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
    c. Specify what kinds of resources have the relevant data
    d. To determine the presence or absence of additional archaeological resources not presently known but likely.

e. Specify the methods for making this determination

f. To definitively distinguish Desert Strike sites from DTC/C-AMA sites

g. 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 BSPP, 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 BSPP, 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 chat room 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.

Throughout the 2009 and 2010 analysis of the original project, staff's intent was to develop conditions of certification that were closely comparable to the mitigation measures that appeared likely, at the time of the July 2010 publication of the Revised Staff Assessment (RSA), to ultimately coalesce under the Bureau of Land Management's (BLM) National Historic Preservation Act (NHPA) Section 106 consultation process. Although staff and the BLM were unable to jointly develop one set of mitigation measures, staff nonetheless continued to collaborate with the BLM in an attempt to reduce the differences between the mitigations that staff developed as conditions of certification in order to comply with CEQA and the mitigations that the BLM developed for the agency's Section 106 programmatic agreement (PA). Staff made a well-intentioned recommendation to the Energy Commission in July 2010 to adopt **CUL-19** to try and avoid conflicts or duplications of effort between the separate CEQA and Section 106 mitigation measures. The character of the mitigation measures that would ultimately be in the PA had been unclear during the preparation of the draft RSA, and the PA was executed in October 2010, subsequent to the publication of the RSA. Operating under the assumption that the mitigation measures in the PA would closely mirror the recommended conditions of certification that staff had drafted for the RSA, **CUL-19** subordinated the Energy Commission's conditions of certification to the mitigation measures in the PA with a qualification that the Energy Commission would retain the authority to require mitigation efforts above and beyond the efforts set out in the PA, if that additional effort was necessary to satisfy the project owner's obligations to comply with CEQA under the Energy Commission's license. Although the BLM formally offered staff the opportunity to participate in the PA under the status of an Invited Signatory, the Energy Commission staff declined that offer due to the deferral in the PA of the development of precise mitigation measures until after the approval of the project. On the basis of our ongoing history of constructive collaboration with the BLM,

staff believes that it would be able to more effectively regulate the project owner's compliance with the conditions of certification under the license for this project outside of the deferral inherent to **CUL-19**. In cases where the deferral of the development of the details of the mitigation measures in the BLM's PA would ultimately lead to the implementation of measures that would not comply with the Energy Commission's statutory and regulatory obligations under CEQA, rather than being subject to an automatic deferral to a differing, inconsistent or less robust mitigation, staff would be able to simply consult with the BLM to collaborate on a resolution that would satisfy both CEQA and Section 106. On the basis of the history of the condition's original development and the condition's inadvertent disincentive for constructive collaboration, staff recommends that the Energy Commission strike **CUL-19**.

NOTEWORTHY PUBLIC BENEFITS

In the case of the proposed BSPP, very little is known about the prehistory of the Mojave Desert. 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 amended project has the potential to contribute to our knowledge of the ancient peoples who lived in this area. As such, data recovery could provide public benefits in the form of information; however, the amount of data slated to be recovered from the archaeological resources on the facility site would not be objectively representative of those deposits, and, consequently, the destruction of those resources would represent a net loss of any future opportunity to recover an objective sample of that data. This scenario would represent a net loss of information value for the public.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

No comments from agencies or the public regarding cultural resources have been received for the BSPP 2013 Amendment.

COMPLIANCE WITH LORS

With the adoption and implementation of staff's recommended conditions of certification, the BSPP construction and implementation would result in less-than-significant direct physical impacts on known and newly found cultural resources. The amended project would therefore be in compliance with the applicable federal and 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. Staff's conditions of certification require specific actions not just to promote but to effect historic preservation and mitigate impacts to all cultural resources in order to ensure CEQA compliance. Consequently, implementation of these conditions would ensure the project owner's actions would be consistent with the general historic preservation goals of the County of Riverside.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission cultural resources staff has analyzed cultural resources data currently available for the proposed BSPP and has concluded that the modified project would have significant direct physical impacts on known archaeological and built-environment resources eligible or assumed eligible for listing in the California Register of Historical Resources. Staff has also concluded that the BSPP, in conjunction with the Genesis Solar Energy Project and the Palen Solar Power Project, would have a cumulatively considerable impact on two cultural landscapes, the Prehistoric Trails Network Cultural Landscape, encompassing region-wide prehistoric trails and the resources and destinations they connected, and the DTC/C-AMA Cultural Landscape, comprised of the archaeological remains of the U.S. Army's WWII Desert Training Center. The further recommendation to eliminate **CUL-19** is a function of what staff perceives would be more efficient administration of the conditions as a whole.

To mitigate the significance of the modified project's direct physical impacts to archaeological resources to a less-than-significant level, staff has recommended conditions of certification providing for data recovery from prehistoric archaeological sites identified as contributors to the Prehistoric Trails Network Cultural Landscape, including an archaeological district and other prehistoric archaeological sites with features (**CUL-6**), small non-habitation prehistoric archaeological sites (**CUL-7**). Staff has also recommended conditions of certification providing for data recovery from historic-period resources, including historic-period archaeological sites with features (**CUL-8**), historic-period archaeological sites with structural remains (**CUL-9**), historic-period archaeological dump sites (**CUL-10**), historic-period roads (**CUL-11**), and built-environment resources (**CUL-13** and **CUL-14**). Staff recommends minor adjustments to **CUL-6**, **CUL-7**, **CUL-8**, **CUL-9**, **CUL-10** and **CUL-11** to eliminate from the conditions those resources that are no longer within the PAA and therefore no longer require data recovery.

It is not possible to reduce the level of significance of the amended project's cumulative impact on region-wide cultural resources of both the prehistoric and the historic period, but to reduce those impacts, staff has recommended, and the Commission included in the 2010 Commission Decision, conditions of certification that would have the project owners of the Blythe Solar Power Project, the Genesis Solar Energy Project, and the Palen Solar Power Project fund programs to document and possibly nominate to the National Register Historic Places the Prehistoric Trails Network Cultural Landscape (**CUL-1**) and the DTC/C-AMA Cultural Landscape (**CUL-2**).

To provide for the appropriate treatment of additional cultural resource that could be encountered during construction, staff has recommended, and the Commission included in the 2010 Commission Decision, additional conditions of certification. **CUL-3** identifies the personnel and their qualifications 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

and coordination of the broader treatment program. **CUL-15** 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-16** and **CUL-17** would provide construction monitoring and cultural resources discovery protocols. **CUL-18** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the whole BSPP cultural resources management program.

Energy Commission staff's recommended Conditions of Certification **CUL-1** through **CUL-18** reflect staff's assessment of what constitutes appropriate mitigation, under the California Environmental Quality Act, for BSPP's identified impacts to register-eligible cultural resources and any subsequent amendments made in response to the amended project.

With the adoption and implementation of Conditions of Certification **CUL-1** through **CUL-18**, the BSPP would be in conformity with all applicable laws, ordinances, regulations, and standards. **CUL-1** and **CUL-2** would reduce the significance of the project's cumulative impacts to the greatest extent possible, but those impacts would still be cumulatively considerable. **CUL-3** through **CUL-18** would reduce the significance of the project's direct impacts to less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Cultural Resources conditions of certification from the BSPP Commission Decision as shown below. (Note: Deleted text is in ~~strikethrough~~, new text is **bold and underlined**.)

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 and/or BLM to finance the completion of the PTNCL Documentation and Possible NRHP Nomination program presented in the Blythe Solar Power Plant (BSPP) Revised Staff Assessment RSA).

The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

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,

and then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission's and/or BLM'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 and/or BLM to finance the completion of the Documentation and Possible NRHP Nomination program presented in the BSPP RSA.

The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

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, and then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission's and/or BLM'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 two 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 coordinative role for the BSPP. 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 noncompliance 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 three of those years in California; and
3. At least three years of experience in a decision-making capacity on cultural resources projects, with at least one 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-6** and **CUL-7**. 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 similar artifacts and environmental modifications (deliberate and incidental) to those associated with the prehistoric and protohistoric use of the Palo Verde Mesa. The PPA must meet OSHA standards as a "Competent Person" in trench safety.

The project owner shall ensure that the CRS obtains the services of a qualified historical archaeologist to conduct the research specified in CUL-8 through CUL-11. 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 resumes of the CRS, alternate CRS, the PPA, and the PHA 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. The project owner may name and hire the CRS, alternate CRS, the PPA, and the PHA prior to certification.

OPTIONAL SPECIALIST BACKHOE OPERATOR

The project owner shall ensure that the CRS obtains the services of a specialist backhoe operator to conduct the activities specified in **CUL-6**, if needed. 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 centimeters thick.

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.

Verification: Preferably at least 120 days, but in any event no less than 75 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 PPA, and the PHA to the CPM for review and approval.

At least 65 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 PPA, and the PHA will be available for on-site work and are prepared to implement the cultural resources Conditions **CUL-6** through **CUL-11**.

Rationale: Proposed schedule change is in accordance with the project time-line.

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 three

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.

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 required by this Condition.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

At least five days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM identifying the new 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 CRS, the PPA, and the PHA with copies of the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and the RSA Supplement/Errata, if any, **and the 2013 Project Amendment SA** for the project. The project owner shall also provide the CRS, the PPA, the PHA, and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all lay down 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. Release of cultural resources information will be pending BLM approval.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS, the PPA, the PHA, and the 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 the CPM of any changes to the scheduling of the construction phases.

Verification: Preferably at least 115 days, but in any event no less than 60 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 PPA, and the PHA. The project owner shall also provide the subject maps and drawings to the CRS, PPA, PHA, and CPM. Staff, in consultation with the CRS, PPA, and PHA, will review and approve maps and drawings suitable for cultural resources monitoring and data recovery activities.

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, PPA, PHA, and CPM.

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, PPA, PHA, and CPM.

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.

Within five 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 PPA, and the PHA. 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 PPA, and the PHA, 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. Prior to certification, the project owner may have the CRS, alternate CRS, the PPA, and the PHA complete and submit to CEC for review the CRMMP, except for the portions to be contributed by the PTNCL and the DTCCL programs.

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 existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts developed in the PTNCL and DTCCL historic context and adds to these the additional context of the non-military, historic-period occupation and use of the Palo Verde Mesa, to create a comprehensive historic context for the BSPP vicinity;
    c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for the Palo Verde Mesa, based on the research questions developed under the PTNCL and DTCCL research and on the archaeological and historical literature pertinent to the Palo Verde Mesa; 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-6** through **CUL-11** shall be specified for the data recovery from known prehistoric and historic-period archaeological resource types.
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. Any 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.
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 a curation facility 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: Preferably, at least 90 days, but in any event no less than 30 days, the project owner shall submit the CRMMP to the CPM for review and approval.

At least 20 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).

At least 30 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 BSPP 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 Prehistoric Quarries Archaeological District (PQAD) Data Recovery and District Nomination

Prior to the start of ground disturbance, the project owner shall ensure that the CRMMP includes a PQAD evaluation and data recovery plan, to identify buried additional potential contributors to the district by geophysical or mechanical survey, to investigate and establish the relationships among all potential contributors by formulating research questions answerable with data from the contributors, conduct data recovery from a sample of the contributors, and write a report of investigations and possibly **CRHR** and **NRHP** nominations as well. The potential contributors include quarry site~~s~~ ~~CA-RIV-2846 and~~ CA-RIV-3419 and thermal cobble feature~~s~~ SMB-P-434~~,~~ ~~SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, SMB-P-441~~. This site list may be revised only with the agreement of the CRS and the CPM. The CRMMP shall also include a detailed data recovery plan for ~~three~~ **an** isolated potential thermal cobble feature~~s~~ (not included in the PQAD) at multi-component site~~s SMB-H-164, SMB-M-214,~~ SMB-M-418~~)~~.

The project owner shall ensure that the CRS and the PPA assess the NRHP and CRHR eligibility of the PQAD district. Additionally, if the PQAD is found to be ineligible for both registers, the thermal cobble features' eligibility as a separate archaeological district consisting of a thermal cobble feature cluster must also be considered.

The evaluation and data recovery plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The project owner shall then ensure that the CRS, the PPA, the specialist backhoe operator, and archaeological team members implement the plan, with the permission of the BLM. The PQAD evaluation and data recovery plan shall provide, at a minimum, the details of each of the numbered elements below.

1. Research Design

Based on the prehistoric and ethnohistoric contexts developed for the PTNCL under the research program funded through **CUL-1**, Tasks C and D, and the archaeological and ethnohistoric literature pertinent to the Palo Verde Mesa, the research design shall reflect archaeological themes that relate to the identity and the lifeways of Native American groups on the Palo Verde Mesa in the prehistoric and historic periods. The research design shall:

a. Verify from the geological literature the Pleistocene age of the pebble terraces;

b. Formulate archaeological research questions and testable hypotheses specifically applicable to the individual contributors (for example, hypotheses regarding the function of the thermal cobble features—cooking? lithic heat treatment? or both?) and to the PQAD overall;

c. Define data sets needed to answer the formulated research questions; and

d. Develop explicit CRHR-eligibility and NRHP-eligibility assessment criteria, correlated with the research questions and specifically referencing the data sets required to answer them, for the PQAD and for the thermal cobble features as a separate potential archaeological district.

2. Program for Evaluation, Data Recovery, and Possible Nomination

The data recovery program shall:

a. Explain how the data sets that are anticipated for the PQAD will contribute to knowledge of the prehistoric and historic-period Native American themes of the research design and answer particular research questions;

b. Set out the purposes and methods of the several field phases of the PQAD evaluation and data recovery program (Geophysical Test, Geophysical Survey/Mechanical Survey, Evaluation and Data Recovery);

c. Set out the purposes and methods of the concomitant material analyses; and

d. Describe the required reports of investigations, the resource registrations (if appropriate), and the process of producing them.

3. PQAD Arbitrary Provisional Boundary Definition

The CRS, PPA, and CPM shall derive and agree upon, in consultation, the precise location of an arbitrary provisional PQAD boundary on the surface of the plant site and in the vicinity of the linear facilities corridor.

4. Evaluation and Data Recovery Methodology

a. Quarries:

The protocol for the quarry sites simultaneously recovers data from the parts of the ~~two~~ quarry site~~s~~, ~~CA-RIV-2846 and~~ CA-RIV-3419 ~~that~~ the project would impact and allows an assessment of the significance of the impacts of the project to the ~~two~~ quarry site~~s~~ and an assessment of the validity of the PQAD concept.

i. Conduct a 100 percent pedestrian survey of the parts of the quarry sites that the project activities would disturb;

ii. Map and field-record finished tools, diagnostic artifacts, ceramics, artifact concentrations and features (and the material types of each) within the impacted portions of the quarry sites. ~~Indentify~~ **Identify** and quantify artifacts within a sample of no more than 1 percent of the impacted portions of the quarry sites using 2 by 2 meter surface units. Record any differential distribution of artifacts (with suggested explanations for the distribution), and assess the integrity of the site, providing evidence on which that opinion is based;

iii Collect for dating and source analyses any obsidian artifacts;

iv. With the approval of BLM, conduct a survey of a one percent sample of randomly selected 10 x 10- meter units on the unimpacted portions of the quarry sites;

v. Gather the same data in the same way as for the impacted parts of the quarry sites;

vi. Compare these data to those gathered in the project-impacted parts of the sites

vii. With approval of BLM, conduct a sample survey of a zone 150 meters wide totaling one-half the length of the northwest boundary of CA-RIV-3419.

viii. Draw conclusions from the collected data on whether the parts of the quarry sites that would be destroyed by the project contribute significantly to the CRHR- and NRHP eligibility of the sites;

ix. Draw conclusions from the collected data, if possible, on whether the merging of the quarries and the lithic scatter in a district is valid.

x. Draw conclusions from the collected data, if possible, on whether the merging of the quarries and the thermal cobble features in a district is valid.

b. Thermal Cobble Features

The protocol for the thermal cobble features shall include Phase I identification of possible additional subsurface contributors and compressed Phase II-Phase III evaluation and data recovery from a sample of intact sites or from all of the surface sites, whether intact or not. Phase I is geophysical and/or mechanical testing to determine the horizontal and vertical extent of the distribution of the thermal cobble features, to identify any buried intact examples of thermal cobble features out 100 meters, within the area subject to project impacts, from all surface examples, and to determine if morphological differences are present among the thermal cobble features.

Phase II-Phase III (evaluation and data recovery) would reflect judgment that features only present on the surface would be register

ineligible and the existing recordation, updated to reflect the test excavation, and would be adequate data recovery. Features with subsurface deposits would be register eligible, and data recovery would ensue.

Geophysical Test for Subsurface PQAD Contributing Thermal Cobble Features:

i. Test, in a one-acre parcel within 30 meters of known thermal cobble features, the efficacy of the use of magnetometry to locate buried examples of thermal cobble features;

ii. Ground-truth by hand or mechanical excavation a minimum 25 percent sample (but no more than five individual anomalies) of the anomalies identified in the test survey;

iii. Keep field notes and the forms for the survey areas sufficient to completely document the geophysical test;

iv. Inform the CPM of the results of the magnetometry survey and groundtruthing and consult on the efficacy of continuing this survey method;

Geophysical Survey for Subsurface PQAD Contributing Thermal Cobble Features:

If the CRS and CPM agree, after consultation, that the geophysical test demonstrates that the use of magnetometry appears to be reasonably effective in locating buried thermal cobble features, the project owner shall ensure that the PPA proceeds to a broader magnetometry survey of a sample of the area within the PQAD provisional district boundary. The PPA shall:

i. Develop a single stratified random sample for the PQAD that would result in a magnetometry survey of a minimum of 10 percent (a maximum of two acres) of the total district area on the plant site;

ii. Use criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

iii. Ground-truth by hand or mechanical excavation the lesser of 10 percent or 10 individual anomalies of those identified in the test survey;

iv. Inform the CPM of the results of the survey;

v. Keep field notes and the forms for the survey are sufficient to completely document the geophysical survey;

Mechanical Survey for Subsurface PQAD Contributing Thermal Cobble Features:

If the CRS and CPM agree, after consultation, that the geophysical test demonstrates that the use of magnetometry appears to be ineffective in locating buried thermal cobble features, the project owner shall ensure that the PPA submits, for CPM review and approval, the CRS's and PPA's plan and methods for a mechanical subsurface survey of the PQAD, using construction equipment, such as a road grader or a backhoe that can work in 5-centimeter lifts. The plan and methods shall include:

i. Use of transects, the proposed width and length of which the CPM would approve

ii. Removal of thin (no thicker than approximately 5 centimeters) layers to carefully expose target archaeological deposits

iii. Survey of a minimum of 2.5 percent of the total PQAD area on the plant site;

iv. Use criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical and material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

v. Preservation of found archaeological deposits until the conclusion of the survey to facilitate the formulation of a representative data recovery sample;

vi. Consideration of the PPA recovering a sample of the buried land surfaces that may surround individual features or groups of features and documenting the material culture assemblages that may be found on such surfaces;

vii. Verbal report to the CPM on the results of the survey;

viii. Retention of field notes and the forms for the survey areas sufficient to completely document the mechanical survey.

Data Recovery from Thermal Cobble Features:

Data shall be recovered from ~~a sample of the individual~~ **impacted** thermal cobble features ~~to document these characteristic elements of the PQAD~~. The purpose of this documentation would be to describe the physical variability of the features, to identify and inventory the artifacts and ecofacts that are found in them, and to interpret the methods of construction and the potential uses of the features. The procedures below shall ~~also~~ be used for data recovery at **SMB-P-434 and** the ~~three non-~~**PQAD** potential thermal cobble feature~~s~~ at **multi-component** ~~(~~site~~s~~ ~~SMB-H-164, SMB-M-214,~~ SMB-M-418~~)~~. Data recovery activities shall include:

~~i. Excavation of a sample of 20 percent of thermal cobble features (not to exceed 10 features), drawn from all of the thermal cobble features~~

~~found as a result of the entire cumulative effort to inventory these PQAD contributors; preference should be given to data recovery from intact, buried examples, if any identified in geophysical or mechanical survey;~~

~~ii. Use of criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical and material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;~~

i~~iii~~. Excavation would entail small (approximately 1–3 meters square) areal exposures by hand, where feasible, to remove the archaeological deposits in anthropogenic layers, if present;

ii~~iv~~. Retention of samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses;

iii. Screening of the balance of each layer through hardware cloth of no greater than 1/8-inch mesh;

iv~~i~~. Recordation of these small exposures in drawings and photographs;

v~~ii~~. Retention of field notes and the forms for the excavated features sufficient to acquire the complete complement of data necessary for the description of each feature and the interpretation of the construction and use of each feature to the satisfaction of the CPM;

v~~iii~~. Completions by PPA or CRS and submission by project owner to CPM and BLM of draft DPR 523C site forms for sites where data recovery completed.

Data Recovery from Former Land Surfaces Surrounding Thermal Cobble Features

Data shall be recovered from a sample of buried land surfaces assumed to be adjacent to buried thermal cobble features, if any, identified during the geophysical or mechanical subsurface survey, to document the material culture assemblages and other evidence of behavior that may be found on such surfaces. The project owner shall ensure that the PPA:

i. Develops, in consultation with the CRS and the CPM a sample of the potential buried surfaces, if any, that would be subject to excavation;

ii. Uses criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical and material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

iii. Excavates by hand three large (three meters square) block exposures,

iv. Successfully recovers data from at least four block exposures, but must make no more than eight attempts to find buried surfaces around thermal cobble features.

v. Removes the archaeological deposits from the top of the surface in anthropogenic layers, if present. Excavates each block exposure as a single excavation unit rather than as nine separate, one-meter-square excavation units; the PPA may excavate three continuous, 1-metersquare excavation units together across the center of the feature to assess the presence of a surface and then excavate the other six units if a surface is present;

vi. Retains samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses;

vii. Screens the balance of each layer through hardware cloth of no greater than 1/8-inch mesh;

viii. Keeps field notes and the forms for the excavated features sufficient to acquire the complete complement of data necessary for the description of the distributions of artifacts and ecofacts across each surface, and the interpretation of the use of each surface, to the satisfaction of the CPM;

5. Materials Analyses

The project owner shall ensure that the PQAD evaluation and data recovery plan articulates the anticipated scope of the analyses of the artifact and ecofact collections that cumulatively result from the investigations of the PQAD, articulates the analytic methods to be used, and articulates how the data sets that such analyses will produce are relevant to the themes and questions in the research design for the PQAD.

6. Report of Investigations

The project owner shall ensure that the PQAD evaluation and data recovery plan states that a final report for the PQAD evaluation and data recovery plan Data Recovery Program is required and describes the content, production schedule, and approval process for the report.

7. Provision of Results to the PTNCL PI

The project owner shall ensure that the CRS provides the data and results of the PQAD evaluation and data recovery plan Data Recovery Program to the PTNCL PI for incorporation into the PTNCL NRHP nomination.

8. California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) Registrations if appropriate.

The project owner shall ensure that the PPA prepares a CRHR nomination and a NRHP nomination for the PQAD, including both the contributors located within the boundaries of the BSPP and such contributors, entire and partial, located beyond the boundaries of the BSPP, as are known or posited. The nominations should be the PPA's best estimate of a boundary for the district, a boundary that the PPA shall derive on the basis of the results of the PQAD evaluation and data recovery program and present in the final report for that program.

The project owner shall ensure that the CRS:

a. submits the CRHR nomination to the State Historical Resources Commission for formal consideration of CRHR eligibility,

b. submits the NRHP nomination to the State Historical Resources Commission to initiate the process of formal consideration by the Keeper of the National Register, and

c. tracks and facilitates the review of both nominations to acceptance or rejection.

9. Outreach Initiatives If PQAD ~~PTNCL~~ is not Eligible

a. Professional Outreach. The project owner shall ensure that the CRS and/or PPA prepare a research paper and present it at a professional conference, to inform the professional archaeological community about the PQAD and to interpret its implications for our understanding of the prehistory and early history of Native American life in the region.

b. Public Outreach. The project owner shall prepare and present materials that Interpret the PQAD for the public. Project owner shall propose at least one outreach project, examples may include one-time preparation of an instructional module or one-time preparation of a public interpretation brochure.

Verification: At least 15 days prior to the start of BSPP construction-related ground disturbance in the linear facilities corridor impacting site CA-RIV-3419, the project owner shall notify the CPM that the field recordation of the impacted southwestern portion of the site has ensued.

At least 90 days prior to the onset of BSPP construction-related ground disturbance in Unit 1 east of Historic Road SMB-H-601, the project owner shall ensure that the PPA completes the geophysical test and that the CRS and PPA consult with the CPM, via telephone, to arrive at an agreement on the reliability of the use of magnetometry to locate buried PQAD thermal cobble features and how to proceed with the subsurface survey. The approved survey shall be conducted. The project owner shall also submit, for the review and approval of the CPM, the precise geographic coordinates of the provisional boundary of the PQAD and a stratified random sample for a broader magnetometry survey of 10 percent of the PQAD within the project boundaries (maximum two acres) or a stratified random sample for a mechanical subsurface survey of 2.5 percent of the PQAD located inside the project's boundaries.

1. At least 60 days prior to the onset of BSPP construction-related ground disturbance in Unit ~~1~~**3** east of Historic Road SMB-H-601, the project owner shall ensure that the PPA completes the preliminary report on the formal inventory of the PQAD prepared by or under the direction of the CRS, ~~and selection of separate samples for the data recovery excavation of 10 PQAD thermal cobble features, and four block exposures to reveal intact buried land surfaces there.~~ The project owner shall ensure that the preliminary report is a concise document that provides descriptions of the schedule and methods of the inventory field effort, a preliminary tally of the numbers and, where feasible, the types of archaeological deposits that were found, a discussion of the potential range of error in that tally, and a map of the locations of the found archaeological deposits that has topographic contours and the project site landform designations as overlays. The results of the formal inventory, as set out in the preliminary report, shall be the basis for the refinement of the provisional district boundary.
2. At least 30 days prior to the start of BSPP construction-related ground disturbance in Unit ~~1~~**3** east of Historic Road SMB-H-601, the project owner shall notify the CPM that the CRS has initiated the data recovery phases of the data recovery program.
3. At least 30 days prior to the start of ground disturbance within 30 meters of the site boundaries of the three isolated thermal cobble features, the project owner shall notify the CPM that the CRS has initiated data recovery on the three isolated thermal cobble features.

~~4. At least 30 days prior to the start of ground disturbance within 30 meters of the northeastern portion of site CA-RIV-3419 that the project will impact, the project owner shall notify the CPM that the CRS has initiated the pedestrian surface survey of the northwestern edge of site CA-RIV-3419, with the permission of the BLM.~~

4. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the preparation of the National Register of Historic Places and the California Register of Historical Resources nominations for the PQAD and submits the nominations to the State Historic Resources Commission for formal consideration.

5. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the professional paper and provides the CPM with three copies of the final product of that effort, and prepares, and submits for the approval of the CPM, a public outreach product. Upon the CPM's approval of the latter product, the project owner shall ensure, as appropriate, the product's installation, implementation, or display.

6. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the requisite material analyses and prepares and submits, for the approval of the CPM, the final cultural resources report for the Blythe cultural resources data recovery and monitoring activities. The final report shall provide descriptions of the schedule and methods of the data recovery effort, technical descriptions of excavated archaeological features and buried land surfaces that present the highest resolution of technical data that

can be derived from the data recovery field notes, plan and, as appropriate, profile drawings and photographs of excavated

7. archaeological features and buried land surfaces, and technical descriptions and appropriate graphics of the stratigraphic contexts of excavated archaeological features and buried land surfaces.

CUL-7 DATA RECOVERY FOR SMALL PREHISTORIC SITES (LITHIC SCATTERS, CAIRNS, AND POT DROPS)

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "small prehistoric sites," consisting of sites ~~CA-RIV-1136, SMB-P-160,~~ SMB-M-214, ~~SMB-P¬228,~~ SMB-H-234, ~~SMB-P-238, SMB-P-241, SMB-P-244, SMB-P¬249, SMB-P-252, SMB-P-410, SMB-P-530, SMB-P-531, SMB-P¬532,~~ SMB-H-CT-001, ~~SMB-H-TC-101, SMB-H-TC-103,~~ and SMB-H-WG-102. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include use of the CARIDAP protocol on qualifying sites, how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods used and describe any post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which, for sites where CARIDAP does not apply, 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. Request the PTNCL geoarchaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the PTNCL geoarchaeologist not be available, to identify the specific landform for each site;
3. Map and field-record all lithic artifacts (numbers of flakes, the reduction sequence stage each represents, cores, tool blanks, finished tools, hammerstones, and concentrations, and the material types of each) and the other types of prehistoric artifacts present
4. Map any differential distribution of artifacts and suggest explanations for the distribution
5. Assess the integrity of the site and provide the evidence substantiating that assessment;
6. Collect for dating and source analyses any obsidian artifacts;

7. Field record the surface location of all other artifacts and collect all ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
8. Surface scrape to a depth of 5 centimeters a 5-meter-by-5-meter area centered on the artifact concentration, field-record the lithic artifacts as to location, material type, and the reduction sequence stage each represents, record the location of all other artifacts, and retain the obsidian and ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
9. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, placing the unit in the part of the site with the highest artifact density and recording its locations on the site map;
10. 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;
11. Notify the CPM by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site's CRHR eligibility;
12. If no subsurface deposits were encountered, and the CPM agrees the site is not eligible for the CRHR, data recovery is complete;
13. If subsurface deposits are encountered, test the horizontal limits of the site by excavating additional 1-meter-by-1-meter excavation units in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, using a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site, recording the locations of these units on the site map;
14. Sample the encountered features or deposits, using the methods described in the CRMMP, record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;
15. Present the results of the **CUL-7** 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, a map showing the location of excavation units including topographic contours and the site landforms, and a discussion of the CRHR eligibility of each site and the justification for that determination;

16. 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, the landform, and the eligibility determination; and

17. Present the final results of data recovery at these prehistoric sites in the CRR, as described in **CUL-18**.

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for small sites has ensued.

After the completion of the excavation of the first 1-meter-by-1-meter excavation unit at each of the subject sites, the CRS shall notify the CPM regarding the presence or absence of subsurface deposits and shall make a recommendation on the site's CRHR eligibility.

Within one week of the completion of data recovery at a site, the project owner shall submit 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 this site location.

CUL-8 DATA RECOVERY ON HISTORIC-PERIOD SITES WITH FEATURES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period archaeological sites with features," consisting of sites SMB-H-143, ~~SMB-H-163, SMB-H-203, SMB-H-205, SMB-H-207, SMB-H-210, SMB-H- 222, SMB-H-223, SMB-H-245, SMB-H-247, SMB-H-250, SMB-H-251, SMB-H- 409,~~ SMB-H-411, SMB-H-416, and SMB-H-419. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods to be used and describe any anticipated post processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, 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. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.

2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, 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.

3. The project owner shall ensure that, prior to beginning the field work, the field crew members are 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.

4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with submeter accuracy (such as UTM 11 North or California Teale Albers).

5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. 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.

6. The project owner shall ensure a systematic metal detector survey is completed at each site, and that each hit is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.

7. The project owner shall ensure that all features are recorded, and that any features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.

8. The project owner shall ensure that the details of what is found at each site 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 that 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 12 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 supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period sites with features.

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.

CUL-9 DATA RECOVERY ON HISTORIC-PERIOD SITES WITH STRUCTURES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period archaeological sites with structures," consisting of site~~s~~ SMB-H-404~~, SMB-H-432, and SMB-H-514~~. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, 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. The project owner shall hire a qualified historian to research the locations of these sites and attempt to determine their origins and functions from the historical record.
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 crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, 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 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 the original site map shall be updated to include at minimum: landform features such as small drainages, any manmade features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).

6. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. 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 a systematic metal detector survey is completed at each site, and that each ”hit” is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.

8. The project owner shall ensure that all structures are mapped, measured, photographed, and fully described in writing, and that all associated features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.

9. The project owner shall ensure that the details of what is found at each site 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.

10. 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 three historic-period sites are contributing elements to the DTCCL.

11. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the

information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period sites with structures.

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.

CUL-10 DATA RECOVERY ON HISTORIC-PERIOD DUMP SITES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period dump sites," consisting of sites SMB-H-171, SMB-H-178, ~~SMB-H-224,~~ SMB-H- 403, and SMB-H-427 on the proposed plant site ~~and sites SMB-H-261/262~~ and SMB-H-522/525 along the linear facilities corridor if impacts to the latter cannot be avoided by spanning. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, 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. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, 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.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are 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.
4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any

manmade features, the limits of any artifact concentrations and features, using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).

5. The project owner shall ensure that each dump is entirely mapped, measured, photographed, and fully described in writing.
6. The project owner shall ensure that 10 percent of the surface contents of each dump is recorded as follows:
    a. Apply a 1-meter x 1-meter grid to the entire dump and randomly select 10 percent of the units.
    b. Do a detailed in-field analysis of all artifacts in each unit, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs shall be taken of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.
    c. If any subsurface elements are found in the units, a qualified historical archaeologist shall excavate the part in the unit. All features and contents must be mapped, measured, photographed, and fully described in writing.
7. The project owner shall ensure that the details of what is found at each site 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, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.
    c. The letter report for each site shall present preliminary conclusions regarding the period(s) of use of the dump and suggest who the possible users were in each represented period.
8. 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 five historic-period dump sites are contributing elements to the DTCCL.
9. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This

report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period dump sites.

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.

CUL-11 DATA RECOVERY ON HISTORIC-PERIOD REFUSE SITES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period refuse sites," consisting of sites SMB-H-164, SMB-H-166, ~~SMB-H-181,~~ SMB-H¬287, SMB-H-288, and SMB-H-423 (~~SMB-H-164 also has a probable prehistoric thermal cobble feature for which assessment and data recovery would be accomplished under CUL-6.~~). The focus of the recordation upgrade is to determine if these sites can be attributed to the DTC/C-AMA use of the region and are therefore contributors to the DTCCL. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, 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. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the fieldwork.
2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, 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.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are 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.

4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with submeter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts types shall be completed, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs shall be taken of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. Artifacts shall not be collected.
6. The project owner shall ensure that the details of what is found at each site 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.
    c. The letter report shall make a recommendation on whether each site is a contributor to the DTTCL.
7. The project owner shall ensure that the data collected from the fieldwork shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the six historic-period sites are contributing elements to the DTCCL.
8. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and upgraded in-field artifact analysis has ensued on six historic-period refuse scatter sites.

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.

CUL-12 DATA RECOVERY ON HISTORIC-PERIOD ROADS

The project owner shall ensure that a qualified architectural historian (must 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) conducts research and writes a report on the age and use of two historic period, unimproved roads (SMB-H-600, SMB-H-601), with particular attention paid to their role during the use of the area by the U. S. Army in World War II training maneuvers (DTC/C-AMA). The project owner shall provide the historian's report to the DTCCL PI Historian for use in the possible DTCCL NRHP nomination. The project owner may undertake this task prior to Energy Commission certification of the project.

Verification: At least 15 days prior to ground disturbance, the project owner shall submit to the CPM the historian's report documenting the age and historical use of the two roads.

Within 15 days after the CPM approves the report, the project owner shall forward it to the DTCCL PI-Historian.

CUL-13 ARCHIVAL RESEARCH ON BLYTHE ARMY AIR BASE RESERVOIR PIPELINES

The project owner shall ensure that a qualified architectural historian (must 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) conducts research to establish the current existence and locations of the water supply pipelines that connect the Blythe Army Air Base Reservoir pipelines to the former Blythe Army Air Base. The project owner shall ensure that the construction of the project's underground facilities that cross these old pipelines avoids impacting them. The project owner shall provide the historian's report to the DTCCL PI Historian for use in the possible DTCCL NRHP nomination. The project owner may undertake this task prior to Energy Commission certification of the project.

Verification: At least 15 days prior to excavating any trenches crossing the old Blythe Army Air Base Reservoir water pipelines, the project owner shall submit to the CPM the historian's report verifying the current presence or absence of the pipelines and, if they are present, a plan indicating how they will be avoided.

Within 15 days after the CPM approves the report, the project owner shall forward it to the DTCCL PI-Historian

CUL-14 ARCHIVAL RESEARCH ON RADIO COMMUNICATIONS FACILITY

The project owner shall ensure that a qualified architectural historian (must 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) conducts research to evaluate the CRHR eligibility of the radio communications facility, considering all pertinent register criteria, as well as integrity. If the facility is recommended as CRHR-eligible, the project owner shall propose ways to avoid or mitigate, to a less than significant level, the project's impacts to the facility's integrity of setting and integrity of feeling. The project owner may undertake this task prior to Energy Commission certification of the project

Verification: At least 45 days prior to construction, the project owner shall submit to the CPM the historian's recommendation, with supporting evidence, on the eligibility of the radio communications facility and, if it is eligible, a plan indicating how the project's impacts to the facility's integrity of setting and integrity of feeling will be avoided or mitigated to a less than significant level.

Rationale: Proposed schedule change is in accordance with the project time-line.

At least 30 days prior to construction, the project owner shall implement those elements of the submitted avoidance/mitigation plan approved by the CRS.

CUL-15 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 lay down areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. 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. 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;

6. 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;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification: 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.

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.

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-16 CONSTRUCTION MONITORING PROGRAM

The project owner shall ensure that the CRS, alternate CRS, or CRMs, to prevent construction impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner, monitor full time all ground disturbances:

1. in the areas recommended by the geoarchaeological study to the depth recommended;
2. for the trenches for underground communication lines and the natural gas pipeline;
3. for the holes for the transmission line support structures
4. in the parts of sites CA-RIV-2846 and CA-RIV-3419 that the project will grade away, in the area inside project boundaries within 1,000 feet of the margins of archaeological sites CA-RIV-2846 and CA-RIV-3419 and within 300 feet of all known and discovered examples of thermal cobble features;
5. And for the jack-and-bore tunneling for underground conductor or cable lines or pipelines, that they monitor the excavation of the jack-and-bore entry and exit pits and examine, log, and screen auger back dirt samples, as detailed in the CRMMP.

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 fifty 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.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. 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. The CPM either will 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 noncompliance 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 with Energy Commission technical staff.

Cultural resources monitoring activities 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: 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.

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.

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.

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.

Weekly, during jack-and-bore tunneling for the underground transmission line, the project owner shall provide the CPM with copies of the soil and sediment descriptions and auger-back dirt screening logs kept by the CRS, alternate CRS, or CRMs, as detailed in the CRMMP.

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.

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.

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-17 AUTHORITY TO HALT CONSTRUCTION; TREATMENT OF DISCOVERIES

The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, PPA, PHA, and the CRMs in the event of a discovery. 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 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, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification: 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, PPA, PHA, 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.

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.

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-18 CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for review and comment and to the BLM Palm Springs archaeologist for review and approval. 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: 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.

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.

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.

~~**COMPLIANCE WITH BLM PROGRAMMATIC AGREEMENT**~~

~~**CUL-19**~~ ~~If provisions in the BLM Blythe Solar Power Plant Programmatic Agreement and associated implementation and monitoring programs conflict with or duplicate these Conditions of Certification, the BLM provisions shall take precedence. Provisions in these Conditions that are additional to or exceed BLM provisions and represent requirements under the Energy Commission's CEQA responsibilities shall continue to apply to the project's activities, contingent on BLM's approval.~~

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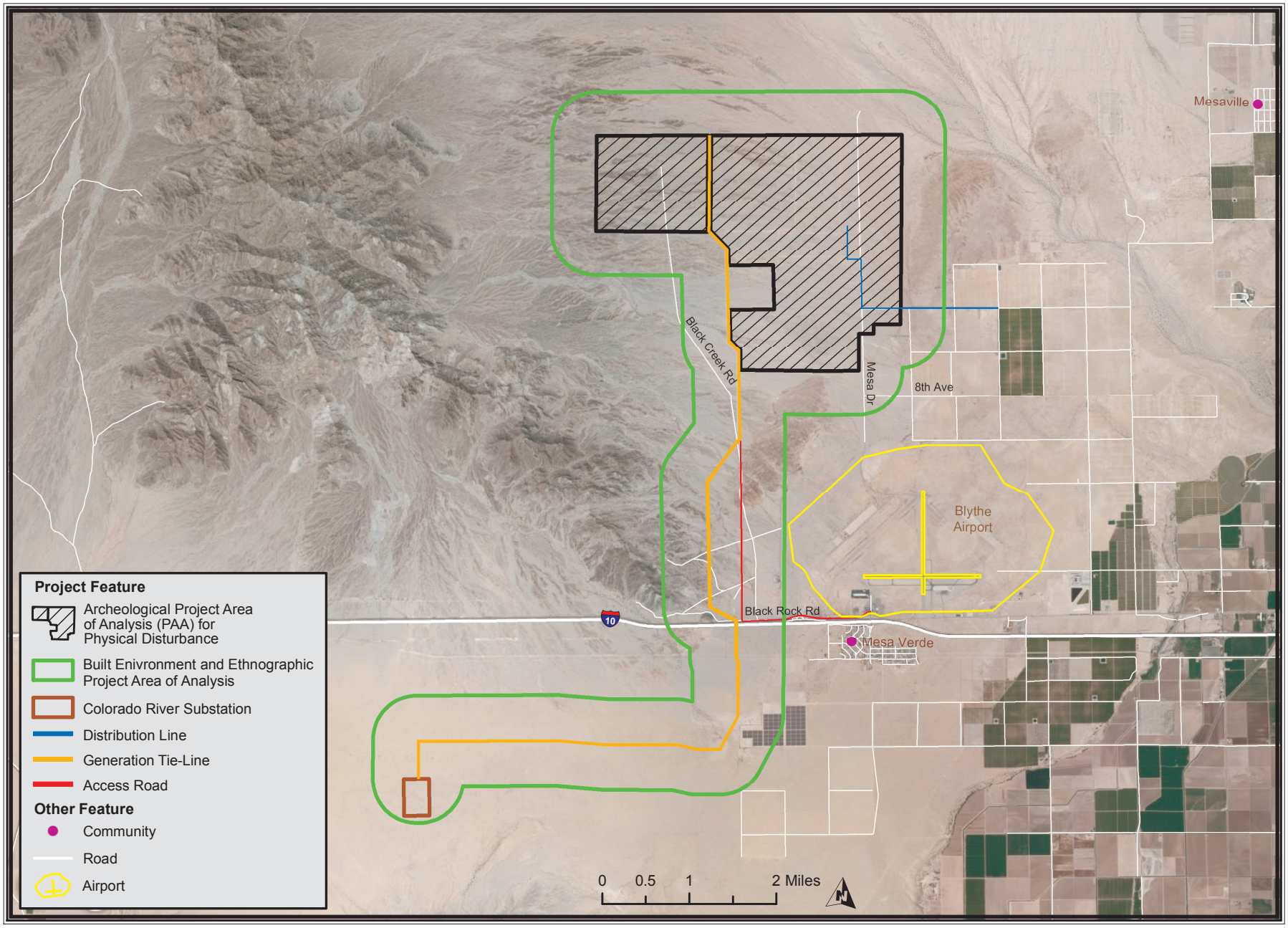
CULTURAL RESOURCES ACRONYM GLOSSARY

AD	After the Birth of Christ
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
BC	Before the Birth of Christ
BSPP	the amended project, Blythe Solar Power Project
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	California Energy Commission Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DEIS	Draft Environmental Impact Statement
DPR 523	Department of Parks and Recreation cultural resource inventory form
DTCCL	Desert Training Center, California-Arizona Maneuver Area (DTC/C-AMA) Cultural Landscape
EIC	Eastern Information Center (CHRIS), University of California, Riverside
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NEPA	National Environmental Protection Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PQAD	Prehistoric Quarries Archaeological District
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.
Project Site	The bounded area(s) identified by the applicant or owner as the area(s) within which they propose to build the project.

PVS1	Palo Verde Solar 1, applicant
Proposed Project	Equivalent in present analysis to “proposed action” and “undertaking.” A “project,” pursuant to 14 CCR § 15378, “means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.”
PTNCL	Prehistoric Trail Network Cultural Landscape
SHPO	State Historic Preservation Officer
Staff	BLM and Energy Commission cultural resources technical staff
SA	Staff Assessment
Undertaking	Equivalent in present analysis to “proposed action” and “proposed project.” An undertaking, pursuant to 36 CFR § 800.16(y), “means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval.”
WEAP	Worker Environmental Awareness Program

CULTURAL RESOURCES - FIGURE 1

Blythe Solar Power Project - Amendment - Cultural Resources Project Area of Analysis



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Bing Aerial Imagery, Tetra Tech Inc -Energy Commission, ESRI.

LAND USE

Testimony of Michael C. Baron

SUMMARY OF CONCLUSIONS

Energy Commission staff (staff) has reviewed the Revised Petition to Amend the Commission Decision for the Blythe Solar Power Project (BSPP) in accordance with the requirements of the California Environmental Quality Act (CEQA). The petition proposes to eliminate the use of solar parabolic trough technology approved under the 2010 Commission Decision and replace it with photovoltaic (PV) solar technology. Staff's analysis considers the changes between the approved project and the modified project.

The modified BSPP would not result in conversion of any farmland to non-agricultural use (as classified by the Farmland Mapping and Monitoring Program), conflict with existing agricultural zoning or Williamson Act contracts, or result in conversion of forest land to non-forest use. In addition, the modified BSPP would be compatible with existing on-site and nearby land uses and would not conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion. The modified BSPP would be consistent with the Riverside County General Plan-Palo Verde Valley Area Plan and the Riverside County Airport Land Use Compatibility Plan. The project would require the implementation of Condition of Certification **TRANS-11** to require marking and lighting of specific transmission poles to ensure sufficient visibility to pilots, Conditions of Certification **TRANS-12** and **TRANS-13** to minimize impacts from glint and glare, and Condition of Certification **TLSN-2** regarding airport related communications as required by the Federal Communications Commission (FCC). Conditions of Certification **BIO-9** through **BIO-11** would mitigate the loss of desert tortoise habitat, which would make the project compatible with the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). The modified BSPP would not divide an established community and would have no land use impacts to the environmental justice population identified in **Socioeconomics Figure 1** published in Staff Assessment Part A**.**

The 2010 Commission Final Decision concluded that the contribution of the BSPP, in combination with the other renewable energy projects proposed in the region, to loss of desert lands, is cumulatively significant. Lands formerly available for multiple uses such as habitat, open space, grazing, and recreation would no longer be available for those uses once a power plant is constructed. While the modified BSPP would reduce the project footprint from 7,043 acres to 4,070 acres, the modified BSPP would also contribute to a cumulative loss of lands available for multiple use in the Colorado Desert in eastern Riverside County, which also would be significant and immitigable.

The modified BSPP would be constructed and operated entirely on lands managed by the Bureau of Land Management (BLM). The BLM published the Plan Amendment/Record of Decision (PA/ROD) on October 22, 2010, and issued the Right-of-Way Grant (ROW No. CACA-048811) on November 4, 2010 for the approved BSPP. Unlike the approved BSPP, the modified BSPP would not be located on private lands under the jurisdiction of Riverside County; therefore, with the exception of Riverside

County LORS that pertain to the Blythe Airport, the project would not be subject to the county's LORS.

INTRODUCTION

In this section, staff discusses if the BSPP would result in substantial adverse impacts under the California Environmental Quality Act (CEQA), and if the project would be inconsistent with applicable laws, ordinances, regulations, and standards (LORS) pertaining to land use, agriculture, and forest resources.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The BSPP would be located on public land (federal land) administered by BLM. The approximately 4,070 acre BSPP site is within the federal California Desert Conservation Area (CDCA) Plan area. There are no state LORS related to land use that are applicable to the project. Unlike the approved BSPP, the modified BSPP does not involve private lands under the jurisdiction of Riverside County; therefore, with the exception of the Riverside County General Plan-Palo Verde Valley Area Plan-Land Use (2003) and Riverside County Airport Land Use Compatibility Plan that pertain to the Blythe Airport, the project would not be subject to local LORS. The modified BSPP's consistency with these local LORS is addressed in the **Traffic and Transportation** section of this document.

PROPOSED MODIFIED PROJECT

The BSPP proposal includes replacing the solar thermal trough technology with PV technology and reducing the physical size of the original BSPP from 7,043 acres to 4,070 acres, excluding off-site linears. The modified BSPP would be located entirely on publicly owned land managed by BLM.

The site would use the same primary access road as the approved project. The project would continue to interconnect to the regional transmission grid via the same gen-tie line to Southern California Edison's Colorado River Substation, which is currently under construction. NextEra Blythe Solar proposes to develop the BSPP in four phases. NextEra Blythe Solar has not selected the specific PV modules nor has it decided on whether a tracker system, fixed tilt system, or combination of the two systems would be installed. NextEra Blythe Solar is requesting the 2010 Decision be amended to allow the specific combination of PV technologies to be selected prior to construction without the need for filing another amendment. All four units would share a single operation and maintenance facility, one on-site switchyard, access and maintenance roads, perimeter fencing and other ancillary security facilities, as well as a 230-kV gen-tie line.

SETTING

The modified BSPP site is a 4,070-acre leased portion of land from the BLM and is located in the Colorado Desert in eastern Riverside County. The surrounding area consists of undeveloped desert land with small rural communities in the vicinity with a mixture of public and private lands. There are federal wilderness areas located on mountainous land to the west, northeast, south and southwest of the project site.

Additional land uses in the study area include Open-Space-Rural, Agricultural and Public Facility (Solar Millennium 2009a pg. 5.17-4).

The site would be located in eastern Riverside County approximately two miles north of U.S. Interstate 10 (I-10), about eight miles west of the City of Blythe. The BSPP site currently consists of undeveloped land composed of sand and desert scrub.

Two residences are located within one mile of the proposed site; one is located south-east of the proposed site outside the 4,070-acre area of disturbance, and the other is located between the southern boundary of the site, north of Blythe Airport. There are no known recreational uses other than Off-Highway Vehicle (OHV) use on designated open routes. The site has not been farmed and BLM has not leased the land for livestock grazing (Solar Millennium 2009a pg. 5.7-15)

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff has analyzed the information provided in the Application for Certification (AFC) and the Revised Petition to Amend as well as information from other sources to determine consistency of the modified BSPP project with applicable land use LORS and the BSPP potential to have significant adverse land use-related impacts.

METHODOLOGY AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on Appendix G of the CEQA Guidelines and performance standards or thresholds identified by Energy Commission staff, as well as applicable LORS utilized by other governmental regulatory agencies.

An impact may be considered significant if the proposed project results in:

- Conversion of Farmland or Forest Land;
    - ✓ Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.[1]
    - ✓ Conflict with existing zoning for agricultural use, or a Williamson Act contract.
    - ✓ Conflict with existing zoning for, or cause rezoning of, forest land [as defined in Pub. Resources Code §12220 (g)), timberland (as defined by Pub. Resources Code §4526), or timberland zoned Timberland Production (as defined by Gov. Code §51104(g)).
    - ✓ The loss of forest land or conversion of forest land to non-forest use.

[1] FMMP defines “land committed to non-agricultural use” as land that is permanently committed by local elected officials to non-agricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors.

- ✓ Other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. [2]

- physical disruption or division of an established community;
- conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects. This includes, but is not limited to, a General Plan, redevelopment plan, or zoning ordinance; or
- incremental impacts that, although individually limited, are cumulatively considerable when viewed in connection with other project-related effects or the effects of past projects, other current projects, and probable future projects.[3]

In general, a power plant and its related facilities may also be incompatible with existing or planned land uses, resulting in potentially significant impacts, if they create unmitigated noise, dust, or a public health or safety hazard or nuisance; result in adverse traffic or visual impacts; or preclude, interfere with, or unduly restrict existing or future uses.

DIRECT/INDIRECT IMPACTS AND MITIGATION

This section discusses the applicable potential project impacts and associated methods and thresholds of significance referenced above.

Agriculture and Forest

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

The BSPP would not create a loss or conversion of Farmland and would not result in a significant adverse impact under this CEQA criterion. According to the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (DOC), the majority of the county's existing agricultural land within a five mile radius is located east of the project site. The southeast corner of the site and land to the southeast is "Farmland of Local Importance," and approximately one mile east of the BSPP site is "Prime Farmland" and "Farmland of Statewide Importance.

[2] A non-agricultural use in this context refers to land where agriculture (the production of food and fiber) does not constitute a substantial commercial use.

[3] Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects and can result from individually minor, but collectively significant actions taking place over a period of time (CEQA Guidelines §15355; 40 CFR 1508.7)

B. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The BSPP would not conflict with existing county zoning for agricultural use or a Williamson Act contract, or result in the conversion of farmland to a non-agricultural use. The project site is located on land designated open space and rural desert by the Riverside County General Plan and Palo Verde Valley Area Plan. The BSPP would be constructed entirely on BLM land and county zoning would not apply. Also, there are no Williamson Act contracts on BLM lands. The BSPP would not conflict with this CEQA criterion and would not result in a significant impact.

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

The BSPP would not conflict with zoning for, or cause rezoning of forest land, timberland or timberland zoned Timberland Production. The project area and vicinity are characterized as undeveloped desert though there are some agricultural activities near the BSPP site.

D. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The BSPP would not result in the loss of forest land or conversion of forest land to non-forest use.[4] The project area and vicinity are characterized as undeveloped desert. The BSPP would not create a loss or conversion of forest land and would not result in a significant adverse impact under this CEQA criterion.

E. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use?

The BSPP would be constructed on an undeveloped portion of the Colorado Desert in eastern Riverside County. The project area consists of relatively undisturbed, unimproved desert vegetated with desert scrub throughout. The area also has desert ephemeral dry wash areas without vegetation, and stabilized and partially stabilized desert dunes. The BSPP would not involve other changes in the existing environment creating a conversion of farmland or forest land and would not result in a significant impact under this CEQA criterion.

[4] In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board (CCR2010).

Physical Disruption or Division Of An Established Community

The BSPP would not physically divide an established community. The project site is in an undeveloped portion of the Colorado Desert in eastern Riverside County. The closest community to the project site is the rural community of Blythe, which is 8 miles east of the project site (population 21,127). The BSPP would not create a significant impact under this CEQA criterion.

Conflict with Any Applicable Habitat Conservation Plan Or Natural Community Conservation Plan

The 4,070 acre BSPP site is not within an approved U.S. Fish and Wildlife Service habitat conservation plan under section 10 of the Endangered Species Act, or within an approved California Department of Fish and Wildlife natural community conservation plan under section 2800 of the Natural Communities Conservation Act. The BSPP would not result in a significant impact under this CEQA criterion.

Conflict with Any Applicable Land Use Plan, Policy or Regulation

California Desert Conservation Area (CDCA) Plan

The BSPP would be located on public land (federal land) administered by BLM. The approximately 4,070 acre BSPP site is within the federal CDCA Plan area. The project area is in the "Multiple-Use Class M" land use category, which allows electrical generation plants in accordance with federal, state, and local laws. The applicant has submitted an amended application to the U.S Bureau of Land Management (BLM) requesting a ROW grant of 4,070 acres to construct the proposed project and its related facilities. Pursuant to the CDCA Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan are considered through the Plan Amendment process. Therefore, the proposed project would require a newly revised BLM ROW grant as well as a project-specific CDCA Plan Amendment.

Northern and Eastern Colorado Desert Coordinated Management Plan

The BSPP area is within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) area. As stated in the **Biological Resources** section, without mitigation the BSPP could contribute to the cumulatively significant loss of biological resources within the Chuckwalla Valley and the NECO area. As stated in the **Biological Resources** section, Conditions of Certification **BIO-9** through **BIO-11** would mitigate the loss of desert tortoise habitat. Condition of Certification **BIO-7** would require the project owner to prepare and implement a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The BRMIMP comprehensively describes avoidance, minimization, and mitigation measures. Staff concludes that with the proposed conditions of certification the BSPP would be compatible with the NECO.

County of Riverside General Plan-Palo Verde Valley Area Plan

The project site is located one mile north of the Blythe Airport. Riverside County's Palo Verde Valley Area Plan defines the Blythe Airport influence Area, including safety zones. Properties within these safety zones are subject to regulations governing development intensity, density, height of structures, and noise. Additional land use restrictions are also defined within Appendix L of the Riverside County Land Use Compatibility Plan. The **Traffic and Transportation** section of this document addresses

the modified BSPP's conformance with this plan and staff has concluded that the project could potentially have negative effects due to glint and glare from solar panels. In order to ensure a less that significant impact due to glint and glare, Conditions of Certification **TRANS-12** and **TRANS-13** have been proposed for the modified BSPP. Condition of Certification **TRANS-11** requires marking and lighting of specific transmission poles located near the end of the runway to ensure sufficient visibility to pilots.

Riverside County Airport Land Use Compatibility Plan

The project site is located one mile north of the Blythe Airport and portions of the modified BSPP are located within Blythe Airport safety zones D and E. As discussed above, the **Traffic and Transportation** section of this document addresses the modified BSPP's conformance with this plan and staff has concluded that impacts to the airport would be less than significant with the implementation of Conditions of Certification **TRANS-11**, **TRANS-12,** and **TRANS-13**.

The **Transmission Line Safety and Nuisance** section of this document has identified that the location and characteristics for the modified project are the same as the originally licensed project and the location of the line would not be subject to additional review. Thus, staff concurs with its previous finding that the transmission line would not pose a safety risk at the Blythe Airport.

The **Transmission Line Safety and Nuisance** section of this document states that that the transmission line would traverse uninhabited open space and would not interfere with modern digital airport-related communications. Thus staff does not expect any related complaints. However, staff recommends Condition of Certification **TLSN-2** to ensure mitigation as required by the Federal Communications Commission in the unlikely event of complaints.

There would be no visible thermal plume as a result of the proposed amendment due to the change in technology. The modified project would use direct conversion of sunlight to electricity and no steam generation would be required to operate the facility. Consequently, potential hazard to aviation associated with the thermal plume is eliminated by the proposed amendment (PVSI2012b).

Staff concludes that the modified BSPP would be consistent with the Riverside County Airport Land Use Compatibility Plan and the Palo Verde Valley Area Plan with implementation of Conditions of Certification **TRANS-11, -12,** and **-13, and TLSN-2.** Please see the **Traffic and Transportation** and **Transmission Line Safety and Nuisance** sections for a complete analysis of the potential aviation hazards from the physical presence of the modified BSPP in the vicinity of the Blythe Airport.

Land Use Compatibility

In general, a power plant and its related facilities may also be incompatible with existing or planned land uses, resulting in potentially significant impacts, if they create unmitigated noise, dust, or a public health or safety hazard or nuisance; result in adverse traffic or visual impacts; or preclude, interfere with, or unduly restrict existing or future uses. Staff has conferred with other project staff to determine that the project with

implementation of conditions of certification would be compatible with surrounding land uses because it would not create significant unmitigated impacts to noise, public health and safety, traffic, or visual resources.

CUMULATIVE IMPACTS

Under CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR [environmental impact report] together with other projects causing related impacts” (Cal. Code Regs., tit. 14, §15130(a)(1)). Cumulative impacts of the project must be discussed if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” (Cal. Code Regs., tit. 14, §15130(a)). Such incremental effects are to be viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (Cal. Code Regs., tit. 14, §15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts shall reflect the severity of impacts and their likelihood of occurrence, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (Cal. Code Regs., tit. 14, §15130(b)).

Geographic Scope of Analysis

The geographic scope for the analysis of cumulative impacts related to land use includes agricultural and open space land within the eastern Riverside County region. This section summarizes foreseeable projects in the project area, and foreseeable projects in the California Desert within proximity of the modified BSPP site. The cumulative land use analysis considers past, current and probable future projects that are within proximity of the proposed project that would contribute to cumulative impacts by impacting agricultural or forest lands, disrupting or dividing an established community, conflicting with applicable land use plans, policy or regulation, or conflicting with an applicable habitat conservation plan or natural community conservation plan.

The eastern Chuckwalla Valley is characterized by undisturbed desert open space and wilderness, distinctive flora such as creosote bush scrub and Joshua tree, sand dunes, and mountainous terrain with large rock outcroppings. Urban and suburban development is absent, farming is limited, and infrastructure other than energy transmission infrastructure is very limited. Much of the land has been identified as desert tortoise habitat by the U.S. Fish and Wildlife Service. Land south of I-10 is within the NECO desert tortoise southern recovery unit (*Eastern Colorado Recovery Unit*).

Existing Projects

Past and present projects occurring in the vicinity of the modified BSPP site include recreational activities proposed by the BLM, energy development in and around Blythe, and development of the existing state prisons south of I-10.

The Devers-Palo Verde No. 1 (DPV1) is an existing 500 kilovolt (kV) transmission line that parallels I-10. The transmission line is within a developed transmission line ROW within a federally approved utility corridor (The DPV1 was approved by the California Public Utilities Commission (CPUC) in 1979 and constructed in 1982.

The Blythe 230 kV Transmission Line is two 230 kV transmission lines that span approximately 70 miles between the Julian Hinds Substation and the Bucks Substation. The transmission line was completed in June 2010. The transmission line was constructed within the existing federally approved utility corridor along I-10.

The Devers-Palo Verde 2 Transmission Line Project, approved by the CPUC in January 2007, involves the construction of two 500 kilovolt electric transmission lines. The route for the Devers-Palo Verde 2 (DPV2) Transmission Line parallels the existing DPV1 transmission line route. Construction began in June 2011.

The Red Bluff Substation is located in the Desert Center area near I-10 within the Devers-Palo Verde transmission line corridor and will be operational in December 2013. The substation will be operated and owned by SCE. The 230/500 kV substation would allow electricity to be carried by the Devers-Palo Verde 2 transmission line. The substation also would allow interconnection of proposed renewable energy projects in the Desert Center area.

Future Foreseeable Projects

The U.S.DOE, Office of Energy Efficiency and Renewable Energy and the BLM, in response to direction from Congress under Title II, Section 211 of the Energy Policy Act of 2005, as well as Executive Order 13212, Actions to Expedite Energy-Related Projects (May 18, 2001), has published a Programmatic Environmental Impact Statement that evaluates utility-scale solar energy development; to develop and implement agency-specific programs that would establish environmental policies and mitigation strategies for solar energy projects; and, to amend relevant BLM land use plans with the consideration of establishing a new BLM solar energy development program (SEDPEISIC2010).

On March 11, 2009, Secretary of Interior Salazar announced Secretarial Order No. 3285, a policy goal of identifying and prioritizing specific locations best suited for large scale production of solar energy on tracts of BLM administered land. The BLM identified a 202,295-acre area in eastern Riverside County as “Riverside East.” Riverside East includes the Chuckwalla Valley and lands on the north side of I-10 and west of the city of Blythe.

The proposed Desert Southwest Transmission Line project consists of construction of an approximate 118-mile 500 kV transmission line and a new substation/switching station. The BLM Palm Springs-South Coast Field Office approved a ROW grant for the transmission line to cross public land between Blythe and the western end of the Coachella Valley.

The proposed Chuckwalla Solar 1 is a 200 megawatt (MW) solar photovoltaic generating project and will be constructed one mile north of Desert Center. The project will be constructed on 4,083 acres of federal land administered by the BLM. A plan for

development (POD) has been submitted to the BLM for their approval. The modified BSPP site is approximately 50 miles east of the project.

The proposed Desert Lily Soleil Project, a 100 MW photovoltaic generating project on 1,216 acres will be located six miles north of Desert Center. The project includes a five to eight mile transmission line to the SCE Red Bluff Substation. A POD has been submitted to the BLM for their approval. The modified BSPP is approximately 60 miles east of the project.
The proposed McCoy Solar Farm, a 750-MW solar photovoltaic generating project will be located approximately 13 miles northwest of the BSPP on 7,700 acres of BLM land and 470 acres of private land. A final environmental impact statement and record of decision have been issued. The applicant has submitted an application to BLM requesting a ROW grant.

The Desert Sunlight Solar Farm is a 550 MW solar photovoltaic generating project, currently under construction, is located approximately five miles north of Desert Center. The project is being constructed on 4,410 acres of BLM administered land. A record of decision and a CDCA Plan amendment have been approved by the BLM. The modified BSPP site is approximately 50 miles east of the project.

The proposed Genesis Solar Energy Project, a 250 MW solar parabolic trough generating project is located north of the Ford Dry Lake exit on I-10. The project's facility footprint will be 1,800 acres. The project was approved by the Energy Commission on October 12, 2010 and is under construction. The modified BSPP site is approximately 20 miles southeast of the Genesis project site.

Cumulative Impacts Conclusion

The potential for the modified BSPP to cause significant cumulative impacts has been considered using the Appendix G of the CEQA Guidelines. The 2010 Commission Final Decision concluded that the contribution of the BSPP, in combination with the other renewable energy projects proposed in the region, to the loss of desert lands, is cumulatively significant. Lands formerly available for multiple uses such as habitat, open space, grazing, and recreation would no longer be available for those uses once a power plant is constructed. While the modified BSPP would reduce the project footprint from 7,043 acres to 4,070 acres, the modified BSPP would also contribute to a cumulative loss of lands available for multiple uses in the Colorado Desert in eastern Riverside County, which also would be significant and immitigable.

Based on staff's analysis of the project direct impacts and the 2010 Commission Final Decision, staff concludes the following for cumulative impacts.

- The modified BSPP would have no direct impacts on farmland and would not contribute to cumulative impacts on this resource.
- The modified BSPP would not conflict with existing zoning for agricultural use and there are no Williamson Act contracts on BLM land. The BSPP would not contribute to cumulative impacts on agricultural uses.

- The modified BSPP would not conflict with existing zoning for or cause rezoning of forest land or timberland and would not contribute to cumulative impacts on these resources.
- The modified BSPP would not result in the loss or conversion of forest land and would not contribute to cumulative impacts on this resource.
- The modified BSPP would not involve changes in the environment that would result in the conversion of farmland or forest land and would not contribute to cumulative impacts on these resources.
- The 4,070-acre modified BSPP site is not within an approved U.S. Fish and Wildlife Service habitat conservation plan under section 10 of the Endangered Species Act, or within an approved California Department of Fish and Wildlife natural community conservation plan under section 2800 of the Natural Communities Conservation Act and would not contribute to cumulative impacts under this criterion
- The modified BSPP would contribute to cumulative impacts to multiple use lands.

COMPLIANCE WITH LORS

The modified BSPP's compliance with the Riverside County General Plan-Palo Verde Valley Area Plan-Land Use (2003) and Riverside County Airport Land Use Compatibility Plan is addressed in the **Traffic and Transportation** section of this document. The **Traffic and Transportation** section has concluded that the modified BSPP would be consistent with these plans with implementation of Conditions of Certification **TRANS-11, TRANS- 12, TRANS- 13. Transmission Line Safety and Nuisance** is recommending **TLSN-2**.

NOTEWORTHY PUBLIC BENEFITS

Staff has not identified any noteworthy public benefits related to land use.

PROJECT CLOSURE AND DECOMMISSIONING

At some point in the future, the proposed facility would cease operation and close down. At that time, it would be necessary to ensure that closure occurs in such a way that public health and safety and the environment are protected from adverse impacts.

The planned lifetime of the project is estimated at 30 years. At least 12 months prior to the initiation of decommissioning, the project owner would prepare a Facility Closure Plan for Energy Commission review and approval. This review and approval process would be public and allow participation by interested parties and other regulatory agencies. At the time of closure, all applicable land use related LORS would be identified and the closure plan would discuss conformance of decommissioning, restoration, and remediation activities with these LORS. All of these activities would fall under the authority of the Energy Commission.

For more information on facility closure, please see the General Conditions provided in this PSA response to Agency and public comments.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has not received any agency or public comments related to land use for the BSPP.

CONCLUSIONS

This analysis focused on whether the BSPP would result in substantial adverse impacts under CEQA and if the project would be inconsistent with applicable land use laws, ordinances, regulations, and standards. Staff concludes the following:

1. The BSPP would be located on public land (federal land) administered by the U.S. Bureau of Land Management.
2. The approximately 4,070 acre BSPP site is within the federal California Desert Conservation Area (CDCA) Plan area. The project area is in the “Multiple-Use Class M” land use category. The Class M land use category allows electrical generation plants in accordance with federal, state, and local laws.
3. Staff concludes that with implementation of Conditions of Certification **BIO-9** through **BIO-11** the BSPP would be compatible with the Northern and Eastern Colorado Desert Coordinated Management Plan.
4. Staff concludes that with implementation of Conditions of Certification **TRANS-11**, **TRANS-12**, **TRANS-13,** and **TLSN-2**, the modified BSPP would be consistent with the Palo Verde Valley Plan and the Riverside County Airport Land Use Compatibility Plan.
5. The BSPP does not divide or disrupt the physical arrangement of an established community.
6. The BSPP is not located within a habitat conservation plan approved by the U.S. Fish and Wildlife Service, or a natural community conservation plan approved by the California Department of Fish and Wildlife.
7. The BSPP does not convert Farmland, conflict with existing county zoning for agricultural use or a Williamson Act contract, or result in the conversion of Farmland to a non-agricultural use.
8. The BSPP does not conflict with zoning for or cause rezoning of forest land, timberland or timberland zoned Timberland Production. The project does not result in the loss of forest land or conversion of forest land to non-forest use.
9. The BSPP would have no direct impacts to the Riverside County Airport Land Use Compatibility Plan and would not contribute to cumulative impacts to the Blythe airport.
10. The modified BSPP would contribute to cumulative impacts to multiple use lands.

PROPOSED CONDITION OF CERTIFICATION

Staff is not proposing a condition of certification for land use.

REFERENCES

CEC 2010a. California Energy Commission (TN 56992), Revised Staff Assessment of Blythe Solar Power Project (09-AFC-6). June 4, 2010.

CEC 2010b. California Energy Commission (TN 57475), Supplemental Staff Assessment of Blythe Solar Power Project (09-AFC-6). July 7, 2010.

CEC 2010c. California Energy Commission (TN 58000), Presiding Member's Proposed Decision, Blythe Solar Power Project (09-AFC-6), August 11, 2010.

CEC 2010d. California Energy Commission (TN 58591), Blythe Solar Power Project (09-AFC-6) - Commission Decision Approved on September 10, 2010. Docketed on September 23, 2010.

CEC 2011a. California Energy Commission (TN 61492). Blythe Solar Power Project - Staff Analysis of Proposed Modifications to the Design of the Facility and the Location of its Transmission Line to Reflect the New Proposed Location of the Colorado River Substation, dated July 22, 2011.

CEC 2011b. California Energy Commission (TN 63021). Order Approving Petition to Modify the Facility Design and the Location of the Transmission Line, dated August 30, 2011.

NEBS2013a. NextEra Blythe Solar Energy Center, LLC (TN 70318). Revised Petition to Amend (Conversion to PV). Dated April 12, 2013. Submitted to CEC on April 12, 2013.

PVSI 2011a. Palo Verde Solar I, LLC (TN 61148). Blythe Solar Power Project - Petition to Amend - Facility Design and Transmission Line Location, dated June 2011. Submitted to CEC on June 14, 2011.

PVSI 2012a. Palo Verde Solar I, LLC (TN 66026). Palo Verde Solar I, LLC's Petition for Amendment (Conversion to PV). Dated June 28, 2012. Submitted to CEC on June 28, 2012

PVSI2012b. Palo Verde Solar I, LLC (TN 66027). Palo Verde Solar I, LLC's Petition for Amendment Air Quality Modeling Files. Dated June 28, 2012. Submitted to CEC on June 28, 2012.

RCALUC2010d Riverside County Airport Land Use Commission, (tn: 56092). Staff Report from the Riverside County Airport Land Use Commission, dated 6/16/2010.

TRAFFIC AND TRANSPORTATION

Testimony of John Hope

SUMMARY OF CONCLUSIONS

Energy Commission staff has analyzed the information provided in the Petition for Amendment and acquired from other sources to determine the potential for the modified Blythe Solar Power Project (BSPP) to have significant and adverse traffic and transportation-related impacts. Staff has also assessed the potential for mitigation proposed by the applicant and conditions developed by staff to reduce any potential impacts to a less than significant level, as well as the feasibility and enforceability of those proposed mitigations and recommended conditions of certification.

As conditioned, the modified BSPP will comply with all laws, ordinances, regulations, and standards pertaining to roadways and ground transportation. In addition, the modified BSPP will result in no significant impacts to the local or regional transportation system.

The modified BSPP has a similar or reduced potential to interfere with the operation of the Blythe Airport because of the following project components:

- Transmission lines,
- Photovoltaic (PV) solar panels, and
- Evaporation ponds.

Any impacts can be adequately reduced through implementation of recommended mitigation.

For additional information, see “Interference with Airport Operations” in the **Direct Impacts and Mitigation** section of this document.

INTRODUCTION

In the Traffic and Transportation analysis, staff focuses on:

1. Whether construction and operation of the modified BSPP would result in traffic and transportation impacts according to the California Environmental Quality Act (CEQA), and
2. If the project would be in compliance with applicable laws, ordinances, regulations, and standards (LORS).

In its analysis, staff identifies potential impacts related to the construction and operation of the modified BSPP on the surrounding transportation systems and roadways and, when applicable, proposes mitigation measures.

METHODOLOGY AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria are based on two items:

1. CEQA Guidelines, and
2. Performance standards and thresholds established by interested agencies.

A project may have a significant effect if it would:

1. Cause a substantial increase in traffic in relation to the existing traffic load or capacity of the street system;
2. Exceed an established level of service standard applicable for the designated roads or highways;
3. Alter existing patterns of circulation or the movement of people or goods or both;
4. Alter waterborne, rail, or air traffic;
5. Increase traffic hazards to motor vehicles, bicyclists, or pedestrians;
6. Result in inadequate emergency access or parking capacity or both; or
7. Conflict with existing policies, plans, or programs.

Level of Service

When evaluating the project-related impacts on the local transportation system, staff bases its analysis on level of service (LOS) determinations. *Level of service* is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of *speed*, *travel time,* and *delay.*

The *Highway Capacity Manual 2000,* published by the Transportation Research Board, Committee on Highway Capacity and Quality of Service*,* includes six levels of service for roadways or intersections ranging from LOS A, the best operating conditions, to LOS F, the worst operating conditions.

Riverside County and the State of California Department of Transportation use the LOS criteria to assess the performance of its street and highway system and the capacity of roadway segments. The county's as well as the state's threshold standards policy requires that LOS C or better be maintained on roadway segments under their jurisdiction.

In addition, operations of intersections were evaluated using methodology contained in the *Highway Capacity Manual 2000*. This methodology is used to assess delays at an unsignalized intersection for movements operating under traffic control—a stop sign, for example. For an intersection at which the only stop-sign is placed at a side street, delay would be reported for movements controlled by the stop sign. The delay is then

assigned a corresponding letter grade to represent the overall condition of the intersection or level of service. These grades range from LOS A, free-flow, to LOS F, poor progression.

The level-of-service standards for the Blythe Solar Power Project as required by Riverside County and the State of California are as follows:

1. LOS C or better on Riverside County roads and conventional highways.
2. LOS C or better on Interstate 10 (I-10), the primary access road to the project site.

A significant impact would exist if the BSPP were to cause intersection operations to exceed the accepted LOS standards on a state, county, or federal roadway.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

In addition to analyzing a project's conformance with LORS, staff uses LORS as significance criteria to determine if the modified BSPP would have a significant adverse impact on the environment under CEQA. The federal, state, and local regulations applicable to the modified BSPP are listed in **Traffic and Transportation Table 1**

TRAFFIC AND TRANSPORTATION Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Code of Federal Regulations (CFR), Title 14, Aeronautics and Space; Part 77, Objects Affecting Navigable Airspace (14 CFR 77)	Includes standards for determining physical obstructions to navigable airspace; information about requirements for notices, hearings, and requirements for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace.
*Code of Federal Regulations (*CFR*)*, Title 49, Subtitle B, Sections 171-177; Sections 350-399; Appendices A-G Other Regulations Relating to Transportation	49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) as well as safety measures for motor carriers and motor vehicles operating on public highways.
State	
California Vehicle Code (CVC), Division 2, Chapter 2.5, Div. 6; Chap. 7, Div. 13; Chap. 5, Div. 14.1; Chap. 1 and 2, Div. 14.8, Div. 15	Pertain to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and transporting hazardous materials.
California Streets and Highway Code, Section 117; Section 660-695; Section 700-711; Section 1450; 1460 et seq.; and 1480 et. Seq.	Pertain to regulating rights-of-way encroachments and granting permits for encroachment on state highways and freeways and on county roads.
California Health and Safety Code; Section 25160 et seq.	Pertain to operators of vehicles transporting hazardous materials
Local	
Riverside County General Plan, Circulation Element and Palo Verde	Pertains to public policies and strategies for the transportation system in Riverside County, including those

Valley Area Plan, which is part of the Riverside County General Plan	pertaining to transportation routes, terminals, and facilities; construction of extensions of existing streets; and levels of services (LOS), and airports.
Riverside County Municipal Code, Title 10, Vehicles and Traffic, Section 10.08	Pertains to requirements for oversize and overweight vehicles.
Riverside County Airport Land Use Compatibility Plan	Pertains to heights of projects as well as other restrictions in areas located near airports. All applicable policies and procedures in the Riverside plan are incorporated as part of the city of Blythe's policies.
City of Blythe General Plan 2025, Chapter 4, Circulation Element	Establishes regional transportation objectives, policies, and implementation measures for various modes of transportation as well as levels of service. Plan is also coordinated with Palo Verde Valley Area Plan and County of Riverside General Plan.
City of Blythe General Plan 2025, Chapter 7, Safety Element	Establishes policies pertaining to airport safety, including minimizing injury to aircraft occupants and preventing creation of hazards to flights. Guiding policies of this section include Blythe Airport Master Plan; Land Use Compatibility Plan; and Federal Aviation Regulations Part 77. Section also contains five guiding policies concerning hazards to airspace; visual disturbances involving light and glare; and electronic devices.
City of Blythe Municipal Code, Title 10, Section 19	Pertains to permit requirements for moving heavy loads and equipment on city streets.
Palo Verde Valley Area Plan	Includes height and other restrictions pertaining to the Blythe Airport.

PROPOSED MODIFIED PROJECT

The project owner, NextEra Blythe Solar Energy Center, submitted a proposal for the development of the modified BSPP with PV generating technology in four operational phases designed to generate a total of approximately 485 megawatts (MW) nominal of electricity. The project owner's right-of-way (ROW) application consists of approximately 4,070 acres of Bureau of Land Management (BLM) land—flat desert terrain located near the Blythe Airport, a general aviation facility.

NextEra Blythe Solar has not selected the specific PV modules nor has decided on whether to install a single-axis tracking modular system, fixed-tilt system, or combination of the two systems.

The project is proposed to be developed on public lands managed by the BLM on a site that is approximately 1.5 miles northwest of Blythe Municipal Airport (BLH), a general aviation facility.

The proposed project is to be located in the Southern California inland desert, approximately eight miles west of the city of Blythe and two miles north of the I-10 freeway in Riverside County, California.

The project will also include a seven-mile transmission line running south from the project; crossing I-10; and turning west to hook up to Southern California Edison's proposed Colorado River substation

As proposed, the project is also located in a number of Airport Compatibility Zones as defined by the Riverside County Airport Land Use Commission and the *Airport Master Plan* as adopted by the Riverside County Board of Supervisors in 2004.

Access to the modified BSPP would be off I-10 to Mesa Drive either by Exit 232 (West) or Mesa Drive (East) interchange. Travelers would drive northerly about 300 feet to Black Rock Road, then westerly on Black Rock Road to a new driveway extending northerly into the site.

The four-legged intersection of Black Rock, Hobsonway, and Mesa Drive is controlled with stop signs on the Hobsonway and Black Rock approaches. See **Traffic and Transportation Figure 1**.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The direct and indirect impacts of the modified BSPP on the transportation system are examined in this section. The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the original licensed solar thermal project conditions to the modified BSPP conditions, including the following:

1. Study intersection/road segment locations;
2. Direct/indirect impacts and mitigation;
3. Construction period impacts and mitigation;
4. Operations impact and mitigation;
5. Emergency services vehicle access;
6. Water, rail, and air traffic;
7. Impact of glare on motorists;
8. Parking capacity;
9. Transportation of hazardous materials;
10. Laws, ordinances, regulations, and standards (LORS); and
11. Conflict with policies, plans, or programs.

Studied Intersection and Road Segment Locations

The following locations on the surrounding roadway network were reviewed:

1. Interstate 10, approximately 40 miles east of the project site;
2. Interstate 10, approximately 40 miles west of the project site;
3. Interstate 10, Westbound ramps, east of project site;

4. Interstate 10, Eastbound ramps, Mesa Drive;
5. Blackrock Road;
6. Mesa Drive; and
7. Hobsonway.

Direct/Indirect Impacts and Mitigation

Determinations of the direct and indirect impacts of the modified BSPP are based on the relevant LORS pertaining to this project. See the "**Laws, Ordinances, Regulations, and Standards**" subsection of this document. To address direct and indirect impacts and mitigation, two project scenarios have been evaluated:

1. Construction Period Impacts and Mitigation, and
2. Operations Impacts and Mitigation.

Construction Period Impacts and Mitigation

Potential traffic impacts associated with construction of the modified BSPP were evaluated for both construction workforce traffic and construction truck traffic.

Construction Workforce

Construction of the modified BSPP would be completed over an approximately 48-month period beginning in June 2014. The construction work force would peak during months 20 through 22 at approximately 619 workers per day. Construction of the transmission line is expected to require a limited crew with fewer than 25 workers during peak periods. For the approved BSPP, the construction work force would peak during month 16 at approximately 1,000 workers per day and average approximately 600 workers over the course of construction. Construction of the transmission line for the approved BSPP was also expected to require a limited crew with fewer than 25 workers during peak periods. However, the transmission line construction schedule would not coincide with the peak of plant site construction employment.

The worst-case scenario, where all workers commute in automobiles with only one occupant per vehicle, yields a peak trip generation of approximately 619 inbound trips during the morning peak period and another 619 outbound trips during the evening peak hour. For the approved BSPP, the worst case scenario would yield a peak trip generation of approximately 1,000 inbound trips during the morning peak period and another 1,000 outbound trips during the evening peak hour. Staff notes, however, that most workers will likely stay in hotels and motels in or near Blythe and participate in some form of ridesharing or other programs designed to reduce traffic on I-10. See Condition of Certification **TRANS-2**.

In the worst-case scenario for the modified project, one-way worker trips would peak at 1,238 trips per day (during months 20 through 22). Construction would also generate an average of approximately 15 to 20, or fewer, one-way, truck trips per day with a peak of approximately 50 to 75, or fewer, truck trips per day. The peak time for truck travel

would occur during the construction of the operations and maintenance facility and would not coincide with the peak onsite worker commute timeframe (during months 20 through 22).

To accommodate the worst-case scenario, a temporary parking area of approximately five acres would be required for construction personnel parking (assuming 350 square feet per vehicle) plus additional area required for the staging and laydown of equipment, materials, and supplies. The modified project would include onsite laydown and parking areas during construction. Those areas would be relocated around the site as construction progresses. Safety and efficiency concerns require on-site parking and laydown areas. That is, a traffic hazard could occur if workers were to park on public roadways or if public roadways were used for the staging and laydown of equipment, materials, and supplies. Such a hazard could adversely impact the level of service (LOS) on I-10 as well as the safety of the workers and drivers. Consequently, to ensure adequate on-site and off-site parking areas as well as staging areas for all phases of project construction, staff recommends Condition of Certification **TRANS-1**. This same condition was recommended for the approved BSPP and was included in the Commission Decision.

The construction workforce would be drawn from the surrounding local and regional area, including a small number from the greater Los Angeles Basin. Project construction traffic from the Los Angeles, Palm Springs, and Indio areas is expected to follow I-10 east to the project site. Workers traveling from Blythe and the Arizona towns of Quartzsite, Ehrenberg, and Cibola would follow I-10 west to the project site.

A large portion of the construction workforce is expected to come from or at least be temporarily housed in the Blythe and Indio areas (including Coachella, Thermal, and Mecca). These workers would also approach the project site following I-10 from the west. Traffic approaching from Blythe itself would generally follow I-10 westerly to Mesa Drive where they would exit to the north and follow Blackrock Road west to the site. However, some workers are likely to follow Hobsonway west directly to Blackrock Road.

Traffic from the Brawley/ El Centro area is expected to follow State Route 78 north to I-10 and I-10 west to Mesa Drive. Traffic from the Indio/ Palm Springs area and points west would follow I-10 east to Mesa Drive and the project site.

See the following Traffic and Transportation tables for information about traffic volumes for roads and intersections used to access the project site:

1. **Traffic and Transportation Table 1**, 2010 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service Without Project
2. **Traffic and Transportation Table 2**, 2012 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service With Project
3. **Traffic and Transportation Table 3**, Existing Peak Hour Intersection Levels of Service Without Project

4. **Traffic and Transportation Table 4**, 2012 Peak Hour Intersection Levels of Service With Project (With Mitigation)

As indicated in the Table 1 and Table 2, LOS for Interstate 10 east and west of the project site would operate at LOS A before and during peak hour construction conditions. As Indicated in **Traffic and Transportation Table 3** and **Traffic and Transportation Table 4**, intersections would operate at LOS A with the implementation of project owner-recommended staggered travel times for construction workers. Staggered travel times are important for these intersections because movement of traffic is controlled by stop signs. Without staggered travel times, vehicle traffic could easily become backed-up or stacked as drivers exit I-10 to the project site.

Caltrans raised a concern regarding the operation of the I-10 / Mesa Drive intersection. Specifically, the concern related to the potential for vehicles to back up on I-10 as they exit the freeway at the intersection with Mesa Drive. Therefore, staff proposes Condition of Certification **TRANS-2** (recommended for the approved BSPP and was included in the Commission Decision) to require the project owner for the modified BSPP to formulate a transportation control plan that would include measures designed to reduce traffic, if necessary, to maintain LOS C or better at the I-10 / Mesa Drive intersections.

Traffic and Transportation Table 1
2010 Peak Hour Roadway Traffic Volumes,
Design Capacities, and Levels of Service without Project

Roadway/Segment	Existing Conditions			
	Travel Lanes	Volume	Capacity	LOS
I-10 West of Project Site	4	3,278	8,000	A
I-10 East of Project Site	4	3,278	8,000	A

Notes: Baseline information from Caltrans 2009 data. Capacity represents approximate two-way capacity in vehicles per hour.

Traffic and Transportation Table 2
2012 Peak Hour Roadway Traffic Volumes,
Design Capacities, and Levels of Service With Project

Roadway/Segment	2012 Conditions			
	Travel Lanes	Volume	Capacity	LOS
I-10 West of Project Site	4	4,278	8,000	A
I-10 East of Project Site	4	4,178	8,000	A

Notes: Baseline information from Caltrans 2009 data. Year 2009 traffic volumes expanded to Year 2012 at historical rates from year 2002 to 2007 (4.275 percent per year). Capacity represents approximate two-way capacity in vehicles per hour.

Traffic and Transportation Table 3
Existing Peak Hour Intersection
Levels of Service Without Project

Intersection	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
I-10 Westbound Ramps/Mesa Drive	1.7	A	2.4	A
I-10 Eastbound Ramps/Mesa Drive	3.2	A	3.7	A
Black Rock Road/Mesa Drive/Hobson Way	2.7	A	3.4	A

Notes: Existing conditions data from Wilson Engineering, 2009. Year 2009 traffic volumes expanded to Year 2012 at historical rates from years 2002 through 2007 or 4.275 percent per year. Average vehicle delay is in seconds. LOS pertains to intersection as a whole. LOS for intersection as a whole.

Traffic and Transportation Table 4
2012 Peak Hour Intersection
Levels of Service with Project (With Mitigation)

Intersection	Year 2012 and 500 Workers			
	AM Peak Hour		PM Peak Hour	
	Delay (in seconds)	LOS	Delay (in seconds)	LOS
I-10 Westbound Ramps/Mesa Drive	5	A	1.1	A
I-10 Eastbound Ramps/Mesa Drive	8	A	6.4	A
Black Rock Road/Mesa Drive/Hobson Way	11.3	B	9.1	A

Notes: Year 2009 traffic volumes expanded to Year 2012 at historical rates from years 2002 through 2007 or 4.275 percent per year. LOS assumes 1,000 person workforce split in two shifts of 500 employees arriving and departing one hour apart. LOS for intersection as a whole.

In addition, several pieces of equipment that exceed roadway load or size limits would need to be transported to the BSPP site via I-10 during construction. This equipment includes the main transformers. The equipment would be transported using multi-axle trucks.

To transport this equipment, the project owner must obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the project owner must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary. Consequently, staff is recommending:

- Condition of Certification **TRANS-3** (recommended for the approved BSPP and was included in the Commission Decision) to ensure the project owner would

comply with vehicle size and weight limitations imposed by Caltrans and other relevant jurisdictions;

- Condition of Certification **TRANS-4** (recommended for the approved BSPP and was included in the Commission Decision) to ensure the project owner complies with Caltrans' and other relevant jurisdictions' limitations on encroachments into public rights of way; and
- Condition of Certification **TRANS-5** (recommended for the approved BSPP and was included in the Commission Decision) to ensure that the project owner would restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities. Repairs shall be of the kind to restore the roads, easements, and rights-of-way to their original or near-original condition.

Operation Impacts and Mitigation

Operation of the modified BSPP would result in a small amount of vehicular traffic. Operational workforce is estimated to be between 15 and 20 workers. For the approved BSPP, operational workforce was estimated to be 221 workers. The arrival and departure time of those workers would be staggered in three eight-hour shifts to cover operations on a 24-hour, seven-day-a-week basis. Consequently, peak weekday traffic would be less than 15 or 20 vehicles even if every employee were to commute in his or her own vehicle.

As indicated in **Traffic and Transportation Table 5** and **Table 6**, which follow, surrounding roadways and intersections are projected to operate well below capacity when BSPP is operational in 2016. Projections have taken into account continued local and regional growth as well as the completion of PSEGS located 35 miles west of Blythe. Consequently, the addition of 20 workers arriving at the plant in staggered shifts over a 24-hour period would not alter existing or future roadway operating characteristics (LOS).

In addition, BSPP operations would require approximately 12 truck trips or fewer per day for the delivery of materials and supplies as well as for offsite shipment of wastes.

Truck travel as well as other non-employee site visits would be very small and would typically occur during non-peak periods. Consequently, cumulative operational impacts would not be significant and not require mitigation.

Traffic and Transportation Table 5
2016 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service

Roadway Segment	2016 Conditions Plus Project Operations		
	Volume	Capacity	LOS
I-10 West of Project Site	3,899	8.000	A
I-10 East of Project Site	3,960	8.000	A

Notes: Year 2009 traffic volumes expanded to Year 2016 (project completion) at historical rates from years 2002 to 2007 or 4.275 per year. Capacity is approximately two-way capacity in vehicles per hour. Completion Palen Solar Power Project north of I-10 assumed in calculations.

Traffic and Transportation Table 6
2016 Peak Hour Intersections Levels of Service

Intersection	2016 Conditions Plus Project Operations			
	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
I-10 Westbound Ramps/Mesa Drive	3.5	A	2.2	A
I-10 Eastbound Ramps/Mesa Drive	4.3	A	5.1	A
Black Rock Road/Mesa Drive/Hobson Way	5.4	A	5.6	A

Notes: Year 2009 traffic volumes expanded to Year 2016 at historical rates from years 2002 through 2007 or 4.275 percent per year Average vehicle delay is in seconds.

Emergency Services Vehicle Access

Two all-weather access roads are to be built to county and fire code requirements for adequate access for emergency vehicles. Please see the **Worker Safety and Fire Protection** section of this staff assessment for additional information.

Water and Rail Obstructions

The modified BSPP is not located adjacent to a navigable body of water; therefore, the BSPP is not expected to alter water-related transportation. In addition, the proposed project is not located near a crossing of a railroad line.

Interference with Airport Operations

Two airports are located in the vicinity of the proposed BSPP site, Desert Center and Blythe. Desert Center is approximately 36 miles northwest from the project site; consequently the project would not affect air traffic at Desert Center. Blythe Airport is operational and is located approximately 1.5 miles southeast of the project site. The Blythe Airport has two operating runways. Runway 8-26 (oriented east-west), the primary runway, is 6,562 feet long and 150 feet wide. Runway 17-35 (oriented north-

south) is 5,820 feet long and 100 feet wide. Today Blythe Airport is primarily used for general aviation.

At Blythe Airport, for the 12-month period ending in 2006, aircraft operations averaged 69 takeoffs or landings per day. Of these, 50 percent were characterized as transient general aviation; 50 percent local, general aviation.

As proposed, several components of the BSPP could interfere with the operation of the Blythe Airport because of their location in airport zones of influence. These components include an overhead 230-kV transmission line and poles and PV panels.

Information about those components is as follows.

230 kV Transmission Line and Poles

An overhead 230-kV single circuit, three-phase transmission line and 52 steel monopoles, ranging from 90 feet to a maximum of 145 feet in height and spanning less than ten miles, will proceed on a route directly south from the BSPP power block and eventually cross I-10 and turn westward to SCE's planned Colorado River substation. Forty-three of the 52 monopoles are located in Blythe Airport Compatibility Zones, D, C, and B1. See **Traffic and Transportation Figure 1** and **Traffic and Transportation Figure 4**.

The transmission line location and pole design have not changed from the originally licensed project; therefore staff recommends the previously adopted mitigation be required in any approval of the modified BSPP. During the original licensing proceeding staff worked with the FAA, Riverside County Airport Land Use Commission and Blythe Airport officials to ensure the transmission line did not impact airport operations. In response to comments made by the Riverside County Airport Land Use Commission (ALUC) during ALUC hearings, the original project was modified to move the proposed transmission line outside airport compatibility zone B1 and off the extended centerline of runway 8-26 thereby reducing the potential for the transmission line to impact aviation safety. In addition, Condition of Certification **TRANS-11** (recommended for the approved BSPP and was included in the Commission Decision) is recommended to require marking and lighting of specific poles located near the end of the runway to ensure sufficient visibility to pilots.

In addition, the **Transmission Line Safety and Nuisance** section of this document has identified that the location and characteristics for the modified project are the same as the originally licensed project and the location of the line would not be subject to additional review. **Transmission Line Safety and Nuisance** staff concurs with its previous finding that the transmission line would not pose a safety risk at the Blythe Airport.

Impact of Glint and Glare on Pilots, Workers, Drivers, and Passengers

NextEra Blythe Solar proposes to construct approximately 4,070 acres of PV panels to transmit sunlight to solar cells that directly produce direct current electricity. The direct

current is subsequently converted to alternating current. The PV panel is usually aligned on a north-south axis. The modified project would install the PV panels using either a fixed-tilt, single-axis tracking modular system, or a combination of both. A single-axis tracking modular system allows for the PV panels to be rotated to track the sun as it moves across the sky each day. In addition, the project owner proposes to use high-transmission, low-reflectance PV panels with non-reflective coatings and to use matt or burnished surfaces of exposed PV support structures (NextEra Blythe Solar Energy 2013).

Some PV panels will be located in airport compatibility zones. See **Traffic and Transportation Figure 3**.

The PV technology has the potential for creating glint and glare. *Glint* is defined as a momentary flash of light; *glare*, as a more continuous source of excessive brightness relative to the ambient lighting. Hazards from glint and glare can range from discomfort, disability, veiling-effects, after-image and retinal burn (Ho 2013). These hazards may affect people working nearby or at the Blythe Airport; pilots using the airport; or motorists driving at or to the airport itself. Due to the surrounding topography, the project would be largely invisible from public roads. Observers potentially affected by glint and glare from the project would be travelers on Midland Road, users of off-highway vehicles, visitors to the McCoy or Big Maria Mountains or the Midland Long Term Visitor Area, and aircraft at the Blythe Airport.

Glare from direct sunlight is recognized as a potential hazard for pilots. The FAA reports that glare from direct sunlight contributed to nearly a dozen aviation accidents during an 11-year study. Although glare from direct sunlight is predictable, solar glare caused by reflections from PV panels can occur at varying times. Reflected light can be characterized as a combination of specular (mirror-like) and diffuse (scattered) reflections. Smooth surfaces, such as mirrors and smooth glass, create more specular reflections with greater intensity and tighter beams while solar receivers, textured glass, and anti-reflective coatings create more diffuse reflections with lower solar intensities but greater subtended angles. The specular reflectance of mirrors can be greater than 90 percent, while the specular reflectance of glass covering a PV panel can be as low as 1 to 2 percent at normal incidence angles. However, the reflectance of the PV glass can be 20 percent or more at large (glancing) incidence angles (greater than 60 percent) (Ho 2013).

To ensure the project owner implements the use of high-transmission, low-reflectance PV panels, staff recommends Condition of Certification **TRANS-12** that would require the project-owner to use anti-reflective coating or textured glass to reduce the specular reflectance of the PV panels.

PV panels could also create reflections from their metallic supporting structures which would be dependent on the surface characteristic, shape of the supports, and sun-PV panel-viewer geometry. Therefore, to ensure the project owner constructs PV support structures with low-reflecting surfaces, staff recommends Condition of Certification

TRANS-13 that requires the project-owner to construct all exposed PV support structures with matt or burnished surfaces to reduce bright specular reflections.

Interference from Electronic Frequencies

BSPP's transmission lines and facility control systems use specific electronic frequencies that could interfere with aircraft communications or avionics (radio frequency interference or RFI).

Both FAA regulations as well as the Riverside County Airport Land Use Commission's Airport Land Use Compatibility Plan include a requirement for minimizing electronic interference.

Staff concludes that interference from electronic frequencies for the transmission line as well as from the facility control systems has been mitigated by the specific low-corona or low electrical discharge designs proposed by the project owner. In addition, the electrical wires needed to operate the facility control systems will be buried underground, thereby eliminating electrical interference. See the **Transmission Line Safety and Nuisance** section of this document.

Evaporation Ponds

The project owner has proposed reducing the size of the evaporation ponds as originally licensed from 32 acres to a maximum of 12 acres, to be located next to the operation and maintenance building.

Evaporation ponds have the potential to attract birds, especially where natural water sources are scarce. When located on or near airports, those evaporation ponds can affect airport operations by attracting birds. Those birds then may then fly into aircraft, particularly during take-offs and landings, the most critical times of flight. During take-offs and landings, the presence of birds can obscure pilots' vision or result in other distractions that could cause pilots to lose control of their aircraft.

Section 21096 of the California *Public Resources Code* requires the California Energy Commission to assess airport-related safety hazards as part of its CEQA analysis. According to the *Airport Land Use Planning Handbook*, published by the California Department of Transportation, Division of Aeronautics, the risk of bird strikes is most serious along the corridors required for takeoffs and landings but exists anywhere in the airport vicinity. As a result, the handbook indicates that any land uses that can attract birds should be avoided. However, the handbook recommends that artificial attractors such as evaporation ponds be particularly avoided near or on airports.

Several power plants are currently located or proposed for location within one or two miles of the Blythe Airport. Sixteen acres of evaporation ponds have been built at the Blythe Energy Plant I. In addition, the Energy Commission has approved for construction a second plant, Blythe Energy Project, Phase II (BEP II, 02-AFC-1C), next to the existing Blythe Energy Project (BEP, 99-AFC-8C). On April 25, 2012, the Commission approved the project owner's request to extend the deadline for the

commencement of construction of BEP II from December 14, 2011 to December 14, 2016. If the Blythe Phase II project is constructed, a third evaporation pond will be added to the site. As a result, at least 56 acres of evaporation ponds could be located within one or two miles of the Blythe Airport.

The proposed evaporation ponds will be netted and monitored to prevent birds from landing on them. However, this may not be enough to preclude the evaporation ponds from serving as an attractant to birds. Condition of Certification **BIO-25** (recommended for the approved BSPP and was included in the Commission Decision) has been included, which requires (1) that all ponds to be netted to exclude birds and other wildlife; (2) additional visual bird deterrents and a rigorous monitoring program to verify that the netting is effective in excluding birds and other wildlife; and (3) adaptive management and remedial action to discourage wildlife use, if monitoring detects bird use at the ponds. Even if resident or migratory birds were initially attracted to the ponds, the netting would preclude use of the ponds for drinking, foraging, resting or nesting, and birds would be unlikely to linger in an area that provides no habitat or foraging opportunities. As concluded in the Commission Decision for the approved BSPP, the BSPP will not result in an increase in the number of birds in the vicinity of the Blythe Airport with implementation of Condition of Certification **BIO-25**. This conclusion would remain the same for the modified BSPP.

PV Panels Attracting Birds

The proposed PV panels have the potential to attract birds, especially where natural water sources are scarce. The majority of bird injuries/mortalities experienced at other desert solar projects (e.g., Desert Sunlight) involved migrant waterbirds which are rarely found in the desert. These birds may have mistaken the panels for water and were drawn to the project site.

Similar to evaporation ponds discussed above, when located on or near airports, PV panels could affect airport operations by attracting birds. Those birds may then fly into aircraft, particularly during take-offs and landings, the most critical times of flight. During take-offs and landings, the presence of birds can obscure pilots' vision or result in other distractions that could cause pilots to lose control of their aircraft.

The proposed PV panels would be constructed to reduce the reflectivity of the PV panels with implementation of staff's recommended Conditions of Certification **TRANS-12** and **TRANS-13**. However, this may not be enough to preclude the PV panels from serving as an attractant to birds. Staff's proposed Condition of Certification **BIO-15** (which would replace the version of BIO-15 in the Commission Decision) would require the project owner to implement adaptive management techniques to discourage birds from using the site, including passive avian diverter installations along the perimeter or at other locations within the project, the use of sound, light or other means to discourage site use, onsite prey or habitat control measures, and additional perch and nest proofing of project facilities. As concluded in the Commission Decision for the approved BSPP, the BSPP will not result in an increase in the number of birds in the

vicinity of the Blythe Airport with implementation of Condition of Certification **BIO-15**. This conclusion would remain the same for the modified BSPP.

Parking Capacity

According to the project owner, the project would include a temporary parking area of approximately five acres for construction workers, based on the assumption of 350 square feet per vehicle. The parking area would accompany 619 vehicles and would be relocated around the site as construction progresses.

An additional area would be required for staging and laydown of equipment, materials, and supplies. That area would also be relocated around the site as construction progresses. Approximately 20 workers would be employed at the BSPP when it becomes operational. Those workers would park on-site.

With the proposed construction parking area on-site as well as on-site parking for operational employees, the project would not result in any parking spill-over to sensitive areas and would not create any adverse impacts. Staff notes that with the implementation of Condition of Certification **TRANS-1** (recommended for the approved BSPP and was included in the Commission Decision), parking arrangements may be modified.

Transportation of Hazardous Materials

Hazardous materials to be used by the modified BSPP consist of diesel fuel, mineral insulating oil, and lube oil. Tanker trucks would use I-10 a maximum of two times per month to make deliveries to the BSPP site.

Federal and state regulations include specific procedures for transporting hazardous materials. See **Traffic and Transportation Table 8** for information about these regulations. To ensure compliance with all applicable state and federal regulations pertaining to hazardous materials, staff recommends Condition of Certification **TRANS-6** (recommended for the approved BSPP and was included in the Commission Decision), Transportation of Hazardous Materials. Condition of Certification **TRANS-6** (recommended for the approved BSPP and was included in the Commission Decision) requires the project owner to secure permits and/or licenses from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Conflict with Policies, Plans, or Programs

With implementation of recommended conditions of certification, the modified BSPP would not conflict with any formal policies, plans, or programs related to transportation aspects of the project.

PROJECT CLOSURE AND DECOMMISSIONING

Decommissioning would not likely occur for at least 20 years and is not expected to result in adverse cumulative traffic and transportation impacts. Generated trips would likely be similar to the trips generated by construction, depending on the duration and

extent of decommissioning, including dismantling of facilities and/or site remediation. Any cumulative impacts could be mitigated by staggering construction employees' work schedules or scheduling commute trips for off-peak hours to ensure acceptable LOS levels. Decommissioning would not cause any cumulative impacts to aviation.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. *Cumulatively considerable* is interpreted to mean that the incremental effects of an individual project are significant when viewed in connection with the effects of (1) past projects; (2) other current projects; and (3) probable future projects (California Code Regulation, Title 14, section 15130).

In this section, staff analyzes the cumulative impacts of the BSPP in combination with approximately 17 solar projects to the local and regional transportation system, as well as the cumulative impacts to the Blythe Airport. See **Traffic and Transportation Figure 4** and **Traffic and Transportation Figure 5**.

The potential exists for substantial future development throughout the entire Southern California Desert Region as well as on the Interstate 10 (I-10) corridor in eastern Riverside County. In this document, Energy Commission staff limited the traffic and transportation analysis to the I-10 corridor of eastern Riverside County within a range starting approximately 40 miles west of the project site near Joshua Tree National Park and ending approximately 20 miles east of the project site near Quartzsite, AZ. Staff selected this range because it encompasses many existing and proposed development projects, including many other energy projects, that could generate traffic traveling on I-10 near the modified BSPP site. See **Executive Summary Figure 1 – Cumulative Projects** and **Executive Summary Figure 1A – Cumulative Projects List** for the location and a list of current, pending, and foreseeable development projects in this area. In addition, Blythe Airport Solar, a 100 MW solar photovoltaic energy facility to be built in 20-MW phases is proposed for construction on 640 acres within an 829-acre area on the grounds of the Blythe Airport. The 640-acre facility would be located east of Runway 17-35 and to the north of Runway 8-26 in several airport compatibility zones. See **Traffic and Transportation Figure 4**. As a result, the construction and operation of the BSPP combined with operation of Blythe I; construction and operation of the proposed Blythe II; and the construction and operation of Blythe Airport Solar have the potential to affect the operation of the Blythe Airport because of their location in several airport compatibility zones.

Traffic LOS on I-10 could degrade with the volume of construction traffic generated by the modified BSPP in combination with traffic generated by the identified additional projects shown in **Executive Summary Figure 1 – Cumulative Projects**. Proposed Condition of Certification **TRANS-2** (recommended for the approved BSPP and was included in the Commission Decision) would ensure that the modified BSPP's contribution to cumulative impacts would be less than significant by requiring the modified BSPP project owner to implement staggered work shifts and/or off-peak work

schedules, and/or to restrict travel to and departures from the project site to 10 or fewer vehicles every three minutes. Traffic during operation of the modified BSPP would also not contribute to cumulative traffic impacts, as operations traffic would be minimal.

Construction time for photovoltaic projects is generally shorter than the time needed to construct parabolic trough projects. In addition, construction of photovoltaic projects is generally accomplished in stages and requires fewer workers than construction of parabolic trough projects. For example, the California Public Utilities Commission (PUC) approved the 7.5 MW Blythe PV Solar Project in July 2008. By December 2009 the Blythe plant had been upgraded to 21 MW, making it the largest PV project to date in California. The upgrade from 7.5 MW to 21 MW took approximately three months. However, in general, depending on size, construction of PV solar facilities can last from one month to a year and require from about 200 to 400 workers, depending on size and location. Because of the relatively short work schedules and the number of workers required by solar PV projects, staff concludes that these projects, combined with the modified BSPP, would not result in a significant cumulative impact to local roadways, particularly since staff has recommended Condition of Certification **TRANS-2**, the implementation of a traffic control plan to reduce construction traffic impacts to LOS and to ensure sufficient parking and emergency access to the site.

The modified BSPP project would also not combine with other nearby existing or proposed solar projects to cause significant cumulative glint and glare impacts to motorists or pilots. There are a couple of other nearby large-scale solar projects that utilize mirrors to generate power, such as the Genesis Solar Energy Project (GSEP), which uses parabolic troughs and is under construction, and the Palen Solar Electric Generating System (PSEGS), approved by the Energy Commission to use parabolic trough technology, although an amendment petition was filed to replace the parabolic troughs with two, 750-foot tall power towers and associated heliostats (flat mirror panels) instead. However, these projects are sufficiently far from the modified BSPP so that motorists on I-10 and pilots would not experience glint and glare impacts from either of these projects simultaneously with the most severe glint and glare impacts from the modified BSPP. The GSEP is approximately 15 miles west of the proposed modified BSPP site and the PSEGS is approximately 30 miles west of the proposed PSEGS site.

The modified BSPP would also be located southwest of the existing Blythe Energy Project I and the proposed Blythe Energy Project II. Blythe Energy Project I, a 520 MW natural gas-fired, combined cycle facility, was approved by the Energy Commission in 2001. Blythe Energy Project II, a 520 MW gas-fired plant was approved for construction by the Energy Commission in 2005. The Energy Commission is currently monitoring the power plant's construction, operation, and eventual decommissioning through compliance proceedings. Construction traffic from several projects in the vicinity of the modified BSPP's location could combine with the modified BSPP's construction traffic to create cumulative traffic impacts. However, with implementation of Conditions of Certification, such as **TRANS-2** (requires reduction of modified BSPP construction traffic impacts through methods such as staggered work hours, off-peak arrivals and

departures; requires the project owner to provide carpool incentives for construction employees), the project's contribution to significant cumulative traffic impacts would not be cumulatively considerable.

Similarly, the modified BSPP's impacts (i.e., glare, bird attractant) to aviation could combine with projects in the vicinity of the Blythe Airport to create cumulative aviation impacts. However, with implementation of Conditions of Certification **TRANS-12** (requires the project-owner to use anti-reflective coating or textured glass to reduce the specular reflectance of the PV panels) and **TRANS-13** (requires the project-owner to construct all exposed PV support structures with matt or burnished surfaces) along with implementation of Conditions of Certification **BIO-15** (requires the project owner to implement adaptive management techniques to discourage birds from using the site) and **BIO-25** (requires the project owner to net all ponds, implement additional visual bird deterrents and a rigorous monitoring program to verify that the netting is effective, and implement adaptive management and remedial action to discourage wildlife use), the project's contribution to significant cumulative aviation impacts would not be cumulatively considerable.

LORS COMPLIANCE

Applicable Law	Description
Federal	
Code of Federal Regulations (CFR), Title 14, Aeronautics and Space; Part 77, Objects Affecting Navigable Airspace (14 CFR 77)	Includes standards for determining physical obstructions to navigable airspace; information about requirements for notices, hearings, and requirements for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace. *Consistent*. As of April 15, 2010, the FAA had reviewed 52 poles; required the applicant to resubmit FAA Form 7460; and noted that additional poles may also require resubmittal of FAA Form 7460, depending on a land survey and ultimate placement of individual poles. As described in the **Project Description**, the modified BSPP would interconnect to the regional transmission grid via the same, previously approved gen-tie line.
*Code of Federal Regulations (*CFR*)*, Title 49, Subtitle B, Sections 171-177; Sections 350-399; Appendices A-G Other Regulations Relating to Transportation	49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) as well as safety measures for motor carriers and motor vehicles operating on public highways. *Consistent:* Condition of Certification **TRANS-6** ensures compliance.
State	
California Vehicle Code (CVC), Division 2, Chapter 2.5, Div. 6; Chap. 7, Div. 13; Chap. 5, Div. 14.1; Chap. 1 and 2, Div. 14.8, Div. 15	These code sections pertain to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and transporting hazardous materials. *Consistent.* Conditions of Certification **TRANS-3** and **TRANS-6** ensure compliance.

Applicable Law	Description
California Streets and Highway Code, Section 117; Section 660-695; Section 700-711; Section 1450; 1460 et seq.; and 1480 et. Seq.	Pertain to regulating rights-of-way encroachments and granting permits for encroachment on state highways and freeways and on county roads. *Consistent.* Condition of Certification **TRANS-4** ensures compliance.
California Health and Safety Code; Section 25160 et seq.	Pertain to operators of vehicles transporting hazardous materials. *Consistent:* Condition of Certification **TRANS-6** ensures compliance.
Local	
Riverside County General Plan, Circulation Element and Palo Verde Valley Area Plan, which is part of the Riverside County General Plan	Pertains to public policies and strategies for the transportation system in Riverside County, including those pertaining to transportation routes, terminals, and facilities; construction of extensions of existing streets; and levels of services (LOS) and airports *Consistent:* Condition of Certification **TRANS-2** would make the project consistent by requiring the project owner to prepare and implement a Traffic Control Plan (TCP) for construction and operation traffic. This condition also requires the project owner to submit the TCP to Riverside County for review and comment.
Riverside County Municipal Code, Title 10, Vehicles and Traffic, Section 10.08	Pertains to requirements for oversize and overweight vehicles. *Consistent:* Condition of Certification **TRANS-3** ensures compliance.
Riverside County Airport Land Use Compatibility Plan	Establishes land use compatibility zones and restrict new land uses that may cause visual, electronic, or increased bird strike hazards to aircraft in flight. Safety zone D provides a 100 foot maximum height restriction. *Consistent.* Condition of Certification **TRANS-12** and **TRANS-13** would make the project consistent by requiring the project owner to use anti-reflective coating or textured glass on the PV panels and to construct all exposed PV support structures with matt or burnished surfaces to reduce specular reflections. In addition, portions of the solar panel field would be located within safety zone D; however, the panels would have a 20-foot maximum height and the modified BSPP would be consistent with this zone.
City of Blythe General Plan 2025, Chapter 4, Circulation Element	Establishes regional transportation objectives, policies, and implementation measures for various modes of transportation as well as levels of service. Plan is also coordinated with Palo Verde Valley Area Plan and County of Riverside General Plan. *Consistent:* Condition of Certification **TRANS-2** ensures compliance. Although the LOS for intersections in the city of Blythe would not exceed the city's LOS standard with implementation of the project, actions of the required Traffic Control Plan would continue to improve construction and operation traffic including the movement of workers, vehicles, and materials.

Applicable Law	Description
City of Blythe General Plan 2025, Chapter 7, Safety Element	Establishes policies pertaining to airport safety, including minimizing injury to aircraft occupants and preventing creation of hazards to flights. Guiding policies of this section include Blythe Airport Master Plan; Land Use Compatibility Plan; and Federal Aviation Regulations Part 77. Section also contains five guiding policies concerning hazards to airspace; visual disturbances involving light and glare; and electronic devices. *Consistent.* The project would comply with guiding policies (e.g., reduce visual hazards) by applying implementation policies of the Blythe General Plan. The implementation policies refer to complying with safety and airspace protection policies of the Riverside County ALUCP (see above) and complying with height limits established in accordance with Part 77 of the Federal Aviation Regulations (see above). Condition of Certification **TRANS-12** and **TRANS-13** would make the project consistent by requiring the project owner to use anti-reflective coating or textured glass on the PV panels and to construct all exposed PV support structures with matt or burnished surfaces to reduce specular reflections. Specific to height limits, as of April 15, 2010, the FAA had reviewed 52 poles; required the applicant to resubmit FAA Form 7460; and noted that additional poles may also require resubmittal of FAA Form 7460, depending on a land survey and ultimate placement of individual poles. As described in the **Project Description**, the modified BSPP would interconnect to the regional transmission grid via the same, previously approved gen-tie line.
City of Blythe Municipal Code, Title 10, Section 19	Pertains to permit requirements for moving heavy loads and equipment on city streets. *Consistent:* Condition of Certification **TRANS-3** ensures compliance.
Palo Verde Valley Area Plan	Includes height and other restrictions pertaining to the Blythe Airport. See Riverside County Land Use Compatibility Plan, above. *Consistent*. Condition of Certification **TRANS-12** and **TRANS-13** would make the project consistent by requiring the project owner to use anti-reflective coating or textured glass on the PV panels and to construct all exposed PV support structures with matt or burnished surfaces to reduce specular reflections. Specific to height limits, as of April 15, 2010, the FAA had reviewed 52 poles; required the applicant to resubmit FAA Form 7460; and noted that additional poles may also require resubmittal of FAA Form 7460, depending on a land survey and ultimate placement of individual poles. As described in the **Project Description**, the modified BSPP would interconnect to the regional transmission grid via the same, previously approved gen-tie line.

NOTEWORTHY PUBLIC BENEFITS

The proposed project could result in traffic and transportation impacts related to project construction. Those impacts could be cumulatively significant. Consequently, staff has recommended conditions of certification to reduce the impact to less than significant.

While the development of the proposed project is intended to address the requirements of federal and state mandates to develop renewable energy, it would not yield any noteworthy public benefits related to traffic and transportation.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments from public agencies or the public were received for the modified BSPP.

CONCLUSIONS

1. Staff recommends **TRANS-1** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to ensure that all parking and staging occurs on-site or off-site in a designated parking area.

2. Staff recommends revising Condition of Certification **TRANS-2** (recommended for the approved BSPP and was included in the Commission Decision) to clarify where the LOS should be monitored and to monitor traffic volumes. Staff recommends the remainder of Condition of Certification **TRANS-2** be applied to the modified BSPP to ensure implementation of measures included in a traffic control plan. 3. Staff recommends Condition of Certification **TRANS-3** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP, limitation of vehicle size and weights to ensure compliance with limitations on use of roadways.

4. Staff recommends Condition of Certification **TRANS-4** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to ensure compliance with limitations on encroachment into public rights-of-way.

4. Staff recommends revising Condition of Certification **TRANS-5** (recommended for the approved BSPP and was included in the Commission Decision) to reflect the purpose of repairing and restoring access roads is to assure public safety. Staff recommends the remainder of Condition of Certification **TRANS-5** be applied to the modified BSPP to ensure all public roads, easements, and rights-of-way are restored to at least their original condition if damaged by project-related construction.

5. Staff recommends Condition of Certification **TRANS-6** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to ensure safe transport of hazardous materials according to state and federal regulations.

6. Staff recommends removal of Condition of Certification **TRANS-7** (recommended for the approved BSPP and was included in the Commission Decision) because this condition related to potential impacts created by thermal plumes. Thermal plumes would not be created with implementation of the modified BSPP.

7. Staff recommends Condition of Certification **TRANS-8** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to comply with Riverside County requirements for avigation easements.

8. Staff recommends removal of Condition of Certification **TRANS-9** (recommended for the approved BSPP and was included in the Commission Decision) because this condition related specifically to operation of parabolic troughs. Parabolic troughs would not be constructed with implementation of the modified BSPP.

9. Staff recommends Condition of Certification **TRANS-10** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to ensure all project-related glare complaints are documented, investigated, evaluated, and attempted to be resolved.

10. Staff recommends Condition of Certification **TRANS-11** (recommended for the approved BSPP and was included in the Commission Decision) be applied to the modified BSPP to ensure that the transmission line and poles closest to the runway are adequately marked for pilots' safety. 11. To ensure no significant glint/glare impacts would occur, staff is proposing Condition of Certification **TRANS-12** to require the project-owner to use anti-reflective coating or textured glass to reduce the specular reflectance of the PV panels to 1 to 2 percent, and Condition of Certification **TRANS-13** to require the project-owner to construct all exposed PV support structures with matt or burnished surfaces to reduce bright specular reflections.

PROPOSED CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Traffic and Transportation Conditions of Certification as shown below. (**Note:** Deleted text is in ~~strikethrough~~, new text is **bold and underlined.**)

Staff recommends the deletion of Conditions of Certification **TRANS- 7** and **TRANS-9** as shown below and the addition of Conditions of Certification **TRANS-12** and **TRANS-13**.

TRANS-1 Parking and Staging. Prior to start of construction of the **Blythe Solar Power Project (**BSPP**)** and all related facilities, the project owner shall develop and implement a parking and staging plan for all phases of project construction to ensure that all project-related parking occurs on-site or in designated off-site parking areas.

Verification: At least 60 days prior to start of site mobilization, the project owner shall submit the plan to the County of Riverside, and the City of Blythe for review and comment, and to the CPM for review and approval. The requirements outlined in this Condition of Certification shall be coordinated with requirements outlined in Condition of Certification **TRANS-3**.

TRANS-2 Traffic Control Plan. Prior to start of construction of the Blythe Solar Power Project (BSPP) the project owner shall prepare and implement a Traffic Control Plan (TCP) for the Blythe Solar Power Project construction and operation traffic. The TCP shall address the movement of workers, vehicles, and materials, including arrival and departure schedules, and designated workforce and delivery routes.

The project owner shall consult with the County of Riverside and the Department of Transportation (Caltrans) District 8 office in the preparation and implementation of the Traffic Control Plan and shall submit the proposed Traffic Control Plan to the County of Riverside and the Department of Transportation (Caltrans) District 8 office in sufficient time for review and comment and to the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the plan.

The project owner shall provide a copy of any written comments from the County of Riverside and the Department of Transportation (Caltrans) District 8 office and any changes to the Traffic Control Plan to the CPM prior to the proposed start of construction.

The Traffic Control Plan shall include:

- A work schedule and end-of-shift departure plan designed to ensure that stacking does not occur on intersections necessary to enter and exit the project **site, and that LOS at these intersections and on I-10 remains at LOS C or better**. The project owner shall consider using one or more of the following measures designed to prevent stacking: staggered work shifts, off-peak work schedules as well as restricting travel to and departures from each project site to 10 or fewer vehicles every three minutes. **The submitted work schedule shall include a detailed plan for worker arrival and departure, including number of workers that are planned to arrive and depart at each time, and methods for ensuring worker compliance.**

  The project owner may use any of the above traffic measures or any other measures if the project owner can demonstrate that the implemented measures would ensure that **Interstate 10 and the** Interstate 10 / **Mesa Drive intersection** operates at a Level of Service (LOS) C or higher during the peak travel hours.

- **A plan for monthly monitoring of traffic volume and/or delay and LOS at study roadways and intersections during periods of higher construction employment (peak construction month).**
- Provisions for an incentive program such as an employer-sponsored Commuter Check Program to encourage construction workers to carpool and/or use van or bus service.
- Limitation on truck deliveries to the project sites to only off-peak **construction commute** hours **and/or staggering of truck deliveries throughout the day** to ensure adequate exit and entry at appropriate intersections.
- Provisions for redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow.
- Placement of signage, lighting, and traffic control device at the project construction site and laydown areas.
- Signage along eastbound and westbound appropriate roads and at the entrance of each of the I-10 northbound and southbound off-ramps at appropriate roads notifying drivers of construction traffic throughout the duration of the construction period.
- A heavy-haul plan designed to address the transport and delivery of heavy and oversized loads requiring permits from Department of Transportation (Caltrans) or other state and federal agencies.
- Parking for workforce and construction vehicles.
- Emergency vehicle access to the project site.

Verification: At least 60 calendar days prior to the start of construction, including any grading or site remediation on the power plant site or its associated easements, the project owner shall submit the proposed traffic control plan to the County of Riverside and the Department of Transportation (Caltrans) District 8 office for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the County of Riverside and the Department of Transportation (Caltrans) District 8 office requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from either the County of Riverside and the Department of Transportation (Caltrans) District 8 office, along with any changes to the proposed traffic control plan to the CPM for review and approval.

TRANS-3 Limitations on Vehicle Size and Weight. The project owner shall comply with limitations imposed by Caltrans District 8 office and other relevant jurisdictions including County of Riverside and City of Blythe on vehicle sizes and weights. In addition, the project owner or its contractor shall obtain necessary

transportation permits from Caltrans and all relevant jurisdictions for use of roadways.

Verification: At least 30 calendar days prior to the start of construction, the project owner shall provide copies of permits obtained from either the County of Riverside and the Caltrans District 8 office to the CPM. In the Monthly Compliance Reports (MCRs), the project owner shall submit copies of any permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-4 Encroachment into Public Rights of Way. The project owner or its contractor shall comply with Caltrans and other relevant jurisdictions' limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

Verification: In the monthly compliance reports (MCRs), the project owner shall submit copies of permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-5 Restoration of All Public Roads, Easements, and Rights-of-Way. The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by the CPM. Repairs and restoration of access roads may be required at any time during the construction phase of the project to assure **public safety**.

Prior to the start of site mobilization, the project owner shall consult with the County of Riverside and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of Riverside and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segments and/or intersections and shall provide the CPM, the affected local jurisdictions and Caltrans (if applicable) with a copy of these images. The project owner shall rebuild, repair and maintain all public roads, easements, rights-of-way in a usable condition throughout the construction phase of the project.

Within 60 calendar days after completion of construction, the project owner shall meet with the CPM, the County of Riverside and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter

signed by the County of Riverside and Caltrans District 8 stating their satisfaction with the repairs to the CPM.

TRANS-6 Securing Permits/Licenses to Transport Hazardous Materials. The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

~~**TRANS-7 Prior to the start of operation, the project owner shall seek and obtain FAA approval to insert comments or notations in the appropriate Aeronautical Charts, Airport/Facilities Directories, and Notice to Airmen (NOTAM) publication, to ensure that pilots are properly notified of the location of BSPP and the possible existence of thermal plumes and glint or glare from the solar arrays.~~

~~**Verification:** At least 30 days prior to the start of operation of any phase of the project, the project owner shall provide documentation that the AFD, NOTAM publication has been modified accordingly.~~

TRANS-8 Prior to the start of operation of any phase of the project, the project owner shall prepare an Avigation Easement in accordance with Appendix D of the California Airport Land Use Planning Handbook and have it signed by the Bureau of Land Management.

Verification: At least 60 days prior to the start of construction, the project owner shall submit a BLM-signed avigation easement to the CPM for review and approval. Once approved by the CPM, applicant shall send the Avigation Easement to the Riverside County Land Use Commission staff for review and recording purposes. Once recorded, applicant shall send a copy of the recorded document to the CPM.

~~**TRANS-9 Prior to the start of construction, the project owner shall provide a plan to the CPM which includes the measures to be taken to reduce glint and glare to the maximum extent possible. The plan shall include the following measures designed to:~~

- ~~Block end-loss reflections from reaching the sky where aircraft are operating by installing walls or screens at the north end of the parabolic trough collectors or by extending the heat collection elements beyond the north end of the collectors far enough to capture reflections when the sun is in the southern horizon, thus reducing the risk of end loss reflections.~~
- ~~Ensure the mirrors are (1) brought out of stowage before sunrise and are aligned to catch the first rays of the morning sun; and (2) returned to stow position after sunset.~~

- ~~Ensure mirrors are continuously monitored for malfunctions and to ensure that they remain properly aligned with the sun. Acquire appropriate equipment and establish procedures to cover inoperative or malfunctioning mirrors immediately after malfunctions are discovered to prevent the escape of errant reflections.~~
- ~~Establish procedures to avoid glare while intentionally moving individual collectors off-axis to "dump" power incident on the heat collection elements during periods of high insolation. For example, if the plant operator needs to dump power and rotate several modules off-axis, the operator should start with the modules at the north-most and west-most parts of the collector field, which is furthest from the Blythe Airport to the southeast. For each module that is rotated off-axis, the operator should consider the nearest flight pattern; if it is to the east, then the module should be rotated to the west, and vice-versa. This rotating shall be done in a manner that minimizes the impact of glare on aircraft (for example, rotating modules furthest from the airport in a direction that is away from flight patterns).~~
- ~~Establish procedures to avoid glare when rotating mirrors into a wind-stow position. Plant operators shall check for aircraft in the vicinity before moving the collectors into a wind-stow position.~~

~~**Verification:** Within 30 days prior to the start of construction, the project owner shall submit the required plan for CPM review and approval. The project owner shall also notify the CPM when the required modifications have been made and are available for inspection.~~

~~In addition, the project owner shall compile data concerning the date and time of any malfunctions, the remedies taken to correct the malfunctions, and the success of the remedies. That information shall be included in the monthly compliance reports during construction and semi-annual compliance report during operation.~~

TRANS-10 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related glare complaints. The project owner or authorized agent shall:

- Use the Complaint Resolution Form (below), or functionally equivalent procedure acceptable to the CPM, to document and respond to each complaint.
- Attempt to contact the person or persons making the complaint within 24 hours. If not contacted within 24 hours, attempt to contact the person or persons for a reasonable time period, to be determined by the CPM.
- Conduct an investigation to determine the source of glare related to the complaint.
- If the glare is project related, take all feasible measures to reduce the glare at its source.

- As soon as the complaint has been resolved to the complainant's satisfaction, submit to the CPM a report in which the complaint as well as the actions taken to resolve the complaint are documented. The report shall include (1) a complaint summary, including the name and address of the complainant; (2) final results of glare reduction efforts; and (3) a signed statement by the complainant, if obtainable, in which complainant states that the glare problem is resolved to his or her satisfaction.

Verification: Within five business days of receiving a glare complaint, the project owner shall file with the City of Blythe Development Services Department, the Riverside County Planning Department, and the CPM a copy of the Glare Complaint Resolution Form, documenting the resolution of the complaint. If mitigation is required to resolve a complaint and the complaint is not resolved within three business days, the project owner shall submit an updated Glare Complaint Resolution Form when the mitigation is implemented.

TRANS-11 Prior to the start of construction of the transmission line, the project owner shall submit a plan identifying measures to be taken to mark and light the lines and poles beneath runway approaches, typical pattern entry corridors, and typical departure routes pursuant to criteria included in FAAC 70/7460-1K. The plan shall identify the number and location of poles that are subject to the criteria and the exact measures to be taken to properly mark and light the poles in conformance with FAAC 70/7460.

Verification: At least 30 days prior to the start of transmission line mobilization, the project owner shall provide a construction plan for review and approval. Once the plan has been approved and implemented, the project owner shall provide documentation showing completion of the transmission line, including the required marking and lighting measures.

TRANS-12 The project owner shall use textured glass or anti-reflective coating on all photovoltaic (PV) solar panels.

Verification: At least 30 days prior to construction of PV panels, the project owner shall provide documentation that textured glass or anti-reflective coating will be used on all PV solar panels.

TRANS-13 The project owner shall construct all exposed PV panel support structures with matt or burnished surfaces.

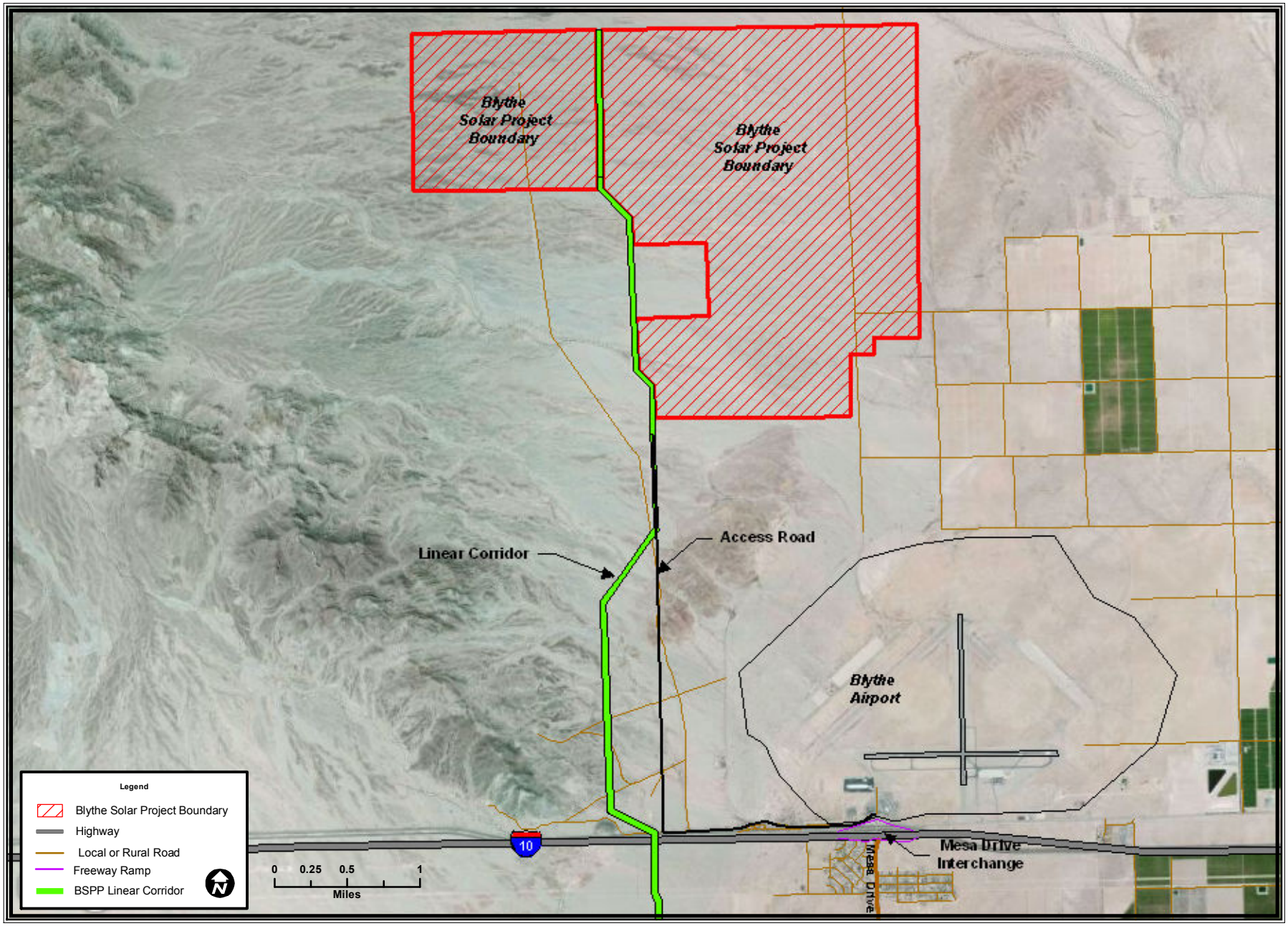
Verification: At least 30 days prior to construction of PV panels, the project owner shall provide documentation showing that matt or burnished surfaces will be used on all PV panel support structures. matt or burnished surfaces on all PV solar panels.

REFERENCES

Ho, Clifford. “Relieving a Glaring Problem.” *Solar Today.* April 2013: pages 28-31. Print.

TRAFFIC AND TRANSPORTATION- FIGURE 1

Blythe Solar Power Project - Local Transportation Access



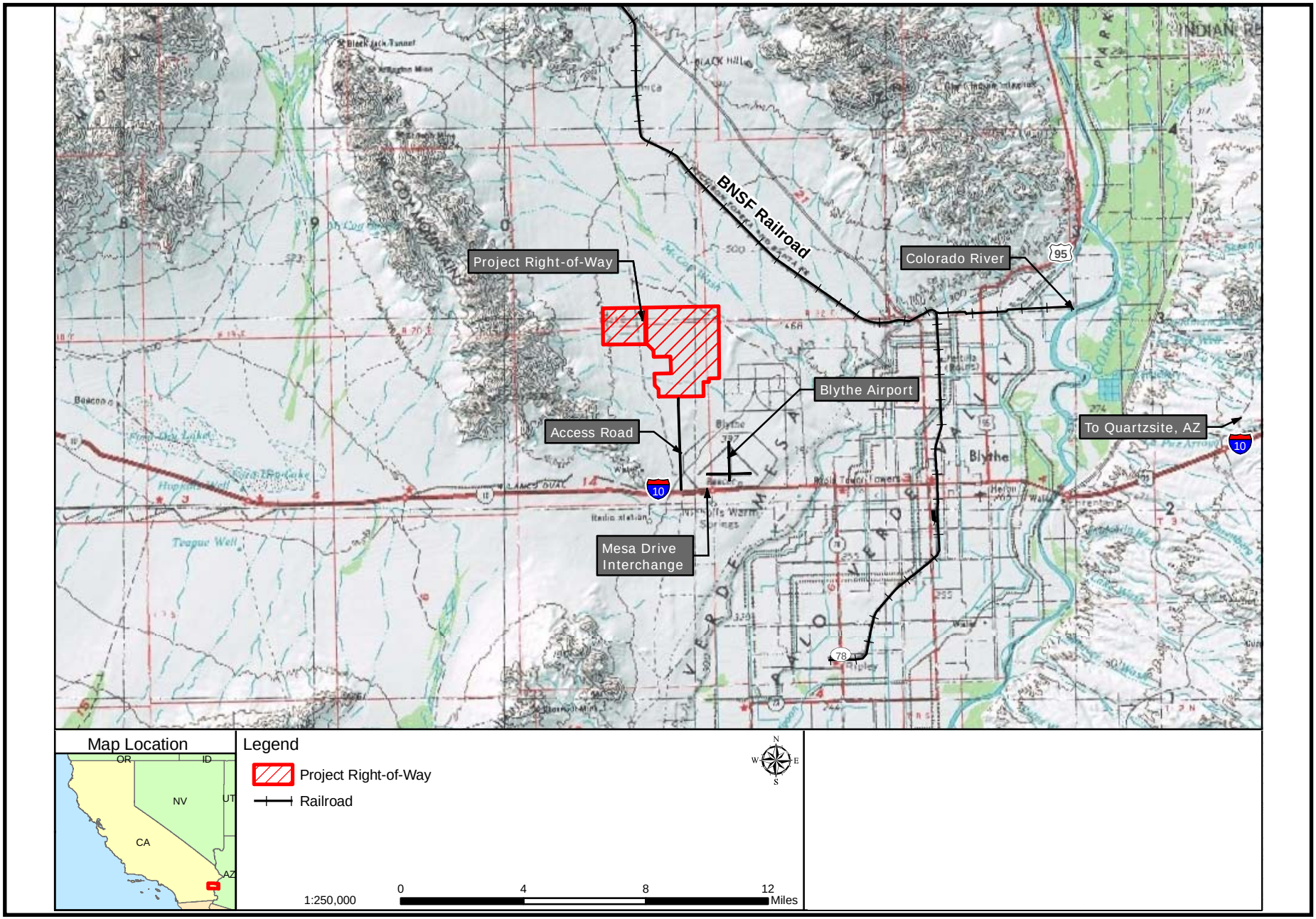
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission and Solar Millennium LLC

TRAFFIC AND TRANSPORTATION - FIGURE 2

Blythe Solar Power Project - Local Transportation Network



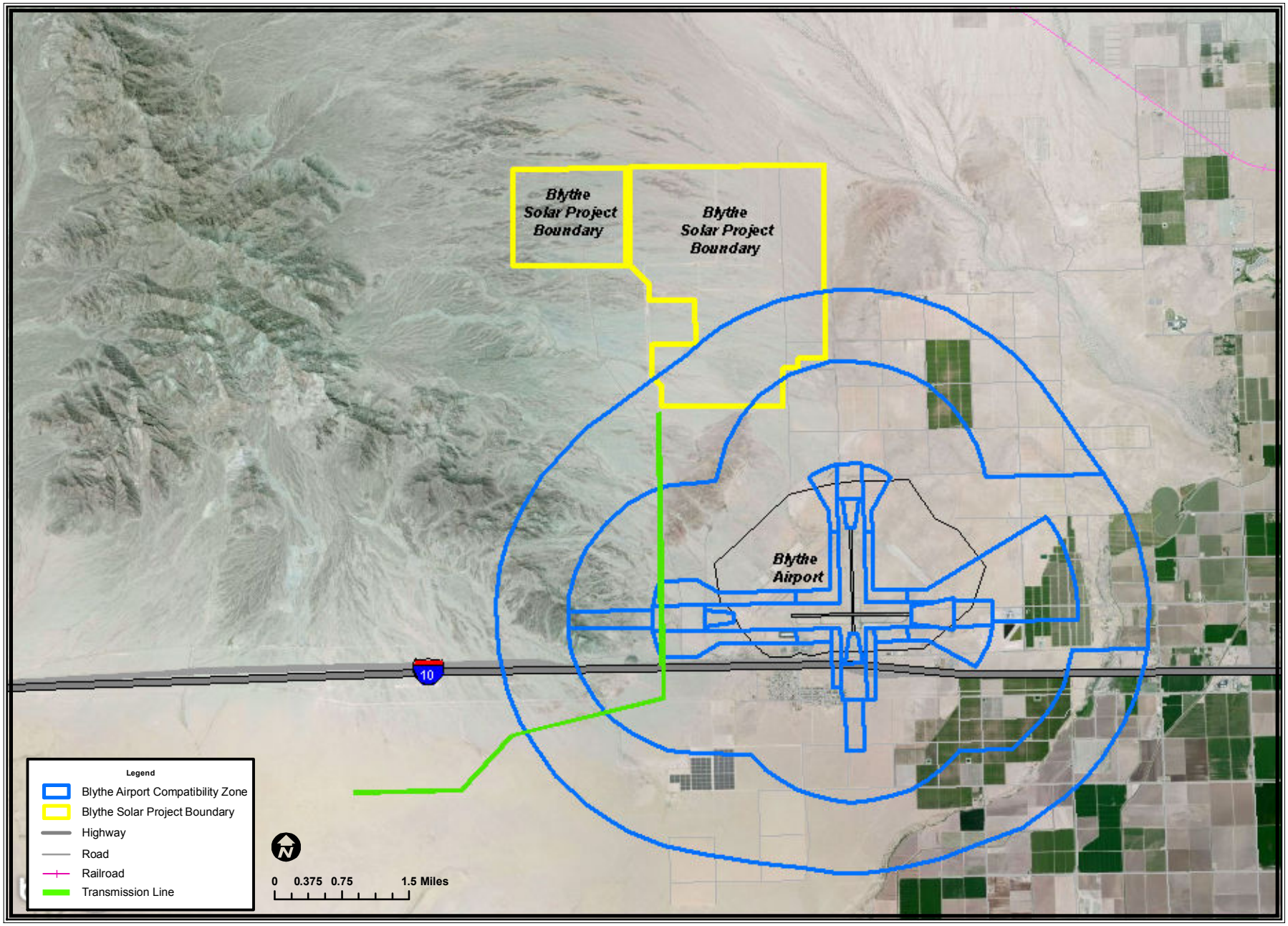
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Fig 5.13-1

TRAFFIC AND TRANSPORTATION- FIGURE 3

Blythe Solar Power Project - Blythe Airport Areas of Influence

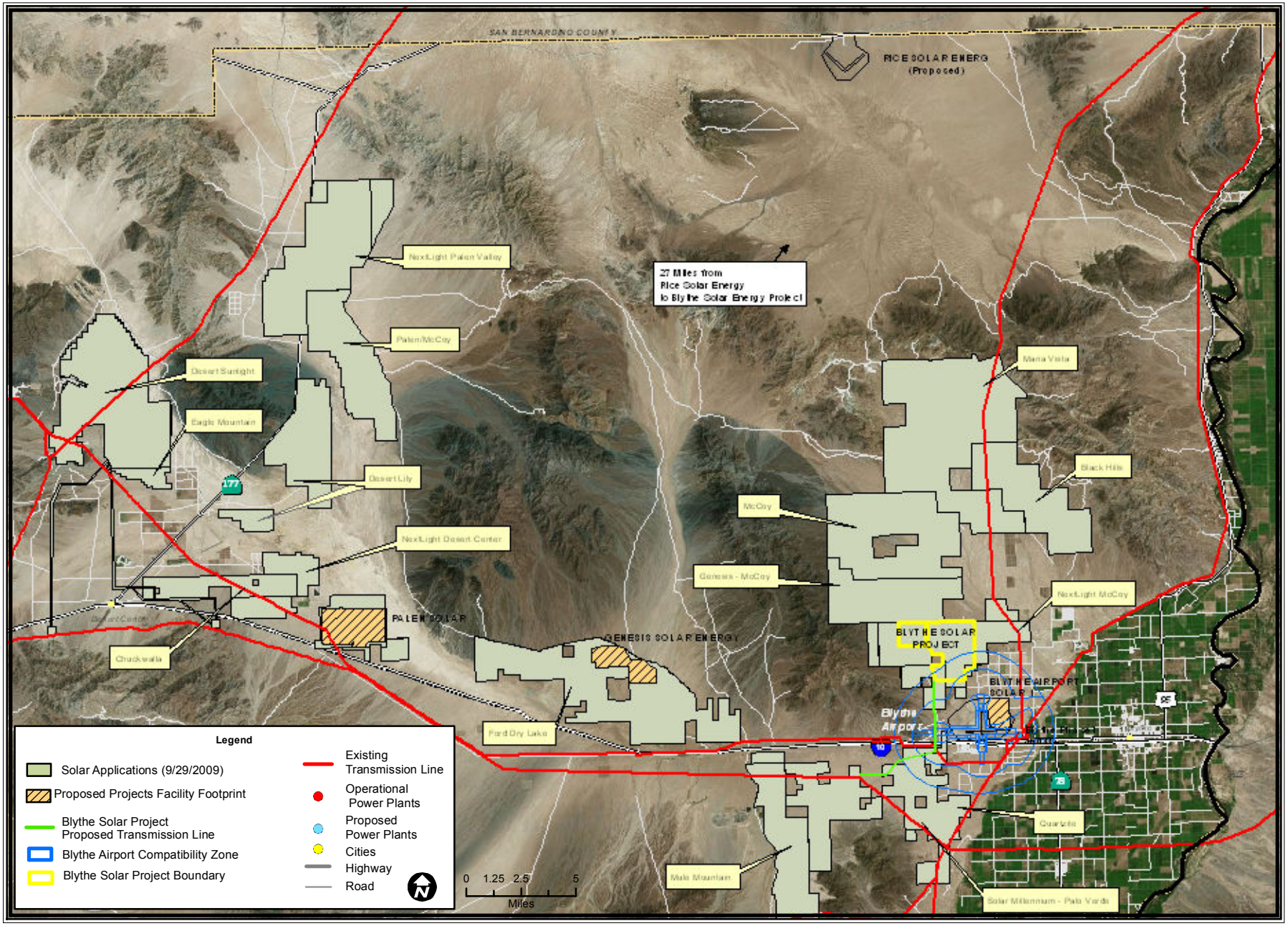


CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission and Solar Millennium LLC

TRAFFIC AND TRANSPORTATION - FIGURE 4

Blythe Solar Power Project - Project Cumulative Impacts



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission and Solar Millennium LLC

VISUAL RESOURCES

Testimony of Mark R. Hamblin

SUMMARY OF CONCLUSIONS

Staff has reviewed the project owner's Petition to Amend the Commission Decision for the Blythe Solar Power Project and concludes the proposed change from solar thermal to solar photovoltaic would not require deletion or modification of a visual resources condition of certification in the September 2010 Commission Decision, or require a new condition of certification to address impacts that were not previously analyzed for the approved project. The modified project like the approved project would create a substantial adverse direct impact and cumulative visual impact. The existing conditions of certification will reduce these visual impacts, but like the approved project, these mitigation measures would not reduce impacts to a less than significant level.

Staff identified no new federal, state or local government laws, ordinances, regulations and standards (LORS) pertaining to the preservation and protection of visual resources that were not previously analyzed in the Commission Decision for the Blythe Solar Power Project that would be affected by the proposed technology modification. Like the approved project, the modified project would comply with federal and state LORS, but not local LORS.

INTRODUCTION

The Petition to Amend the Commission Decision request is to allow the new project owner (NextEra Blythe) to change (switch) from using concentrating solar thermal collection and steam turbine technology (solar thermal technology) to photovoltaic technology (PV) for the Blythe Solar Power Project (BSPP). The BSPP was acquired by NextEra Blythe in 2012. The Energy Commission issued its Commission Decision for the BSPP in September 2010.

METHODOLOGY AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Staff assess if a proposed project would create a "significant effect on the environment" for aesthetic issues according to provisions in the California Environmental Quality Act (CEQA) codified in California Public Resources Code §21000 et sequences (et seq.), and the CEQA Guidelines[1] codified in the California Code of Regulations §15000 et seq.

The CEQA Guidelines define a *significant effect on the environment* to mean "a substantial, or potentially substantial, adverse change in any of the physical conditions

[1] The "State CEQA Guidelines or Guidelines" are codified in the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387. The State CEQA Guidelines are provided by the California Resources Agency to detail guidance on how public agencies should comply with CEQA. Each public agency is responsible for complying with CEQA and the State CEQA Guidelines. A public agency must meet its own responsibilities under CEQA and shall not rely on comments from other public agencies or private citizens as a substitute for work CEQA requires the lead agency to accomplish (14 Cal. Code Regs. §15020).

within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or **aesthetic** significance" [emphasis added] (14 Cal. Code Regs., §15382).

The following CEQA Guideline criteria were considered in determining whether a visual impact would be significant under CEQA.

Would the project:

a) Have a substantial adverse effect on a scenic vista?

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff's procedures for evaluating the above aesthetic issues (questions) are presented below under the subheadings: Scenic Vista, Scenic Resources, Light and Glare, and Visual Character or Quality.

A "*threshold of significance"* as define by the CEQA Guidelines is "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant" (14 Cal. Code Regs., §15064.7).

Staff criteria used to determine a threshold of significance is based to the extent possible on scientific and factual data, performance and professional standards, and guidelines established by public agencies or professional associations, and recommendations by subject matter experts.

LAW, ORDINANCES, REGULATIONS, AND STANDARDS

The federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to the proposed project modification are listed below and presented in more detail in **Visual Resources Table 1**.

COMPLIANCE WITH FEDERAL LORS

The modified project was found to be in compliance with the California Desert Conservation Area Plan.

COMPLIANCE WITH STATE LORS

The modified project was found to be in compliance with the State Scenic Highway Program administered by the California Department of Transportation (Caltrans). The segment of Interstate 10 near the BSPP is neither an eligible or designated state scenic highway.

COMPLIANCE WITH LOCAL LORS

The modified project was found not to be in compliance with several Riverside County General Plan land use (LU) policies pertaining to protection/preservation of the visual character of the existing landscape and scenic corridors. Because the modified BSPP would be located entirely on land managed by the BLM, the project would not be subject to Riverside County's LORS.

PROPOSED MODIFIED PROJECT

The licensed BSPP is to use solar thermal technology. The proposed modified BSPP would use PV technology. PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional solar thermal power generation plant. The modified project's observable PV technology items include inverters, solar panels, and an office and maintenance building. The list below includes BSPP items that would have been observed had it been built with solar thermal technology now eliminated or reduced with the switch to PV technology:

- Four power blocks each having a steam turbine, evaporation pond, auxiliary boiler, air-cooled condenser, and integral accessory equipment and structures have been eliminated.
- The HelioTrough energy collection systems and associated heat transfer fluid (HTF) piping systems have been eliminated and replaced with PV panels configured for either horizontal tracking or fixed tilt operations.
- A reduction in the height of solar collectors/PV panels from 24 feet to nine feet approximately.
- The Land Treatment Units for HTF have been eliminated.
- The number of evaporation ponds has been reduced from eight ponds to two.
- The large drainage structures surrounding the site have been eliminated; smaller drainage features may be required.
- The substation has been replaced by a switchyard.
- The assembly hall has been eliminated.
- The natural gas line has been eliminated.

The total acreage for the BSPP footprint is being reduced from 7,025 acres (licensed project) to 4,070 acres (modified project).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS

A. Scenic Vista

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

The term *scenic vista* is not defined in CEQA or the CEQA Guidelines. Staff uses as the definition for a scenic vista the following: "a distant view of high pictorial quality perceived through and along a corridor or opening." This definition was used by the California Energy Commission in the Commission Decision for Beacon Solar Energy Project, Docket Number 08-AFC-2, the Commission Decision for Mariposa Energy Project, Docket Number 09-AFC-3, the Commission Decision for Blythe Solar Power Project, Docket Number 09-AFC-6, the Commission Decision for Genesis Solar Energy Project, Docket Number 09-AFC-8, and the Commission Decision for Pio Pico Energy Center, Docket Number 11-AFC-01.[2]

The project would have a less than significant impact under this criterion. The area within which the project would be site encompasses a portion of the Colorado Desert. The area within which the project would be seen includes the McCoy Mountains to the west, the southern ridges of the Little Maria Mountains to the north and the Big Maria Mountains to the northeast. These areas overlook Palo Verde Mesa. The propose project is not sited in a distance view of high pictorial quality perceived through and along a corridor or opening (see **Visual Resources Figure 5**).

B. Scenic Resources

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

For the purpose of this analysis, *scenic resources* include a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique/historical importance to a community (a tree linked to a famous event or person, an ancient, old growth tree); historic building; or other scenically important physical features, particularly if located within a designated federal scenic byway or state scenic corridor.

The modified project would have no impact under this criterion. Staff did not find a scenic resource on the project site. The project site is located approximately three miles north of I-10 which is not listed as an eligible State Scenic Highway.

[2] Commission Decision for Beacon Solar Energy Project, Visual Resources, p. 458, the Commission Decision for Mariposa Energy Project, Visual Resources, p. 5, the Commission Decision for Blythe Solar Power Project, Docket Number 09-AFC-6, Visual Resources, p. 514, the Commission Decision for Genesis Solar Energy Project, Visual Resources, p. 7-8, and the Commission Decision for Pio Pico Energy Center, Visual Resources, p. 8.5-4.

C. Light and Glare

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

The modified project, without adequate lighting and glare control, has the potential to create a new source of substantial sky glow, light trespass and glare that would adversely affect day or nighttime views in the area.

Sky glow, light trespass and glare are difficult to eliminate, but they can be minimized through good design practices. In many cases, all that is required is the proper placement of poles, selection of luminaire optics and shielding accessories.

Reflection from the surface of an object becomes undesirable if it accidentally or improperly travels offsite. *Reflectivity*[3] from the surface of an object depends on the intensity of the radiation (beam of light) striking it, the age and type of material used, its location, position and gradient, the particular time of day and year, and the position of the sun.[4] Upon a surface, the amount of radiation is typically described as that interacting with the surface in one or more of three ways: it will be absorbed into the material, transmitted through the material, or reflected off the material.

Direct normal irradiance (DNI) is the amount of solar irradiance striking a surface perpendicular to the sun's rays. The DNI provides the starting "strength" of the solar glare source, which can then be reduced by the reflectance of the PV module, mirror or receiver. The specular reflectance of PV glass can be as low 1 to 2 percent at near normal incidence angles, while the specular reflectance of mirrors can be greater than 90 percent. At large incidence angles (greater than 60 percent) the reflectance of PV glass can be 20 percent or more even with texturing and antiglare coatings (Ho, Clifford. "Relieving a Glaring Problem," Solar Today, April 2013, p. 28-31, and NEBS2013j, p. 4).

Reflectivity from structures and equipment is anticipated to be limited with the project owner's effective use of non-glare and non-reflective materials surface treatments. The project owner's proposals to use high-transmission, low-reflectance PV panels with non-reflective coatings and to use matt or burnished surfaces on exposed PV support structures have been incorporated into staff's proposed Conditions of Certification **TRANS-12** and **TRANS-13**. See the **Traffic and Transportation** section of the staff assessment for more information.

Condition of Certification **VIS-3** requires lighting to be directed downward or toward the area to be illuminated on site; shielded from public view to the extent feasible; and (to the level consistent with operational safety and security) kept off when site areas are unoccupied through the use of switches, sensors, and timers. BSPP's new source of substantial light to nighttime views will be less than significant with the effective implementation of Condition of Certification **VIS-3**.

[3] Reflectivity "does not create its own light. It borrows light from another source. The borrowed light waves strike an object and "bounce" from it" ("Reflectivity," **3M** Traffic Safety Systems Division, 2004).
[4] "Reflectivity From Existing Building Surfaces," BlueScope Steel, 2007.

The modified BSPP will not affect the visual resources conditions of certification in the Commission Decision for the BSPP, or require new conditions of certification. Lighting and glare related impacts created by the modified project would be less than significant with implementation of Conditions of Certification **VIS-1**, **VIS-3**, **VIS-4**, **TRANS-12**, and **TRANS-13**.

The Energy Commission in its Commission Decision for the BSPP in September 2010 determined the "BSPP's new source of substantial light to nighttime views will be less than significant with the effective implementation of Condition of Certification **VIS-3**" (CEC2010e).

D. Visual Character or Quality

Would the proposed project "substantially degrade the existing visual character or quality of the project site and its surroundings?

The staff's assessment used during the licensing process included a detailed analysis from selected Key Observation Points (KOPs). KOPs are selected to be representative of the most critical locations from which the proposed project would be publicly seen. KOPs are selected based on their usefulness in evaluating the existing landscape(s) and potential impacts on identified visual related resources from a publicly accessible vantage point. KOP locations used for the BSPP analysis were: (1) along a major travel corridor (I-10); (2) along recreational access 4WD roads and trails; (3) from vantage points within nearby designated Wilderness areas; and (4) at locations that provided good examples of the existing landscape context and viewing conditions (landscape character).

At each KOP, the existing landscape was characterized. Photographs were obtained showing the existing setting without the project, and representative simulations of the proposed BSPP in the existing setting were prepared to help staff in evaluating the KOP. In the 2010 Revised Staff Assessment, Visual Resources Figure 3 (see attached **Visual Resources Figure 1**) shows the locations of the KOPs used for the project analysis. The KOPs shown on the figure are described as follows:

- **KOP 1** – Blythe Airport, southeast of the project site viewing to the northwest.
- **KOP 2** – Black Creek Road, southern portion of the project site viewing to the northwest.
- **KOP 3** – southwest corner of the development area viewing to the northeast.
- **KOP 4** – McCoy Mountains – low elevation, from the BLM recreational access road viewing to the east.
- **KOP 5** – McCoy Mountains – high elevation, along the main north-south ridge viewing to the east.
- **KOP 6** – westbound Interstate 10, east of the interconnecting transmission line viewing to the west.
- **KOP 7** – eastbound Interstate 10, west of the interconnecting transmission line span of I-10 viewing to the east.

Staff modeled a *visual sphere of influence*[5] (VSOI) to determine the surface area where the modified project may potentially be visible. The VSOI is a delineated surface area on a map or satellite image showing where a straight-line view from the site of the proposed facility's tallest onsite structure considering elevations and slope of the terrain (excluding buildings, structures, and vegetation) to a hypothetical observer standing two meters (6.56 feet) above the surface terrain; see **Visual Resources Figure 2**. In the 2010 Revised Staff Assessment, Visual Resources Figure 1 shows the viewshed map used for the original project analysis (see attached **Visual Resources Figure 3**). The modified BSPP's viewshed is somewhat smaller when compared to the original project's viewshed. Mostly like due to the elimination of the 120-foot tall cooling towers.

The modified project would be located on the Palo Verde Mesa in an undeveloped portion of the Colorado Desert. From each of the original project's selected KOPs, the view contains a generally broad, open and predominantly undeveloped landscape with grasses and shrubs. Consistently, few built elements are present. More specifically, the region's terrestrial habitats include creosote bush scrub; mixed scrub, including yucca and cholla cactus; desert saltbush; sandy soil grasslands. Higher elevations are dominated by pinyon pine and California juniper, with areas of Manzanita and Coulter pine.

The original BSPP was to use solar thermal technology. The proposed modified BSPP would use PV technology. PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional solar thermal power generation plant. The modified project's observable PV technology items include inverters, solar panels, and an office and maintenance building. In the 2010 Revised Staff Assessment, Visual Resources Figure 8B (see attached **Visual Resources Figure 4**) shows a simulation of the licensed BSPP from KOP 5 (McCoy Mountains) used for the original staff analysis. **Visual Resources Figure 5** characterizes a simulation of the modified BSPP from KOP 5.

The use of PV technology would reduce the public visibility of the project as licensed notably by eliminating four power blocks and integral accessory equipment/structures, eliminating six evaporation ponds, a reduction in the height of solar collectors from 24 feet tall to 9 feet (approximately 17 feet tall if it includes a tracking system), and a reduction in the level of glint and glare being emitted by the project.

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[5] The visual sphere of influence (VSOI) is prepared using a standard computerized application in a geographical information system (GIS) software; ArcMap Desktop 10 of ESRI (ArcMap). A three-dimensional representation of the local area where the proposed facility is to be sited is created using a terrain surface model (7.5 minute Digital Elevation Model (DEM) data with a 10-meter-grid cell resolution from the United States Geological Survey) is inserted into ArcMap. The DEM data is processed using the Viewshed tool of the ArcMap Spatial Analyst extension. Energy Commission staff uses a five-mile radius from the proposed facility's tallest onsite building, structure, equipment (e.g., typically an exhaust stack) using a straight-line overlooking the terrain surface to a hypothetical observer 2-meters (6.56 feet) above the terrain surface considering elevations and slope of the terrain (ESRI, Inc., ArcGIS Resource Center, "Using Viewshed and Observer Points for visibility analysis," June 2011, and ESRI Technical Support, <http://support.esri.com>, "response to questions regarding observation parameters for viewshed analysis," April 3, 2012, email communication).

The visual disturbance of the modified project on 4,070 acres in the landscape from the key observation points would strongly attract visual attention. Attention would be drawn by its strong contrast in form, line, color, or texture, luminance in the landscape.

The "visual absorption capability" of the landscape is considered low to moderate. "Visual absorption may be defined as the physical capacity of a landscape to absorb proposed development or management activities and still maintain its inherent visual character and quality. Two of the most important factors affecting the absorption capability of a landscape are: 1) the degree of visual penetration, i.e., the distance into the landscape you can see from a vantage point and 2) the complexity of the landscape. The degree of visual penetration is affected both by vegetation and topography."[6]

The proposed project would introduce structures with industrial character into the foreground to background views from BLM recreational access roads (KOPs 2 through 5), Interstate 10 (KOPs 6 and 7), and nearby residences off of Mesa Drive, south of I-10 and Blythe Airport.

Every landscape has the basic elements of form, line, color, and texture. The alteration to the existing landscape created by the proposed modified project (the project's design) does not repeat the basic elements in the landscape thereby creating a significant contrast. Attention would be drawn by strong contrast in form, line, color, and texture. The project's visual impacts due to contrast with the existing landscape, in terms of form, line, color, texture, and scale and spatial dominance, would be significant. The "visual absorption capability," the physical capacity of the landscape to absorb the proposed development and still maintain its inherent visual character and quality is considered low to moderate. The desert landscape is not able to visually absorb the 4,000+ acre modified project. The overall visual change introduced by the modified project would substantially degrade the existing visual character or quality of the site and its surroundings. No mitigation measure is available to reduce the visual impact to a less than significant level. Therefore, staff recommends the continuance of Condition of Certification **VIS-4** to minimize the modified project's degradation of the existing visual character or quality of the site and its surroundings.

Areas disturbed during construction would require restoration. Proper implementation of Condition of Certification **VIS-2** would ensure that the visual impacts of residual disturbed areas associated with project construction remain less than significant.

The Energy Commission Decision for the BSPP in September 2010 determined the original BSPP would result in a significant and unmitigable visual impact to scenic views from KOPs 2, 3, 4, 5 and 7 (CEC2010e).

[6] W. C. Yeomans. A Proposed Biophysical Approach to Visual Absorption Capability (VAC). General Technical Report PSW-GTR-35. Berkeley, CA. Pacific Southwest Forest and Range Experimental Station. USDA Forest Service, Berkeley, Calif., 1979, pp. 172-181.

Construction–Related Impacts

Construction of the proposed project would cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur on the proposed project site and along the transmission line route. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, construction of the actual facilities, and site cleanup and restoration covering 4,070 acres. Construction activities would be visible from I-10, Blythe Airport, Black Creek Road nearby BLM recreational access roads, and McCoy Mountains.

During construction, onsite grading and vehicle use of the access road to the project site would generate large dust clouds that would be aesthetically unpleasing if not controlled properly; refer to the **Air Quality** section of the staff assessment for dust control mitigation.

The visual disturbance created by the modified project as it takes shape in the landscape from the key observation points would strongly attract visual attention. Attention would be drawn by strong contrast in form, line, color, and texture. The visual absorption capability of the landscape is considered low to moderate. Construction and related activities on the project site would create a significant visual impact from several KOPs. There is no feasible mitigation to reduce this impact to less than significant.

CUMULATIVE IMPACTS

Under the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR [*environmental impact report*] together with other projects causing related impacts” (14 Cal. Code Regs., §15130(a)(1)). Cumulative impacts of the project must be discussed if the incremental effect of a project, combined with the effects of other projects is ‘cumulatively considerable’ (14 Cal. Code Regs., §15130(a)). Such incremental effects are to be ‘viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects’” (14 Cal. Code Regs., §15164(b)(1)). Together, these projects comprise the cumulative scenario that forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts shall reflect the severity of impacts and their likelihood of occurrence, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (14 Cal. Code Regs., §15130(b)).

Cumulative Impact Significance

Cumulative impacts to visual resources would occur where project facilities occupy the same viewshed as other built facilities or impacted landscapes, and an adverse change in the visible landscape character is perceived. In some cases, a cumulative impact could also occur if a viewer perceives that the general visual quality or landscape

character of an area is diminished by the proliferation of visible structures or construction effects, even if the changes are not within the immediate viewshed as existing (or future) structures or facilities.

a. Effects of Past and Present Projects

The modified BSPP would be constructed within the I-10 corridor. The I-10 corridor is defined in Commission Decision, Exhibit 200, pp. B.3.8-13 to B.3-13. Four existing projects are located within the BSPP viewshed including I-10, the West-wide Section 368 Energy Corridor, the BLM Recreational Opportunities project for the Midland Long-Term Visitor Area, and the Devers-Palo Verde Transmission Line. Of the four projects, only a portion of the Devers-Palo Verde Transmission Line is both located within the BSPP transmission line viewshed and shares similar visual characteristics and impacts.

The BSPP interconnecting transmission line is expected to substantially contribute to a cumulatively significant effect within the context of existing cumulative conditions established by the Devers-Palo Verde 2 Transmission Line.

b. Effects of Reasonably Foreseeable Future Projects

Excluding foreseeable commercial and residential projects in Blythe, 18 foreseeable future energy projects in the I-10 corridor would share similar visual characteristics with the modified BSPP and would contribute to the conversion of the natural desert landscape to a landscape with an industrial character (complex industrial forms, lines, textures and colors not found in the natural desert landscape). A significant cumulative impact to visual resources is identified from the combination of BSPP and the 18 foreseeable projects.

Given these considerations, the modified BSPP's visual impacts are cumulatively considerable in the context of the I-10 corridor's desert landscape when considering existing and foreseeable projects, both within the immediate project viewshed and in a broader context encompassing the whole of the I-10 corridor. The modified BSPP transmission line will also result in a substantial contribution to cumulative visual impacts in the context of existing cumulative conditions.

CONSISTENCY WITH APPLICABLE LORS

Staff evaluated if the siting and operation of a proposed project modification would be consistent or in compliance with applicable federal, state, and local government LORS that pertain to the preservation and protection of landscape components in **Visual Resources Table 1**.

The modified project was found to be inconsistent with several Riverside County General Plan land use (LU) policies pertaining to protection/preservation of the visual character of the existing landscape and scenic corridors: LU 13.1 (preservation of scenic vistas), LU 13.3 (compatible appearance with surrounding environment), LU 20.1 (environmental character), LU 20.2 (avoid unnatural appearance), and LU 20.4 (open space and rural character). Because the modified BSPP would be located entirely on land managed by the BLM, the project would not be subject to Riverside County's LORS.

However, staff has included a discussion of the project's consistency with the visual resources goals and objectives of Riverside County since these LORS informed staff's CEQA analysis of the project and indicate the importance of open space and scenic resources to the county.

Local law can be considered applicable only to the extent it does not result in a land use which conflicts with the federally designated land use (Kleppe v New Mexico, 426 U.S. 529, 543, 96 S. Ct. 2285, 2293, 49 L.Ed.2d 34 (1976); United States v. City of Pittsburg, 661 F.2d 783, 785 (9th Cir. 1981); Ventura County, 601 F.2d at 1083). The BSPP site is classified in the California Desert Conservation Area Plan as Multiple-Use Class "M" (Moderate Use). The Multiple-Use Class "M" includes as an allowable use electrical power generation facilities including wind/solar facilities.

Visual Resources Table 1
Laws, Ordinances, Regulations and Standards

Source	General Description	Consistency/Compliance Determination and Discussion (assumes implementation of staff-recommended Conditions of Certification)
Federal		
California Desert Conservation Area (CDCA) Plan	BSPP is located within the California Desert Conservation Area Plan, which is the BLM Resource Management Plan applicable to the project site (USDOI, 1980, as amended). The BSPP site is classified in the CDCA Plan as Multiple-Use Class (MUC) "M" (Moderate Use). Management of MUC M lands is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, live-stock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources, which permitted uses may cause. The MUC M Class includes as an allowable land use electrical power generation facilities including wind/solar facilities. New major electric transmission facilities may be allowed only within designated utility corridors. Existing facilities within designated utility corridors may be maintained and upgraded or improved in accordance	Consistent. Solar electrical generation plants are allowed in the Multiple Use Class (MUC) "M."

Source	General Description	Consistency/Compliance Determination and Discussion (assumes implementation of staff-recommended Conditions of Certification)
	with existing rights-of-way or amendments to right-of-way grants.	
State		
State Scenic Highway Program	The California Department of Transportation (Caltrans) identifies state eligible and designated scenic highways which, if designated, are subject to various controls intended to preserve their scenic quality (Calif. Streets and Highways Code, sections 260 through 263).	Consistent. I-10 within the project viewshed is not an eligible or designated State Scenic Highway.
Local		
Riverside County Integrated Plan	LU 4.1 Requires that new developments be located and designed to visually enhance, not degrade the character of the surrounding area through consideration of the following concepts: c. Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review.	Consistent. The original project applicant did not propose to landscape the project site, and therefore did not submit a landscape plan. Given the location of the project and potential impacts to water and biological resources resulting from landscaping at this location, staff and later the Commission concluded this was appropriate for the project.
	d. Require that new development utilize drought-tolerant landscaping and incorporate adequate drought-conscious irrigation systems.	Consistent. The original project applicant did not propose to landscape the project site (see above comment).
	l. Mitigate noise, odor, lighting, and other impacts on surrounding properties.	Consistent. All outdoor lighting at the project site will be the minimum required to meet safety and security standards. All light fixtures will be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the light fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not needed. These measures are included in Condition of Certification **VIS-3**.
	m. Provide and maintain landscaping in open spaces and parking lots.	Consistent. The project footprint includes no open space. The parking area for the BSPP is inaccessible to the public. Planting and maintaining landscaping in the parking area would require water to be used unnecessarily.
	n. Include extensive landscaping.	Consistent. Extensive landscaping is not being proposed for the project site (see above comments). It would require water to be used unnecessarily.
	p. Require that new development be designed to provide adequate space for pedestrian connectivity and access,	Not Consistent. The modified project would not be accessible by pedestrians, recreationists, or general vehicular

Source	General Description	Consistency/Compliance Determination and Discussion (assumes implementation of staff-recommended Conditions of Certification)
	recreational trails, vehicular access and parking, supporting functions, open space, and other pertinent elements.	travel.
	LU 4.2 Require property owners to maintain structures and landscaping to a high standard of design, health, and safety through the following: c. Promote and support community and neighborhood based efforts for the maintenance, upkeep, and renovation of structures and sites.	Consistent. The project owner would maintain the appearance of the modified project and ensure proper maintenance practices.
County Scenic Corridors	LU 13.3 Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.	Not Consistent. Although Caltrans has not designated I-10 as either an Eligible or Officially Designated Scenic Highway, Riverside County has designated I-10 as a County Scenic Highway from SR-62 near Palm Springs to the California-Arizona border. The modified project is not compatible in design and appearance with the scenic setting within this County scenic highway corridor.
	LU 13.7 Require that the size, height, and type of on-premise signs visible from Designated and Eligible State and County Scenic Highways be the minimum necessary for identification. The design, materials, color, and location of the signs shall blend with the environment, utilizing natural materials where possible.	Consistent. The modified project would include simple identification signage at the facility gate. Such signage would be visible from I-10, a designated County Scenic Highway.
The following policies apply to land designated as "*Open Space-Rural"* on the area plan land use maps.	LU 20.1 Require that structures be designed to maintain the environmental character in which they are located.	Not Consistent. The industrial design and character of the modified project facilities would not maintain the existing landscape character of a desert mesa landscape currently absent such industrial features.
	LU 20.2 Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.	Not Consistent. The industrial appearance of the modified project would not blend with the existing desert mesa landscape.
	LU 20.4 Ensure that development does not adversely impact the open space and rural character of the surrounding area.	Not Consistent. The modified project would significantly impact the natural desert landscape and rural character of the site and surroundings.

PROJECT CLOSURE AND DECOMMISSIONING

At some point in the future, the proposed facility would cease operation and close down. At that time, it would be necessary to ensure that closure occurs in such a way that public health and safety and the environment are protected from adverse impacts.

The planned lifetime of the project is estimated at 30 years. At least 12 months prior to the initiation of decommissioning, the project owner would prepare a Facility Closure Plan for Energy Commission review and approval. The Facility Closure Plan would address the following:

- Proposed decommissioning activities for the facility and all appurtenant facilities constructed as part of the facility;
- Conformance of the proposed decommissioning activities to all applicable LORS and local/regional plans;
- Activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities;
- Decommissioning alternatives other than complete restoration; and
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning.

The Energy Commission review and approval process of the closure plan would be public and allow participation by interested parties and other regulatory agencies.

At the time of closure, all applicable LORS related to physical and visible aesthetics, and the preservation and protection of landscape components would be identified and the closure plan would discuss conformance of decommissioning, restoration, and remediation activities with the LORS.

Upon closure of the facility or decommissioning, it is likely the project owner would be required to restore lands affected by the project to their pre-project state; therefore the effects of the decommissioning are not expected to be adverse pertaining to physical and visible aesthetics, and the preservation and protection of landscape components.

NOTEWORTHY PUBLIC BENEFITS

No noteworthy public benefits pertaining to aesthetic/visual resources were identified.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No responses from a public agency or the general public have been received at this time.

CONCLUSIONS

Staff has reviewed the project owner's Petition to Amend the Commission Decision for the Blythe Solar Power Project and concludes the proposed electrical generation

technology change from solar thermal to PV would not require deletion or modification of a visual resources condition of certification in the Commission Decision, or require a new condition of certification to address impacts that were not previously analyzed for the approved project. The modified project, like the approved project, would create a substantial adverse direct impact and cumulative visual impact. The existing conditions of certification will reduce these visual impacts, but like the approved project, these mitigation measures would not reduce impacts to a less than significant level.

Staff identified no new federal, state or local government LORS pertaining to the preservation and protection of visual resources that were not previously analyzed in the Commission Decision that would be affected by the proposed technology modification. Like the approved project, the modified project would comply with federal and state LORS, but not local LORS.

CONDITIONS OF CERTIFICATION

Staff has provided the visual resources conditions of certification found in the Commission Decision for the Blythe Solar Power Project dated September 2010 below. Staff is not proposing any changes to these conditions of certification.

Surface Treatment of Project Structures and Buildings

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public such that: a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; b) their colors and finishes do not create excessive glare; and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following in-field consultation with the Energy Commission/BLM Visual Resources specialist and other representatives as deemed necessary, the project owner shall submit for Compliance Project Manager (CPM) review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

A A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be field tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces;

B A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and pantone number; or according to a universal designation system;

C One set of color brochures or color chips showing each proposed color and finish;

D A specific schedule for completion of the treatment; and

E A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to Riverside County for review and comment. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the project KOPs. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of major maintenance activities for the next year.

Revegetation of Disturbed Soil Areas

VIS-2 The project owner shall revegetate disturbed soil areas to the greatest practical extent, as described in Condition of Certification **BIO-8**. In order to address specifically visual concerns, the required closure, Revegetation and Rehabilitation Plan shall include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures.

Verification: Refer to Condition of Certification **BIO-8**.

Temporary and Permanent Exterior Lighting

VIS-3 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting (which should be an on-demand, audio-visual warning system that is triggered by radar technology); d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner shall submit to the CPM for review and approval and simultaneously to the County of Riverside for review and comment a lighting mitigation plan that includes the following:

A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

C. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

D. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: At least 90 days prior to ordering any permanent exterior lighting or temporary construction lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and simultaneously to the County of Riverside for review and comment a lighting mitigation plan. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

The project owner shall not order any exterior lighting until receiving CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If after inspection, the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving

that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days.

Project Design

VIS-4 To the extent possible, the project owner will use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see VIS-1) and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:

Earthwork: Select locations and alignments that fit into the landforms to minimize the size of cuts and fills. Avoid hauling in or hauling out of excess earth cut or fill. Avoid rounding and/or warping slopes. Retain existing rock formations, vegetation, and drainage. Tone down freshly broken rock faces with emulsions or stains. Use retaining walls to reduce the amount and extent of earthwork. Retain existing vegetation by using retaining walls or fill slopes, reducing surface disturbance, and protecting roots from damage during excavations. Avoid soil types that generate strong color contrasts. Reduce dumping or sloughing of excess earth and rock on downhill slopes.

Vegetation Manipulation: Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.

Structures: Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges.

Linear Alignments: Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts and bisecting ridge tops. Hug vegetation lines and avoid open areas such as valley bottoms. Cross highway corridors at less sharp angles.

Reclamation and Restoration: Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Replace soil, brush, rocks,

and natural debris over disturbed area. Newly introduced plant species should be of a form, color, and texture that blends with the landscape.

Verification: As early as possible in the site and facility design, the project owner shall meet with BLM's Authorized Office and the CPM to discuss incorporation of these above factors into the design plans. At least 90 days prior to final site and facility design, the project owner shall contact the CPM to review the incorporation of the above factors into the final facility and site design plans. If the CPM determines that the site and facility plans require revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

REFERENCES

California Code of Regulations, Title 14, Chapter 3, Sections 15000 et seq**.,** (State CEQA Guidelines).

California Streets and Highway Code, Sections 260-284.

CEC 2010b. California Energy Commission (TN 56992), Revised Staff Assessment of Blythe Solar Power Project (09-AFC-6). June 4, 2010.

CEC 2010e. California Energy Commission (TN 58591), Blythe Solar Power Project (09-AFC-6) - Commission Decision Approved on September 10, 2010. Docketed on September 23, 2010.

NEBS2013a. NextEra Blythe Solar Energy Center, LLC (TN 70318). Revised Petition to Amend (Conversion to PV). Dated April 12, 2013. Submitted to CEC on April 12, 2013.

PVSI 2012a. Palo Verde Solar I, LLC (TN 66026). Palo Verde Solar I, LLC's Petition for Amendment (Conversion to PV). Dated June 28, 2012. Submitted to CEC on June 28, 2012.

"Reflectivity," **3M** Traffic Safety Systems Division, 2004.

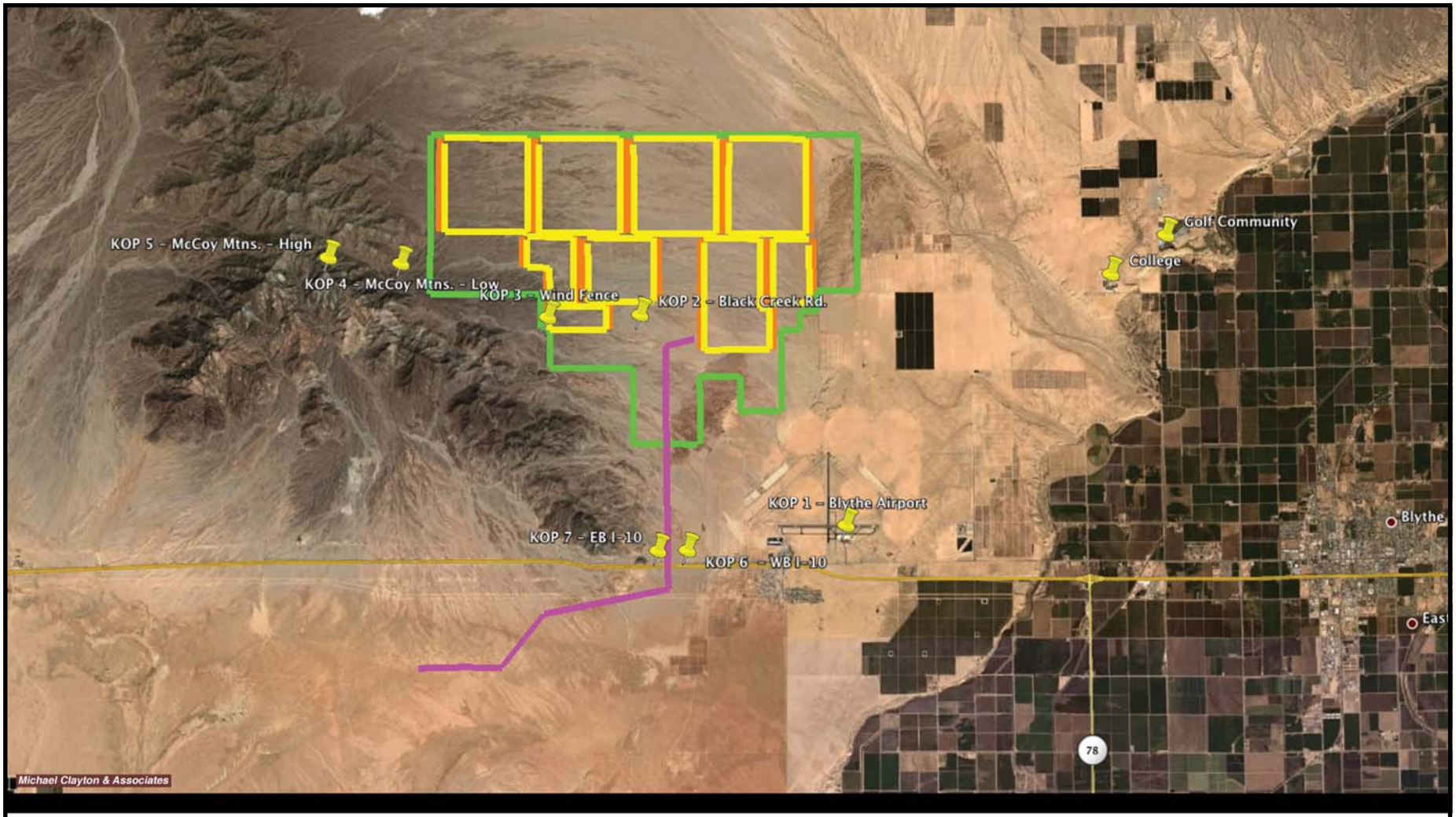
"Reflectivity From Existing Building Surfaces," BlueScope Steel, 2007.

Riverside County Integrated General Plan.

W. C. Yeomans. A Proposed Biophysical Approach to Visual Absorption Capability (VAC). General Technical Report PSW-GTR-35. Berkeley, CA. Pacific Southwest Forest and Range Experimental Station. USDA Forest Service, Berkeley, Calif., 1979.

VISUAL RESOURCES - FIGURE 1

Blythe Solar Power Project - Location of Key Observation Points (KOPs)



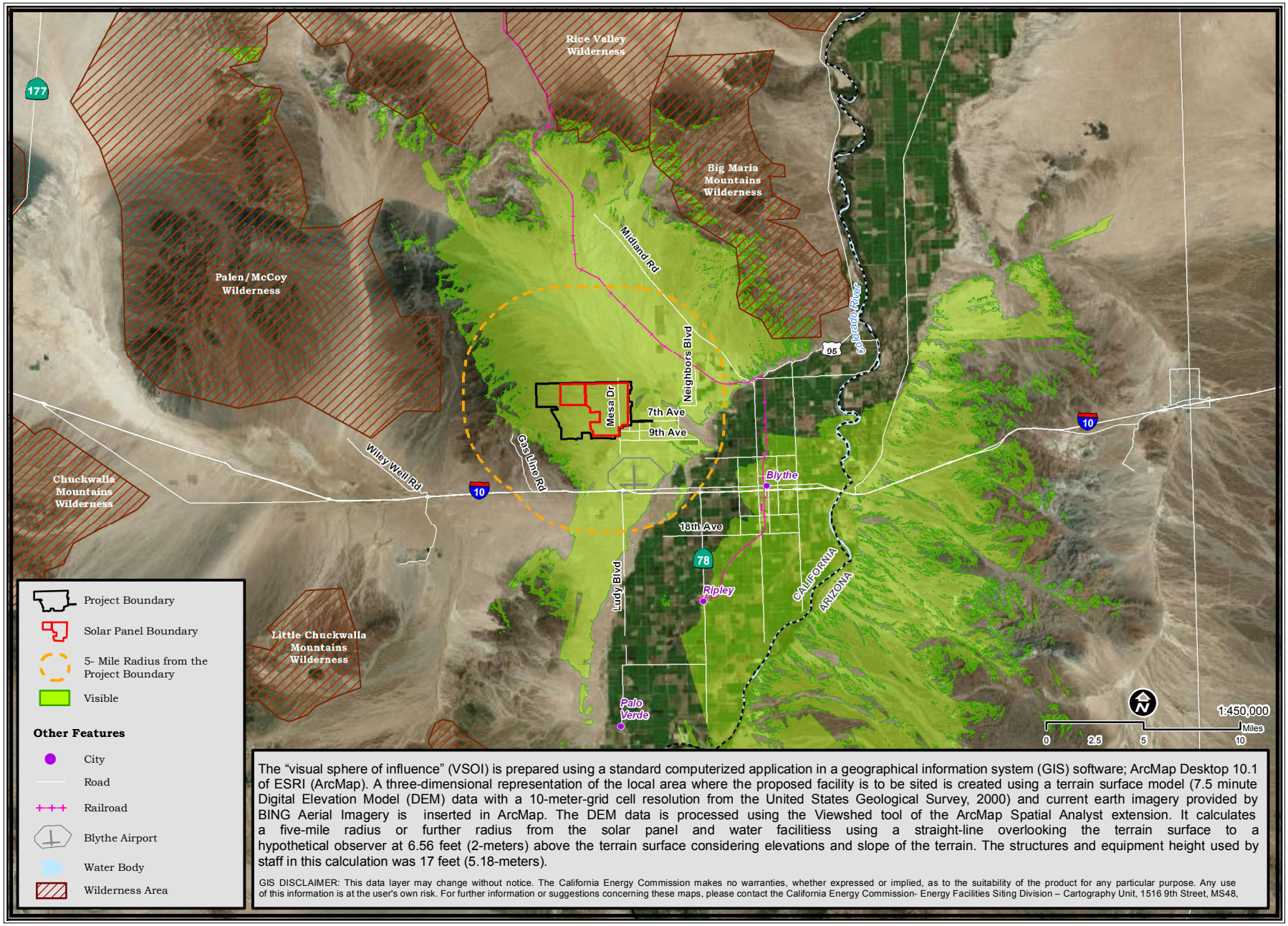
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Michael Clayton & Associates

VISUAL RESOURCES - FIGURE 2

Blythe Solar Power Project - Visual Sphere of Influence within Five-Mile Radius from Facility Site



The "visual sphere of influence" (VSOI) is prepared using a standard computerized application in a geographical information system (GIS) software; ArcMap Desktop 10.1 of ESRI (ArcMap). A three-dimensional representation of the local area where the proposed facility is to be sited is created using a terrain surface model (7.5 minute Digital Elevation Model (DEM) data with a 10-meter-grid cell resolution from the United States Geological Survey, 2000) and current earth imagery provided by BING Aerial Imagery is inserted in ArcMap. The DEM data is processed using the Viewshed tool of the ArcMap Spatial Analyst extension. It calculates a five-mile radius or further radius from the solar panel and water facilitiess using a straight-line overlooking the terrain surface to a hypothetical observer at 6.56 feet (2-meters) above the terrain surface considering elevations and slope of the terrain. The structures and equipment height used by staff in this calculation was 17 feet (5.18-meters).

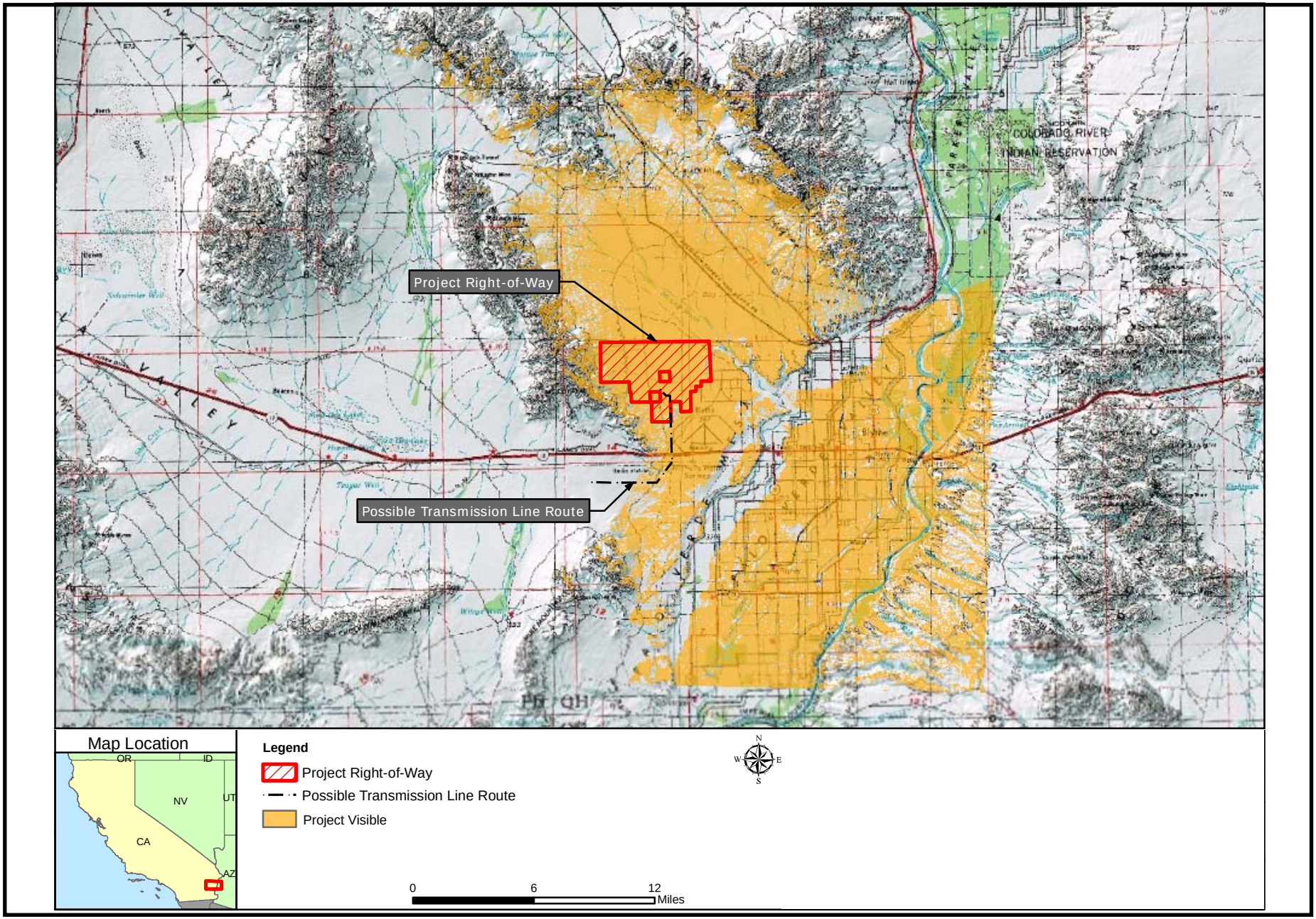
VISUAL SPHERE OF INFLUENCE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ArcGIS Resource Center:Desktop 10.1 - ESRI, California Energy Commission, BING Aerial, OpenStreetMap.

VISUAL RESOURCES - FIGURE 3

Blythe Solar Power Project - Viewshed Map for BSPP



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.15-1

VISUAL RESOURCES - FIGURE 4

Blythe Solar Power Project - View from KOP 5, Looking East-Northeast toward BSPP Site – Simulated Condition

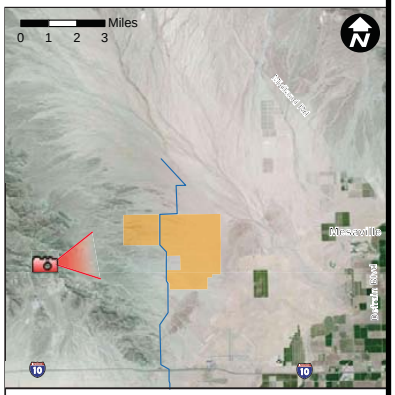
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Data Response Figure DR-VIS-233-1b

VISUAL RESOURCES - FIGURE 5

Blythe Solar Power Project - Photographic Simulation of the Modified BSPP view from KOP 5 (McCoy Mountains)



Legend

Site Boundary

KOP Cone of Vision

Gen-tie Line

Photograph Information

- Date of Photograph: 12/14/2009
- Time of Photograph: 12:12 pm
- Weather Condition: Sunny
- Viewing Direction: East/Northeast
- Latitude: 33°39'52.40"N
- Longitude: 114°49'47.50"W

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Tetra Tech

ALTERNATIVES

Testimony of Jeff Juarez

INTRODUCTION

In 2010, Energy Commission staff conducted an alternatives evaluation of the proposed Blythe Solar Power Project (BSPP), a 1,000-megawatt (MW) solar thermal power-generating facility utilizing parabolic trough technology on approximately 7,043 acres of land managed by the Bureau of Land Management (BLM) in Riverside County, California. The project was approved and licensed by the California Energy Commission; however, the project was not completely constructed as proposed, and subsequently the BSPP underwent a change in ownership. In 2013, the new owner (NextEra Blythe Solar) of the BSPP submitted a revised petition to amend the BSPP 2010 Final Decision (2010 Decision) to modify the project and replace the solar thermal technology with solar photovoltaic (solar PV or PV) technology on the site.

The following section summarizes the alternatives analysis conducted for the previously proposed BSPP in 2010 (2010 BSPP). The summary is followed by an alternatives evaluation that compares the impacts of the No Project Alternative with the impacts of the proposed modified project (Modified BSPP).

SUMMARY OF 2010 BSPP ALTERNATIVES ANALYSIS

CEQA REVEW REQUIRED

The purpose of the alternatives analysis is to consider a reasonable range of alternatives which, under CEQA, could substantially reduce or avoid any potentially significant adverse impacts of the proposed project.

In its evaluation of the 2010 BSPP, Energy Commission staff identified and considered alternatives to the proposed project, as required by CEQA, in its *Revised Staff Assessment of the Blythe Solar Power Project* (RSA). Section 15126.6 of the CEQA Guidelines indicates that the alternatives analysis must:

- describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- consider alternatives that would avoid or substantially lessen any significant environmental impacts of the proposed project, including alternatives that would be more costly or would otherwise impede the project's objectives; and
- evaluate the comparative merits of the alternatives.

These regulations also apply to the document used as a substitute for an EIR in a certified program (Cal. Code Regs., tit. 14, §§ 15251 and 15252).

The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives (Cal. Code Regs., tit. 14, § 15126.6[a]). CEQA does not require an EIR to "consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives…." The range of reasonable alternatives must be selected and discussed in a manner that fosters meaningful public participation and informed decision making (Cal. Code Regs., tit. 14, § 15126.6[f]). That is, the range of alternatives presented in this analysis is limited to ones that will inform a reasoned choice by Energy Commission decision makers. Under the "rule of reason," an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6[f][3]).

The lead agency is also required to (1) evaluate a "no project alternative," (2) identify alternatives that were initially considered but then rejected from further evaluation, and (3) identify the "environmentally superior alternative" among the other alternatives (Cal. Code Regs., tit. 14, § 15126.6).

Alternatives may be eliminated from detailed consideration by the lead agency if they fail to meet most of the basic project objectives, are infeasible, or could not avoid any significant environmental effects (Cal. Code Regs., tit. 14, § 15126.6[c]).

In its 2010 BSPP analysis, staff developed and evaluated 22 alternatives to the project. These included three alternative site locations or configurations, a range of different solar and renewable technologies, generation technologies using different fuels, and conservation and demand-side management. Of the 22 alternatives, two alternatives were determined to be reasonable and feasible by Energy Commission staff and had the potential to result in reduced impacts in comparison with the proposed project: the Reconfigured Alternative and the Reduced Acreage Alternative. Both alternatives included and complemented land use plan decisions proposed at that time. In addition, staff evaluated one site alternative in detail, Blythe Mesa Alternative. Finally, Energy Commission staff considered the No Project Alternative. The Site Alternative, the Reconfigured Alternative, and the Reduced Acreage Alternative were analyzed in further detail.

2010 BSPP No Project Alternative

The RSA explained that the No Project Alternative under CEQA would be the scenario that would exist if the 2010 BSPP were not constructed. The CEQA Guidelines state that "the purpose of describing and analyzing a 'no project' alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. 14 § 15126.6(i)). The No Project analysis in the RSA considered existing conditions and "what would be reasonably expected to occur in the foreseeable future if the project were not approved…" (Cal. Code Regs, tit. 14 § 15126.6(e)(2)).

The RSA pointed out that if the No Project Alternative were selected, the construction and operational impacts of the 2010 BSPP would not occur. There would be no grading of the site, no loss of resources or disturbance of desert habitat, and no installation of power generation and transmission equipment. The No Project Alternative would also eliminate contributions to cumulative impacts on a number of resources and environmental parameters in Riverside County and the Mojave Desert (CEC, 2010b).

In the absence of the 2010 BSPP, however, other power plants, both renewable and non-renewable, may be proposed and constructed on this site or in the surrounding desert region to serve the demand for electricity and to meet the criteria for the California Renewables Portfolio Standard (RPS), which calls for a 33 percent renewable energy mix statewide by 2020. The impacts of these other facilities may be similar to those of the 2010 BSPP because the technologies may also require large amounts of land, similar to the 2010 BSPP. The No Project Alternative may also lead to siting of other non-solar renewable technologies to help achieve the state-mandated RPS (CEC 2010b).

Also, if the No Project Alternative were chosen, additional gas-fired power plants may be built, or existing gas-fired plants may operate longer. If the proposed project were not built, California would not benefit from the reduction in greenhouse gases that this facility would provide, and California utilities would not receive the 1,000-MW contribution to the RPS (CEC 2010b).

Staff concluded that the No Project Alternative under CEQA was not superior to the proposed project because the No Project Alternative would likely delay development of renewable energy as a source of power generation or shift renewable power plant development to other desert environments. In addition, the No Project Alternative could lead to increased development of non-renewable technology power plants or the continued operation of existing power plants that use non-renewable technologies (CEC 2010b).

2010 BSPP PROJECT ALTERNATIVES EXAMINED IN DETAIL

A public scoping and comment period held for the 2010 BSPP allowed the public and regulatory agencies an opportunity to comment on the scope of the environmental document and the alternatives being considered, and to identify issues that should be addressed in the project's environmental review. A number of scoping comments requested that the project be reconfigured or reduced in size to avoid the western washes where impacts to desert washes, ephemeral streams and soils and associated wash-dependant vegetation communities would be greatest (CEC 2010b).

Site Alternative

The site alternative evaluated in detail under CEQA by Energy Commission staff was the Blythe Mesa Alternative. Scoping comments requested that an alternative site be considered on disturbed land, thereby lessening the potential project impacts to the desert environment. While the impacts to resource areas of the Blythe Mesa Alternative site would have been similar to those of the proposed site, they were likely to be less

severe to biological and cultural resources, as the alternative site is located on disturbed lands previously used for agriculture. However, the alternative site would have presented other challenges not present at the proposed site. For instance, the alternative site is made up of three unconnected areas; this would increase the cost of the project due to the need for additional infrastructure (such as transmission and water infrastructure). Additionally, the Blythe Mesa Alternative site is comprised of approximately 152 parcels with 43 separate landowners. Due to the number of parcels that would need to be acquired, obtaining site control would have been more challenging at the alternative site than at the proposed site, where BLM is the only land management entity (CEC 2010b).

Reconfigured Alternative

The Reconfigured Alternative was developed by the applicant in response to a data request, which was developed in an effort to reduce impacts related to a major unnamed dry wash that flows through the proposed site along the southwestern side. The key feature of the Reconfigured Alternative is that one of the four proposed solar fields would have been relocated south of its proposed location, thereby reducing impacts to the southwestern area of the project site (CEC 2010b).

This alternative was analyzed because, (1) it would retain the proposed 1,000-MW generation capacity, and (2) it minimizes impacts to state waters and to desert dry wash woodlands, a vegetation community classified as sensitive by the BLM and California Department of Fish and Wildlife (CDFW). The boundaries of the Reconfigured Alternative would entirely be on BLM land (CEC 2010b).

Reduced Acreage Alternative

The Reduced Acreage Alternative would eliminate one of the four proposed solar fields, and thereby reduce its power generating capacity from 1,000 MW to 750 MW; the project footprint would occupy approximately 4,750 acres of land (CEC 2010b).

This alternative was analyzed because, (1) it eliminates about 25 percent of the proposed project area, reducing all impacts, and (2) it would eliminate the 1,200 acre southwestern solar field, which is located on flowing desert washes. This alternative minimizes impacts to state waters and to desert dry wash woodlands, a vegetation community classified as sensitive by the BLM and CDFW, and to wildlife movement corridors (CEC 2010b).

2010 BSPP Project Alternatives Compared with the Modified BSPP

The three project alternatives that were evaluated in detail for the 2010 BSPP (the Site Alternative, the Reduced Acreage Alternative, and the Reconfigured Alternative) would be markedly larger in scale and power-generating capacity than the Modified BSPP. **Alternatives Table 1** shows the project acreages and power-generating capacities of the alternatives under the 2010 BSPP and Modified BSPP. **Alternatives Figures 1-4** depict their project boundaries and project footprints.

Alternatives Table 1: 2010 BSPP Project Alternatives Compared with the Modified BSPP				
	Site Alternative (Blythe Mesa)	Reduced Acreage	Reconfigured	Modified BSPP
MW	1,000	750	1,000	485
Land Area (acres) – Project Boundary/Project Footprint	6,200/5,700	9,800/4,750	10,300/7,180	7,400/4,070

Source: RSA, 2010 and Blythe Solar Power Project Revised Petition for Amendment, 2013

As shown in **Alternatives Figure 1**, the Modified BSPP does not propose to develop facilities in the southwest portion of the project site and thereby avoids or substantially reduces major impacts to desert washes, state waters, and desert dry wash woodlands, a vegetation community classified as sensitive by the BLM and CDFW.

ALTERNATIVES CONSIDERED FOR THE 2010 BSPP BUT NOT EVALUATED IN FURTHER DETAIL

Site Alternatives

Energy Commission staff considered several site alternatives to the 2010 BSPP, including East of Lancaster Alternative, El Centro Alternative, Johnson Valley, Alternative, and Chuckwalla Valley Alternative. Staff determined that the site alternatives would be infeasible or that they would not result in lesser impacts than the 2010 BSPP. In its 2010 Decision, the Commission agreed with staff's assessment and found that the alternative site locations "…do not comprise a superior alternative In terms of feasibly meeting the project objectives or reducing significant potential environmental impacts" (CEC 2010e, p. 34) Because these alternatives would not avoid or substantially reduce the adverse impacts of the 2010 BSPP, or because they would not meet the project's purpose, need, and objectives, or are otherwise not reasonable alternatives, they were not analyzed in further detail (CEC 2010b).

Alternative Renewable Technologies

Alternative renewable technologies (wind, geothermal, biomass, tidal, and wave) were considered as potential alternatives to the project, but they were not examined in further detail. Staff concluded that they would be either infeasible in meeting project objectives at the scale of the 2010 BSPP or would not eliminate significant impacts caused by the 2010 BSPP without creating their own significant impacts (CEC 2010b). In its 2010 Decision, the Commission agreed with staff's assessment of the alternative technologies, including alternative solar technologies, described below, and found that the alternative technologies "…could not achieve all of the project objectives, including completion in time to meet the deadlines necessary to secure ARRA (2009 American Recovery and Reinvestment Act) funding," and that "Meeting the state's Southern

California Edison's obligations to develop renewable energy will require contributions from all of the commercially available renewable technologies analyzed by Staff, such that these technologies are best viewed as complementary strategies rather than as competing alternatives" (CEC 2010e, p.34).

Alternative Methods of Generating or Conserving Electricity

Alternative methods of generating or conserving electricity (natural gas, coal, nuclear, and conservation and demand-side management programs) were discussed in the evaluation, but they were not examined in further detail. Staff indicated that nonrenewable energy technologies would not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements. Furthermore, a natural gas plant would contribute to greenhouse gas emissions, and construction of new nuclear power plants is prohibited under California law. In addition, conservation and demand-side management programs alone would likely not meet the state's growing electricity needs that would be served by the 2010 BSPP (CEC 2010b).

Alternative Solar Generation Technologies

Alternative solar generation technologies (Stirling engine, solar power tower, utility-scale solar photovoltaic (PV), and Linear Fresnel) were also considered but not evaluated in further detail. In comparison to the originally proposed parabolic trough technology, staff concluded that the alternative solar technologies would not substantially change the severity of impacts to visual, biological, and cultural resources, though land requirements and water use vary among the technologies (CEC 2010b). However, at the time of the 2010 BSPP alternatives analysis, the project proposed to generate 1,000 MW of power via parabolic trough technology, and all power generation technologies were compared to the proposed project based on the potential impacts those technologies would create at the same project scale and power-generating capacity (1,000 MW). Under the 2010 proposed project scenario, the alternative solar technologies did not appear to reduce the severity of impacts to visual, biological, and cultural resources.

2010 BSPP Utility-Scale Solar PV Technology Alternative

Staff considered solar PV technology as an Alternative Solar Generation Technology. In its analysis, staff indicated that a utility-scale PV power generation facility consists of PV panels that would absorb solar radiation and convert it directly to electricity, and that a utility-scale PV project consists of any PV facilities requiring transmission to reach the load center, or center of use (CEC 2010b).

Characteristics of Utility-Scale PV Technology. Staff reported the following characteristics of utility-scale solar PV technology as it related to land area, water consumption, and size (CEC 2010b).

Land Area

- The land requirement varies from approximately 3 acres per MW to more than 10 acres per MW, depending on the type of solar PV technology; therefore, a nominal 1,000-MW solar PV power plant would require between 3,000 and 10,000 acres.
- Utility-scale solar PV installations require land with less than 3 percent slope.

Water Consumption

- Solar PV systems do not require water for electricity generation.
- To maintain efficiency, some water will be required to wash the PV panels, or modules; approximately 20 to 100 acre-feet per year (AFY) of water is estimated to be required for a 1,000-MW installation.

Size

- Solar PV arrays and inverters would be approximately 15 to 20 feet in height; however, some components of the solar PV facility, such as collector power lines or a transmission interconnection may be substantially taller.

Staff concluded that a utility-scale, 1,000-MW solar PV project would create several substantial adverse effects similar to those created by the Approved BSPP; however, staff pointed out impacts to some resources would either be similar to or reduced due to the nature of solar PV technology. Staff identified the following anticipated effects of a 1,000-MW PV facility at the project site, by resource area (CEC 2010b):

Water, Soil, and Biological

- The proposed project site is crossed by several desert washes; therefore, it is likely that additional acreage would be required to site the PV arrays away from the major washes.
- Some solar PV technology systems require ground surface with less than 3 percent slope; therefore it is likely that the entire site would be graded, removing all vegetation from the area.
- Less water consumption is likely, as water would be required only for washing the PV arrays. Staff estimated approximately 48 AFY of water would be required for a 1,000-MW solar PV facility, significantly less than the Approved BSPP utilizing solar trough technology.

Visual

- The size and height of the solar PV arrays would likely be visible from nearby recreation areas and Interstate Highway 10, due to the size of the solar PV facility.
- The large number of PV arrays, access roads, and interconnection power lines required for a 1,000-MW PV facility would introduce prominent industrial features.

- The PV technology would not introduce components as tall as the proposed 30-foot solar troughs.
- Glare and reflection would be lessened, because PV panels are black to absorb sun light, rather than mirrored to reflect it. As such, potential impacts to the Blythe Airport would also be lessened.

Air Quality

- Staff indicated the likelihood of many miles of permanent access roads being required for washing and maintenance of the PV panels. The extensive grading would likely create air emissions and erosion concerns similar to those anticipated under the 2010 BSPP.

Staff eliminated solar PV technology from further consideration because a 1,000-MW solar PV facility on a 7,043-acre site would not reduce the major impacts of the Approved BSPP facility utilizing solar parabolic trough technology. Due to its requirement for a nearly flat site, staff concluded that a solar PV facility would require as much grading as a solar thermal power generating facility, with similar air emissions and erosion potential (CEC 2010b).

Because the solar PV facility proposed under the Modified BSPP would be smaller in scale and power-generating capacity than the hypothetical solar PV facility that was considered as an Alternative Solar Generation Technology in the RSA, impacts to land, water, biological, visual, and air resources are expected to be less severe than those anticipated by staff in its 2010 analysis.

The following section provides an evaluation of the No Project Alternative for the Modified BSPP. For this project, the No Project Alternative would be the construction and operation of the originally proposed 2010 BSPP that was eventually approved and licensed as a 1,000-MW solar thermal facility (Approved BSPP) or a similar, solar thermal power plant of up to 1,000 MW in power-generating capacity utilizing parabolic trough technology, as it would be the practical result of a project non-approval of the Modified BSPP.

MODIFIED BSPP ALTERNATIVES EVALUATION

MODIFIED BSPP SOLAR PV SYSTEM

The Modified BSPP proposes to utilize solar PV technology to generate approximately 485 MW (nominal) of electricity on 4,070 acres of land located entirely on the same publicly-owned land managed by BLM, exclusive of off-site linear facilities. The Modified BSPP would be nearly 3,000 acres less than the 7,043 acres of the Approved BSPP. Linear access to the site would be the same as for the Approved BSPP, and the Modified BSPP would continue to interconnect to the regional transmission grid via the same gen-tie line to Southern California Edison's Colorado River Substation, which is currently under construction.

Solar PV technology involves the direct conversion of photons (i.e., sunlight) into

electricity. Solar PV modules (or solar panels) absorb solar radiation and convert it into direct current electricity. This direct current power is then converted into alternating current electricity for delivery to the electrical grid system. This conversion occurs when direct current (DC) flows through a device called an *inverter*, which converts the electrical characteristics to alternating current (AC) that can be tied to the power distribution system for power delivery. The electrical current produced is directly dependent on how much light strikes the module. Multiple PV panels are wired together to form an array, an arrangement that increases the total system output. PV technology does not involve thermal energy or the production of steam to power turbines. PV systems are relatively simple to operate and maintain and require little water for project operations compared to solar thermal energy systems (CEC 2012).

A traditional fixed-tilt solar PV system is composed of flat-plate collectors (i.e., solar PV panels or modules) installed in arrays at a fixed tilt facing south. Maximum yearly solar radiation can be achieved using a tilt angle approximately equal to a site's latitude. Larger, more complex installations use tracking flat-plate collectors that tilt the panels toward the sun for maximum efficiency. PV tracking systems using single-axis tracking could maximize the panels' absorption of sunlight during the day and throughout the year. Tracking PV modules produce more electricity annually compared to fixed-tilt modules (CEC 2012). NextEra Blythe Solar is considering installing either a single-axis tracking system, a fixed-tilt system, or a combination of the two systems. **Alternatives Figure 5** show solar PV single-axis tracking and fixed-tilt systems. NextEra Blythe Solar is requesting the 2010 Final Decision be amended to allow the specific combination of solar PV technology systems to be selected prior to construction without the need for filing another amendment.

NextEra Blythe Solar proposes to develop the Modified BSPP in four phases. All four units would share an operations and maintenance facility, one on-site switchyard, access and maintenance roads, perimeter fencing and other ancillary security facilities, and a 230-kV gen-tie line.

NO PROJECT ALTERNATIVE

The CEQA Guidelines require that, among other alternatives, a no project alternative shall be evaluated in relation to the proposed project. The no project alternative analysis must "discuss the existing conditions at the time…environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Cal. Code Regs., tit. 14, § 15126.6[e][2]).

The CEQA Guidelines discuss possible ways for the discussion of the no project alternative to proceed. "If disapproval of the project under consideration would [likely] result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain instances, the no project alternative means 'no build' wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of

existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment" (Cal. Code Regs., tit 14, § 15126.6 [e][3][B]).

As required by CEQA, a No Project Alternative has been included in the alternatives evaluation of the Modified BSPP. The No Project Alternative is the only alternative examined in this evaluation because (1) the alternatives analysis for the Approved BSPP already analyzed a reasonable range of potentially feasible alternatives to the Approved BSPP under and CEQA; (2) the Modified BSPP is substantially smaller in scale than the Approved BSPP in terms of both MW-generating capacity and land area, and therefore, the Modified BSPP is anticipated to avoid or substantially lessen the significant impacts of the Approved BSPP, and (3) the project site has already been approved and licensed as a solar thermal power plant.

Under the CEQA Guidelines, the Approved BSPP or a similar, solar thermal power plant of up to 1,000 MW in power-generating capacity utilizing parabolic trough technology is the practical result of non-approval of the petition to amend, since the project site has already been approved as such.

This alternatives evaluation provides a comparison of the impacts of approving the proposed Modified BSPP with the impacts of not approving the Modified BSPP (and potentially having the project built as a solar thermal power-generating facility utilizing parabolic trough technology).

Potential to Attain Project Objectives

A non-approval of the Modified BSPP may result in the construction and operation of the Approved BSPP, which was licensed as a 1,000-MW solar thermal power plant on 7,043 acres of land managed by BLM. The Modified BSPP proposes to build and operate a 485-MW power facility utilizing solar photovoltaic (PV) technology on 4,070 acres of land on the same property as the Approved BSPP. The Approved BSPP, as the No Project Alternative, would have twice the power-generating capacity as the Modified BSPP, and it also would utilize a renewable energy source, but it also would entail development of almost 3,000 more acres of land, and would likely incur greater environmental impacts. Therefore, the No Project Alternative would not attain the Modified BSPP's project objectives of constructing and operating a smaller, less impactful power plant on a smaller area of BLM-managed land.

Potential Feasibility Issues

The Approved BSPP has no feasibility issues as a 1,000-MW solar thermal power-generating facility was approved on the project site.

Environmental Analysis

Alternatives Table 2 presents a summary comparison of impacts of the No Project Alternative (Approved BSPP) to the same or similar potential impacts of the Modified BSPP.

The comparison of impacts to the Modified BSPP is conveyed using these terms in a graded scale:

- Much less than the Modified BSPP
- Less than the Modified BSPP
- Somewhat less than the Modified BSPP
- Similar to the Modified BSPP
- Same as the Modified BSPP
- Somewhat greater than the Modified BSPP
- Greater than the Modified BSPP
- Much greater than the Modified BSPP

Impact conclusions for the proposed project and the comparative impacts for the alternatives are shown using these abbreviations:

— = no impact
B = beneficial impact
LS = less-than-significant impact, no mitigation required
SM or PSM = significant or potentially significant impact that can be mitigated to less than significant
SU or PSU = significant and unavoidable or potentially significant and unavoidable impact that cannot be mitigated to less than significant

Comparative discussions for each environmental topic area follow the table.

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
AIR QUALITY			
Construction-Related Impacts	SM	SM	Somewhat greater than the Modified BSPP (SM)
Reduction in Greenhouse Gases	B	B	Similar to the Modified BSPP (B)
Project Operations Impacts	SM	SM	Greater than the Modified BSPP (SM)
Reduction in Greenhouse Gases	B	B	Similar to the Modified BSPP (B)
BIOLOGICAL RESOURCES			
Impacts to Sonoran Creosote Bush Scrub and associated wildlife from project construction and operations	SM	SM	Much greater than the Modified BSPP (SM)
Impacts to Stabilized and Partially Stabilized Dunes and Mojave fringe-toed lizards along the gen-tie route from construction and operations	SM	SM	Same as the Modified BSPP (SM)
Impacts to Waters of the State/Sensitive Plant Communities from construction and operations	SM	SM	Much greater than the Modified BSPP (SM)
Impacts to special-status plants (Harwood's eriastrum, Hardwood's milk-vetch, and Abram's spurge) from project construction and operations	SM	SM	Greater than the Modified BSPP (SM)
Impacts to listed wildlife species (desert tortoise) from project construction and operations	SM	SM	Much greater than the Modified BSPP (SM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Impacts to special-status wildlife (golden eagle, western burrowing owl, American badger, desert kit fox, Couch's spadefoot toad) from project construction and operations	SM	SM	Greater than the Modified BSPP (SM)
Impacts to avian species from collisions with solar parabolic troughs or photovoltaic panels during construction and operations	PSU	PSU	Similar to the Modified BSPP (PSU)
CULTURAL RESOURCES			
Construction-Related Impacts			
Prehistoric Quarries Archaeological District (PQAD)	PSM	PSM	Somewhat greater than the Modified BSPP (PSM)
Small Prehistoric Sites	PSM	PSM	Similar to the Modified BSPP (PSM)
Historic Period Sites	PSM	PSM	Similar to the Modified BSPP (PSM)
Historic Period Sites with Structures	PSM	PSM	Similar to the Modified BSPP (PSM)
Historic Period Dump Sites	PSM	PSM	Similar to the Modified BSPP (PSM)
Historic Period Refuse Sites	–	–	–
Historic Period Roads	–	–	–
Blythe Army Air Base	–	–	–
Radio Communications Facility	–	–	–
Project Operations Impacts			

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Funds for PTNCL	SU	SU	Same as the Modified BSPP (SU)
Funds for DTCCCL	SU	SU	Same as the Modified BSPP (SU)
Discovery of Unknown Resources	PSM	PSM	Same as the Modified BSPP (PSM)
FIRE PROTECTION			
Construction-Related Impacts			
Becoming familiar with and planning for emergency responses	SM	SM	Same as the Modified BSPP (SM)
Plan reviews, inspections, and permitting	SM	SM	Somewhat greater than the Modified BSPP (SM)
Fire response	SM	SM	Same as the Modified BSPP (SM)
Hazmat spill response	SM	SM	Same as the Modified BSPP (SM)
Rescue	SM	SM	Same as the Modified BSPP (SM)
Emergency Medical Services	SM	SM	Same as the Modified BSPP (SM)
Project Operations Impacts			
Becoming familiar with and planning for emergency responses	SM	SM	Same as the Modified BSPP (SM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Plan reviews, inspections, and permitting	SM	SM	Somewhat greater than the Modified BSPP (SM)
Fire response	SM	SM	Much greater than the Modified BSPP (SM)
Hazmat spill response	SM	SM	Much greater than the Modified BSPP (SM)
Rescue	SM	SM	Same as the Modified BSPP (SM)
Emergency Medical Services	SM	SM	Same as the Modified BSPP (SM)
GEOLOGY AND PALEONTOLOGY			
Potential impacts from strong seismic shaking	PSM	PSM	Greater than the Modified BSPP (SM)
Potential impacts from corrosion and soil failure caused by liquefaction, hydrocollapse, and/or dynamic compaction	PSM	PSM	Greater than the Modified BSPP (SM)
Potential impacts on paleontological resources	SM	SM	Same as the Modified BSPP (SM)
Potential impacts on geological or mineralogical resources	—	—	—

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
HAZARDOUS MATERIALS			
Construction-Related Impacts	SM	SM	Same as the Modified BSPP (SM)
Project Operations Impacts	SM	SM	Much Greater than the Modified BSPP(SM)
LAND USE			
Cumulative loss of multiple use desert lands	SU	SU	Somewhat greater than the Modified BSPP (SU)
NOISE AND VIBRATION			
Construction-Related Impacts			
Potential to create substantial temporary or short-term noise and vibration impacts	PSM	PSM	Greater than the Modified BSPP (PSM)
Project Operations Impacts			
Potential to create substantial permanent or long-term noise and vibration impacts	LS	LS	Greater than the Modified BSPP (PSM)
PUBLIC HEALTH			
Construction-Related Impacts	LS	LS	Greater than the Modified BSPP (LS)
Project Operations Impacts	LS	LS	Greater than the Modified BSPP (PSM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
SOCIOECONOMIC RESOURCES			
Induce substantial population growth in an area, either directly or indirectly.	LS	LS	Somewhat greater than the Modified BSPP (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere.	LS	LS	Somewhat greater than the Modified BSPP (LS)
Adversely impact acceptable levels of service for police protection, schools, and parks and recreation.	LS	LS	Somewhat greater than the Modified BSPP (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees.	B	B	Greater than the Modified BSPP (B)
TRAFFIC AND TRANSPORTATION			
Construction-Related Impacts			
Sufficient construction-related parking and staging area	PSM	PSM	Similar to the Modified BSPP (PSM)
Construction-related traffic on local roadways during construction activities	PSM	PSM	Greater than the Modified BSPP (PSM)
Effects of oversized vehicles on roadways	PSM	PSM	Similar to Modified BSPP (PSM)
Construction-related traffic encroachment into public rights-of-way	PSM	PSM	Similar to the Modified BSPP (PSM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Damage to public roads, easements, and rights-of-way from construction-related traffic	PSM	PSM	Greater than the Modified BSPP (PSM)
Transportation of hazardous materials	PSM	PSM	Greater than the Modified BSPP (PSM)
Project Operations Impacts			
Aircraft operational safety from thermal plumes	—	—	Greater than the Modified BSPP (PSM)
Compliance with Riverside County requirements for avigation easements	PSM	PSM	Similar to the Modified BSPP (PSM)
Glint and glare from reflectors	PSM	PSM	Similar to the Modified BSPP (PSM)
Aircraft operational safety from transmission line poles	PSM	PSM	Similar to the Modified BSPP (PSM)
TRANSMISSION LINE SAFETY AND NUISANCE			
Potential for Non-Hazardous Electric Shocks from Generated Electric and Magnetic Fields	LS	LS	Similar to the Modified BSPP (LS)
Potential for Collision Hazard to Area Aviation	LS	LS	Similar to the Modified BSPP (LS)
Environmental Levels and Human Exposure to Generated Electric Fields	LS	LS	Similar to the Modified BSPP (LS)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Environmental levels and Human Exposure to Generated Magnetic Fields	LS	LS	Somewhat greater than the Modified BSPP (LS).
Potential For Radio-Frequency Impacts	LS	LS	Similar to the Modified BSPP (LS)
Potential for Hazardous Shocks from Direct or Indirect Contact with Line	LS	LS	Similar to the Modified BSPP (LS)
VISUAL RESOURCES			
Construction-Related Impacts			
Potential to substantially degrade the existing visual character or quality of the site and its surroundings.	SU	SU	Greater than the Modified BSPP (SU)
Potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	PSM	PSM	Somewhat greater than the Modified BSPP (PSM)
Project Operations Impacts			
Potential to substantially degrade the existing visual character or quality of the site and its surroundings.	SU	SU	Much greater than the Modified BSPP (SU)
Potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	PSM	PSM	Greater than the Modified BSPP (PSM)
WASTE MANAGEMENT			
Potential unexploded ordnance (UXO)	PSM	PSM	Similar to the Modified BSPP (PSM)
Potential for impacts on human health and the environment related to past or present soil or water contamination	PSM	PSM	Similar to the Modified BSPP (PSM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Potential for impacts on human health and the environment related to potential waste discharges	LS	LS	Much Greater than the Modified BSPP (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	LS	LS	Similar to the Modified BSPP (LS)
SOIL, SURFACE WATER, AND WATER SUPPLY			
Soil erosion by wind and water during project construction	SM	SM	Much greater than the Modified BSPP (SM)
Soil erosion by wind and water during project operations	PSM	PSM	Somewhat Less than the Modified BSPP (PSM)
Water quality impacts from contaminated storm water runoff	PSM	PSM	Greater than the Modified BSPP (SM)
Water quality impacts from storm damage	PSM	PSM	Greater than the Modified BSPP (SM)
Water quality impacts from power plant operations	PSM	PSM	Much Greater than the Modified BSPP (SM)
Water quality impacts from sanitary waste	SM	SM	Similar to the Modified BSPP (SM)
Potential impacts from on-site and off-site flooding	PSM	PSM	Less than the Modified BSPP (PSM)

Alternatives Table 2 Summary Comparison of Impacts of the No Project Alternative (Approved BSPP) to the Modified BSPP			
Environmental Effect	**Modified BSPP (Proposed)**		**No Project Alternative (Approved BSPP)**
	Single-Axis Tracking Photovoltaic System	**Fixed-Tilt Photovoltaic System**	
Potential to impede or redirect 100-year flood flows, as shown on Federal Emergency Management Agency maps	—	—	—
Potential impacts on local wells	PSM	PSM	Somewhat greater than the Modified BSPP (PSM)
Potential impacts on groundwater basin balance	PSM	PSM	Somewhat greater than the Modified BSPP (PSM)

TABLE LEGEND

Impact Conclusions

— = no impact
UNK = significance of impact is unknown
B = beneficial impact
LS = less-than-significant impact, no mitigation required
SM or PSM = significant or potentially significant impact that can be mitigated to less than significant
SU or PSU = significant and unavoidable or potentially significant and unavoidable impact that cannot be mitigated to less than significant

- Much less than the Modified BSPP
- Less than the Modified BSPP
- Somewhat less than the Modified BSPP
- Similar to the Modified BSPP
- Same as the Modified BSPP
- Somewhat greater than the Modified BSPP
- Greater than the Modified BSPP
- Much greater than the Modified BSPP

AIR QUALITY

The number and type of emitting sources during project operations with implementation of the Approved BSPP, which is the No Project Alternative for this analysis, would be greater than those of the Modified BSPP. The Approved BSPP intended to use heat transfer fluid (HTF) in the receiver tubes of the parabolic mirrors during project operations, along with many other stationary permitted sources. These would not be needed for the photovoltaic (PV) technology now planned to be use for the proposed BSPP project. When HTF leaks from project apparatus (e.g. piping, flanges, etc.), it vaporizes into small amounts of volatile organic compounds (VOCs), which are ozone precursors. Overall, due to these VOC emissions, air quality impacts for the Approved BSPP would be **greater than the Modified BSPP**. Construction-related emissions and impacts would also be **somewhat greater for the Approved BSPP than the Modified BSPP**. Operational-related emissions and impacts would also be **greater for the Approved BSPP than the Modified BSPP**. Similar to the Approved BSPP, the Modified BSPP would cause an overall cumulative reduction in GHG emissions from power plants; however, the Modified BSPP would have fewer required conditions of certification compared to the Approved BSPP project.

The Modified BSPP would not require the use of auxiliary boilers combusting natural gas to keep the HTF from freezing during colder periods. It would also not require a natural gas pipeline to be constructed to the site. Furthermore, there is less need to wash the solar PV collectors of the Modified BSPP compared to the parabolic troughs of the Approved BSPP. Also, since solar PV technology does not require more uniform ground level, there is less earthmoving required for the Modified BSPP than was required for the Approved BSPP.

Thus, the Modified BSPP would have less construction-related particulate matter emissions from both site earthwork and pipeline construction.

In addition, during operations the Modified BSPP would have less operational impacts since there would not be emissions from onsite auxiliary boilers and less frequent solar collector washing. Although the frequency of washing the solar PV modules has yet to be finalized, solar PV surface washing is expected to be needed less frequently than solar parabolic trough washing. Both of these factors lead to the conclusion that the Modified BSPP would have fewer operational impacts than the Approved BSPP.

BIOLOGICAL RESOURCES

The Blythe Solar Power Project site was previously approved for development of a concentrated solar thermal electric generating facility with four adjacent, independent, and identical solar plants of 250-megawatt (MW) nominal capacity each, for a total nominal capacity of 1,000 MW. It would have an overall disturbance area of up to approximately 7,043 acres.

The Modified BSPP would result in a reduction in footprint of 3,040. Therefore, impacts under the larger, Approved BSPP to desert tortoise (Gopherus agassizii) and sensitive

vegetation communities, which includes Sonoran creosote bush scrub, stabilized and partially stabilized dunes, as well as state waters [desert dry wash woodland, vegetated ephemeral swales constituting the creosote bush–big Galleta grass association, and unvegetated ephemeral dry wash, would all be **much greater than the Modified BSPP**.

The project would also impact special-status plant (Harwood's eriastrum, Hardwood's milk-vetch, Las Animas colubrina, and Abram's spurge) populations within the sensitive plant communities from the loss of habitat through grading. Impacts along the gen-tie would be from construction (includes construction vehicles and noise) and maintenance (vehicle traffic) of access roads. Impacts to special-status plants during construction and operations and along the gen-tie would be **greater than the Modified BSPP**.

Perimeter fencing around the project site for construction and operations will exclude the desert tortoise (state and federally threatened) and other special-status wildlife species (American badger, desert kit fox, and Couch's spadefoot toad). The ongoing disturbance, noise, and other anthropogenic activities (e.g. mowing vegetation, construction of buildings and roads) at the site may continue to degrade vegetation and habitat functions and values within the perimeter fencing. The impacts to the listed and special-status wildlife species during construction and operations and along the gen-tie would be **much greater than the Modified BSPP** because of the larger footprint of the Approved BSPP.

Direct and indirect impacts from the gen-tie route (access roads and transmission line) would impact Mojave fringe-toed lizards and their habitat (stabilized and partially stabilized desert dunes). The loss of Mojave fringe-toed lizards through vehicle traffic would be the **same as the Modified BSPP** because the gen-tie route is no different between the Approved and Modified BSPP projects.

Impacts to avian species would occur through potential collisions with project features such as solar panels, transmission lines, or other project facilities. Collisions have been documented at both parabolic trough and PV facilities; however, the basis of this adverse effect is still unclear. It is possible that birds (and bats and insects) are attracted to the site based on perception; that is, under certain conditions, panel fields (of both PV and parabolic trough technology) may resemble a body of water, and therefore serve as an attractant. This effect may be more significant with certain species, such as water birds, and may increase or decrease seasonally, such as during migration, or in conjunction with other poorly understand biological parameters. Other factors may confound wildlife perception of the site, such as polarization of light (see the **Biological Resources** section of this SA for more information).These effects may be experienced both by migratory and year-round residents of the site. While staff cannot quantify this risk; or determine the species likely to be affected, these risks are unavoidable and certain to occur.

Birds, bats, and other insects that remain on the site yearly or nearly year round, as well as migratory species attracted to the site, may be exposed to anthropogenic sources of injury or mortality at the site. This may consist of overheating, confusion, or

disorientation, during both construction and operation activities. Given the current lack of long-term, scientifically sound research data from renewable power projects, staff currently considers impacts related to collisions and other sources of onsite injury or mortality associated with construction and/or operation of the Approved Project as **similar to the Modified BSPP**. Staff considers these impacts on avian species (and bat and insect species) to be significant, particularly if state or federally listed threatened, endangered, or other special status species were impacted, or if numbers of non-listed species were frequently adversely impacted at a high rate. Impacts could remain cumulatively significant after implementation of all feasible mitigation measures.

CULTURAL RESOURCES

Energy Commission staff analyzed available cultural resources data for the originally proposed project (Approved BSPP) and concluded that the project would have significant direct impacts on 166 known archaeological and built-environment resources eligible or assumed eligible for the California Register of Historical Resources (CRHR). Due primarily to the larger footprint of the Approved BSPP, there would be greater direct impacts on individual historic resources than for the proposed Modified BSPP. The Approved BSPP would have direct impacts upon two large Prehistoric Quarries Archaeological Districts (PQAD), whereas the Modified BSPP would have direct impacts on only one of the two large PQAD resources. Therefore, the impacts upon the PQAD resources would be somewhat greater in the Approved BSPP than the Modified BSPP. Aside from the PQAD resources, the Modified BSPP would directly impact fewer resources but the mitigations required would remain the same. For the Small Prehistoric Sites, Historic Period Sites, Historic Period Sites with Structures and Historic Period Dump Sites, the Approved Project's impacts to cultural resources **would be similar to the Modified Project**.

In addition, the Approved BSPP, in conjunction with the Genesis Solar Energy Project and the Palen Solar Power Project, would have a significant cumulatively considerable impact on two staff-identified cultural landscapes, the Prehistoric Trails Network Cultural Landscape (PTNCL), encompassing region-wide prehistoric trails and the resources and destinations they connected, and the DTC/C-AMA Cultural Landscape, comprehending the archaeological remains of the U.S. Army's WWII Desert Training Center. These impacts would be the **same as the Modified BSPP**. The mitigations provided for in the conditions of certification for the Approved BSPP would be the same as in the Modified BSPP.

Impacts to historic-period built environment resources are the same for the Approved BSPP and the Modified BSPP. All built environment resources that were assumed eligible pending survey and documentation have been evaluated as required by Conditions of Certification **CUL-11**, **CUL-12** and **CUL-13** and found to be ineligible for listing as historic resources in the CRHR. Therefore, there would be no impacts to historic-period built-environment resources for either project.

There is no change to ethnographic cultural resources.

FIRE PROTECTION

The following alternative was analyzed:

- No Project Alternative would be the construction and operation of the originally licensed BSPP project using parabolic trough technology.

Note that staff finds that there would be no difference in fire protection and emergency response needs for the Modified BSPP with the two different solar PV technologies so these two options are analyzed as one.

Construction and Operations Related Impacts

Fire protection services include six areas where the Riverside County Fire Department (RCFD) would have to provide some level of services and encumber significant time and funds that would have to be mitigated:

1. Becoming familiar with and planning for emergency responses
2. Plan reviews, inspections, and permitting
3. Fire response
4. Hazmat spill response
5. Rescue
6. Emergency Medical Services (EMS)

Construction

Analysis of the No Project Alternative (Approved BSPP)

During construction, the level of service that would be provided by the RCFD for the above six service areas would be **somewhat greater for the Approved BSPP than for the Modified BSPP**. Therefore, the impacts to the fire department would be somewhat greater. However, differences exist in some of the areas of service as discussed below:

1. Familiarization: very little difference would exist between the Approved BSPP and the Modified BSPP for the construction phase. The RCFD is familiar with both PV and parabolic trough technologies.
2. Plan reviews, inspections, and permitting: A somewhat greater level of effort would be required of the RCFD for the Approved BSPP and a much lower effort would be required for the Modified BSPP.
3. Fire response: the Approved BSPP and the Modified BSPP would present the same impacts to the RCFD. An exception to this would be near the end of construction just prior to commissioning/operations when both construction activities and commissioning occurs simultaneously, the Approved BSPP would present an increased need for fire response due to the presence of very large volumes (>2,000,000 gallons) of Heat Transfer Fluid (HTF) and the presence of a natural gas pipeline.

4. Hazmat spill response: under both the Approved BSPP and the Modified BSPP, small amounts of hazardous materials (e.g., paint, solvents, gasoline, diesel fuel, motor oil, lubricants, and welding gases) would be used and thus all alternatives would present the same impacts to the RCFD. An exception to this would be near the end of construction just prior to commissioning/operations when both construction activities and commissioning occur simultaneously, the Approved BSPP would present an increased need for spill response due to the presence of very large volumes of HTF (>2,000,000 gallons) and other larger amounts of hazardous materials on-site.
5. Rescue: both the Approved BSPP and the Modified BSPP would present about the same impacts to the RCFD. The differences would be that with the Modified BSPP, no confined space work would be conducted during construction and little risk from fire would exist.
6. EMS: during the construction phase of any large-scale desert solar project, site grading, construction of buildings, construction of mirrors, and construction of power blocks would occur in a very hot desert environment thus subjecting workers to potential heat stress that would require EMS response.

Operations

Analysis of the No Project Alternative (Approved BSPP)

As with the construction phase, operations would require fire protection services in six areas where the RCFD would have to provide some level of services and encumber significant time and funds that would have to be mitigated:

1. Familiarization: very little difference would exist between the Approved BSPP and the Modified BSPP during the operations. The RCFD is familiar with both PV and parabolic trough technologies.
2. Plan reviews, inspections, and permitting: A somewhat greater level of effort would be required of the RCFD for the Approved BSPP and a much lower effort would be required for the Modified BSPP.
3. Fire response: the Approved BSPP would present an increased need for fire response due to the presence of very large volumes (>2,000,000 gallons) of Heat Transfer Fluid (HTF) and the presence of a natural gas pipeline. The Approved BSPP would have a both a direct and cumulative impact on the RCFD as an HTF or natural gas fire would require the need of many fire fighters and engines and thus cause a draw-down of emergency response resources in the area.
4. Hazmat spill response: a solar power plant using parabolic trough technology uses very large amounts (more than 2,000,000 gallons) of HTF, while the solar power tower technology does not. HTF is a highly combustible mixture of two hydrocarbons that is also highly flammable at elevated operating temperatures and pressures. Solar parabolic trough technology also requires use of large amounts of other hazardous materials such as acids and caustics, and the originally licensed project would also require storage of large amounts of propane, a highly flammable gas that poses a significant risk of explosion and

off-site consequences. Therefore, implementation of the Approved BSPP would result in the operation of a solar power plant that would involve the transportation, storage, and use of very large amounts of hazardous materials. The risk of an accidental release or spill would be **much greater** for the Approved BSPP using parabolic trough technology than the Modified BSPP using PV technology and thus the need for a greater response from the RCFD would exist.

5. Rescue: both the Approved BSPP and the Modified BSPP would present about the same impacts to the RCFD.
6. EMS: both the Approved BSPP and the Modified BSPP would present about the same impacts to the RCFD. Although the Approved BSPP presents a far more complex industrial environment and hence to risk of worker accidents requiring EMS response is high, solar photovoltaic panels present a unique safety hazard in that individual PV panels will continue to be energized and generating electricity even when disconnected or covered unless the covering is composed of 100 percent light-blocking material. And, even when disconnected from the grid and on a cloudy day they remain energized. It is also estimated that at night, the light from facility light poles is powerful enough to re-energize a PV panel to a level that presents a shock hazard. Therefore, even after disconnecting from the grid, PV panels are capable of discharging current to an object or a person. Standard OSHA regulations requiring "Lockout/Tagout" of electrical systems are not sufficient to eliminate the threat posed by a PV panel or multiple panels to on-site workers and thus impacts rescue and EMS response. And besides presenting a threat to workers, emergency response personal engaged in rescue or fire suppression are also at risk of coming into contact with electrified PV panels. This unique aspect of EMS and rescue response is not present with the other alternatives because once a circuit is cut (or locked-out) the current stops and workers are protected.

Even with this added hazard to workers, staff concludes that the Approved BSPP's impacts to the RCFD would be **greater than the impacts of the Modified BSPP**.

GEOLOGY AND PALEONTOLOGY

PROPOSED MODIFIED BSPP

Significant and Potentially Significant Impacts:

- Paleontological resources

Potentially Significant Impacts Requiring Mitigation:

- Strong seismic shaking
- Hydro-collapse
- Dynamic compaction

- Corrosion

Impacts that Do Not Apply to the Modified BSPP:

- Impacts to geological or mineralogical resources
- Liquefaction
- Land subsidence
- Landslides
- Tsunamis and Seiches

No Project Alternative (Approved BSPP)

Significant paleontological resources have been documented within Pleistocene sediments in the site vicinity. Similar deposits of high paleontologic sensitivity are likely to be present at the site beneath a thin veneer of recent (Holocene) alluvium of low paleontologic sensitivity at an undetermined but potentially shallow depth.

Construction of the Approved BSPP (i.e., the No Project Alternative) would require substantial site grading and excavation. These activities would include site leveling, establishment of drainage systems and structures, excavation of trenches for pipelines and utilities, excavations for ancillary structure foundations, and drilled shaft foundations for support of parabolic trough mirror sections. Installation of a parabolic trough system would involve construction of parallel rows of mirrors suspended on level, linear lattice structures supported by drilled pier foundations. Using conventional excavation methods, fossils encountered during construction would have been uncovered, discovered, collected and recorded, thereby contributing to the scientific understanding of the paleoclimate and paleobiology of the area.

The Modified BSPP would use a different construction method. The Modified BSPP would involve installation of approximately 213,000 individual posts to support photovoltaic panels. Both single-axis tracking and fixed tilt mounting systems are proposed to be supported by steel posts approximately 6 inches in diameter, spaced approximately 20 feet apart and driven approximately 13 feet into the ground. These posts will be driven into the ground either by hydraulically ramming, screwing in or drilling and grouting. Any and all of these methods would provide negligible opportunities to observe, identify, recover or collect encountered fossils beneath the site.

Given the construction method and number of post foundations proposed for the Modified BSPP, staff concludes in the **Geology and Paleontology** section of this staff assessment that, unmitigated, the proposed project would result in significant impact to paleontological resources. With the implementation of the recommended paleontological resources characterization of the subsurface in the solar field area, the recommended characterization will allow for the refinement of various mitigation options including fossil recovery and data collection, avoidance, and modifications of

post insertion to be implemented as appropriate to ensure significant impacts are mitigated. Therefore, staff concludes that although the site would be significantly modified by the No Project Alternative, with the construction of the Approved BSPP, the overall impacts on paleontological resources from construction of the approved project would be **the same as the proposed Modified BSPP**. Under the No Project Alternative, implementation of appropriate mitigation measures would reduce potentially significant impacts on paleontological resources to less than significant.

The parabolic trough system that would be installed under the Approved BSPP would require construction of structures to house steam generator turbines and steam cooling apparatus that would not be required by the Modified BSPP. With the elimination of turbine structures and cooling apparatus for the Modified BSPP there would be a decrease in susceptibility to impacts from strong ground-shaking due to seismic activity compared to the approved project.

The overall potential for impacts to occur from all identified geologic hazards for the Approved BSPP would be **much greater than the Modified BSPP**. Conditions of certification to reduce the risk of damage to the facility from identified geologic hazards would remain the same regardless of the project technology.

The Modified BSPP area is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site and could potentially be a source of salable resources; however, such materials are present throughout the regional area such that the Approved BSPP would not cause a significant impact on the availability of such resources. There are no other known viable geologic or mineralogic resources at the project site. The overall impacts on geologic or mineralogic resources from construction and operation of the Approved BSPP would be the **same as the proposed Modified BSPP**, and **no impact** would occur.

HAZARDOUS MATERIALS MANAGEMENT

Solar PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and water treatment systems generally associated with traditional or solar trough power plants. As a result, the types, amounts, and concentrations of hazardous materials normally associated with solar PV power plant facilities would be much lower than the previously approved solar parabolic trough technology.

Only small quantities of a limited number of hazardous materials would be used for a solar PV project. The possible need to reconfigure the proposed site for installation of either fixed-tilt or tracking solar PV modules could change the site layout, including the dirt roads that would be constructed for access and maintenance of solar PV panels, but this would not impact on hazardous materials management.

Construction-Related Impacts of the No Project Alternative

Hazardous materials use during construction activities would remain about the same for both the permitted solar trough power plant and the Modified BSPP. During the construction phase of any large-scale desert solar project that involves site preparation and/or structure construction, hazardous materials that would be used include paint, solvents, gasoline, diesel fuel, motor oil, lubricants, and welding gases. No acutely toxic hazardous materials will be used on project during construction and none of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, their environmental mobility, and mitigation. Any impact of spills or other releases of these materials will be limited to the site because of the small quantities involved, their infrequent use (and therefore reduced chances of release), and/or the temporary containment berms used by construction contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and represent a less-than-significant risk of off-site impacts even in larger quantities.

No Project Alternative (Approved BSPP)

The BSPP site was previously approved for development of a parabolic trough project with an overall disturbance of up to 10 square miles. The risks associated with hazardous material use with solar parabolic trough technology require implementation of thorough and effective mitigation that can reduce the inherent risks to insignificant levels. Insofar as hazardous materials management is concerned, a solar power plant using parabolic trough technology typically uses large amounts (>2,000,000 gallons) of Heat Transfer Fluid (HTF), while solar PV technology does not involve the use of HTF. HTF is a highly combustible mixture of two hydrocarbons that is also highly flammable at elevated operating temperatures and pressures. Solar trough technology also uses large amounts of other hazardous materials such as acids and caustics and the originally licensed project would also use natural gas in the HTF heater, thus requiring a natural gas pipeline. No natural gas or gas pipeline would be present at the proposed PV facility. Natural gas is highly flammable gas that poses a significant risk of explosion and off-site consequences. Therefore, the No Project alternative would result in the construction and operation of a solar power plant that would involve the transportation, storage, and use of very large amounts of hazardous materials. The risk of an accidental release or spill would be significantly less with a solar PV as compared to parabolic trough technology.

During operation of a solar PV facility, hazardous chemicals such as cleaning agents, water treatment chemicals, welding gasses, oils, activated carbon, and other various chemicals would be used and stored in relatively small amounts and represent limited off-site hazards because of their small quantities, low volatility, and/or low toxicity. At this site, several factors would influence staff's conclusion that the risk of off-site impacts of a release of hazardous materials would be extremely low:

1. Hazardous materials would be delivered and stored in chemical "totes" which are designed to meet strict safety standards and thus have an excellent safety record of structural integrity and minimal spills.

2. Totes are self-contained units that do not involve the transfer of the hazardous material from a tanker truck to a large storage tank. They are delivered already containing the hazardous material.
3. The chance that more than one would fail at the same time is extremely remote.
4. The maximum volume of each tote is likely to be 400 gallons or less and each tote would be required to be placed within a secondary spill containment area to limit the spread of any spilled materials, thus limiting the size of the pool of material available for evaporation and dispersion.
5. Previous modeling at other power plants by staff of far greater amounts of various hazardous materials, including ammonia and sulfuric acid, spilling onto a road show very limited dispersion and the distance to a level of less than a significant airborne concentration is usually only a short distance. A spill into a containment area would have even a lesser dispersion distance.
6. The nearest off-site public receptors are a significant distance from the project fence line and thus no matter where the small quantities of hazardous materials were placed on a solar PV site, no off-site consequences would be expected if a spill were to occur.

Therefore, staff concludes that impacts related to hazardous materials use under the Approved BSPP would be **greater than those of the Modified BSPP**.

LAND USE

No-Project Alternative (Approved BSPP)

The proposed project site is located on a 4,070-acre leased portion of land from the Bureau of Land Management (BLM) and is located in the Colorado Desert in eastern Riverside County. The surrounding area consists of undeveloped desert land with small rural communities in the vicinity with a mixture of public and private lands. There are federal wilderness areas located on mountainous land to the west, northeast, south and southwest of the project site. Additional land uses in the study area include Open-Space-Rural, Agricultural and Public Facility (Solar Millennium 2009a pg. 5.17-4). The site would be located in eastern Riverside County approximately two miles north of U.S. Interstate 10 (I-10), about eight miles west of the city of Blythe.

The 2010 Commission Decision approved the site for development of a 1000-MW parabolic trough project with an overall disturbance area of up to approximately 7,043 acres. As noted in the **Land Use** analysis of this staff assessment, the Modified BSPP would be located entirely on public land administered by BLM and within the federal California Desert Conservation Area (CDCA) Plan area. The project area is in the "Multiple-Use Class M" land use category, which allows construction and operation of electrical generation plants.

The 2010 Commission Final Decision concluded that the contribution of the BSPP, in combination with the other renewable energy projects proposed in the region, to loss of

desert lands, is cumulatively significant. Lands formerly available for multiple uses such as habitat, open space, grazing, and recreation would no longer be available for those uses once a power plant is constructed. While the Modified BSPP would reduce the project footprint from 7,043 acres to 4,070 acres, the Modified BSPP would also contribute to a cumulative loss of lands available for multiple use in the Colorado Desert in eastern Riverside County, which also would be significant and immitigable.

NOISE AND VIBRATION

The No Project Alternative (Approved BSPP) would use solar parabolic trough technology. The Modified BSPP would use photovoltaic technology. PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the heat exchangers, steam turbine generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional solar thermal power generation plant, such as the Approved BSPP. Due to this and to the larger project foot print for the Approved BSPP, noise and vibration impacts for the Approved BSPP would be **greater than** those of **the Modified BSPP**.

A. Potential to create substantial temporary or short-term noise and vibration impacts

Construction of an industrial facility such as a power plant usually creates temporary or short-term noise impacts. For the Approved BSPP, construction-related noise and vibration impacts would be **greater than those of the Modified BSPP** due to substantially more grading, the construction of the concrete batch plant proposed under the Approved BSPP, and the closer proximity between construction of the larger project and the project's noise-sensitive receptor (a residence southwest of the project site, labeled LT in the **Noise and Vibration** section of this staff assessment).

B. Potential to create substantial temporary or short-term noise and vibration impacts

Operation of an industrial facility such as a power plant can create permanent or long-term noise impacts. The primary noise sources of the Approved BSPP are the power blocks, where the steam turbine generators, air-cooled condensers, and various pumps and fans would be located. The modified project, however, would not employ any of these noise sources. The only notable noise sources of a PV power plant are inverters and electric transformers. But, the overall operational noise levels resulting from sources under the Approved BSPP would be **greater than those from the Modified BSPP**.

The fixed-tilt PV system would be marginally quieter than the single axis tracking system due to lack of tracking motors required for the tracking system, but the overall impact resulting from both systems would be the same at the project's noise-sensitive receptor.

PUBLIC HEALTH

The BSPP project owner is considering either a single-axis tracking or fixed-tilt solar PV system, or a combination of both. For public health issues, both of the single-axis

tracking photovoltaic system and fixed-tilt photovoltaic system alternatives are similar enough that they can be considered the same. References below to “Modified BSPP” apply equally to both systems.

Construction

Compared to the Approved BSPP, toxic air emissions (such as diesel exhaust) and fugitive duct during the construction period of the Modified BSPP would be less due to the following factors (NEBS 2013a):

- The project footprint of the Approved BSPP (6,831 acres) is more than the footprint of the Modified BSPP (4,070 acres);
- The length of the time needed for construction of the Approved BSPP is 69 months, more than for the Modified BSPP (48 months);
- Since solar PV panels do not require a nearly flat surface, substantially less grading of the Modified BSPP footprint would be expected;
- The cut and fill amount of the Approved BSPP is approximately 8.3 million cubic yards, much more than the amount for the Modified BSPP (approximately 0.9 million cubic yards);
- The Modified BSPP would not utilize an on-site concrete batch plant or fuel depot proposed in the Approved BSPP; and
- A natural gas pipeline would not be constructed for the Modified BSPP.

Therefore, construction-related emissions and impacts for the Approved BSPP would be **greater than the Modified BSPP**. No significant impacts would occur, and no conditions of certification would be required for either the Approved BSPP or the Modified BSPP.

Operation

The operational and maintenance emissions associated with the Modified BSPP are less than those of the Approved BSPP due to the following (NEBS 2013a):

- Heat transfer fluid (HTF) will no longer be used in the Modified BSPP, so the extensive piping throughout the solar field and the ullage systems will not be installed;
- The auxiliary boilers which burn natural gas and are used for freeze protection of the HTF and cold startup of the steam generators will no longer be needed for the Modified BSPP;
- Emergency generators and fire water pump engines which burn diesel fuel are no longer planned in the power block area of the Modified BSPP; and
- Solar PV panels used in the Modified BSPP require much less frequent washing (e.g., at most quarterly) rather than the intensive weekly mirror washing program.

Since the solar trough system in the Approved BSPP would be replaced by solar PV in the Modified BSPP, the auxiliary boilers, cooling towers, emergency generator and fire pump engines would no longer be needed. Therefore, using solar PV would not cause combustion-related toxic air emissions, and most of the TACs emitted from the Approved BSPP would no longer be an issue except for diesel particulate matter (DPM). Moreover, due to the infrequent washings of solar PV panels, DPM emissions from the use of mobile sources (i.e. vehicle systems for mirror washing equipment and site support vehicles) would be substantially less compared to the Approved BSPP.

Some high-performance solar PV cells are known to contain small amounts of cadmium, selenium, and arsenic, and these substances could be emitted if any solar cells were broken. However, even with the possibility of solar PV panel cell breakage, staff does not consider any such emission hazards to be significant for public health and no conditions of certification would be required. Please refer to the **Waste Management** section for the delivery, storage, handling, and disposal of solar PV-related waste.

In conclusion, the operation-related emissions and impacts for the Approved BSPP would be **greater than the Modified BSPP**. No significant impacts would occur, and no conditions of certification would be required for either the Approved BSPP or the Modified BSPP.

SOCIOECONOMIC RESOURCES

Compared to the Modified BSPP, the No Project Alternative (Approved BSPP) requires a larger construction workforce, a larger operations workforce, and a longer construction period.

Staff concluded that construction and operation of the Modified BSPP would not cause a significant adverse direct or indirect impact or contribute to a cumulative socioeconomic impact on the area's housing, schools, law enforcement services, or parks and recreation. Staff also concluded that the Modified BSPP would not induce a substantial population growth or displacement of population, or induce substantial increases in demand for housing, parks, or law enforcement services. With the increase in workforce and construction schedule, impacts associated with the Approved BSPP would be **somewhat greater than the Modified BSPP**.

Construction and project operation of the Approved BSPP would generate employment income and associated state and local sales taxes somewhat greater than what would be generated for the Modified BSPP. Like the Modified BSPP, the Approved BSPP project site is on federal land; therefore, Section 17620 of the Education Code (school impact fees) would not apply and no property taxes would be paid. The economic benefits of the Approved BSPP would be **somewhat greater than the Modified BSPP**.

TRAFFIC AND TRANSPORTATION

Solar PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional power

plant. In addition, solar PV systems do not rely on reflecting sunlight to create heat but are designed for capturing light to directly generate electricity. As a result, characteristic impacts on traffic and transportation, specifically to airport and aircraft operations, caused by the presence of power plant facilities for the Approved BSPP would be **greater than the Modified BSPP**.

Construction of the Approved BSPP would result in increased traffic on local and regional roadways compared to existing conditions; however, construction- and operation-related traffic volume for the Approved BSPP would be **greater than the Modified BSPP**. The level of service (LOS) for all roadway segments and intersections in the study area would continue to operate at LOS A or B under the Modified BSPP. Similarly, the increased traffic volumes would result in **greater** potential damage to public roads, easements, and rights-of-way from construction-related traffic as compared to the Modified BSPP. The amount and types of hazardous materials transported for the Approved BSPP would also be **greater than the Modified BSPP**.

The Modified BSPP would continue to transport several pieces of equipment (e.g., main transformers) that exceed roadway load or size limits to the BSPP site via I-10 during construction. The equipment would be transported using multi-axle trucks. The project owner of the Modified BSPP would also need to obtain special ministerial permits from Caltrans to move oversized or overweight materials and ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary. Transportation of heavy, oversized equipment for the Approved BSPP would result in potential impacts that would be **similar to the Modified BSPP**.

Lastly, the Modified BSPP would continue to use the previously approved route for the transmission line. Potential impacts related to pole heights located within the Blythe Airport influence areas for the Approved BSPP would be the **same as the Modified BSPP**.

TRANSMISSION LINE SAFETY AND NUISANCE

The generated power would be transmitted from the Approved BSPP and the Modified BSPP projects to SCE's power grid using the same 230-kV power line designed to maintain the field and non-field impacts below levels of potential significance. Since the line voltage would remain the same, the electric field impacts (that were discussed in staff's testimony in terms of non-hazardous shocks, radio-frequency impacts, and audible noise) would remain the same for both projects. Since the generated power would be less for the Modified BSPP than for the Approved BSPP, the magnetic fields (which depend on current levels) would be **less for the Modified BSPP**. Both would remain as expected for SCE lines of the same current-carrying capacity (as presently required by the CPUC).

The general dimension and route for the line for both projects would remain the same as necessary to minimize the line's collision hazard to area aviation.

VISUAL RESOURCES

A. Potential to substantially degrade the existing visual character or quality of the site and its surroundings?

Construction–Related Impacts

Construction of the Modified BSPP would cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur on the Modified BSPP site and along the transmission line route. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, construction of the actual facilities, and site cleanup and restoration covering 4,070 acres. Construction activities would be visible from I-10, Blythe Airport, Black Creek Road nearby BLM recreational access roads, and McCoy Mountains.

During construction, onsite grading and vehicle use of the access road to the project site would generate large dust clouds that would be aesthetically unpleasing if not controlled properly; refer to the **Air Quality** section of this document for dust control mitigation.

Areas of residual disturbance to project facilities after construction would require restoration. Proper implementation of Condition of Certification **VIS-2** would ensure that the visual impacts of residual disturbed areas associated with project construction remain less than significant.

The visual disturbance created by the Modified BSPP as it takes shape in the landscape from the key observation points would strongly attract visual attention. Attention would be drawn by strong contrast in form, line, color, and texture. The visual absorption capability of the landscape is considered low to moderate. Construction and related activities on the project site would create a significant visual impact from several KOPs.

The construction–related impacts potential to substantially degrade the existing visual character or quality of the site and its surroundings for the Approved BSPP would be **greater than the Modified BSPP**.

Operation Impacts

The Modified BSPP would be located in an undeveloped portion of the Colorado Desert on the Palo Verde Mesa. Overall, from each of the Approved BSPP's selected KOPs the view consistently contains a generally broad, open and predominantly undeveloped landscape with grasses and shrubs. Few built elements are present. More specifically, the region's terrestrial habitats include creosote bush scrub; mixed scrub, including yucca and cholla cactus; desert saltbush; sandy soil grasslands. Higher elevations are dominated by pinyon pine and California juniper, with areas of manzanita and Coulter pine.

The No Project Alternative (Approved BSPP) would use solar thermal technology, and the Modified BSPP would use PV technology. PV systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional solar thermal power generation plant, such as that of the Approved BSPP. The Modified BSPP's observable PV technology items include inverters, solar panels, and an office and maintenance building. The list below includes Approved BSPP items that would have been observed had it been built with solar thermal technology under the Approved BSPP but now would be eliminated or reduced with the switch to photovoltaic (PV) technology under the Modified BSPP:

- Four power blocks each having a steam turbine, auxiliary boiler, air-cooled condenser, and other integral accessory equipment and structures, and an evaporation pond have been eliminated.
- The HelioTrough energy collection systems and associated HTF piping systems have been eliminated and replaced with PV panels configured for either horizontal tracking or fixed tilt operations.
- A reduction in the height of solar collectors from 24 feet to 9 feet.
- The Land Treatment Units for heat transfer fluid (HTF) have been eliminated.
- The number of evaporation ponds has been reduced from eight ponds to two.
- The large drainage structures surrounding the site have been eliminated; smaller drainage features may be required.
- The substation has been replaced by a switchyard.
- The assembly hall has been eliminated.
- The natural gas line has been eliminated.

The total acreage for the BSPP footprint is being reduced from 7,025 acres to 4,070 acres.

The use of PV technology would reduce the public visibility of the project as licensed notably by eliminating four power blocks and integral accessory equipment/structures, eliminating six evaporation ponds, a reduction in the height of solar collectors from 24 feet tall to 9 feet (approximately 17 feet tall if it includes a tracking system), and a reduction in the level of glint and glare being emitted by the project. The Modified BSPP when compared to the visual impacts identified for the approved project would be substantially less degrading to the existing visual character or quality of the project site and surroundings.

The Modified BSPP would introduce structures into the foreground to background views from BLM recreational access roads (KOPs 2 through 5), Interstate 10 (KOPs 6 and 7), and nearby residences off of Mesa Drive, south of I-10 and Blythe Airport.

The visual disturbance of the Modified BSPP on 4,070 acres in the landscape from the key observation points would strongly attract visual attention. Attention would be drawn by its strong contrast in form, line, color, or texture, luminance in the landscape.

The visual absorption capability of the landscape is considered low to moderate. "Visual absorption may be defined as the physical capacity of a landscape to absorb proposed development or management activities and still maintain its inherent visual character and quality. Two of the most important factors affecting the absorption capability of a landscape are: 1) the degree of visual penetration, i.e., the distance into the landscape you can see from a vantage point and 2) the complexity of the landscape. The degree of visual penetration is affected both by vegetation and topography."[1]

The resulting visual change would be moderate-to-high when viewed from five of the seven KOPs, resulting in a substantial degrading of the existing visual character or quality of the site and its surroundings.

The potential to substantially degrade the existing visual character or quality of the site and its surroundings for the Approved BSPP at operation would be **much greater than the Modified BSPP**.

The Energy Commission found that the Approved BSPP would result in a significant and unmitigable visual impact to scenic views from KOPs 2, 3, 4, 5 and 7 (CEC2010e).

B. Potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Modified BSPP, without adequate lighting and glare control, has the potential to create a new source of substantial sky glow, light trespass and glare that would adversely affect day or nighttime views in the area. Sky glow, light trespass and glare are difficult to eliminate, but they can be minimized through good design practices. In many cases, all that is required is the proper placement of poles, selection of luminaire optics and shielding accessories.

Construction-Related Impacts

Condition of Certification **VIS-3** requires lighting to be directed downward or toward the area to be illuminated on site; shielded from public view to the extent feasible; and (to the level consistent with operational safety and security) minimize the time that lights are on to when site areas are occupied through the use of switches, sensors, and timers. With the effective implementation of Condition of Certification **VIS-3,** the Modified BSPP's new source of substantial light to nighttime views will be less than significant.

[1] W. C. Yeomans. A Proposed Biophysical Approach to Visual Absorption Capability (VAC). General Technical Report PSW-GTR-35. Berkeley, CA. Pacific Southwest Forest and Range Experimental Station. USDA Forest Service, Berkeley, Calif., 1979, pp. 172-181.

With the Approved BSPP, the potential for construction–related impacts to create a new source of substantial light or glare that would adversely affect day or nighttime views in the area of the project site would be **somewhat greater than the Modified BSPP**, and would be reduced to less than significant with effective implementation of mitigation measures, but because the overall larger size of the Approved BSPP would create a larger scale of construction activities, it would create greater lighting impacts.

Operation Impacts

The Modified BSPP, without adequate lighting and glare control, has the potential to create a new source of substantial sky glow, light trespass and glare that would adversely affect day or nighttime views in the area. Sky glow, light trespass and glare are difficult to eliminate, but they can be minimized through good design practices. In many cases, all that is required is the proper placement of poles, selection of luminaire optics and shielding accessories.

Reflection from the surface of an object becomes undesirable if it accidentally or improperly travels offsite. *Reflectivity*[2] from the surface of an object depends on the intensity of the radiation (beam of light) striking it, the age and type of material used, its location, position and gradient, the particular time of day and year, and the position of the sun.[3] Upon a surface, the amount of radiation is typically described as that interacting with the surface in one or more of three ways: it will be absorbed into the material, transmitted through the material, or reflected off the material. Reflectivity from direct sunlight is predictable and most problems occur during the mornings and evenings when the sun is close to the horizon.

Direct normal irradiance (DNI) is the amount of solar irradiance striking a surface perpendicular to the sun's rays. The DNI provides the starting "strength" of the solar glare source, which can then be reduced by the reflectance of the PV module, mirror or receiver. The specular reflectance of PV glass can be as low 1 to 2 percent at near normal incidence angles, while the specular reflectance of mirrors can be greater than 90 percent. At large incidence angles (greater than 60 percent) the reflectance of PV glass can be 20 percent or more even with texturing and antiglare coatings.

Reflectivity from structures and equipment is anticipated to be limited with the applicant's effective use of non-glare and non-reflective materials, surface treatments, and normal operating alignment of the PV panels with the sun.

Condition of Certification **VIS-3** requires lighting to be directed downward or toward the area to be illuminated on site; shielded from public view to the extent feasible; and (to the level consistent with operational safety and security) minimize the time that lights are on to when site areas are occupied through the use of switches, sensors, and

[2] Reflectivity "does not create its own light. It borrows light from another source. The borrowed light waves strike an object and "bounce" from it" ("Reflectivity," **3M** Traffic Safety Systems Division, 2004).
[3] "Reflectivity From Existing Building Surfaces," BlueScope Steel, 2007.

timers. The Modified BSPP's new source of substantial light to nighttime views will be less than significant with the effective implementation of Condition of Certification **VIS-3**. Areas of residual disturbance to project facilities after construction would require restoration. Proper implementation of Condition of Certification **VIS-2** would ensure that the visual impacts of residual disturbed areas associated with project construction remain less than significant.

The Modified BSPP will not affect the visual resources conditions of certification in the 2010 Decision for the Approved BSPP, or require new conditions of certification. Lighting and glare related impacts created by the Modified BSPP would be less than significant with implementation of Conditions of Certification **VIS-1**, **VIS-3** and **VIS-4**.

The potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area for the Approved BSPP at operation would be **greater than the Modified BSPP**.

WASTE MANAGEMENT

MODIFIED BLYTHE SOLAR POWER PROJECT

Significant and Potentially Significant Impacts

No immitigable impacts were identified by staff under either the Modified BSPP single axis or fixed tilt photovoltaic (PV) designs. The following significant impacts can be mitigated to less than significant:

- The potential for unexploded ordnance (UXO) at the Modified BSPP site would be mitigated by an Identification, Training, and Reporting Plan, which would include site worker training and procedures for UXO investigation, removal, and disposal; and,
- Human health and the environment would be protected from Recognized Environmental Conditions (RECs) in connection with historical or current Modified BSPP site operations by compliance with existing Condition of Certification **WASTE-3**.

Less-Than-Significant Impacts Requiring No Mitigation

The following impacts are less than significant:

- Material/waste generated during Modified BSPP construction and operation would be managed in an environmentally safe manner, i.e. reduction, recycling, or disposal; and,
- Disposal or diversion of project materials would not result in significant adverse impacts to existing waste disposal or diversion facilities.

No Project Alternative

If the Modified BSPP project were not approved, the No Project Alternative would be the construction of the already approved solar thermal project. Based on current estimates

provided by the BSPP project owner, disposal of non-hazardous and hazardous waste generated by the Modified BSPP project would be **similar** to the originally licensed project (i.e., the No Project Alternative), except for disposal of heat transfer fluid (HTF) impacted soil, and would not adversely impact either Class III or Class I landfill capacity. The no-project alternative, however, would require the use of HTF, which must be disposed of as a hazardous waste.

The Modified BSPP would use either silicon or cadmium telluride (CdTe) PV modules. Broken or damaged silicon PV modules are not considered hazardous and would be recycled or disposed of at a Class III landfill. Broken or damaged CdTe PV modules would likely be transported to the manufacturer for recycling as universal waste and not be considered hazardous waste requiring landfill disposal.

Potential impacts relating to soil and water contamination and the potential presence of UXO would be **similar to the Modified BSPP**. A UXO Identification, Training, and Reporting Plan would still be required, which would include site worker training and procedures for UXO investigation, removal, and disposal. RECs identified in connection with historical uses or current site operations would be reported and mitigated as necessary, as required by existing Condition of Certification **WASTE-3**.

SOIL, SURFACE WATER, AND WATER SUPPLY

Solar PV technology systems do not use steam generators because receiver units directly generate electricity and thus do not require the steam boilers, generators, steam condensers, and/or auxiliary heat rejection equipment generally associated with a traditional power plant. As a result, characteristic impacts on water quality caused by the presence of power plant facilities for the Approved BSPP (the No Project alternative for this analysis) would be **much greater than the Modified BSPP**, namely the disposal of industrial wastewater and the risk of storm water exposure to industrial chemicals. Domestic sanitary waste would still need a septic system for proper disposal, and impacts related to sanitary waste for the Approved BSPP would be **similar to the Modified BSPP**.

As discussed under “Waste Management,” depending on the PV module technology, use of PV panels could cause the release of CdTe waste if panels were damaged. Research shows that CdTe can be hazardous if ingested. However, research also shows that CdTe is stable and that the potential for emission into the air and water and also leaching into the soil is low. The No-Project alternative would use a heat transfer fluid (HTF) that is hazardous and highly flammable. The likelihood of accidental release of this fluid is higher than that for CdTe and the amounts released could be much larger and the risk to the environment would be greater than a release of CdTe. The inadvertent release of hazardous waste during a large storm event and the potential for water quality impacts from storm damage for the Approved BSPP would therefore be **greater than the Modified BSPP**.

The parabolic trough technology employed by the Approved BSPP requires very flat terrain because the piping interconnecting the troughs has a very low tolerance for

change in slope. The parabolic troughs need to be on less than 2 percent slope, and preferably less than 1 percent. The additional amount of total soil disturbance would significantly increase due to the need to level the site for installation of parabolic troughs. No specific slope is required for the PV panels. Natural terrain would be largely preserved, unless a spot has a slope that is too steep to match with the adjacent panel posts, in which case the slope in that particular area would be reworked. Amounts of earthwork would not be known until the final selection of the PV technology has been made when the number and location of the PV panels would be determined. Therefore, the amount of earthwork required for the Modified BSPP would be substantially reduced compared to the Approved BSPP.

As a result, impacts related to soil erosion during construction for the Approved BSPP would be **much greater than the Modified BSPP**.

The need for flat terrain results in very different approaches to storm water management between the two technologies. For the No Project alternative, large channels would have been constructed within the project borders to divert off-site flows away from the solar fields. These channels would help protect the site from off-site flows contributing to on-site flooding. Because the Modified BSPP would allow existing on-site flooding to continue, impacts from on-site flooding of the Approved BSPP would be **less than the Modified BSPP**. However, potential impacts on these diversion channels from storm damage would be **greater than the Modified BSPP** because flows from multiple existing ephemeral channels would combine, which would increase discharge rates and runoff volumes. Impacts from 100-year flood flows (as shown on the FEMA maps) do not apply because the published maps show that the 100-year flood plain is not present at or near the proposed site.

Both the Approved BSPP and the Modified BSPP would utilize soil stabilizers within the solar fields to reduce the amount of dust deposited on the solar collectors. In addition, the flat slopes and grading would prevent on-site runoff from concentrating, thereby resulting in shallow sheet flow which minimizes the potential for surface erosion. Therefore, despite the fact that many more acres of land would be graded and leveled for the Approved BSPP than for the Modified BSPP, impacts related to soil erosion during operations of the Approved BSPP would likely be **somewhat less than the Modified BSPP**.

Because of the decrease in frequency for washing of PV panels compared to what would be required to maintain the solar trough, the Modified BSPP would create less dust overall from washer vehicles driving on the dirt roads. Impacts related to soil erosion during project operations of the Approved BSPP would be **greater than the Modified BSPP**. Also, parabolic trough technology employs a steam cycle while PV technology (under the Modified BSPP) does not. Steam cycle operation requires much more water than PV technology which requires relatively minor amounts of water mainly for solar panel washing. Thus operational needs for water of the Approved BSPP would be **much greater than for the Modified BSPP** (600 AFY vs. 40 AFY). Also, construction of the Approved BSPP would have required much more water than the

Modified BSPP (4,100 AF vs. 1,200 AF). This is due to the significant amount of earthwork during construction of the Approved BSPP. Despite the fact that the Approved BSPP would use at most ten times the amount of water used by the Modified BSPP over the life of the project (22,100 AF vs. 2,400 AF), the difference is a small fraction of the 5,000,000 AF storage capacity of the Palo Verde Mesa Groundwater Basin (PVMGB) where the water would be pumped from. Therefore, potential impacts from the Approved BSPP on the PVMGB and local well owners would be **somewhat greater than the Modified BSPP**.

SUMMARY CONCLUSIONS FOR THE NO PROJECT ALTERNATIVE (APPROVED BSPP)

For many environmental resources, comparative impacts under the Approved BSPP are described as, "**somewhat greater than**," "**greater than**," or "**much greater than**" the Modified BSPP; however, staff considers the severity of the impacts to these resources under *both* projects to be either **less than significant (LS)**, **significant but can be mitigated to less than significant (SM),** with implementation of appropriate mitigation measures, or **potentially significant but can be mitigated to less than significant (PSM)**, with implementation of appropriate mitigation measures. The scale of the impacts under the Approved BSPP would be **greater than** those for the Modified BSPP, due to the larger project footprint of the Approved BSPP; however, for most environmental resource areas, the severity of the impacts does not change under the Modified BSPP. For Visual Resources, staff concludes that the potential to substantially degrade the existing visual character or quality of the site and its surroundings, which is a construction-related and operation impact to these resources, would be **significant and unavoidable and cannot be mitigated (SU)** for both the Approved BSPP and Modified BSPP. And for Land Use, the cumulative loss of multiple-use desert lands also would be **significant and unavoidable and cannot be mitigated (SU)** for both the Approved BSPP and Modified BSPP.

For some of the environmental resource areas, the severity of impacts created by the Approved BSPP is lessened under the Modified BSPP. For Geology and Paleontology, Noise and Vibration, Public Health, Waste Management, and Soils, Surface Water and Water Supply, the comparative impacts under the Approved BSPP are described as "**somewhat greater than**," "**greater than**," or "**much greater than**" the Modified BSPP; however, staff concludes that the impacts to these resources under the Approved BSPP will be slightly reduced from **significant but can be mitigated to less than significant (SM)** to **potentially significant but can be mitigated to less than significant (PSM)**, with implementation of appropriate mitigation measures, for the Modified BSPP, or reduced from **potentially significant but can be mitigated to less than significant (PSM)**, with implementation of appropriate mitigation measures, under the Approved BSPP, to **less than significant (LS)**, which does not call for any mitigation measures, for the Modified BSPP.

Comparative impacts under the Approved BSPP are described as "**same as**" or "**similar to**" the Modified BSPP for many of the environmental resources. Staff concludes that for

the environmental resource impacts related to construction and operations, those impacts that would be caused by the Approved BSPP and considered **significant but can be mitigated to less than significant (SM)** or **potentially significant but can be mitigated to less than significant (PSM)**, with implementation of appropriate mitigation measures, would remain so under the Modified BSPP; however, because of the smaller project footprint of the Modified BSPP, the impacts would be fewer, and they would be mitigated to less than significant with implementation of appropriate mitigation measures. Under Cultural Resources, impacts related to two cultural landscapes, the Prehistoric Trails Network Cultural Landscape (PTNCL), encompassing region-wide prehistoric trails and the resources and destinations they connected, and the DTC/C-AMA Cultural Landscape (DTCCL), comprehending the archaeological remains of the U.S. Army's WWII Desert Training Center, are the same under both projects – **significant and unavoidable and cannot be mitigated to less than significant (SU)**. In its 2010 Decision, the Energy Commission adopted staff's recommendation to require the BSPP to contribute to the funds established to document and nominate to the National Register of Historical Places (NRHP) the PTNCL and the DTCCL (CEC 2010e).

Staff describes comparative impacts under the Approved BSPP as "**same as**" or "**similar to**" the Modified BSPP for the environmental resources Air Quality, Biological, Transmission Line Safety and Nuisance, and Waste Management. Staff concludes that for comparative impacts related to construction and operations, those impacts considered **less than significant (LS)** under the Approved BSPP are also **less than significant (LS)** for the Modified BSPP. For comparative impacts related to Biological Resources, staff concludes that impacts to avian species from collisions with solar parabolic troughs or PV panels during construction and operations would be **potentially significant and unavoidable and cannot be mitigated to less than significant (PSU)** under either project.

Comparative impacts for the Approved BSPP are described as "**somewhat less than**" or "**less than**" for the Modified BSPP for the environmental topic, Soils, Surface Water, and Water Supply. The flat terrain, grading, and storm water management system associated with the Approved BSPP would produce lesser impacts related to on-site flooding and soil erosion during construction than the Modified BSPP; however, staff concludes that the impacts for both projects are **potentially significant but can be mitigated to less than significant (PSM)**, with implementation of appropriate mitigation measures. As previously mentioned, other impacts related to Soils, Surface Water, and Water Supply will be **greater** under the Approved BSPP than for the Modified BSPP, such as impacts to water quality and water supply.

CONCLUSION OF ALTERNATIVES ANALYSIS

Overall, with the exception of the impacts to soil erosion as discussed in the Soils, Surface Water, and Water Supply section, all other impacts that would be produced by the Approved BSPP would be either greater or similar to those anticipated for the Modified BSPP.

Because of its larger project footprint, the Approved BSPP would result in a broader scale of impacts, as compared with the Modified BSPP. For resource areas Geology and Paleontology, Noise and Vibration, Public Health, Waste Management, and Soils, Surface Water, and Water Supply, the Approved BSPP would cause more severe impacts than the Modified BSPP.

As mentioned, the larger project footprint of the Approved BSPP accounts for the difference in impacts between the two projects, but also that its project footprint does not avoid the biologically sensitive southwest area of the project site, thereby creating impacts to biological and water resources in that area. Also, solar parabolic trough technology results in greater impacts relative to solar PV technology. For instance, the former will produce greater impacts to water quality because it involves the use of heat transfer fluid, and it will produce greater impacts to visual resources because it produces more glint and glare due to its higher reflection characteristics. The larger project footprint, development in the southwest area of the project site, and the characteristics of solar parabolic trough technology are the main factors in determining that the Approved BSPP is not the environmentally superior project.

The Modified BSPP, although it would still produce significant and potentially significant impacts to most of the environmental resources discussed in this evaluation, would create those impacts on a smaller scale, and it would avoid development in the biologically sensitive southwest area of the project site, thereby avoiding impacts to biological and water resources in that area. As it is proposed, the Modified BSPP is environmentally superior to the Approved BSPP.

REFERENCES

CEC 2010b. California Energy Commission (TN 56992), Revised Staff Assessment of Blythe Solar Power Project (09-AFC-6). June 4, 2010.

CEC 2010e. California Energy Commission (TN 58591), Blythe Solar Power Project (09-AFC-6) - Commission Decision Approved on September 10, 2010. Docketed on September 23, 2010.

CEC 2012. California Energy Commission (TN 68953), Final Staff Assessment of Hidden Hills Solar Electric Generating System (11-AFC-2). December 21, 2012.

NEBS2013a. NextEra Blythe Solar Energy Center, LLC (TN 70318). Revised Petition to Amend (Conversion to solar PV). Dated April 12, 2013. Submitted to CEC on April 12, 2013.

Declarations and Resumes

DECLARATION OF
Michael C. Baron

I, Michael C. Baron

1. I am presently employed by the California Energy Commission in the **Land Use Section** of the Siting, Transmission and Environmental Protection Division as a Planner II with an expertise in Land Use.

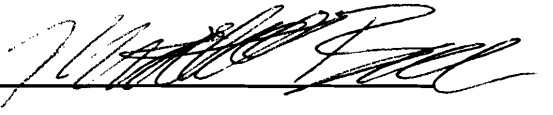
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Land Use,** for the **Blythe Solar Power Plant** 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: 9/16/2013 Signed: 

At: Sacramento, California

Michael C. Baron

Professional experience

2013-Present California Energy Commission Sacramento, CA

Planner II - Siting Transmission and Environmental Protection

- Technical Writing
- Prepare and Analyze Land Use Sections, Conditions of Approval, Findings and CEQA Documentation
- Energy Policy Analysis
- Perform Site Inspections

2011-2013 Caldwell Compliance Pleasanton, CA

Regulatory Analyst

- Audit Existing Leased/Owned ATT Cell Tower Facilities for NEPA, SHPO, FAA, & FCC Compliance
- Analyze 1A/2C surveys, 620/621 SHPO submittals, NEPA reports, Phase I ESA, Tribal Notification System (TCNS), RF/Spectrum, Programmatic Agreement Letters (PAL)
- Verify Tower Height (HV), Marking and Lighting (M&L)
- Update and Upload Compliance Documentation within AT&T Internal Tracking Systems using Internal Software. i.e. ANGELS, Guardian, and Siterra
- FAA/FCC Database searches using notice Criteria Tool, TOWAIR Circle Search, and ASR Registration Search
- Sitesafe AM Tower Screening
- Work from Remote Station
- Use Microsoft Outlook, Word, Excel
- Participate/Lead in regulatory status meeting and conference calls

2004-2010 El Dorado County Planning Services Placerville, CA

Senior Planner

- Intake and Process Subdivision Maps, Planned Developments Commercial Design Reviews, Proposed Utility Projects, Variances, DEIR preparation, and Land Use Permits
- Develop Mitigation and Monitoring Programs
- Coordinate Site Improvements/Modifications with Utility Companies
- Front Counter Customer Service/Public Assistance
- Meeting Facilitation
- Prepare and Analyze Staff Reports, Conditions of Approval, Findings and CEQA Documentation
- Present Findings and Make Recommendations to Boards and Commissions
- Plan Review for Ordinances and General Plan Consistency
- Proficient Using Arcview, Arc Map, and Arc Catalog for GIS Long Range Planning Support and Exhibits
- Perform Site Inspections=

2003-2004 BAP Construction Westmont, IL

Supervisor/Crew Leader

- Estimating Construction Costs
- Construction Management
- Interpret and Analyze Proposed Construction Plans
- Responsible for Permit Processing and Approvals
- Supervise and Assign Daily Tasks
- Scheduling and Tracking Project Milestones

2000-2002 SIUC Geography Department Carbondale, IL

Teaching Assistant- Weather Forecasting

- Guide Students Through Laboratory Experiments
- Assist Students During Office Hours
- Proctor Exams
- Grade All Homework and Exams

1999-2000 Southern 5 County Planning Commission Ullin, IL

GIS/Cartographic Assistant

- Develop and Layout Spatial Datasets using Arcview/ArcInfo
- Created, Maintained and Managed Road and Utility Database for Five Counties
- Present Data and Findings to Supervisors, Boards, and Commissions
- Perform Site Inspections
- Public Assistance

Education

1999-2003 Southern Illinois University Carbondale, IL

Master of Science, Geography

- Urban/Environmental Planning
- Quantitative Research Methods
- Socio-Cultural Research
- Sustainable Development Practices
- Alternative Energy Resources
- GIS/Cartographic Applications
- Disaster Planning
- Parks and Wild Lands Management

1996-1999 Southern Illinois University Carbondale, IL

Bachelor of Arts, Geography

- Urban/Environmental Planning
- GIS/Cartographic Applications
- Natural Resources Planning
- U.S. Environmental Policies Analysis
- Sustainable Development
- Socio-Economics

DECLARATION OF
Heather Blair

I, Heather Blair:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Siting, Transmission and Environmental Protection Division as a **Senior Associate Biologist**.

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 **Blythe Solar Power 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: October 10, 2013 Signed: 

At: Sacramento, California

HEATHER V. BLAIR
Senior Associate Environmental Scientist

Academic Background

MS, Conservation Biology, Sacramento State University, 2012
BS, Ecology, San Diego State University, 2004

Professional Experience

Heather Blair is an Environmental Scientist experienced in the managerial and technical aspects of environmental review of energy infrastructure projects. Her particular expertise is terrestrial biological resources throughout California. This expertise is backed by experience in a range of natural resource investigations and environmental impact analysis including botanical and wildlife research, inventory, and survey techniques; technical writing; and data analysis. She has experience preparing and managing the preparation of environmental documents pursuant to applicable federal, state and local environmental regulations, including but not limited to the California Environmental Quality Act, National Environmental Policy Act, and the California and federal Endangered Species Acts.

Aspen Environmental Group.....2004-present

Selected project experience at Aspen includes the following:

Power Generation and Transmission Interconnection Projects

- **California Energy Commission.** Aspen has a multi-year contract to provide support to the Energy Facility Planning and Licensing Programs. Under this contract Ms. Blair has participated in the following projects:
  - **Biological Resources Assessment for the Huntington Beach Energy Project.** Ms. Blair is the lead technical staff for the analysis of impacts to biological resources from this 939 MW natural gas-fired power plant in coastal Orange County that will replace the existing Huntington Beach Generating Station. Important biological issues for this project include indirect impacts to nearby wetlands and preserves, including noise and vibration impacts to listed birds (e.g., clapper rail).
  - **Biological Resources Assessment for the Blythe Solar Power Project PV Amendment.** Ms. Blair is preparing the cumulative impact analysis for biological resources for this amendment to convert the approved solar thermal project to photovoltaic technology.
  - **Biological Resources Assessment for the Rio Mesa Solar Electric Generating Facility.** Ms. Blair was the co-lead technical staff for the analysis of impacts to biological resources from this 250 MW solar thermal power plant in the Mojave Desert. Important biological issues for this project include impacts to migratory birds, desert tortoise, and jurisdictional washes. Coordination is required with BLM as a portion of the generator-tie line would cross portions of the California Desert Distinct. This project was ultimately cancelled by BrightSource.
  - **Biological Resources Assessment for Pio Pico Energy Center Power Plant Licensing Case.** Ms. Blair was the co-lead technical staff for the analysis of impacts to biological resources from this 300 MW solar thermal power plant in eastern San Diego County. Important biological issues for this project include impacts to critical habitat for federally listed Quino checkerspot butterfly, Otay tarplant, and California gnatcatcher from nitrogen deposition as well as consistency with the San Diego County Multi-Species Conservation Plan.
  - **Biological Resources Assessment for the Abengoa Mojave Solar Project.** Ms. Blair was the lead technical staff for the analysis of impacts to biological resources from the 250 MW solar thermal

power plant in the Mojave Desert. Important biological issues for this fast-track American Reinvestment and Recovery Act (ARRA) funded project included impacts to Harper Dry Lake from potentially decreased water availability, desert tortoise, and Mojave ground squirrel. Ms. Blair testified as an expert witness in biological resources during Evidentiary Hearings before the Commission.

- **Biological Resources Assessment for the San Joaquin Solar 1&2 Hybrid Project.** Ms. Blair was the lead technical staff for the analysis of impacts to biological resources from the 107 MW solar thermal/biomass hybrid power plant. Important biological issues include potential impacts to San Joaquin kit fox habitat and movement corridor connectivity. This project was cancelled prior to issuance of a Decision.
- **Biological Resources Assessment for the Genesis Solar Energy Project.** Ms. Blair was the assistant technical staff for the analysis of impacts to biological resources from this 250 MW solar thermal power plant in an undeveloped area of the Sonoran Desert. Important biological issues for this fast-track ARRA project include direct and indirect (downstream) impacts to ephemeral drainages from site development and indirect impacts to sand dune dependent vegetation and wildlife communities from disruption of Aeolian processes.
- **Biological Resources Assessment for the Carlsbad Energy Center.** Ms. Blair was the lead technical staff for the analysis of impacts to biological resources from the 540 MW CECP. Important biological issues include potential impacts to Agua Hedionda Lagoon and consistency with the Carlsbad Habitat Management Plan. Ms. Blair testified as an expert witness in biological resources during Evidentiary Hearings before the Commission.
- **Biological Resources Assessment for the CPV Sentinel Project.** Ms. Blair was the lead technical staff for the analysis of impacts to biological resources from the 850 MW CPV Sentinel project. Important biological issues include potential impacts from groundwater drawdown to the mesquite hummock plant community and the special-status species it supports.
- **Biological Resources Assessment for the CPV Vaca Station Project.** Ms. Blair is currently serving as the lead technical staff for the analysis of impacts to biological resources from the 660 MW CPVVS. Important biological issues include potential impacts to giant garter snake from reduced flows in Old Alamo Creek and loss of Swainson's hawk foraging habitat.
- **Biological Resources Assessment for the Marsh Landing Generating Station.** Ms. Blair served as the lead technical staff for the analysis of impacts to biological resources from the 930 MW MLGS. Important biological issues include indirect impacts to State and federally listed plants and insect species in the Antioch Dunes National Wildlife Refuge from nitrogen deposition. Ms. Blair presented her findings before the Commission.
- **Biological Resources Assessment for the Willow Pass Generating Station.** Ms. Blair is currently serving as the lead technical staff for the analysis of impacts to biological resources from the 550 MW WPGS. Important biological issues include direct impacts to California red-legged frog and indirect impacts to State and federally listed plants and insect species in the Antioch Dunes National Wildlife Refuge from nitrogen deposition.
- **Biological Resources Assessment for the Oakley Generating Station.** Ms. Blair co-prepared the analysis of impacts to biological resources from the 624 MW OGS. Important biological issues include indirect impacts to State and federally listed plants and insect species in the Antioch Dunes National Wildlife Refuge from nitrogen deposition.
- **Biological Resources Assessments for the Panoche and Starwood Energy Centers.** Ms. Blair served as the lead technical staff for the analysis of impacts to biological resources from the 400

MW Panoche Energy Center and 120 MW Starwood Project. These projects required coordination with USFWS and CDFG regarding impacts to the State and federally listed San Joaquin kit fox.

- **Downstream Transmission Upgrades.** Ms. Blair prepared the impact assessment of various issue areas (e.g., biological, geological, and water resources) for reasonably foreseeable upgrades required to interconnect the Palen Solar Power Plant, Blythe Solar Energy Project, Genesis Solar Energy Project, Abengoa Mojave Solar Project, and Los Esteros Critical Energy Facility Phase 2 to the electrical grid.
- **Desert Renewable Energy Conservation Plan EIR/EIS.** Ms. Blair is preparing the analysis of biological and water resources impacts resulting from transmission line build-out outside of the Plan Area, extending north into the San Joaquin Valley, east into the Los Angeles Area and south into San Diego and Imperial counties. She is also integrating BLM's conservation management actions across all issue areas for inclusion in the EIR/EIS.

- **Alta East Wind Project EIS/EIR, Kern County and BLM.** Ms. Blair prepared portions of the project description as well as the geology and minerals section for this proposed 318 MW wind project, which includes development of up to 120 wind turbine generators ranging from 1.5 MW to 3 MW in capacity and construction of a 230 kV generation-tie transmission line within the Tehachapi Wind Resource Area.
- **California Valley Solar Ranch EIR, San Luis Obispo County.** Ms. Blair managed the pre-construction mitigation compliance for this 250 MW photovoltaic (PV) solar power plant in the unincorporated portion of eastern San Luis Obispo County. She worked closely with the applicant and the County to track compliance with mitigation measures from the EIR, including acquisition of permits and conducting needs surveys and reporting, under a very tight timeframe.
- **Tule Wind EIS, Third Party NEPA Review.** Under contract to the BLM, Ms. Blair is assisting the BLM in reviewing the biological resources section of the Draft and Final EIS/EIR for the proposed Tule Wind Project (EIS) to meet BLM and NEPA requirements. The joint document evaluates the proposed Tule Wind Project and the proposed East County Substation Project (ECO), along with other related parts of both projects.
- **Northern California CO_2 Storage Pilot, Confidential Client, CEQA and NEPA compliance (2008).** Contributed to the preparation of Department of Energy NEPA environmental questionnaire to comply with Category Exclusion requirements and preparation of the Initial Statement under CEQA for the proposed CO_2 sequestration pilot test site in Montezuma Hills. Ms. Blair conducted focused nesting surveys of the State-threatened Swainson's hawk (*Buteo swansonii*).
- **Arizona Utilities CO_2 Storage Pilot, CEC and University of California, NEPA compliance (2007).** Contributed to the preparation of Department of Energy NEPA environmental questionnaire to comply with Category Exclusion requirements for the proposed CO_2 sequestration pilot test site near Joseph City, Arizona. Ms. Blair conducted focused surveys of the federally endangered Peebles Navajo cactus (*Pediocactus peeblesianus* var. *peeblesianus*).
- **Environmental Screening Tool for Out-of-State Renewables, KEMA and CEC, Staff (2009).** Assessed the potential for California laws, ordinance, regulations and standards to be impacted by out-of-state renewable facilities seeking RPS certification. Ms. Blair prepared the assessment of impacts associated with geothermal projects.
- **Review of the Trans Alta Blue Trail Wind Project for RPS Certification.** Assessed whether the Trans Alta Wind Project's application for Renewable Energy Credits met the Energy Commission's data adequacy requirements and would be consistent with applicable federal, California, and

local laws, ordinances, regulations, and standards. The Blue Trail Wind Project is located in Alberta, Canada.

- **Nuclear Power Plant Assessment (Assembly Bill 1632).** Ms. Blair managed the preparation of and was a contributing author for a major Appendix to the Nuclear Power Plan Assessment Report for the Energy Commission. This report evaluated nuclear power issues in the state in response to recent legislation (AB 1632), including environmental issues associated with alternatives (including renewable) to the state's two nuclear facilities.
- **Diablo Canyon Power Plant Steam Generator Replacement Project.** Ms. Blair supported the management team in preparing the project description, alternatives and supporting sections of the Draft and Final EIR.
- **Vermont Yankee Nuclear Power Plant Report, Vermont Department of Public Service.** Ms. Blair evaluated biological resource impacts 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.

Transmission Line and Substation Projects

- **Western Area Power Administration Sierra Nevada Region On-call NEPA and Other Environmental Services Contract.** Ms. Blair is deputy program manager for this 3-year contract covering environmental review and permitting of all Western actions within its 101,000,000 square mile service area in northern and central California as well as eastern Nevada. In this role, she responds to requests from Western to assemble the most qualified team and prepare cost estimates for task orders issued by Western. In addition, she was the Project Manager for the following projects/task orders:
  - **Path 15 Erosion Project Phase III.** Tasks include preconstruction protocol surveys for San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, nesting birds and rare plants.
  - **Tracy- Livermore 230 kV Overhead Groundwire Installation.** Tasks included biological and cultural resources pre-construction surveys and construction monitoring.
  - **Maxwell-Obanion 230 kV Overhead Groundwire Installation.** Tasks included biological resources pre-construction surveys and construction monitoring.
  - **Cultural Resources On-call Task Order.** Requested services have included cultural surveys for access road maintenance projects in northern and central California.
- **Western Area Power Administration Desert Southwest Region On-call NEPA and Other Environmental Services Contract.** Ms. Blair is currently serving as deputy program manager for this 3-year contract covering environmental review of all Western actions within its 102,000,000 square mile service area in Arizona, southern California and southern Nevada. In this role, she responds to requests from Western to assemble the most qualified team and prepare cost estimates for task orders issued by Western. She managed the following projects under this contract:
  - **Parker-Blythe #1 and #2 Transmission Line Maintenance Project.** Ms. Blair is managing biological resource surveys, a Class II cultural resources (sample) survey, and delineation of waters of the U.S. for maintenance activities two, parallel 65-mile-long 230-kV transmission lines.
  - **Mead-Liberty 345 kV Transmission Line CWA Permitting.** Ms. Blair is managing a filed delineation and acquisition of an Individual Permit from USACE and Water Quality Certification

from Arizona Department of Environmental Quality for impacts to ephemeral washes form O&M activities under Section 404 and 401 of the Clean Water Act, respectively.

- **Gila-North Gila Transmission Line Rebuild and Upgrade Project.** Ms. Blair is managing scoping and preparation of an EA for the proposed rebuild and upgrade of the Gila-Knob and Gila-North Gila transmission lines. Arizona Power Service's North Gila-TS8 230 kV transmission project is being analyzed as a connected action.
- **Glen Canyon-Flagstaff Access Road Maintenance Project.** Ms. Blair managed a delineation of wetlands and waters of the U.S. and Clean Water Act Section 404 and 401 permitting for this access road maintenance project on Navajo Nation Tribal land in northern Arizona.
- **Saguaro-Tucson 115 kV Transmission Line Vegetation Management and Access Road Maintenance Project.** Ms. Blair managed biological resource surveys and wetland/waters of the U.S. delineation in support of permitting for this 7-mile, 115 kV transmission line in southeastern Arizona.
- **Tucson-Apache Transmission Line Maintenance Project.** Ms. Blair managed biological and cultural resource surveys and wetland/waters of the U.S. delineation in support of permitting and a CX determination for maintenance of 149 poles, 20 miles of access roads and vegetation management at the San Pedro River crossing for this 115 kV transmission line in Arizona.
- **Gila-Wellton Mohawk Transmission Line Maintenance Project.** Ms. Blair managed biological and cultural resource surveys in support of permitting and a CX determination for maintenance of this 13-mile, 161 kV transmission line near Yuma, Arizona.
- **Henderson-Mead Access Road Maintenance Project.** Ms. Blair managed biological resource surveys and wetland/waters of the U.S. delineation in support of permitting and a CX determination for this 4-mile segment of 230 kV transmission line in Clark County, Nevada.
- **Davis-Nora McDowell Transmission Line Rebuild Project.** Ms. Blair managed biological and cultural resource surveys and wetland/waters of the U.S. delineation in support of permitting and a CX determination for this 9-mile, 69 kV transmission line, which crosses BLM, NPS, BOR, and Tribal lands in Arizona and southern Nevada.
- **Black Point Communication Building Replacement Project.** Ms. Blair managed biological and cultural resource surveys in support of permitting and a CX determination for replacement of a communication building on the Black Point Mesa on BLM land in eastern California.
- **Gila-Gila Valley Infrastructure Replacement Project.** Ms. Blair managed cultural resource surveys in support of NHPA Section 106 permitting and a CX determination for maintenance of this 5-mile 35 kV distribution line in Yuma, Arizona.
- **ED4-ED5 Infrastructure Replacement Project.** Ms. Blair managed cultural resource surveys in support of NHPA Section 106 permitting and a CX determination for a 230 kV upgrade of this 9-mile 115 kV transmission line in Arizona.

- **Sunrise Powerlink Transmission Line Project.** Under contract to the California Public Utilities Commission (CPUC), Aspen prepared an EIR/EIS for a 150-mile proposed transmission line from Imperial Valley Substation, near El Centro, to Peñasquitos Substation in northwestern San Diego County. The Proposed Project would potentially deliver renewable resources from the Imperial Valley via a 500 kV transmission line to a new 500/230 kV substation, and from the new substation to western San Diego via 230 kV overhead and underground transmission lines. Ms. Blair analyzed the impacts to wilderness and recreation. Additionally, she wrote the project description and assisted with overall project support.

- **TANC Transmission Project.** Aspen was awarded a contract with the Transmission Agency of Northern California (TANC) for CEQA/NEPA and environmental permitting support for 600 miles of proposed 500 and 230 kV transmission lines between Lassen County and Santa Clara County. The project included evaluation of over 600 additional miles of alternative routes, six new substations, and modifications to six existing substations. Ms. Blair was the Deputy Project Manager, responsible for coordinating the biological and cultural resource field surveys. The project was cancelled in July 2009.
- **Sacramento Area Voltage Support Project.** Under contract to Western Area Power Administration (Western) and in cooperation with SMUD, Aspen prepared an SEIS and EIR for a double-circuit 230 kV circuit between Western's O'Banion/Sutter Power Plant and Elverta Substation/Natomas Substation. Ms. Blair was part of the project management team and managed the wetland delineation, Biological Survey Report, and Biological Evaluation.
- **North Area ROW Maintenance Project.** Under contract to Western, Ms. Blair is currently providing project support to prepare an Environmental Assessment and Operation and Maintenance Program associated with the operation and maintenance procedures along Western's transmission line ROWs between Sacramento (Sutter/Yuba County line) and the Oregon border. This project also includes a detailed survey of the biological and cultural resources along 434 miles of North Area ROW, 342 miles of COTP ROW, and several hundred miles of access and maintenance roads. Ms. Blair is working closely with project management and resource specialists to coordinate and execute over 800 miles of surveys. She conducted wildlife inventory and surveyed portions of ROW for sensitive species and recorded habitat types, jurisdictional waters and infrastructure using a Trimble GeoXT GPS unit. Additionally, Ms. Blair was integrally involved in the management and development of the North Area O&M GIS database.
- **Categorical Exclusions for Routine Operation and Maintenance.** Under contract to Western, Ms. Blair has prepared dozens of CXs for routine maintenance activities along Western's CVP, PACI, and COTP transmission line ROWs and access roads. She has developed a streamlined and highly efficient system to use the results and analysis for the North Area ROW Maintenance Project to complete these documents.
- **GIS Data Verification and Resource Database Development for the Trinity County PUD Direct Interconnection Project.** Under contract to Western, Ms. Blair was the Deputy Project Manager for this project and also be coordinated and conducted biological resources in support of the development of an O&M GIS database, which included identification of sensitive resources and associated project conservation measures for this new segment of Western's CVP transmission system.
- **Cressey-Gallo 115 kV Transmission Project.** Under contract to the CPUC, Ms. Blair provide technical oversight for the biological resource section of an Initial Study/Mitigated Negative Declaration for a proposed 14-mile transmission line in north-central Merced County near Livingston, CA.
- **Seventh Standard Substation Project.** Under contract to the CPUC, Ms. Blair prepared the biological resource section of an Initial Study/Mitigated Negative Declaration for a proposed 4.9-acre 115/21 kV substation and transmission interconnection in northwest Bakersfield, Kern County. Important biological issues included impacts to the State and federally listed San Joaquin kit fox and western burrowing owl (a California species of special concern), as well as compliance with the Metropolitan Bakersfield Habitat Conservation Plan.

- **Windsor Substation Project.** Under contract to the CPUC, Ms. Blair prepared the biological resource section of an Initial Study/Mitigated Negative Declaration for a proposed 3.2-acre 115/12 kV substation and transmission interconnection in Sonoma County. Important biological issues included potential indirect impacts to adjacent USACE-jurisdictional wetlands.
- **Colorado River Substation Expansion Project.** Ms. Blair is preparing the biological resource section of a Supplemental EIR for the proposed expansion of the Colorado River Substation. The CRS was originally approved in the Devers–Palo Verde No. 2 Transmission Line EIR/EIS and needs to be expanded to accommodate interconnection of utility-scale solar thermal generation projects in the Sonoran Desert. Important biological issues include indirect (downwind) impacts to Mojave fringe-toed lizard habitat from impediments to Aeolian sand transport.
- **South San Joaquin Irrigation District, Plan to Provide Retail Electric Service, Sphere Plan, Municipal Services Review and Annexation.** Ms. Blair is preparing the biological resources section of a Subsequent EIR for Municipal Services Review and sphere expansion to allow the public takeover and upgrade of electric distribution facilities by SSJID in southern San Joaquin County.
- **Atlantic–Del Mar Reinforcement Project Mitigated Negative Declaration.** Under contract to the CPUC, Ms. Blair served as an assistant environmental monitor during the construction of four miles of overhead transmission towers and lines and approximately 1.3 miles of underground lines. The project involved trenching, horizontal drilling and blasting and requires avoidance of several wetlands, seasonal pools and threatened and endangered species.
- **Miguel-Mission 230 kV #2 Project EIR Addendum.** Under contract to the CPUC, Ms. Blair helped to prepare a detailed addendum associated with engineering design changes for the Miguel-Mission 230 kV #2 Project.

Other Infrastructure, Resource Management, and Monitoring Projects

- **Hazardous Fuels and Vegetation Management for Angeles National Forest.** Under contract to the US Forest Service, Ms. Blair conducted botanical and wildlife surveys at approximately 100 sites ranging from one to 2500 acres throughout the Angeles National Forest. Modifications to current fuel management practices were proposed in response to increased frequency and intensity of wildfire resulting from climate change. She prepared 75 Biological Evaluations/Biological Assessments that assessed the biological impacts of proposed fuel management practices throughout the forest.
- **Rare Plant Surveys for the East Branch Extension Pipeline Project.** Under contract to the Department of Water Resources, Ms. Blair conducted rare plant surveys of the endangered Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*) and the state and federally endangered slender horned spine flower (*Dodecahema leptoceras*) in response to the proposed construction of a water pipeline through San Bernardino and Riverside Counties.
- **Indian Springs Telecommunication Project.** Under contract to the CPUC, Ms. Blair is preparing the biological resource section of an Initial Study/Mitigated Negative Declaration for three proposed telecommunication facilities in Shasta County. Important biological issues include impacts to the northern clarkia, a CNPS List 1B species.
- **Upper San Antonio Creek Watershed Giant Reed Removal Project.** Ms. Blair prepared the biological resource analysis of an Initial Study to remove invasive plant species from the Upper San Antonio Creek Watershed. Required field survey and development of impact avoidance

measures for several special-status species, including California red-legged frog, southern steelhead, and riparian nesting birds.

- **Least Tern Monitoring for the Montezuma Slough Tidal Wetlands Restoration Project.** Under contract to EcoBridges Environmental, Ms. Blair monitored the nesting success of three nesting colonies of the federally and State endangered California least tern. This effort involved counting and mapping the nest sites and tern chicks once a week for two years.
- **Endangered Species Monitoring for the Lomita Canal Vegetation Clearing Project.** Monitored the federally threatened California Red-legged frog and the State and federally endangered San Francisco giant garter snake during vegetation clearing activities along the Lomita Canal at the San Francisco International Airport. Involved identification of these species, relocation of California red-legged frogs, and re-direction of work in the event a San Francisco giant garter snake was spotted.
- **Western Grid Group 2050 Clean Energy Vision and Renewable Energy Transmission Plan Evaluation.** Under contract to the Energy Foundation, Aspen developed a 2050 Clean Energy Vision for the west as support for NGO participation in western states and at the Western Electric Coordinating Council. For this report, Ms. Blair evaluated impacts of climate change according to the Clean Energy Vision and Business as Usual Scenarios.

Soil Ecology and Restoration Group.....2004

Research Assistant. Ms. Blair assisted in managing the greenhouse where native seeds were germinated and propagated. In this role, she collected seeds from native plants and analyzed the composition of the soil present in their native habitat to ensure seedling viability. The plants were subsequently used in the restoration of degraded habitat as contracted by the US Army Corps of Engineers and others.

Presentations and Publications

EUCI Electric Transmission and Distribution Project Management Seminar. April 8-9, 2013. Anaheim, CA. Speaker: Transmission Asset Management System – Using GIS to Streamline Environmental Planning and Regulatory Processes for Transmission Line O&M Projects

DECLARATION OF
Mary Dyas

I, **Mary Dyas**:

1. I am presently employed by the California Energy Commission in the Compliance Office of the Siting, Transmission and Environmental Protection Division as a Compliance Project Manager.

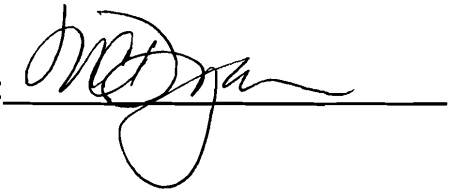
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Executive Summary, Introduction, General Conditions, and Project Description for the Blythe Solar Power Project (09-AFC-9C) 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: 9/18/2013 Signed: 

At: Sacramento, California

MARY DYAS
CALIFORNIA ENERGY COMMISSION – COMPLIANCE PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Planner II/III – Energy Facilities Compliance Project Manager ***05/01/2008 to Present***
Siting Unit / Siting and Compliance Office
California Energy Commission, Sacramento, California

Compliance Project Manager—Provide oversight of energy facility construction and operation activities to ensure compliance with conditions of certification. Function as team leader for all compliance monitoring activities, processing of post-certification amendments, complaints, and facility closures.

Currently acting as working team leader on projects filed with the Energy Commission including renewable energy projects (Blythe Solar Power Project) and natural gas-fired energy projects (El Segundo Energy Center) in the licensing, construction and operational phases of each project.

Planner I/II – Energy Facilities Siting Project Manager ***01/18/2006 to 04/30/2008***
Siting Unit / Siting and Compliance Office
California Energy Commission, Sacramento, California

Siting Project Manager – Provide day-to-day management of complex and controversial energy facility siting projects and renewable solar projects, including the Carrizo Energy Solar Farm Project, Bullard Energy Center, El Centro Unit 3 Repower Project and Chevron Replacement Project. Planning, organizing and directing the work of an interdisciplinary environmental and engineering staff team engaged in the review of complex or controversial energy facility siting Applications for Certification.

Energy Analyst / Associate Energy Specialist – LNG Research ***09/27/2002 to 01/17/2006***
Natural Gas Office / Transportation Division
California Energy Commission, Sacramento, California

Coordinating and assisting with the facilitation of monthly Interagency LNG Working Group meetings involving cooperative federal, state, and local agencies; assisting with report writing conducting LNG facility assessments; Organizing/facilitating public workshops and preparing status reports on LNG facility development for use by Commissioners and Governor's Office, as well as reviewing and analyzing LNG-related legislative bills in California; Creating and maintaining the Commission LNG webpage, researching and preparing numerous LNG fact sheets for public education, and gathering information on new technology, tracking new LNG projects, and LNG market information.

Office Technician / Energy Analyst - Assistant Siting Project Manager ***06/27/2000 to 09/27/2002***
Siting Unit / Siting and Compliance Office
California Energy Commission, Sacramento, CA

Assisting energy facility project managers with organization of and conducting workshops and public meetings between staff and power plant developers, other governmental agencies, private organizations, and the public. Also assisting with the reviewing, evaluating and editing of project correspondence, reports, and testimony as well as assisting project secretaries, and Office Managers as needed. Also performed all the same duties in relation to the Emergency Power Plant Permitting 21-day, 4-month, 6-month and 12-month projects.

Office Technician / Energy Analyst - Assistant Siting Project Manager ***06/27/2000 to 09/27/2002***
Siting Unit / Siting and Compliance Office
California Energy Commission, Sacramento, CA

Managing the Siting Peak Workload Contract, including the preparation of hundreds of work authorizations, invoices, and general coordination of work between technical staff and contractor and preparing associated budget information for office managers and executive office.

EDUCATION

Bachelor of Science degree in Biological Sciences ***California State University, Sacramento ~ 1995***

DECLARATION OF
Thomas M. Gates

I, **Thomas M. Gates**, declare as follows:

1. I am presently employed by the California Energy Commission in its Siting, Transmission and Environmental Protection Division as a **Planner II–Energy Facility Siting**.

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 the **Cultural Resources** and the **Alternatives** sections of the **Resource Assessment** for the **Blythe Solar Power Project** Petition for Amendment, based on my independent analysis of the Petition for Amendment, supplements, data, documents, analysis and testimony from other staff and reliable sources, and based upon my own 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 certain 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: October 10, 2013 Signed: Thomas M. Gates

At: Sacramento, California

Thomas M. Gates, Ph.D.
Curriculum Vitae

EDUCATION
University of North Carolina at Chapel Hill, Ph.D., Anthropology, **Chapel Hill, NC 8/95**
Humboldt State University, B.A., Anthropology, B.A., Philosophy, Minor Studio Painting, **Arcata, CA**, **6/87**

NON-ACADEMIC EMPLOYMENT
California Energy Commission, Sacramento, CA, 1/1/12 – Present
Cultural Resources Analyst – Planner II
Work with a team of cultural resources professionals to review and respond to energy facility siting applications proposing energy facility construction or facility amendments located within the State of California. Specifically provide tribal consultation and ethnographic methods expertise.

Preservation Management Services, Sacramento, CA, 9/14/11 – Present
Self-Employed Owner
Secure, perform and complete contract work for tribal, federal, state, and local governments. Work includes following services: Tribal Historic Preservation Office (THPO) program development, operations and related training; THPO Cultural Resources Management Planning and facilitation; Cultural Landscape, traditional Cultural Property and Sacred Site Assessments, Cultural Resources Surveys and Cultural Resources monitor mitigation.

North State Resources, Inc., Sacramento, CA, 11/1/2009 – 11/08/11
Senior Program Manager:
Direct Cultural Resource Program for a team of CRM professionals to secure, perform and complete CRM cultural resource contracts on behalf of diverse client base (government agencies, developers, tribal governments. Also provided services in cultural resources training and tribal government planning facilitation.

SWCA Environmental Consultants, Sacramento, CA, 6/23/08-10/30/09
Senior Program Manager:
Direct Cultural Resource Program for a team of CRM professionals to secure, perform and complete CRM cultural resource contracts on behalf of diverse client base (government agencies, developers, tribal governments). Also provide training for Tribal Historic Preservation Officer (THPO) programs, NHPA Section 106 and Consultation with Indian Tribes.

Yurok Tribe, Klamath, CA, 5/1/03- 6/15/08
Self Governance Officer:
Coordinated Yurok governmental functions with local, state, federal governments; negotiated contracts, compacts, annual funding agreements, memorandums of understanding per the Indian Self Determination Act. More recently, handled tribal land appraisals, acquisitions, land acquisition funding, sustainable forestry management, tribal park planning and youth workforce creation.

Yurok Tribe, Klamath, CA, 9/4/96-6/15/08
Heritage Preservation Officer:
Performed Tribal Heritage Preservation Officer functions for Yurok Tribal Lands per NHPA § 101d(2)NPS Agreement. Provided Section 106 comment and made National Register nominations related to undertakings affecting tribal lands. Coordinated CHRIS Info Center/Tribal Inventory. Reviewed archeology survey reports and site records. Participated in the North Coast Strategic Partnership Coalition.

Yurok Tribe, Klamath, CA, 10/1/93– 5/1/03
Culture Department Director:
Directed a department with four divisions: Archeology, Archives, NAGPRA, Mapping and Compliance. Coordinated Tribal Elder's Cultural Committee, represented the tribe in Federal and State consultations pertaining to Yurok Culture. Managed multi-account program budget ($300,000/year) of base funding, grants and contracts for ethnographic research, archeological survey and monitoring and related planning.

USFS - Inyo NF, Bishop, CA, 6/1/80 – 8/31/89 (Seasonal)
Watershed Restoration Crew Leader/Member:
Supervised summer work-crews performing erosion control, dam construction, trail and road work and trout spawning site restoration in remote wilderness and back country settings; coordinated crew safety program.

ACADEMIC EMPLOYMENT

Humboldt State University, Arcata, CA, 6/1/92 - 5/31/07
Lecturer:
Cultural Anthropology, North American Indians and Anthropology of Religion

College of the Redwoods,Eureka, CA, 8/94-5/98
Adjunct Instructor:
Cultural Anthropology, Archeology, Folklore

University of North Carolina at Chapel Hill, Chapel Hill, NC, 8/1/88-5/31/90
Instructor:
General Anthropology
Teaching Assistant:
General and Cultural Anthropology

RESEARCH and PROJECTS

CEC – Hidden Hills Solar Energy Generating Systems – Ethnographic Report. 2012
Conducted ethnographic research with several Native American Tribes concerning the documentation of the Pahrump Paiute Tribe life-ways related to several cultural landscapes, including the Salt Song Trail, located in and about the Pahrump Valley, Ca.

NSR – Assessing Effects to Indian Trust Resources and Cultural Values as a Result of Implementing the Klamath Basin Settlement Agreement to Remove Four Dams Along the Klamath River. 2010 – 2011. Project manager responsible for facilitating project Sub team (BIA and BOR) tribal consultations with 6 Klamath Basin Tribal governments and owners and heirs of Public Domain Allotments. Project also entails writing a Background Technical Report that assesses historic and current operation effects on trust resources. A final report is also being completed that assesses future operations affects on trust resources for two broad alternatives: "dams in" and "dams out."

SWCA – California Indian Heritage Center, Sacramento, CA, 2008 – 2011
Consult on behalf of California State Parks with tribal entities throughout the State of California in relation to the planning, design and construction of a $50 million facility and grounds located in Sacramento, and representing all California Tribes. Center will feature archaeological collections, archives, education classrooms, botanical gardens and demonstration village along banks of Sacramento River.

Yurok Tribal Park and Homeland Restoration, Klamath, CA, 2003 – 2008
Team Leader:
Coordination, planning, and acquisition for the Yurok Tribe initiative to regain homelands through creation of a tribal park system, marine sanctuary, community forest and related land purchases and transfers.

Yurok Tribe Condor Re-Introduction, Klamath, CA, 2007 – 2008
Principal:
Study of historic and environmental conditions conducive to the re-introduction of condor into Yurok territory.

North Coastal Information Center of the CHRIS, Klamath, CA, 2000-2008
Coordinator:
Negotiated, established and coordinated the North Coastal Information Center with CA SHPO; managed archeological and historical records and clearing house; provided review and compliance support for CEQA, Coastal Act, NEPA, NHPA, ARPA and CDF Timber Harvest Rule projects occurring in Humboldt and Del Norte counties.

Bald Hills Ethnographic Landscape Study, Orick, CA, 1999 – 2001
Co-Principal: Yurok Ethnographic use study of Bald Hills, Redwood National and State Parks (RNSP), Interview, field survey and record

Dissertation Fieldwork: Yurok Trail System, **Klamath, CA, 1991-1995**
Ph.D. Candidate: Compiled a history of Yurok trail systems, obtaining information from ethnographic interviews, literature, cartographic inventories, and archeological surveys.

PUBLICATIONS

Yurok Tribe Comprehensive Cultural Resource Management Plan A 15 Year Plan for the Implementation of the Yurok Tribe - NPS Agreement to perform § 101d(2) functions of NHPA and other cultural resource related Tribal, Federal and State laws.
Along the Ridgelines: The History of Yurok Trail Systems, (Ph.D. Dissertation, UNC), **12/94**
***The Asdiwal Myth Complex of the Tsimshian of the N*orthwest Coast of British Columbia** (4th semester paper, UNC), **5/89**
***Watershed Restoration Construction Safety Precautions Watershed Restoration Construction Manual* 6/87,** Inyo National Forest,

U.S. Forest Service

APPOINTMENTS

National Association of THPOs – Co-founder and Board member	**1998-2008**
Historic Resource Information Centers of California – President	**1999-00**
Jacoby Creek Land Trust – Board Member and Recording Secretary	**1998-00**

AWARDS

CEC Outstanding Employee	**2013**
CA State Senator Chesbro - *Recognition of Achievement*	**2002**
Research and Teaching Assistantships, UNC Dept. of Anthropology	**1987, 88, 89, 90**
USFS Employee Award – *Outstanding Service in the Field*	**1980, 81, 82, 86**

TRAINING

PSMJ Project Management Bootcamp, Phoenix, Arizona	**2009**

REFERENCES

Larry Myers, Native American Heritage Commission
Tel: 916 653 3356 Email: lm_nahc@pacbell.net

Bambi Kraus, President, National Association of Tribal Historic Preservation Officers
Tel: 202 628-8476 Email: bambi@nathpo.org

Destry Jarvis, President, Outdoor Recreation and Parks Services Consulting
Tel: 540 338-6970 Email: destryjarvis@earthlink.net

Dan Hall, Archaeologist, BIA Sacramento Regional Office
Tel: 916 978-6041 Email: dan.hall@bia.gov

Troy Fletcher, Senior Policy Analyst, Yurok Tribe
Tel: 530 625 4015 Email: troy_fletcher@earthlink.net

DECLARATION OF
Mark R. Hamblin

I, Mark R. Hamblin declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as a Planner II.

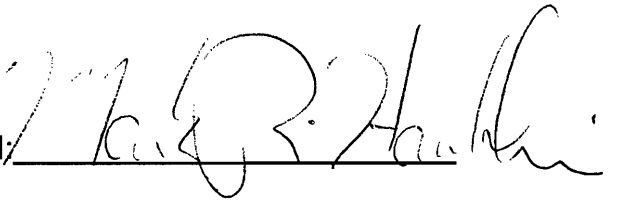
A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on Visual Resources, for the Petition to Amend the Commission Decision for the Blythe Solar Power Project based on my independent analysis of the Petition to Amend and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

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: Sept. 17, 2013 Signed: 

At: Sacramento, California

MARK RUSSELL HAMBLIN

Professional Experience

California Energy Commission, 1516 9th St., Sacramento CA 95814-5504
Planner II — November 2000 to present
Prepares an independent technical analysis in the area(s) of land use planning, traffic & transportation, and visual resources pertaining to the potential siting of natural gas fired power generation plants and solar power facilities. Provides recommendations to the Energy Commission. Reviews information provided by the applicant and other sources to assess the environmental effects of energy facility proposals as required by the California Environmental Quality Act (CEQA), and the California Energy Commission siting regulations. Evaluates project in accordance with federal, state and local laws, ordinances, regulations, standards; coordinates proposal with federal, state and local agencies. Conducts field studies; oversees technical consultant(s); participates in public workshop(s); presents sworn testimony during evidentiary hearings. Performs compliance monitoring for projects approved by the Energy Commission ensuring that power plants are constructed and operated according to the conditions of certification of their license.

Yolo County Planning and Public Works Department, 292 W. Beamer St., Woodland CA 95695
Associate Planner — June 1992 to October 2000
Advised and assisted individuals in the processing of land use planning requests (general plan amendments, conditional use permits, subdivision maps, etc.); reviewed the request for consistency with state zoning and planning law (e.g., CEQA, the Subdivision Map Act, Williamson Act, etc.), the county General Plan, the county government code for presentation in a staff report before for the county planning commission and/or county board of supervisors; served as board of supervisors liaison and planning department staff person to citizen and inter-agency committees (county airport advisory committee, county habitat conservation plan steering committee, and community general plan citizen advisory committee(s); drafted zoning ordinances and regulations; prepared environmental assessment documents in accordance with the National Environmental Policy Act (NEPA); hired and supervised consultants; served as county zoning administrator; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter, or over the telephone regarding land use and development issues in the county.

Yolo County Community Development Agency, 292 W. Beamer St., Woodland CA 95695
Assistant Planner — January 1991 to June 1992
Advised and assisted individuals in the processing of land use planning requests; reviewed the request for consistency with state zoning and planning law, the county

General Plan and county government code; presented the information pertaining to the land use planning request in a staff report for consideration by the county planning commission; drafted zoning ordinances; supervised consultants; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter, or over the telephone regarding land use and development in the county.

Tulare County Planning and Development Department, Civic Center, Rm. 105, Visalia, CA 93291
Planning Technician II March 1988 to January 1990
Advised and assisted individuals in the processing of land use planning requests; reviewed request for consistency with state zoning and planning law, the county General Plan, and county government code, analyzed the information for presentation in a staff report before the county zoning administrator, site plan review committee, or planning commission; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter and over the telephone regarding land use planning and development in the county.

Education

University of California, Davis Extension. Davis, California. Course work in California Land Use Planning and the California Environmental Quality Act 1988 to 1995.

Cosumnes River College. Sacramento, California. Course work in television and radio broadcasting 1990 to 1991.

California State University, Bakersfield. Bakersfield, California. Master of Public Administration; August 1988. Concentration in Public Policy. Course work in Business Administration and Political Science.

California State University, Sacramento. Sacramento, California. Bachelor of Science in Public Administration; May 1984. Concentration in Human Resources Management.

Porterville College. Porterville, California. Associate in Arts Social Science; May 1982. Course work in Administration of Justice.

Awards

2009 Superior Accomplishment Award – Recognition of Outstanding Contribution in the training of staff new to the Environmental Protection Office, Community Resources Unit and unfamiliar with the unit's analytical methodologies and approaches in the areas of land use, visual resources, and traffic/transportation. Awarded by California Energy Commission.

2001 Superior Accomplishment Award – Recognition of Outstanding Performance and Contribution as a team member of the 21 Day, 4, 6, and 12 month processes team. Awarded by California Energy Commission.

2001 Superior Accomplishment Award – Recognition of Outstanding Performance and Contribution as a team member of the expedited 4 Month Application for Certification/Small Power Plant Exemption Team. Awarded by California Energy Commission.

2000 Yolo County Planning Commission Resolution – Appreciation of Service for nearly 10 years of service to the Yolo County Planning Commission and employment at the Yolo County Planning and Community Development Agency.

DECLARATION OF
John Hope

I, **John Hope**, declare as follows:

1. I am presently employed by **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 prepared the staff testimony on **Traffic and Transportation**, for the **Blythe Solar Power 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: 9/16/13 Signed: 

At: Sacramento, California

JOHN HOPE

1516 9th Street, MS 40
Sacramento, California 95814

(916) 654-7119
john.hope@energy.ca.gov

Land Use and Environmental Planner
John Hope has thirteen years experience with current and long-range land use planning and environmental planning. He has served the public interest through evaluating economic, social, and environmental issues in communities. He is a skilled advocate effective in presenting professional planning knowledge to interest groups, the public, and political affiliations.

PROFESSIONAL EXPERIENCE

CALIFORNIA ENERGY COMMISSION, Sacramento, California
Environmental Planner II, December 2011 to Current

As part of the Siting, Transmission and Environmental Protection (STEP) division - Environmental Office, I prepare environmental documentation for proposed energy facilities for the Commission as required by the California Environmental Quality Act (CEQA). Specifically, I write technical analyses for facility siting cases and planning studies in the areas of socioeconomics, environmental justice, land use, traffic and transportation, and visual resources, along with and formulate solutions and mitigation unique to each individual energy facility. I provide expert technical expertise and serve as a member of inter-disciplinary team that evaluates potential environmental and socioeconomic effects of proposed power plants, policies, and plans for energy development in order to satisfy the requirements of the Warren-Alquist Act and CEQA.

AECOM, Sacramento, California
Noise Analyst, February 2010 to July 2011

I served as assistant project manager, environmental planner, or air quality/noise analyst for various CEQA/NEPA documents. My work focused on preparing environmental setting and impact analysis sections, such as land use, traffic, public services, for projects related to infrastructure improvements, residential development, fairgrounds, industrial expansion, business parks, mixed-use developments, and economic appraisal. I used various modeling techniques along with SoundPLAN, a software-based noise prediction modeling program, to assess project-generated noise levels in an environment. Through the use of SoundPLAN, I graphically mapped and visually evaluated project-generated noise levels based on principles of acoustics. I also used SoundPLAN to model noise maps, design traffic noise mitigation, and predict combined noise levels. My experience in long-range planning also involved preparation of various elements for general plans and community plans.

EDAW | AECOM, Sacramento, California
Associate Environmental Planner, September 2004 to June 2009

I wrote technical sections and managed environmental documents that analyze and describe to the public the potential environmental impacts of implementing development projects, including needed on-site and offsite infrastructure. I supervised preparation of environmental documents utilizing information from the client (i.e., state, county, city) and other professionals (e.g., air quality consultant, traffic engineers) to conduct environmental impact analysis of development projects. I also wrote sections and conducted research for general plans and specific plans. I worked as part of a team in preparing these documents to meet the requirements of state and federal permit regulations. I diligently maintained budgets and worked within stringent schedules as part of managing preparation of environmental and community planning documents with local agencies, cities and counties, and environmental specialists. I prepared scopes of work and proposals for new work opportunities.

STANTEC CONSULTING, Sacramento, California
Project Planner, July 2002 to August 2004

I was responsible for providing land planning and environmental impact analysis in environmental engineering firms with various environmental remediation projects throughout northern California. I conducted hands-on oversight of remediation projects to assess the onsite environmental impacts and analyzed their successfulness. I provided my proficient writing skills through the preparation of site reports

related to remediation projects. I was relied upon to provide my land planning, environmental impact analysis, and entitlement processing expertise.

I was also responsible for providing assistance to land developers through the entitlement process including preparing development applications, preparing due diligence reports, and representation of the project to the public-at-large. I assisted cities and counties with the preparation of environmental documents and the processing of proposed land development projects. I managed the implementation of land development projects including large residential subdivisions, commercial development, public facilities, and business parks by coordinating efforts being pursued by other associates including surveyors, engineers, environmental specialists, public agencies, and the developer themselves. I also wrote technical sections that analyzed the environmental impacts associated with large infrastructure improvement projects and prepared the environmental document articulating the team's findings. Co-workers relied upon me to provide land use and environmental planning expertise towards a team effort.

PACIFIC MUNICIPAL CONSULTANTS, Rancho Cordova, California
Assistant Planner, July 1999 to July 2002

As part of my work experience I evaluated proposed development projects, provided code enforcement, and assisted the public-at-large. I gained experience in long-range planning from diligent researching, and writing technical sections for General Plans and environmental documents.

As part of a team effort, I was responsible for the expedited review and management of proposed development applications through the entitlement process and conducting environmental review while working as a land use planner for the City of Elk Grove. I was responsible for processing and reviewing current planning projects applications such as subdivision maps, use permits, design review applications, staff level discretionary review, and other entitlements as assigned by the Community Development Director. As part of this process, I evaluated proposed projects with the requirements of the municipal code and General Plan, presented development projects, and portrayed issues surrounding the project to decision makers and the public through writing staff reports and articulating my professionalism to Planning Commissions and City Councils. As time went on, I worked my way up for the opportunity to process larger and more complicated development projects.

In addition, I worked on the City of Elk Grove's first General Plan by writing and analyzing all the quantitative and statistical data for the Housing element and administered public meetings and workshops. I wrote the draft Housing Element, started the State certification process with the Department of Housing and Community Development, and assisted with the preparation of other required elements of the General Plan. I also utilized GIS software for manipulating and visually presenting information related to the community.

I gained experience with the environmental impact review process which resulted from analyzing and comprehending technical studies and incorporating their information by writing technical sections for environmental documents and I coordinated the implementation of mitigation monitoring and reporting programs. As my experience with the environmental review process grew, my work ethic allowed me to increase my responsibilities as related to more environmentally controversial projects.

EDUCATION

California Polytechnic State University, San Luis Obispo
Bachelor of Sciences, City and Regional Planning

This program provided a hands-on experience which allowed me to execute environmental impact assessments and site analysis, create site designs, research planning law and ordinances, present to several public and private groups, create graphic presentations, and conduct hands-on field research for specific projects located along the California central coast. I gained knowledge of various land use design concepts through hands-on draft work with computers and graphic tools.

DECLARATION OF
Jeff Juarez

I, **Jeff Juarez**:

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 – Energy Facility Siting.

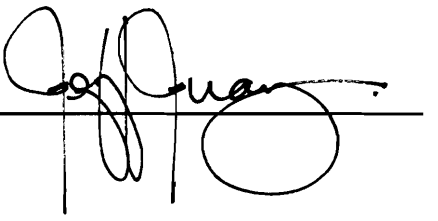
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on the evaluation of **Alternatives** for the **Blythe Solar Power 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: 17SEP2013 Signed: 

At: Sacramento, California

Jeff Juarez

1516 NINTH STREET MS 40
SACRAMENTO CA 95814

916.654.3947
jeff.juarez@energy.ca.gov

Education

University of California, Berkeley
Master of City Planning (2000)
Master of Landscape Architecture (2000)
Concentration: Urban Design

California State Polytechnic University, Pomona
Bachelor of Science in Landscape Architecture (1995)

Experience

Urban and Regional Planning and Design

California Energy Commission, Sacramento, CA (2013 – present)
Planner II – Energy Facility Siting: Identify and analyze environmental effects of proposed energy facilities for compliance with the requirements of the Warrant-Alquist Act and CEQA.

Los Angeles County Department of Regional Planning, Los Angeles, CA (2007 – 2010)
Regional Planning Assistant II: Implement local coastal programs and land use plans of the Santa Monica Mountains Coastal Zone; revise and prepare new coastal plan standards.

City of Foster City Planning Department, Foster City, CA (2002 – 2003)
Assistant Planner: Land use planning; prepare municipal park landscape improvement plan.

City of Fremont Planning Department, Fremont, CA (1999 – 2001)
Assistant Planner: Assist in developing Central Business District Concept Plan Design Guidelines; plan, coordinate, and facilitate General Plan Housing Element Update community outreach and participation.

Essential planning and design duties:

- Project management and coordination.
- Compile, analyze, interpret, and present planning data.
- Discretionary site plan and design review.
- Review building permit technical plans.
- Environmental review and analysis; prepare CEQA documents.
- Communicate planning policies, processes, and procedures.
- Prepare and present reports and recommendations to local review boards, planning commissions, city councils, and the Los Angeles County Board of Supervisors.

Landscape Architecture

California State Polytechnic University, Pomona, Pomona, CA (2003 – 2007)
Assistant Professor: Instruct undergraduate and graduate landscape architecture design courses of an accredited four-year landscape architecture program in the College of Environmental Design.

DECLARATION OF
Andrea Martine

I, **Andrea Martine**:

1. I am presently employed by the California Energy Commission in the **(Environmental Protection Office)** of the Siting, Transmission and Environmental Protection Division as an **(Planner II, Biological Resources)**

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 **(Blythe 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: Sept. 16, 2013 Signed: Andrea Martine

At: Sacramento, California

Andrea Martine

Employment History

California Energy Commission

Planner II, Staff Biologist *12/2009 to present*

As a staff biologist with the Energy Commission, Ms. Martine analyzes the biological resource components of energy facilities siting applications to assess resource impacts, develop mitigation, and to evaluate compliance with applicable federal, state, and local, 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 ensure the best available information is included in staff analyses.

California Department of Transportation, District 3

Associate Environmental Planner/Environmental *11/1998 to 7/2000*

Ms. Martine's primary duties with Caltrans as Project Biologist were to analyze environmental impacts to special status plants, wildlife and wetlands and stream associated with transportation projects in Northern California. She wrote environmental documents to satisfy CEQA, NEPA, obtained 404 permits, 401 certification and 1601 agreements for various transportation-related projects. She acted as liaison for Federal Highways Administration while reviewing documents prepared for local projects.

Jones & Stokes Associates, Inc.

Environmental Specialist/Botanist *04/1994 to 11/1998*

While with the environmental consulting firm Jones & Stokes Assoc. Inc., Ms. Martine specialized in listed Brachiopod surveys, special status plant and floristic surveys. She worked throughout California including Sacramento, Placer, Fresno and San Diego counties and several military sites (BEALE AFB, Camp Roberts, & Fort Hunter Ligget). Projects while at JSA included protocol-level surveys for special-status plants and brachiopods, wetland delineations, and monitoring vernal pools, seasonal wetlands and riparian vegetation at mitigation sites. Managed brachiopod projects and budgets and writing biological resources sections of documents to satisfy NEPA and CEQA requirements.

El Dorado National Forest

Botanist (Volunteer) *07/1993 to 08/1993*

Ms. Martine helped prepare environmental analyses of proposed timber and recreational projects in which, she produced inventories and assessments of the existing natural environmental conditions of project sites and watersheds.

EDUCATION

Biological Sciences *B.S.*

California State University , Sacramento *June 1993*

DECLARATION OF
Michael D McGuirt

I, : Michael D McGuirt

1. I am presently employed by the California Energy Commission in the Cultural Resources Unit, Environmental Protection Office, Siting, Transmission and Environmental Protection Division as an Energy Planner II.

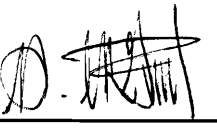
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Cultural Resources, for the Blythe Solar Power Project (09-AFC-6C) 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 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: 9/19/2013 Signed: 

At: Sacramento, California

MICHAEL D MCGUIRT, MA, RPA

SUMMARY OF PROFESSIONAL EXPERIENCE

Over eighteen years of professional academic and cultural resources management experience in western North America, Hawai'i, Central America, and Eastern Europe. Former regulator and present planner with expert knowledge of Section 106 of the National Historic Preservation Act of 1966 (NHPA). Thorough knowledge of the California Environmental Quality Act of 1970, Section 110 of the NHPA, and the US Army Corps of Engineers' Appendix C. Working knowledge of the National Environmental Policy Act of 1969, Native American Graves Protection and Repatriation Act of 1990, and the Archaeological Resources Protection Act of 1979. Expert in developing and coordinating historic preservation solutions that comply with complex Federal, state, and local regulatory environments for large-scale energy, transportation, and telecommunications projects. Expert technical skills in geoarchaeology, mapping and spatial analysis, archaeological survey and excavation, and material culture analyses.

EDUCATION

MASTER OF ARTS, Anthropology, University of Texas at Austin
May 1996

BACHELOR OF ARTS, Anthropology and Archaeological Studies, University of Texas at Austin
December 1990

PROFESSIONAL AFFILIATIONS

Register of Professional Archaeologists
Society for American Archaeology
Society for California Archaeology
National Trust for Historic Preservation
California Preservation Foundation

HONORARY AFFILIATIONS

Honor Society of Phi Kappa Phi

RECENT PROFESSIONAL EMPLOYMENT

ENERGY PLANNER III, California Energy Commission, Sacramento, California
December 2009 to May 2010

Supervised an Energy Commission staff of five professional cultural resources analysts and a varying number of equivalent consultants in the development of CEQA and NEPA analyses of the potential effects that the construction and operation of proposed thermal power plants may have on significant cultural resources, developed and supervised the implementation of agency-wide programs to facilitate agency compliance with Federal historic preservation regulations, and supervised the periodic staff reviews of licensees' actions to ensure compliance with conditions of certification for extant licenses.

ENERGY PLANNER II, California Energy Commission, Sacramento, California
November 2007 to December 2009, June 2010 to present

Develop environmental impact analyses of the potential effects that the construction and operation of proposed thermal power plants may have on significant cultural resources. Apply applicable Federal, State, and local statutes and regulations, as they relate to the consideration of cultural resources. Design and execute cultural resource impact analyses that are appropriate to the specific regulatory context for each proposed project. Gather and evaluate information on projects and on cultural resources in project areas. Develop and maintain agency and public relationships to acquire the most useful data and to elicit input in the development of California Energy Commission conditions of certification. Succinctly convey, orally in different public forums and in different written technical formats, the results of cultural resource impact analyses and proposed conditions of certifications meant to mitigate adverse impacts to significant cultural resources. Periodic reviews of licensees' actions to ensure compliance with extant conditions of certification. Oversight of consultants' who are preparing cultural resource impact analyses.

ASSOCIATE STATE ARCHAEOLOGIST, Office of Historic Preservation, California Department of Parks and Recreation (California State Parks), Sacramento, California
May 2001 to November 2007

Regulator, in the California Office of Historic Preservation (OHP), of the Advisory Council on Historic Preservation's (Advisory Council) process implementing Section 106 of the National Historic Preservation Act (NHPA). Conducted among the most complex Section 106 reviews, and participated in, and often guided, the consultations of which those reviews were a part. Formally advised other OHP units and the California State Historical Resources Commission on the appropriate disposition and treatment of archaeological resources in the context of other State and Federal historic preservation programs that OHP either administers or in which OHP participates. Worked out of class for two consecutive, six-month terms as a Senior State Archeologist, from December 2004 through December 2005, supervising the Project Review Unit for the State Historic Preservation Officer (SHPO). As the Acting Chief of Project Review, managed and trained a staff of eight professionals and one clerical assistant to conduct, on behalf of the SHPO, the review of all Federal agency actions in the State of California under 36 CFR Part 800, the Advisory Council's Section 106 regulation.

ENVIRONMENTAL SPECIALIST III, Jones & Stokes, Sacramento, California
February 1999 to May 2001

Designed, conducted, and managed short- and long-term archaeological projects in California, Nevada, and New Mexico to comply with Sections 106 and 110 of the NHPA. Prepared proposals. Assisted with client contract negotiations. Conducted archaeological record searches and archival research. Directed Phase I pedestrian inventory surveys and test excavations for Phase II evaluations. Analyzed material culture assemblages. Prepared technical reports and regulatory compliance documents including National Register property and district evaluations, and monitoring and discovery plans. Represented clients in consultations with federal and state agencies, and coordinated and managed clients' compliance with federal cultural resource

regulations and the cultural resource regulations of California, Nevada, and New Mexico.

ASSISTANT ANTHROPOLOGIST, Bernice Pauahi Bishop Museum, Honolulu, Hawai`i
August 1996 to June 1998

Assisted with archaeological project design, preparation of proposals, and client contract negotiations, directed Phase I pedestrian inventory surveys, test excavations for Phase I subsurface inventory surveys, test excavations for property evaluations, and data recovery excavations, and assisted with preparation of technical reports on short-term cultural resource management contracts. Analyzed field records, prepared site reports and synthetic report chapters, and analyzed and prepared reports on lithic assemblages for Phases I–III of a long-term federal highway project (Interstate Route H–3). Conducted research in Hawaiian archaeology, and delivered public and professional presentations of that research. Advised on the integration of geoarchaeological methods and techniques into cultural resource management field efforts, and on geoarchaeological interpretations of extant field records, and designed and conducted geoarchaeological components of fieldwork for short–term cultural resource management contracts.

ARCHEOLOGIST I, Archeology Survey Team, Texas Parks and Wildlife Department, Austin, Texas
December 1994 to May 1995

Assisted in the direction of pedestrian inventory surveys, the preparation of cultural resource management plans, and the preparation of state site forms and reports of investigations. Advised on the integration of global positioning system (GPS) technology and the field methods of archaeological survey.

ARCHAEOLOGIST, Lower Colorado River Authority, Austin, Texas
February 1994 to December 1994

Designed and implemented experimental mitigation measures for archaeological sites subject to fluvial and lacustrine erosion. Assisted in pedestrian inventory surveys and evaluation-phase excavations, the preparation of State site forms, the development of the agency's database for its archaeological site inventory, and public education initiatives that included site tours for primary and secondary students, and workshops with field and classroom components to instruct primary and secondary teachers.

RECENT PROFESSIONAL DEVELOPMENT

CULTURAL RESOURCE AND ENVIRONMENTAL LAW

The Section 106 Advanced Seminar: Reaching Successful Outcomes in Section 106 Review

Sacramento, California, Advisory Council on Historic Preservation, Tom McCulloch
March 2011

Renewable Energy Development: Impacts on Cultural Resources

Phoenix, Arizona, National Preservation Institute, Claudia Nissley
February 2011

Thresholds of Significance in Environmental Planning
Sacramento, California, University of California, Davis, Continuing and Professional Education, Terry Rivasplata and Maggie Townsley
February 2011

Successful CEQA Compliance: An Intensive Two-Day Seminar
Sacramento, California, University of California, Davis, Continuing and Professional Education, Terry Rivasplata and Maggie Townsley
June 2009

ACHP - FHWA Advanced Seminar: Reaching Successful Outcomes in Section 106 Review
Vancouver, Washington, Advisory Council on Historic Preservation, Don Klima and Carol Legard; Federal Highway Administration, Mary Ann Naber
October 2007

NEPA Compliance and Cultural Resources
Portland, Oregon, National Preservation Institute, Joe Trnka
October 2007

Section 106: How to Negotiate and Write Agreements
Sacramento, California, National Preservation Institute, Claudia Nissley
November 2004

Consultation with Indian Tribes on Cultural Resource Issues
Sacramento, California, National Preservation Institute, Thomas F. King and Reba Fuller
September 2003

Section 106: How to Negotiate and Write Agreements
The Presidio, San Francisco, California, National Preservation Institute, Thomas F. King
May 2002

Introduction to CEQA
Sacramento, California, University of California, Davis, Continuing and Professional Education, Ken Bogdan and Terry Rivasplata
July 2000

TECHNICAL ARCHAEOLOGY

Introduction to Historic Site Survey, Preliminary Evaluation, and Artifact ID
West Sacramento, California, California Department of Transportation, Julia Huddleson, Anmarie Medin, Judy Tordoff, and Kimberly Wooten; California Department of Parks and Recreation, Glenn Farris, Larry Felton, and Pete Schulz
September 2006

Principles of Geoarchaeology for Transportation Projects (Course No. 100246)
Sacramento, California, California Department of Transportation, Graham Dalldorf, Glenn Gmoser, Jack Meyer, Stephen Norwick, Adrian Praetzellis, and William Silva
October 2006

INFORMATION TECHNOLOGY AND CULTURAL RESOURCE MANAGEMENT

GIS: Practical Applications for Cultural Resource Projects
Sacramento, California, National Preservation Institute, Deidre McCarthy
September 2006

ENVIRONMENAL ANALYSES, TECHNICAL REPORTS, CONFERENCE PAPERS, AND PUBLICATIONS

ALLRED, SARAH, MICHAEL MCGUIRT, AND KATHLEEN FORREST

2010 **Cultural Resources and Native American Values**. In *Calico Solar Power Project, Supplemental Staff Assessment, Part II* (CEC-700-2010-009-SSA-2, August 2010), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. C.2-1–C.2-175. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

BASTIAN, BEVERLY E. AND MICHAEL D. MCGUIRT

2009 **Cultural Resources**. In *Final Staff Assessment, Canyon Power Plant, Application for Certification (07-AFC-9), Orange County* (CEC-700-2009-008-FSA, September 2009), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. 4.3-1–4.3-51. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

BLOSSER, AMANDA, MICHAEL D. MCGUIRT, AND BEVERLY E. BASTIAN

2008 **Cultural Resources**. In *Staff Assessment, Orange Grove Project, Application for Certification (08-AFC-4), San Diego County* (CEC-700-2008-009, November 2008), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. 4.3-1–4.3-43. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

DARCANGELO, JENNIFER, JOHN SHARP, MICHAEL D. MCGUIRT, ANDREA GALVIN, AND CLARENCE CAESAR

2004 ***Section 106 for Experienced Practitioners: Consulting with the California SHPO*** *(GEV4111)*. Course taught on 8 September 2004 in Oakland to California Department of Transportation cultural resources personnel and private sector cultural resource consultants (8 hours).

DARCANGELO, JENNIFER, JOHN SHARP, MICHAEL D. MCGUIRT, AND ANDREA GALVIN

2005 ***How to Consult with the California SHPO***. Workshop presented on 23 April 2005 at the 39th Annual Meeting of the Society for California Archaeology, Sacramento, California (6 hours).

FORREST, KATHLEEN AND MICHAEL D. MCGUIRT

2010 **Cultural Resources**. In *Almond 2 Power Plant Project, Revised Staff Assessment* (CEC-700-2010-011REV, July 2010), edited by Siting, Transmission and

Environmental Protection Division, California Energy Commission, pp. 4.3-1–4.3-51. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

GATES, THOMAS, AMBER GRADY, AND MICHAEL D. MCGUIRT
2012 **Cultural Resources**. In *Hidden Hills Solar Electric Generating System (11-AFC-2) Supplemental Staff Assessment* (June 15, 2012), pp. 1–101. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

JONES & STOKES
1999a ***Cultural Resource Inventory Report for Williams Communications, Inc. Fiber Optic Cable System Installation Project, Wendover, Nevada to the California State Line***. Volume 1: Draft Report. July. (JSA 98-358.) Sacramento, California. Prepared for Williams Communications, Inc., Tulsa, Oklahoma.

1999b ***Cultural Resources Report for the Williams Communications, Inc. Interstate 80 Fiber Optic Cable System Installation Project***. Volume I. September. (JSA 98-358.) Submitted to Williams Communications, Inc., Tulsa, Oklahoma. On file with the State Historic Preservation Office, Carson City, Nevada.

1999c ***Archaeological Site Avoidance and Monitoring Plans for Williams Communications' Fiber Optic Cable Installation In the Union Pacific Railroad Right-of-Way, Doña Ana County to Hidalgo County, New Mexico***. October. (JSA98-379.) Sacramento, California. Prepared for Williams Communications, Inc., Tulsa, Oklahoma.

2001 ***Final Phase II Cultural Resource Evaluation for the Kramer Mining District, Edwards AFB, Kern and San Bernardino Counties, California.*** Volume I. November. Sacramento, California. On file with the Base Historic Preservation Officer, Edwards AFB, California.

LEBO, SUSAN A. AND MICHAEL D. MCGUIRT
1997 ***Geoarchaeology at 800 Nuuanu: Archaeological Inventory Survey of Site 50-80-14-5496 (TMK1-7-02:02), Honolulu, Hawai`i***. Department of Anthropology, Bishop Museum, Honolulu. (100 pp.) Submitted to Bank of Hawaii, Honolulu. On file with the State Historic Preservation Division, Honolulu.

1998a ***Assessments of Stone Architecture: a Case Study from North Hālawa Valley, O`ahu***. Paper presented at the 11th Annual Hawaiian Archaeology Conference of the Society for Hawaiian Archaeology, Kailua-Kona, Hawai`i.

1998b ***Pili Grass, Wood Frame, Brick, and Concrete: Archaeology at 800 Nuuanu***. Department of Anthropology, Bishop Museum, Honolulu. (142 pp.) Submitted to Bank of Hawaii, Honolulu. On file with the State Historic Preservation Division, Honolulu.

LENNSTROM, HEIDI A., P. CHRISTIAAN KLIEGER, MICHAEL D. MCGUIRT, AND SUSAN A. LEBO
1997 ***Archaeological Reconnaissance of Pouhala Marsh, `Ewa District, O`ahu***. Department of Anthropology, Bishop Museum, Honolulu. (14 pp.) Submitted to Ducks Unlimited, Inc., Rancho Cordova, California. On file with the State Historic Preservation Division, Honolulu.

MCGUIRT, MICHAEL D.
1996 ***The Geoarchaeology and Palynology of an Early Formative Pithouse Village in West-Central New Mexico***. Unpublished M.A. thesis, Department of Anthropology, University of Texas at Austin.

1998 **50-80-10-2010, 50-80-10-2016, 50-80-10-2088, and 50-80-10-2134**. In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vols. 2a and 2b, edited by Department of Anthropology, Bishop Museum, pp. 1–3, 1–44, 1–5, and 1–46. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

2002 **Committee Reports, OHP Liaison**. *SCA Newsletter* 36(3):4–5.

2004 **Committee Reports, OHP Liaison**. *SCA Newsletter* 38(2):7, 38(3):6–8.

2006 **Preservation Archaeology**. In *California Statewide Historic Preservation Plan: 2006–2010*, edited by Marie Nelson, pp. 8–15. California Department of Parks and Recreation's Office of Historic Preservation, Sacramento. Submitted to the National Park Service, Washington, D.C. On file at the California Office of Historic Preservation, Sacramento.

2007 **Dealing with Multi-element Cultural Resources under Section 106**. In *Historic Properties Are More Than Meets the Eye: Dealing with Historical Archaeological Resources under the Regulatory Context of Section 106 and CEQA*. Session presented on 25 April 2008 at the *33rd Annual California Preservation Conference* of the California Preservation Foundation in Napa, California, moderated by Michelle Messinger and Michael D. McGuirt (1 1/2 hours).

2010 **Cultural Resources and Native American Values**. In *Imperial Valley Solar Project (Formerly SES Solar Two), Supplemental Staff Assessment, Part II* (CEC-700-2010-013 SUP, August 2010), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. C.3-1–C.3-409 plus appendix B (118 pp.). Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

2012 **[Geology and geomorphology contexts (pp. 4.3-12–4.3-15), and discussions of geoarchaeological field investigations and the role of the investigations in the regulatory process (pp. 4.3-39–4.3-43)]** In *Rio Mesa Solar Electric Generating Facility, Preliminary Staff Assessment-Part B* (CEC-700-2012-006-PSA-PTB, October 2012), edited by Siting, Transmission and Environmental Protection Division, California Energy

Commission. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

McGUIRT, MICHAEL D., AMANDA BLOSSER, AND BEVERLY E. BASTIAN

2009 **Cultural Resources**. In *Final Staff Assessment, Beacon Solar Energy Project, Application for Certification (08-AFC-2), Kern County* (CEC-700-2009-005-FSA, August 2009), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. 4.3-1–4.3-131. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

McGUIRT, MICHAEL D., THOMAS GATES, AND AMBER GRADY

2012 **Cultural Resources, Sandy Valley Off-site Alternative, Alternatives**. In *Hidden Hills Solar Electric Generating System (HHSEGS), Preliminary Staff Assessment* (CEC-700-2012-003-PSA, May 2012), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. 6.1-25–6.1-32. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

McGUIRT, MICHAEL D. AND LESLIE H. HARTZELL

1997 **50-80-10-2139 and 50-80-10-2459**. In *Imu, Adzes, and Upland Agriculture: Inventory Survey Archaeology in North Hālawa Valley, O`ahu*, vols. 2c and 2d, edited by Department of Anthropology, Bishop Museum, pp. 1–17 and 1–5. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

1998 **Chapter 1: Introduction**. In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vol. 1, edited by Department of Anthropology, Bishop Museum, pp. 1–14. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

McGUIRT, MICHAEL D. AND SHANNON P. MacPHERRON

1998 **50-80-10-2137**. In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vol. 2b, edited by Department of Anthropology, Bishop Museum, pp. 1–86. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

McGUIRT, MICHAEL AND SARAH C. MURRAY

2008 **Cultural Resources**. In *Preliminary Staff Assessment, Ivanpah Solar Electric Generating System, Application for Certification (07-AFC-5), San Bernardino County* (CEC-700-2008-013-PSA, December 2008), edited by Siting, Transmission and Environmental Protection Division, California Energy Commission, pp. 5.3-1–5.3-73. Siting, Transmission and Environmental Protection Division, California Energy Commission, Sacramento. On file with the California Energy Commission, Sacramento.

McGuirt, Michael D. and Deborah I. Olszewski
1997 **50-80-10-2256**. In *Imu, Adzes, and Upland Agriculture: Inventory Survey Archaeology in North Hālawa Valley, O`ahu*, vol. 2d, edited by Department of Anthropology, Bishop Museum, pp. 1–9. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

Mikesell, Stephen, Michael McGuirt, and Trish Fernandez
2008 **Introduction to the White Papers in State Historical Resources Commission Archaeology Committee White Papers**. *SCA Newsletter* 41(1):18–21.

Sharp, John, Michael D. McGuirt, Jennifer Darcangelo, and Andrea Galvin
2004 ***How to Consult with the California SHPO***. Workshop presented on 18 March 2004 at the 38th Annual Meeting of the Society for California Archaeology, Riverside, California (4 hours).

DECLARATION OF
Melissa E. Mourkas

I, Melissa E. Mourkas, declare as follows:

1. I am presently employed by the California Energy Commission in the Cultural Resources Unit, Environmental Protection Office, Siting, Transmission and Environmental Protection Division as an Energy 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 Cultural Resources, for the Blythe Solar Power Project project (09-AFC-6C) based on my independent analysis of the Petition to Amend 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 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: October 7, 2013 Signed: Melissa E. Mourkas

At: Sacramento, California

MELISSA MOURKAS, ASLA

EDUCATION

MASTER OF ARTS, LANDSCAPE DESIGN & PLANNING, 1994
CONWAY SCHOOL OF LANDSCAPE DESIGN, CONWAY, MASSACHUSETTS
Graduate landscape design program providing professional training in site design and land-use planning. Curriculum emphasis is on sustainable landscape planning and design. Graduate projects included: Master Plan for a 45-acre historic resort, original landscape designed by F.L. Olmsted and Performance Standards for a proposed industrial park.

BACHELOR OF ARTS, HISTORY OF ARCHITECTURE & ART, 1981
SCRIPPS COLLEGE, CLAREMONT, CALIFORNIA
Major studies in Art and Architectural History, Urban Development. Senior thesis: documentation and analysis of the innovative residential designs and construction techniques of California modern architect Rudolf M. Schindler. Minor studies in Art and the Humanities.

PROFESSIONAL EXPERIENCE/QUALIFICATIONS

- Licensed Landscape Architect, California # 5139
- Qualified Architectural Historian, Secretary of the Interior's Standards for Historic Preservation, Code of Federal Regulations, 36 CFR Part 61.
- Chair, City of Sacramento Preservation Commission

LANDSCAPE ARCHITECTURE:

1994 to Present: Landscape Architecture and Design. Experience in landscape architecture, landscape construction estimating, site planning, historic landscapes and landscape master plans. Provide landscape architecture and consulting services to private clients, public organizations, contractors, and design firms. Preparation of Cultural Landscape Reports. Frequent speaker to various groups on landscape design, construction and cultural landscapes. Owner of Landscape Legacy, established 1998.

PLANNING AND HISTORIC PRESERVATION:

April 2010 to Present: Planner II, California Energy Commission, Siting, Transmission and Environmental Protection Division. Provide technical environmental analysis of proposed energy facilities and development. Review of EIR/EIS documents prepared by other agencies under NEPA. Specific tasks include: the assessment of potential impacts of new electric power plants on both Visual and Cultural Resources; identification of suitable mitigation measures under CEQA; preparation of written testimony; participation in public workshops; present sworn testimony during evidentiary hearings, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Cultural Resource specialty in the built environment, including buildings, structures, trails, parks and water conveyance systems.

2005 to 2008: Assistant Planner, Historic Preservation Office, City of Sacramento, CA
Responsible for design review and approval for private and public development projects involving rehabilitation, preservation and restoration of historic resources and districts under CEQA. Prepared staff reports for Preservation Commission and Council, and coordinated with other planning staff on concurrent entitlements. Staff liaison on municipal development projects involving historic resources, including buildings, other structures, parks and roadways.

BLYTHE SOLAR POWER PROJECT (09-AFC-6C)
STAFF ASSESSMENT – Part B

Amendment to the Blythe Solar Power Project