BLYTHE SOLAR POWER PROJECT
BIOLOGICAL RESOURCES MITIGATION
IMPLEMENTATION AND MONITORING PLAN
RIVERSIDE COUNTY, CALIFORNIA

09-AFC-6C

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1.0 INTRODUCTION

Palo Verde Solar I, LLC (PVSI) will construct, own, and operate the Blythe Solar Power Project (Project). The Project is proposed on public lands managed by the Bureau of Land Management (BLM) in Riverside County, California.

The Project is located approximately 8 miles west of Blythe and 2 miles north of Interstate 10 (I-10) in Riverside County, California (Figure 1). The Project is located on a 7,541-acre right-of-way (ROW) owned by the Federal government and administered by BLM, pursuant to an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by California Energy Commission (CEC). The Project site is currently undeveloped open space.

1.1 Purpose of the Biological Resources Mitigation Implementation and Monitoring Plan

The purpose of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) is to identify the means (e.g., mitigation measure, responsible party, timing, schedule, action, performance standard and remedial action) by which PVSI intends to minimize impacts, protect and conserve biological resources, and comply with Federal and State requirements for the Project. The BRMIMP Summary Table (Appendix A) is the principal section of this BRMIMP. The BRMIMP Summary Table will guide PVSI and other responsible parties in the implementation of the CEC's biological Conditions of Certifications (COCs) and other biological permitting requirements for the Project and provide a tracking system for implementation (See Appendix B for the Biological Resources COCs as set forth in the CEC Final Decision issued September 15, 2010). The BRMIMP Summary Table provides the following information:

- Condition (e.g., the COC such as BIO-1, BIO-2, etc);
- Source (a COC, such as BIO-1 or a compliance plan, such as the Avian Protection Plan);
- Page number (of the source document);
- Mitigation measure (the specific measure from the COCs or compliance plans);
- Responsible party (the entity responsible for compliance, e.g., Owner[1], Designated Biologist);
- Timing (e.g., the timeframe, such as preconstruction, construction, post-construction, operations, and closure);

1. The COCs use the term "Owner"; therefore, Owner is used in the BRMIMP Summary Table (Appendix A) instead of PVSI, which is used herein.

- Action (the type of action taken to be taken);
- Schedule (i.e., when an action is to occur, such as *No fewer than 45 days before start of site mobilization or construction-related ground disturbance* for BIO-1);
- Notes (any clarifying information to the schedule, mitigation measure, or the action);
- Performance standard (a decision-making tool to determine if/when a mitigation measure or action is or is not successful);[2]
- Remedial action (an action to be implemented if the performance standard is not met); and
- Status (the condition of the action or remedial action).

This BRMIMP Summary Table also incorporates impact avoidance and minimization measures set forth in the biological resources compliance plans prepared to date for the Project. The avoidance and minimization measures from the individual compliance plans that are included in the BRMIMP Summary Table are distinct from those measures in the COCs. In other words, if the COC notes that preconstruction surveys are to occur and these preconstruction surveys are also noted in the compliance plan, the measure is not included in the list of measures under the compliance plan in the BRMIMP Summary Table, unless there is distinct information relevant to the measure. The relevant compliance plans and associated COC references are:

- BIO-8, Item #17: Revegetation Plan (provided as Appendix C)
- BIO-10: Desert Tortoise Relocation/Translocation Plan (Appendix D)
- BIO-13: Raven Management Plan (Appendix E)
- BIO-14: Weed Management Plan (Appendix F)
- BIO-15/BIO-8, Item #8b: Avian Protection Plan/Nesting Bird Monitoring and Management Plan
- BIO-18: Burrowing Owl Mitigation Plan (Appendix G)
- BIO-19: Special-status Plant Mitigation Plan
- BIO-23: Decommissioning and Reclamation Plan (Appendix H)
- BIO-24: Golden Eagle Monitoring and Management Plan
- BIO-26: Couch's Spadefoot Toad Protection and Mitigation Plan (Appendix I)

2. Note: Performance standards and remedial actions are forthcoming and will be included in the BRMIMP Summary Table (Appendix A) for the next submittal.

The BRMIMP Summary Table will also describe the following:

- BIO-6: Biological Resources Worker Environmental Awareness Training Program
- BIO-8: Impact Avoidance and Minimization Measures
- BIO-22, Item #5: Waters of the State Best Management Practices
- Conservation measures specified in the U.S. Fish and Wildlife Service (USFWS) Biological Opinion (Appendix J)

The BRMIMP includes accurate and up-to-date maps depicting the location of sensitive biological resources. See the included figures for maps showing the location of the following biological resources:

- Burrowing owl (Figure 2)
- Desert tortoise (Figure 3)
- Special-status plants (Figure 4)
- Special-status wildlife (Figure 5)

1.1.1 Regulatory Approvals

Table 1 lists the regulatory agencies and their respective approvals (e.g., conditions, permits, etc) as they relate to biological resources for the Project.

Table 1 Regulating Agency's Approvals

Agency	Approvals
CEC	Final Decision, which includes biological resources conditions of certification
BLM	Final Environmental Impact Statement and Record of Decision ROW Grant California Desert Conservation Area Amendment
California Department of Fish and Game	1602 (requirements are incorporated into the Final Decision) 2080.1 Consistency Determination on Section 7 Endangered Species Act (ESA) Consultation or a 2081 Incidental Take Permit (requirements are incorporated into the Final Decision)
Regional Water Quality Control Board	Waste Discharge Requirement (requirements are incorporated into the Final Decision)
United States Fish and Wildlife Service	Section 7 ESA Consultation--Biological Opinion (see Appendix J)

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of I-10 in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre ROW owned by the Federal government and managed by the BLM, pursuant to an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by CEC.

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on-site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily

the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development in the fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) non-linear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 2.

Table 2 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1a	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor (including the main access road), Water Well and initial portion of Unit #1	772.68
Phase 1b	Remainder of Unit #1, Unit #2 and Gen-tie line	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
Total		**7,024.5**

Construction activities will occur primarily during the day, but certain construction activities will be conducted at night. For example, cement pours should be conducted at night as the high ambient temperatures during the summer daytime hours in the desert would jeopardize the quality of the concrete, as concrete dries too quickly if it is too hot. Solar collector assembly work would be conducted 24 hours per day. Other low-noise (less than 65 decibel A-weighted), construction activities may be conducted at night, including pulling wire and welding. These various activities

would require operation of the concrete batch plant, generators, lights, welders, forklifts, possibly small cranes, and miscellaneous other equipment.

1.4 Vegetation Communities Present in the Project Site

COC BIO-7 requires PVSI to provide a final accounting in whole acres of the areas of vegetation communities/cover types present before and after construction. Table 3 presents the acres of vegetation communities present on the Project site that will be impacted from the Project. The acreage includes the entire proposed Project footprint and the acreage for species habitat that triggers compensatory mitigation.

Table 3 Vegetation Communities Present in the Project Site

Vegetation Communities and Other Cover Types	Acres
Creosote Bush – Big Galleta Association	371
Desert Dry Wash Woodland	213
Unvegetated Ephemeral Dry Wash	8
Subtotal Riparian	*592*
Sonoran Creosote Scrub Brush	6,365
Stabilized and Partially Stabilized Sand Dunes	58
Subtotal Upland	*6,423*
Grand Total	**7,015**

2.0 RESPONSIBLE PARTIES AND LINES OF COMMUNICATION

This section describes responsibilities of participating parties and key points of authority or notification during implementation of the Project (CEC 2010). For a complete listing of responsible parties, authority or notification actions, refer to Appendix A.

Responsibilities of all participants in the Project are connected through the permitting/licensing process. Each participant, through legally binding instruments, agrees to abide by requirements designed to minimize impacts and document compliance to Federal and State laws that protect or conserve biological resources. Timely, clear and effective communication between PVSI, CEC, BLM, the construction contractor, and other agencies will be critical to the success of this Project.

Figures 6 a and b shows the key lines of communication.

2.1 California Energy Commission Compliance Project Manager

In their role as state Lead Agency under California Environmental Quality Act, the CEC has the responsibility to complete an independent assessment of the Project's engineering design and its potential effects on the environment. The staff also recommends measures to mitigate potential significant adverse environmental effects, which take the form of COCs (Appendix B) for construction, operation, maintenance and eventual decommissioning of the Project. The CEC Compliance Project Manager (CPM) is responsible for the designated actions shown in Appendices A and B. The name and contact information for the CEC CPM is provided in Section 6.0, Important Contact Information.

Key points of authority or notification are:

- [The CEC CPM will notify the PVSI of] a determination of success or failure of a corrective action … within five working days after receipt of notice that corrective action is completed, or notify the PVSI that coordination with other agencies would require additional time before such a determination could be made (BIO-5).
- The CEC CPM reserves the right to issue a stop work order or allow California Department of Fish and Game (CDFG) to issue a stop work order after giving notice to the PVSI, if the CEC CPM in consultation with CDFG determines that the PVSI has breached any of the terms or conditions of BIO-22.

2.2 Bureau of Land Management Authorized Officer

In their role as Federal Lead Agency, the BLM has oversight responsibility to ensure the mitigation measures and conditions of approval contained in the Project Record of Decision (ROD), BLM ROW grant and BLM use permits are implemented during Project construction, operation and maintenance. Compliance will be monitored primarily by a designated BLM

Authorized Officer (AO), other BLM designate of the AO, and possibly a BLM Field Monitor. The names and contact information for BLM individuals are provided in Section 6.0, Important Contact Information. BLM's AO is responsible for the designated actions shown in Appendices A and B.

2.3 PVSI Compliance Program Manager

As the owner of the Project, PVSI has the responsibility to construct, operate, and maintain the Project in compliance with all Federal, State, and local regulations, and in accordance with the CEC License, ROD/ROW grant and other required permits. The PVSI[3] CPM will be responsible for overseeing and managing the construction contractor(s), as well as operation and maintenance personnel, to ensure they comply with conditions contained in the COCs and other permits. PVSI retains final responsibility for compliance with environmental mitigation measures. PVSI is responsible for the designated actions shown in Appendices A and B.

Key points of authority or notification are:

- In an emergency, the PVSI CPM will immediately notify the CEC CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist (DB) (see Section 2.3.3, PVSI Designated Biologist) is proposed to the CPM for consideration (BIO-1).
- PVSI CPM will notify the CEC CPM of the circumstances and actions being taken to resolve the problem (non-compliance problems) (BIO-5).
- If the non-compliance or halt to construction or operation relates to desert tortoise or any other Federal or State-listed species, PVSI CPM will notify the Carlsbad Office of USFWS and Ontario Office of CDFG at the same time (BIO-5).
- If a Federal or State-listed plant species or BLM sensitive plant species is detected during summer/fall 2010 surveys, PVSI CPM will immediately notify the CDFG, USFWS, BLM, and the CEC CPM (BIO-19, Section C.4).
- PVSI CPM will notify the CEC CPM and CDFG, 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 (BIO-22).
- PVSI CPM will notify the CEC CPM and CDFG of any change of conditions to the Project, impacts to state waters, or the mitigation efforts. The notifying report will be provided to the CEC CPM and CDFG no later than seven days after the change of condition is identified (BIO-22).

3. Shown as SMLLC Compliance Program Manager on Figure 6 a and b.

2.3.1 PVSI Environmental Compliance Manager

PVSI will assign an Environmental Compliance Manager (ECM) to the Project. The ECM is responsible for facilitating implementation of the environmental conditions of the Project. Typical ECM duties involve managing, supervising, and/or providing advice on work affecting air quality, water/streambed permits, and biological resources environmental compliance programs. The ECM will have experience in the implementation of general environmental compliance measures.

2.3.2 PVSI Construction and/or Operations

Construction contractors will be contracted by PVSI to construct the Project. All of the construction contractors will be legally bound to the requirements of the COCs (Appendix B) and other permits through conditions included or otherwise incorporated into PVSI's bid documents. The bid documents include text explaining that the contractor is accountable for their actions about the environment and compliance with environmental regulations will be a condition of employment. Operation staff and contractors will be legally bound to the requirements of the COCs (Appendix B) and other permits through conditions included or otherwise incorporated into PVSI's operating contracts.

2.3.2.1 EPC Contractor Construction Manager

The Engineering, Procurement, and Construction (EPC) Construction Manager will have ultimate oversight of the construction contractor to ensure compliance with the COCs (Appendix B).

Key points of authority or notification are:

- The construction/operation manager will act on the advice of the DB and Biological Monitor(s) to ensure conformance with the biological resources of the COCs (BIO-5).
- Operations staff at the Project site will also report finding any dead birds or other wildlife at the evaporation ponds to the DB within one day of the detection of the carcass (BIO-25, Item #2).

2.3.3 PVSI Designated Biologist

The DB is responsible for the designated actions shown in Appendices A and B. The DB is the main contact for PVSI and the CEC CPM. Although contracted by PVSI, the DB will act independently and responsibly in verifying all elements of this BRMIMP or other approved mitigation are carried out in totality and in a timely manner.

Key points of authority or notification are:

- The DB will 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 (BIO-5).
- The DB will notify the CEC CPM 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 and advise them of any corrective actions (BIO-5).
- Inform PVSI and the construction or operation manager when to resume activities (BIO-5, Item #2).
- Notify the CEC CPM and 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 Office of USFWS and the Ontario Office of CDFG shall also be notified. (BIO-5, Item #3).
- Notify the CEC CPM at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify the CEC CPM in writing if PVSI is not in compliance with any COC, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the COCs (BIO-11, Item #1).
- If an injured or dead listed species is detected within or near the Project Disturbance Area, the CPM, the Ontario Office of CDFG, and Carlsbad Office of USFWS shall be notified immediately by phone. Notification will 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. Written follow-up notification via FAX or electronic communication will be submitted to these agencies within two calendar days of the incident and include the information as relevant (BIO-11, Item #4)
- The DB will report any bird or other wildlife deaths or entanglements within two days of the discovery to the CEC CPM, CDFG, and USFWS (BIO-25, Item #1).
- The DB will make immediate efforts to contact and consult the CEC CPM, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties will not delay taking action that would, in the judgment of the DB, prevent further mortality of birds or other wildlife at the evaporation ponds (BIO-25, Item #2).

2.3.3.1 Qualifications of the Designated Biologist

The DB 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 desert tortoise, and be approved by the USFWS;
5. Possess a California Endangered Species Act Memorandum of Understanding pursuant to CDFG Code Section 2081(a) for desert tortoise; or
6. In lieu of the above requirements, the resume will demonstrate to the satisfaction of the CEC CPM, in consultation with CDFG and USFWS, that the proposed DB or alternate has the appropriate training and background to implement effectively the COCs.

Resumes for three DBs and a list of references are provided in Appendix K.

2.3.4 PVSI On-Site Biological Monitors

Biological Monitors are responsible for the designated actions shown in Appendices A and B as well as carrying out the actions assigned to them by the DB and reporting any variations to the DB.

Key points of authority or notification are:

- If required by the DB and Biological Monitor(s), PVSI's construction/operation manager will halt all site mobilization, ground disturbance, grading, boring, and trenching and operation activities in areas specified by the DB (BIO-5).
- If the DB is unavailable for direct consultation, the Biological Monitor will act on behalf of the DB (BIO-5).
- The Biological Monitor will notify the CEC CPM 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. If the work stoppage relates to desert tortoise or any other Federal or State-listed species, the Carlsbad Office of USFWS and the Ontario Office of CDFG shall also be notified (BIO-5).

- For special-status species roadkill, the Biological Monitor will contact the Carlsbad Office of USFWS and the Ontario Office of CDFG within one working day of detection of the carcass for guidance on disposal or storage of the carcass (BIO-8, Item #12).

2.4 Designated Botanist

The Designated Botanist is responsible for the designated actions shown in Appendices A and B as well as carrying out the actions assigned to them by the DB and reporting any variations to the DB.

2.5 Regulatory Agency Personnel

USFWS, CDFG, and the Regional Water Quality Control Board (RWQCB) are responsible for representing Federal and State laws concerning protection of biological resources. The agencies will aid the Project by being responsive to requests for guidance should the need arise. Agency representatives will monitor the success of the Project's compliance with Federal and State laws by monitoring reports prepared by the DB. Table 1 (above) lists the regulating agencies and the various instruments or agreements they will grant or agreements they will enter into regarding the Project. The USFWS Biological Opinion is provided as Appendix J.

3.0 BIOLOGICAL RESOURCE MONITORING AND REPORTING

3.1 Scope of Compliance Monitoring

Construction and operation of the Project will result in potentially significant direct and/or indirect impacts to biological resources. The ECM, DB and Biological Monitors shall assist PVSI in conducting the Project in such a manner as to minimize adverse effects to biological resources and in compliance with the COCs.

3.2 Monthly and Yearly Compliance Reports

The DB[4] will prepare monthly compliance reports (MCR) and provide them to PVSI, CEC, BLM, CDFG, and USFWS as appropriate and described in Appendix A. MCRs are due on or before the tenth day of the following month. These reports will include the following information:

- Areas and activities monitored during the prior month;
- The number of persons who have completed the Worker Environmental Awareness Program training in the prior month and a running total of all persons who have completed the training to date;
- Implementation of BRMIMP measures (Appendix A);
- Change evaluation forms;
- Notification forms;
- Non-compliance reports;
- Non-compliance resolution reports;
- An account of all rescued/released animals;
- A detailed account of any injure or dead listed species; and
- Results of pre-activity surveys conducted, if any.

As part of the annual compliance report (ACR) each year following construction, the DB shall provide a report to the CPM that describes compliance with avoidance and minimization measures to be implemented during construction, operation, and maintenance. The ACR will summarize the previous year's monthly compliance reports and make recommendations for the upcoming year if necessary. ACRs are due on or before January 31 of the reporting year.

4. The Designated Botanist shall provide a summary of the implementation of the special-status plant impact avoidance and minimization measures to the DB by the first day of the following month for incorporation into the MCRs.

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

3.3 Reporting Procedures for Injured or Dead Wildlife

If an injured or dead listed species is detected within or near the Project Disturbance Area, the DB shall immediately notify by phone the CEC CPM, the Ontario Office of CDFG, and Carlsbad Office of 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. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident describing all reported incidents of injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred.

If a desert tortoise is injured because of Project-related activities during construction, the DB or approved Biological Monitor shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by PVSI. Following phone notification as required above, the CEC CPM, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, and location, circumstances of the incident, and the name of the facility where the animal was taken.

If a desert tortoise is killed by Project-related activities during construction or operation, the DB shall submit a written report to the CEC CPM, CDFG, and USFWS with the same information as an injury report. 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). PVSI will have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

4.0 ADAPTIVE MANAGEMENT PROGRAM

To manage unforeseen circumstances, PVSI is committed to implementing an adaptive management program that functions within the constraints of the Project permits and approvals. Adaptive management decisions will be made with input from pertinent CEC and other regulatory agency staff (see Section 6.0, Important Contact Information for a listing of key PVSI, CEC and other regulatory agency staff) in a timely manner so corrections can be made to implement appropriate mitigation measures.

4.1 Adaptive Management

4.1.1 Definition

Adaptive management is typically used in environmental management efforts to facilitate more effective management of resources to achieve desired objectives. Adaptive management can be defined as an iterative and structured optimal decision-making process intended to reduce uncertainty through system monitoring. The decision-making process simultaneously maximizes one or more resource objectives and accrues information needed to improve future management, either actively or passively. Using current knowledge, passive adaptive management involves the use of conceptual modeling to guide management actions. The model is adjusted as new knowledge is obtained and management decisions are subsequently modified. Active adaptive management involves testing alternative hypotheses through system manipulation employing management strategies. Thus, passive adaptive management is based on information gained from observational studies, whereas active adaptive management is based on information gained from experimental manipulation (Holling 1978, cited in AECOM 2010a). The focus will be on passive adaptive management but may ultimately apply both passive and active adaptive management techniques.

4.1.2 Adaptive Management Triggers and Measures

Adaptive management triggers are the performance criteria listed in Appendix A[5]. If the performance criteria are not met, any identified remedial actions will be implemented as needed (see Appendix A). Possible remedial actions follow "if/then" scenarios. However, each situation will be evaluated and appropriate adaptive measures will be proposed. If a measure is proposed that is different from the remedial action listed in Appendix A, the responsible party will notify the CEC and regulatory agencies, as appropriate, before implementing the measure, if time allows. If remedial action is time sensitive, the action will be implemented and the CEC and regulatory agencies, as appropriate, will be notified no later than the morning following the incident, or Monday morning in the case of a weekend (see Appendix A, BIO-5, Schedule).

5. Note: this information is forthcoming and will be included in the BRMIMP Summary Table (Appendix A) for the next submittal.

5.0 MODIFICATIONS TO CONDITIONS OF CERTIFICATIONS, COMPLIANCE PLANS, AND PERMIT CONDITIONS

5.1 Project Changes

A certain amount of change during the course of any project is inevitable. Once Project construction begins, certain changes to design, procedure, and even locations of Project features may be necessary. These changes could be such that they were not specifically addressed in the CEC or BLM documents, and may require further environmental analysis and agency approval. To examine changes to a Project feature, construction activity, or location, the PVSI CPM will propose a "Change Evaluation" (CE).

The focus of a CE is a deviation from the Project described and evaluated in the CEC and BLM documents. The CE process described below is designed to assure the CEC and BLM that any given change will avoid significant environmental impacts. It will be the responsibility of the PVSI CPM to facilitate approval of Project changes.

Changes can fall into one of two categories: major or minor. A major change (e.g., the need to work outside of the Project Disturbance Area) will require a CE form (see Appendix L for a sample form) to document responsible evaluation of the Project change and must be approved by the CEC, BLM, and appropriate regulatory agencies, if necessary, if it is a major change. A minor change (e.g., minor road encroachment outside of flagged impact areas to allow vehicles passing or turning around as long as the minor encroachment area is within the planned impact area or in previously disturbed areas) can be approved by either PVSI CPM or PVSI ECM, but it also must be documented with a CE form that will be reported to the CEC and BLM weekly.

Table 4 provides a few examples of the types of Project activities that would constitute a major or a minor change. A sample CE Form is provided in Appendix L.

Table 4 Examples of Major and Minor Project Changes That Would Require a Change Evaluation

Activity	Major Change	Minor Change
Any change involving a State or Federally listed plant or animal species	X	
Any Project activities outside of the Project Disturbance Area	X	
Any alternative mitigation action to a COC that is necessary due to infeasibility	X	
Change construction procedures (This could fall in the major or minor category, depending if the change is substantially different than discussed in CEC and BLM documents.)	X	X
Temporary use of a road in a buffer zone to access work zone		X
Temporary encroachment in a buffer zone		X
Waiver of mitigation measure (because of error in resource identification or resource no longer in existence)		X
Work after designated/restricted construction hours		X

5.2 Compliance Levels

PVSI will maintain a record system describing the compliance levels and will use it as a tool to help explain, record, and enforce the compliance requirements. The following levels of compliance measurement will be used:

- Compliance
- Notification
- Non-compliance
- Non-compliance resolution report
- Stop task order

These compliance levels and their associated actions are described in Table 5. Sample forms for notification, non-compliance reports, and non-compliance resolution reports are provided in Appendix L.

Table 5 Compliance Levels

Compliance Level	Description
Compliance	Used to identify an action in accordance with all Project requirements.
Notification	Used to identify an action approaching non-compliance. This is like a "fix-it" notice.
Non-Compliance	This term identifies an action that does not comply with a Project requirement; therefore, a non-compliance will be issued. A repeat non-compliance would be noted on the Non-Compliance form as a second occurrence. A Non-Compliance Resolution Report must be written by the Compliance Field Specialist and submitted to the CEC and BLM.
Stop Task Order	A third repeated non-compliance and any "serious" non-compliance (e.g., grading through a protected area) would result in a Stop Task Order (other work may continue). Figure 6 identifies the positions with the authority to issue a Stop Task Order (i.e., PVSI Project Manager, PVSI Construction Manager, PVSI ECM, and PVSI CPM; DB; CEC CPM; and, BLM AO. A Stop Task Order would require the PVSI ECM and PVSI CPM to meet with appropriate decision makers to determine requirements to correct or resolve the issue and resume activity in the problem area.

6.0 IMPORTANT CONTACT INFORMATION

6.1 PVSI Representative

Nicole C. Tenenbaum, Compliance Program Manager
Solar Millennium, LLC
1111 Broadway, 5th Floor
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Office: 510-524-4517
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Cell: 510-333-2466
Tenenbaum@solarmillennium.com

To be determined
Environmental Compliance Manager

6.2 CEC Representatives

Alan Solomon, Project Manager
1516 Ninth Street
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asolomon@energy.state.ca.us

Mary Dyas, Compliance Project Manger
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Rick York, Senior Biologist
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Ryork@energy.state.ca.us

6.3 BLM Representatives

Holly Roberts, Associate Field Manager
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Mark Massar, Wildlife Biologist
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6.4 USFWS Representatives

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Tannika Engelhard
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6.5 CDFG Regional Representatives

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Craig Weightman
Inland Deserts Region
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Fax: 760-200-9358
cweightman@dfg.ca.gov

Kim Nicol
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Information: 909-484-0167
Fax: 909-481-2945
KNICOL@dfg.ca.gov

Cal Tip Poaching Hotline: 888-334-2258

6.6 RWQCB Representatives

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Victorville, CA 92392
Phone: 760-241-4942
slamech@waterboards.ca.gov

7.0 REFERENCES

AECOM. 2010. Common Raven Monitoring and Control Plan Blythe Solar Power Project. Prepared for Palo Verde Solar I, LLC, Berkeley, CA. September.

Berry, K. H. 2001. Protocol -- June 2001. Salvaging injured, recently dead, ill, and dying wild, free-roaming desert tortoises (*Gopherus agassizii*). Prepared at the request of the U. S. Fish and Wildlife Service and the California Department of Fish and Game.

California Energy Commission (CEC). 2010. Blythe Solar Power Project Commission Decision CEC-800-2010-009-CMF Docket Number 09-AFC-6. September 15. Available at: http://www.energy.ca.gov/sitingcases/solar_millennium_blythe/documents/index.html. Accessed September 24, 2010.

Holling, C. S. 1978. Adaptive Environmental Assessment and Management. Chichester: Wiley (cited in AECOM 2010).

FIGURES

Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project Biological Resources Mitigation Implementation and Monitoring Plan

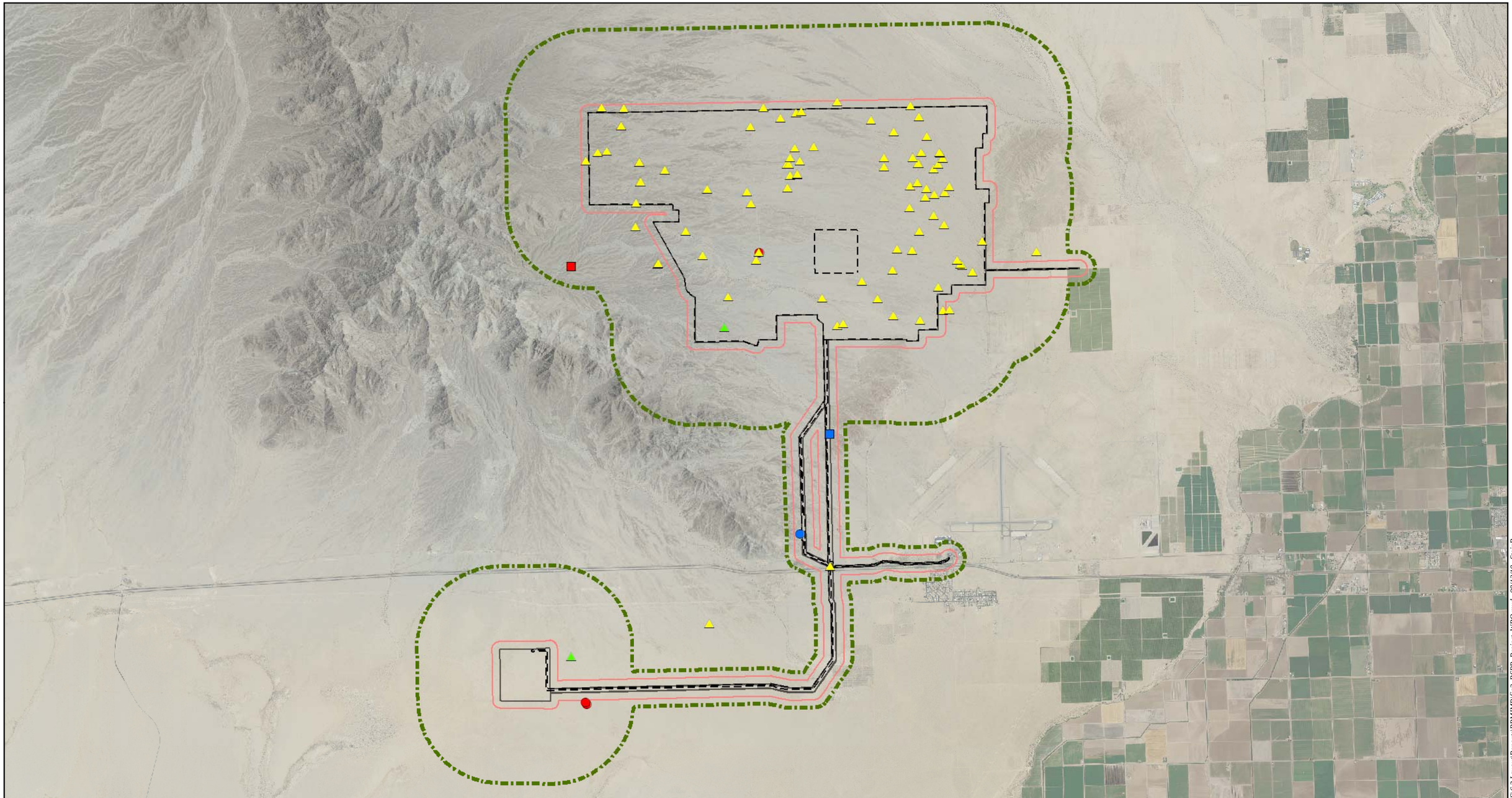
Figure 1
Regional Map

Source: ESRI; AECOM 2010

AECOM

Date: August 2010

Path: P:\2009\09080082 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\BRMIMP\Fig1_BSPP_RegionalLocation.mxd, 08/12/10, SteinB



Map Location

Legend

- Proposed Project Study Area
- Proposed Project BRSA
- Project Disturbance Area
- Burrowing Owl Survey Buffer - 492-foot

Western Burrowing Owl Observations 2010

- Western Burrowing Owl
- Western Burrowing Owl with Active Burrow
- Burrow with Sign

Observations 2009

- Western Burrowing Owl
- Western Burrowing Owl with Active Burrow
- Burrow with Sign

Source: NAIP 2009; AECOM 2010

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

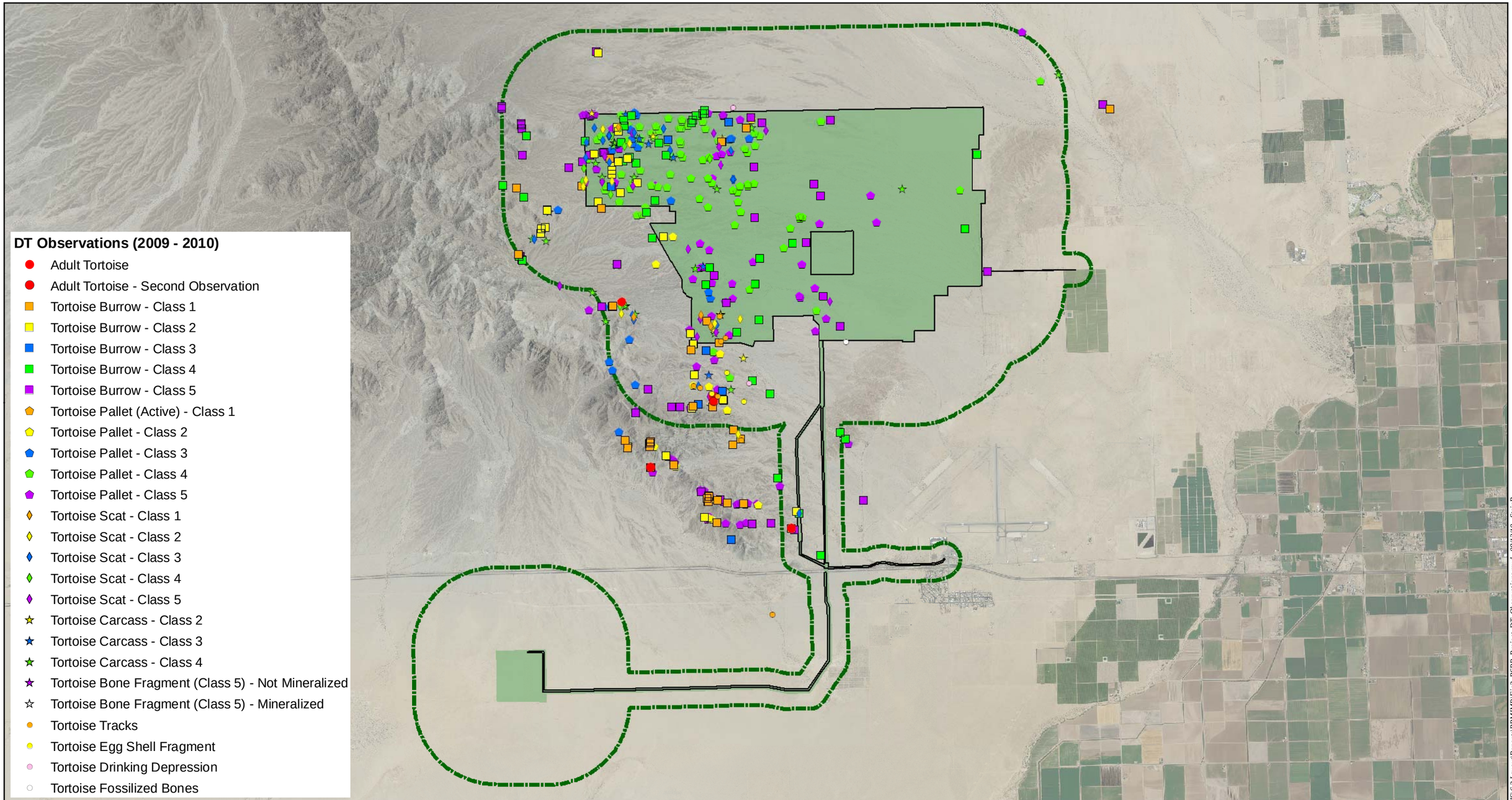
Blythe Solar Power Project
Biological Resources Mitigation Implementation and Monitoring Plan

Figure 2
Burrowing Owl Observations

AECOM

Date: August 2010

Path: P:\20090\60080082 Sol MII Blythe\6.0 GIS\6.3 Layout\Reports\BRMIMP\fig2_BSPP_Project_WBO.mxd, 08/12/10, SteinB



Map Location

Legend

- Proposed Project Study Area
- Proposed Project Disturbance Area
- Proposed Project BRSA

Source: NAIP 2009; USGS; AECOM 2009

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
Biological Resources Mitigation Implementation and Monitoring Plan

Figure 3
Desert Tortoise Observations

AECOM

Date: August 2010

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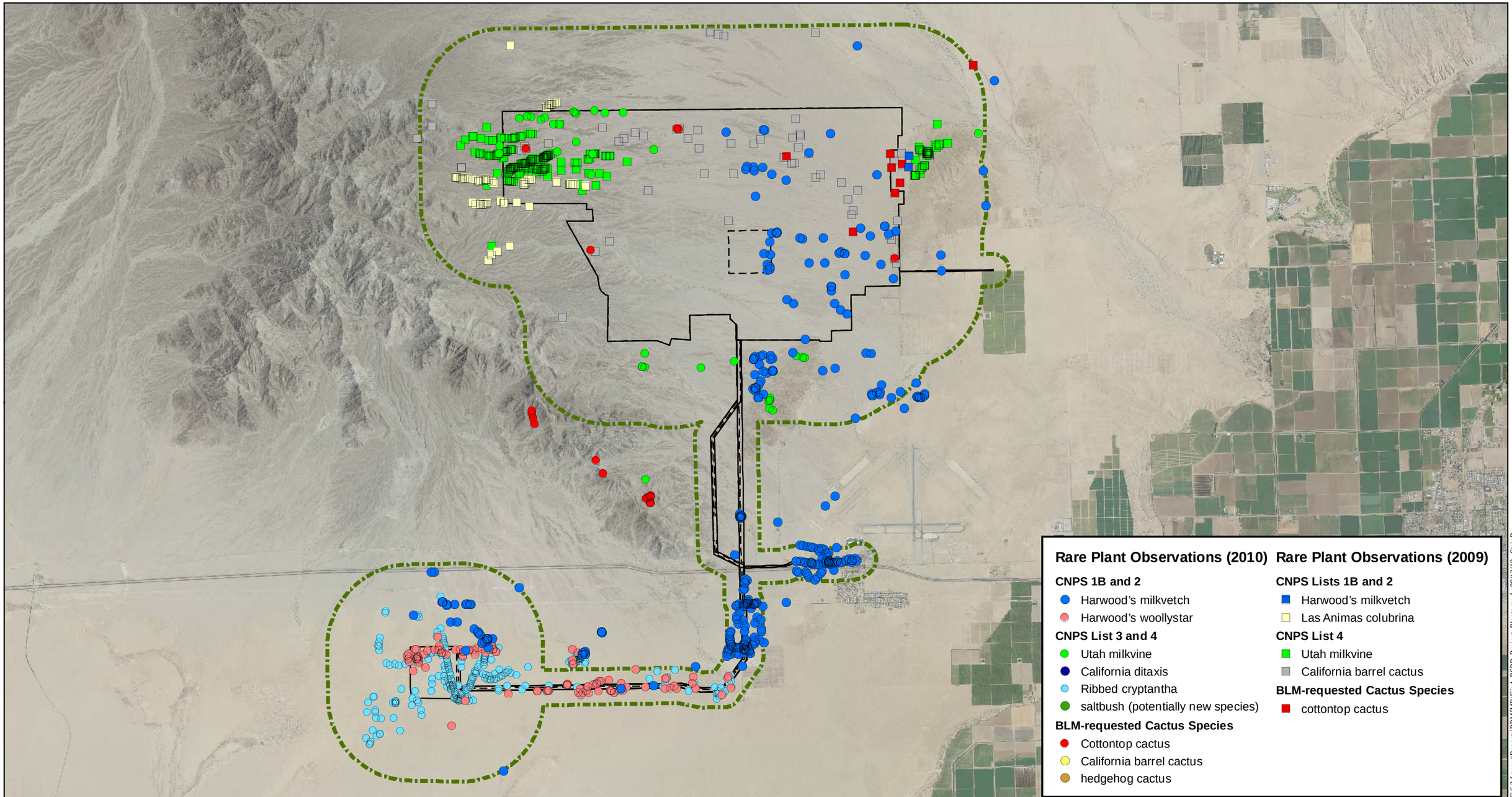

Map Location

Legend

- Proposed Project Study Area
- Proposed Project BRSA
- Project Disturbance Area

Source: NAIP 2009; EDAW 2009; AECOM 2010

N
W
E
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1 in = 6,000 feet

0 6,000 12,000 Feet

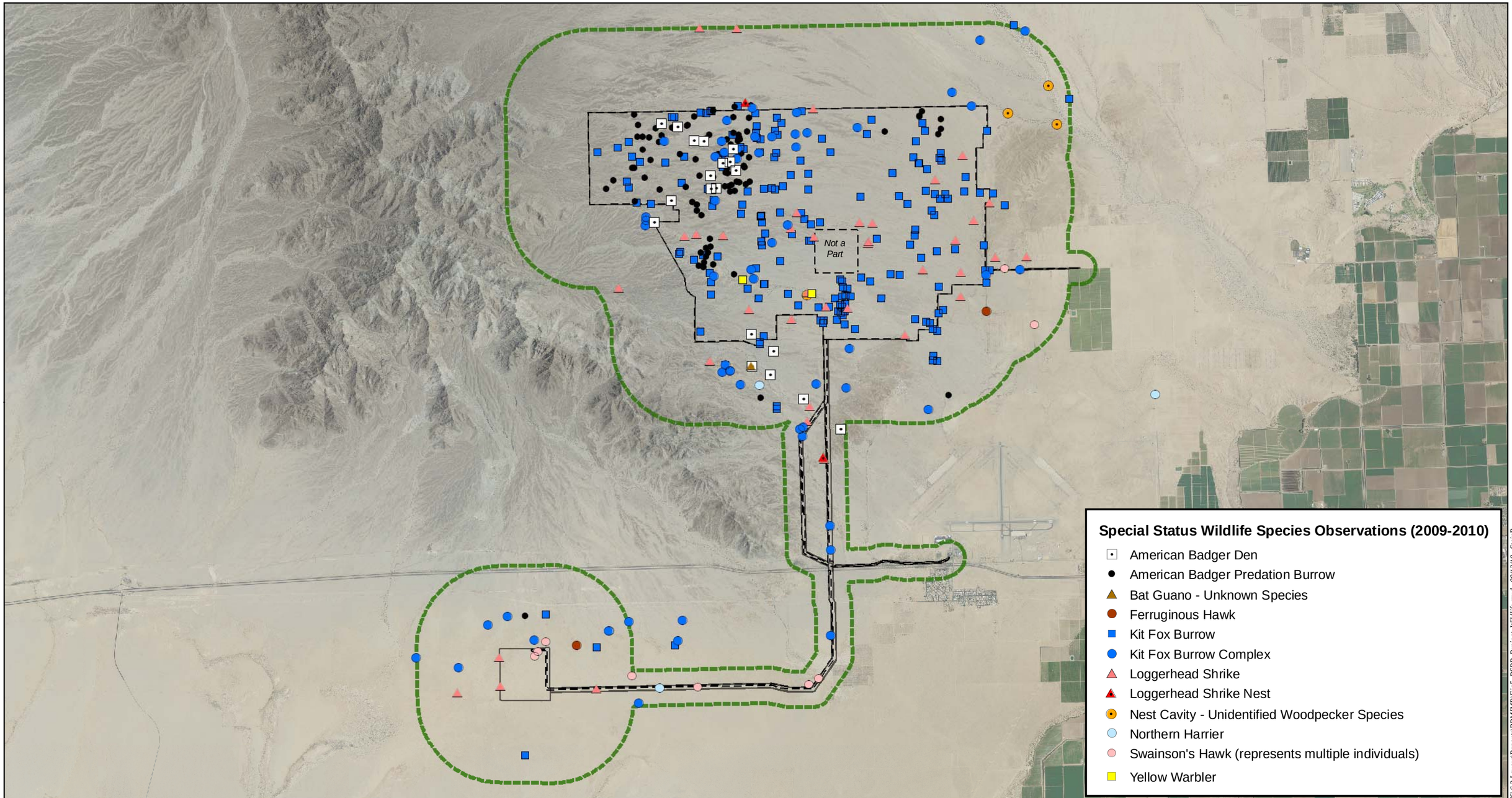
Blythe Solar Power Project
Biological Resources Mitigation Implementation and Monitoring Plan

Figure 4
Special Status Plant Species

AECOM

Date: August 2010

Path: P:\2009\09080082 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\BRM\MPF\fig4_BSPP_Project_Plants.mxd, 08/12/10, SteinB



Map Location

Legend

- Proposed Project Study Area
- Project Disturbance Area
- Proposed Project BRSA

Source: NAIP 2009; AECOM 2009-2010

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
Biological Resources Mitigation Implementation and Monitoring Plan

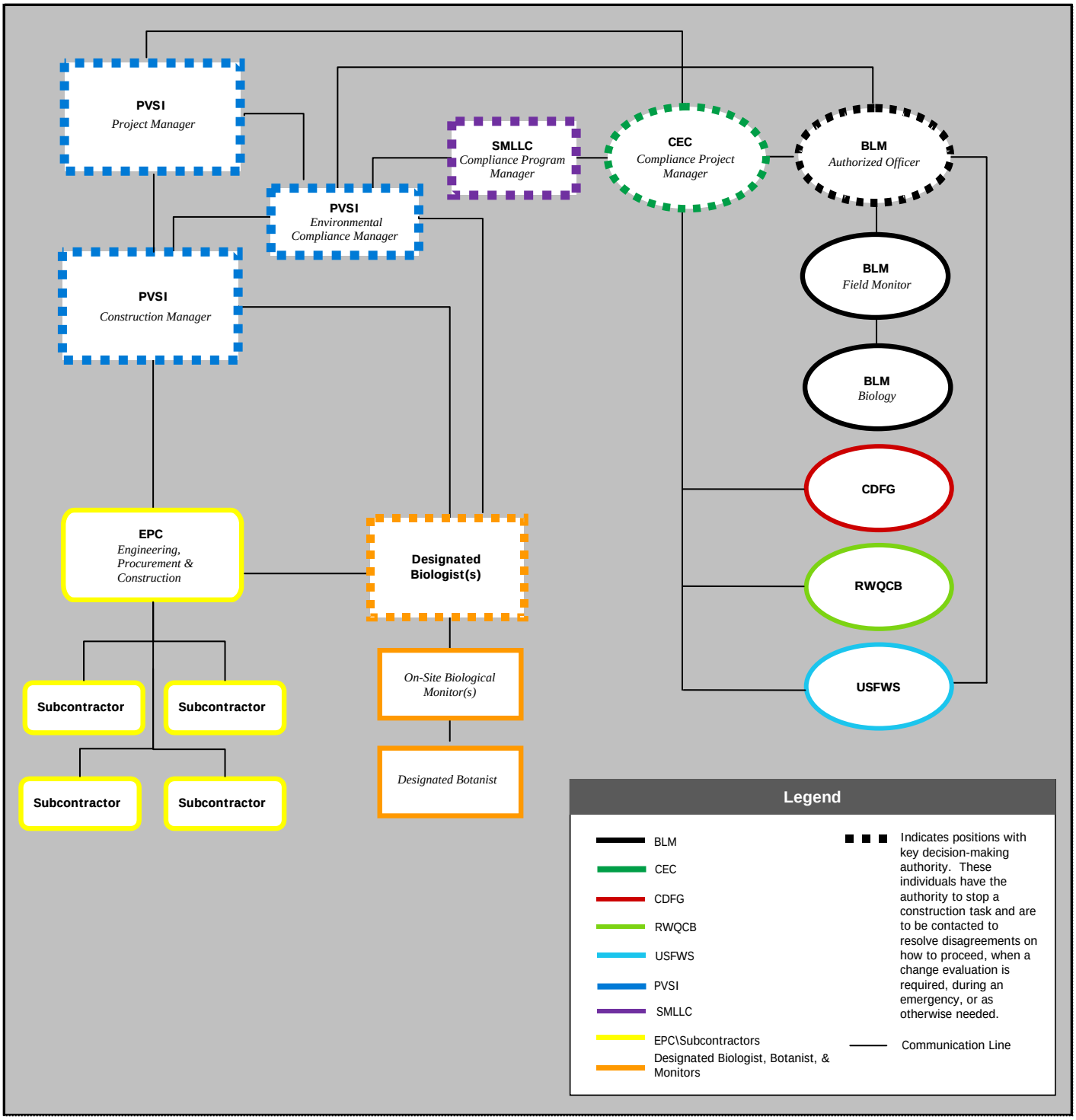
Figure 5
Special Status Wildlife Species

AECOM

Date: August 2010

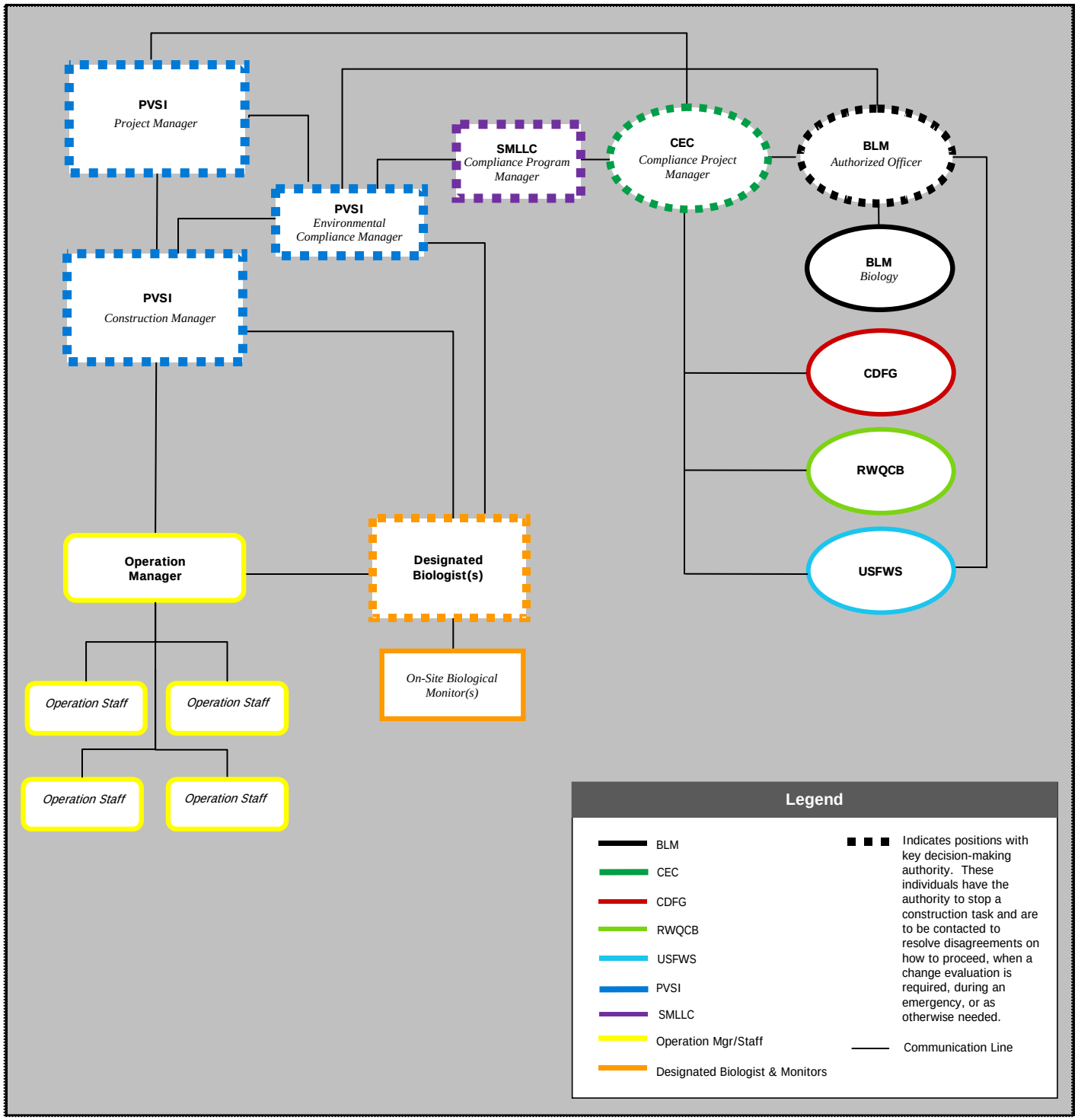
Path: P:\2009\09080082 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\BRMIMP\Fig5_BSPP_Project_Wildlife.mxd, 08/12/10, SteinB

FIGURE 6A
Responsible Parties and Lines of Communication—Preconstruction through Construction



Source: AECOM 2010

FIGURE 6B
Responsible Parties and Lines of Communication—Operations



Source: AECOM 2010

APPENDIX A

BRMIMP SUMMARY TABLE

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-1	Final Decision	248	**DB SELECTION AND QUALS:** Assign at least one DB (DB) to the Project. The resume of the proposed DB(s) shall include at least three references and contact information. The DB must meet the minimum qualifications specified in BIO-1 (Appenidx B, p. 248).	Owner	**Precon**	Submit the DB's name along with a USFWS Desert Tortoise (DT) Authorized Biologist Request Form to the USFWS and Compliance Project Manager (CPM) for review and final approval.	No fewer than 45 days before start of site mobilization or construction-related ground disturbance	No construction related ground disturbance, grading, boring, or trenching shall commence until an approved DB is available to be on site.			
	Final Decision	249	**DB REPLACEMENT:** If a DB 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 DB. In an emergency, the Owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent DB is proposed to the CPM and for consideration.	Owner	**Con & Ops**	Submit the required information to the CPM.	At least 10 working days prior to the termination or release of the preceding DB				
BIO-2	Final Decision	249	**DB DUTIES:** Ensure that the DB performs the specific duties set forth in BIO-2 (p. 5; Appendix B of the BRMIMP) during any site mobilization activities, construction related ground disturbance, grading, boring or trenching activities. The DB may be assisted by the approved Biological Monitors (BMs) but remains the contact for Owner and the CPM.	Owner & DB	**Con & Ops**	DB shall provide copies of all written reports and summaries that document biological resources compliance activities, including those conducted by the BMs, in the Monthly Compliance Reports (MCRs) and Annual Compliance Reports (ACRs), as appropriate, to the CPM.	Construction: Include in Monthly Compliance Report (MCR). Operations: Summaries in the Annual Compliance Report (ACR)	MCRs due on or before the tenth day of the following month. ACRs are due on or before January 31 of the reporting year.			
BIO-3	Final Decision	250	**BIOLOGICAL MONITOR SELECTION & QUALIFICATIONS:** DB shall submit the resume, at least three references, and contact information of the proposed BM 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 BM is the equivalent of the USFWS designated DT Monitor.	DB	**Precon**	Submit the specified information to the CPM for approval.	At least 30 days prior to the start of site mobilization or construction-related ground disturbance, grading, boring or trenching				
	Final Decision	250	**BM TRAINING:** DB shall inform BMs of the include familiarity with the COC, Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), Worker Environmental Awareness Program (WEAP), and USFWS guidelines on DT surveys and handling procedures.	DB	**Precon**	Submit a written statement to the CPM confirming that individual BM(s) has been trained including the date when training was completed.	Before start of site mobilization or construction-related ground disturbance, grading, boring, or trenching				
	Final Decision	250	**ADDITIONAL BMs:** If needed during construction, the specified information shall be submitted to CPM.	DB	**Con**	Submit the specified information to the CPM for approval.	At least 10 days prior to their first day of monitoring activities				
BIO-4	Final Decision	251	**BM DUTIES:** The BMs shall assist the DB in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring or trenching. The DB shall remain the contact for the Owner and CPM.	BM	**Con**	Submit written reports to DB. Be available for monitoring and reporting.	On-going				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-5	Final Decision	251	**DB AND BM AUTHORITY:** The construction/operation manager shall act on the advice of the DB and BM(s) to ensure conformance with the biological resources COCs. The DB 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 DB and BM(s), Owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching and operation activities in areas specified by the DB. The DB's duties are described in BIO-5 (Appendix B, p. 251). If the DB is unavailable for direct consultation, the BM shall act on behalf of the DB. If the work stoppage relates to DT or any other federal or state-listed species, the Carlsbad Office of USFWS and the Ontario Office of CDFG shall also be notified. If the non-compliance or halt to construction or operation relates to DT or any other federal or state-listed species. the Project owner shall notify the Carlsbad Office of USFWS and Ontario Office of CDFG at the same time.	Owner, DB or BM	**Con**	Owner to ensure that the DB or BM notifies the CPM. Owner notify the CPM of the circumstances and actions being taken to resolve the problem. DB or BM to stop work that is not in compliance. Owner shall provide the CEC staff with reasonable access to the Project site under the control of the Owner and shall otherwise fully cooperate with the CEC's efforts to verify the Owner's compliance with. or the effectiveness of mitigation measures set forth in the COC.	As-needed. Immediate notification and no later than the morning following the incident, or Monday morning in the case of a weekend.				
	Final Decision	252	**CORRECTIVE ACTION:** A determination of success or failure would be made by the CPM.	CPM	**Con**	CPM to notify Owner, in consultation with USFWS and CDFG.	Within 5 working days after receipt of notice that corrective action is completed, or the Owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-6	Final Decision	252	**WEAP**: Develop and implement a project-specific WEAP and secure approval for the WEAP from the CPM. Owner shall also provide the BLM, USFWS and CDFG a copy of all portions of the WEAP relating to DT 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 site preconstruction, construction, operation, and closure. The WEAP shall describe the items listed in BIO-6 (Appendix B, p. 252).	Owner, DB, Authorized Officer (AO) & CPM	**Precon, Con, Ops & Closure**	Owner submit WEAP and all supporting written materials and electronic media prepared or reviewed by the DB and a resume of the person(s) administering the program to CPM. Owner provides 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 in the MCR. DB to develop or consult on preparation of WEAP. CPM to approve WEAP. Throughout the life of the Project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within 1 week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the Project area.	Precon**:** Owner provides final WEAP to CPM for review and approval at least 30 days prior to construction-related ground disturbance, and a copy of the final WEAP to BLM, USFWS and CDFG, and all supporting written materials and electronic media prepared or reviewed by the DB, and resume of the person(s) administering the program. Construction, Operations and Closure: Annual training for permanent employees; administer training within 1 week of arrival to any new personnel. Construction: File training acknowledgement forms signed during construction for at least 6 months after the start of commercial operation. Operation: File signed training acknowledgement forms for 6 months following termination of an individual's employment.				
BIO-7	Final Decision	254	**BRMIMP**: Develop a BRMIMP that includes complete and detailed descriptions of the information requested in the BIO-7 (p. 10; Appendix B of the BRMIMP). Implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of various biological mitigation and/or monitoring plans. Report implementation in MCR. Owner shall provide to BLM, CDFG, and USFWS a copy of all portions of the BRMIMP relating to DT and any other federal or state-listed species for review and comment.	Owner, DB & CPM	**Precon**	Owner submit the final BRMIMP, which has been prepared in consultation with the DB, to the CPM for review and approval and include up-to-date maps depicting the location of sensitive biological resources. The BRMIMP shall also contain all of the required measures included in the biological COC. At the same time, Owner shall provide to BLM. CDFG. and USFWS a copy of all portions of the draft BRMIMP relating to DT and any other federal or state-listed species.	Owner provides draft BRMIMP to CPM no fewer than 30 days prior to construction-related ground disturbance. Owner shall provide the final BRMIMP to the CPM at least 7 days prior to the start of any construction-related ground disturbance. grading. boring. or trenching.	No construction-related ground disturbance, grading, boring or trenching may occur prior to approval of the final BRMIMP by the CPM.			
	Final Decision	255	**CHANGES TO BRMIMP:** Revise and resubmit changes to the BRMIMP based on permit conditions.	Owner, DB, CPM, CDFG & USFWS	**Precon**	1) Owner to submit permits. 2) Owner revise/resubmit BRMIMP, in consultation with DB, to reflect permit conditions. CPM, CDFG and USFWS to approve. Take aerial photographs, at an approved scale.	1) Within 5 days of receipt.				
	Final Decision	255	**REPORT IMPLEMENTATION:** Report implementation in MCRs.	DB	**Con**	Include information in MCRs.	On-going				
	Final Decision	255	**CONSTRUCTION DISTURBANCE:** Verify extent of construction disturbance does not exceed that described in Staff Assessment/Draft Environmental Impact Statement. Provide a final accounting in whole acres of the areas of vegetation communities/cover types present before and after construction.	Owner	**Postcon**	Take second set of aerial photographs and determine vegetation acres, communities or cover. Submit aerial photographs and vegetation acres, communities, or cover type to CPM, BLM, USFWS, and CDFG.	No later than 90 days after completion of construction				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	255	**CONSTRUCTION TERMINATION REPORT:** Identify BRMIMP completed items, a summary of all modifications to mitigation measures made during the Project's Precon site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are outstanding.	Owner, BLM & CPM	**Postcon**	Owner to submit written report to CPM for review and approval. CPM to review and approve.	Within 30 days after completion				
BIO-8	Final Decision	256	**LIMIT DISTURBANCE AREAS:** 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 construction activities in consultation with the DB. 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. Note: see BIO-9 for methods for clearance surveys, fence specification and installation.	Owner & DB	**Precon**	Owner to implement measure. DB to oversee and report implementation in MCRs.					
	Final Decision	256	**MINIMIZE ROAD IMPACTS:** New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area. 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. Note: see BIO-9 for methods for clearance surveys, fence specification and installation.	Owner & DB	**Con**	Owner to implement measure. DB to report implementation in MCRs.	On-going				
	Final Decision	256	**MINIMIZE TRAFFIC IMPACTS:** Vehicular traffic during Project 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 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.	Owner & DB	**Con & Ops**	Owner to implement measure. DB to report implementation in MCRs.	On-going				
	Final Decision	256	**MONITOR DURING CONSTRUCTION:** In areas without DT exclusion fencing and that have been cleared, the DB shall be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife. If DT are found during construction monitoring. procedures outlined in B10-9 shall be implemented.	DB & BM	**Con**	The DB or BM shall walk immediately ahead of equipment during brush clearing and grading activities. DB to report implementation in MCRs.	On-going				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	256	**MINIMIZE IMPACTS OF TRANSMISSION/PIPELINE ALIGNMENTS, ROADS, STAGING AREAS:** Staging areas for construction on the plant site shall be within the area that has been fenced with DT 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 and Mitigating Bird Collisions with Power Lines to reduce the likelihood of large bird electrocutions and collisions.	Owner & DB	**Precon & Con**	Owner to implement measure. DB to report implementation in MCRs.	Precon: design activities; Construction: on-going				
	Final Decision	257	**AVOID USE OF TOXIC SUBSTANCES:** Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.	Owner & DB	**Con**	Owner to implement measure. DB to report implementation in MCRs.	On-going				
	Final Decision	257	**MINIMIZE LIGHTING IMPACTS:** Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.	Owner & DB	**Precon & Con**	Owner to implement measure. DB to report implementation in MCRs.	Precon: plans and specifications; Construction: on-going				
	Final Decision	257	**MINIMIZE NOISE IMPACTS:** A continuous low-pressure technique shall be used for steam blows, to the extent possible, to reduce noise levels in sensitive habitat proximate to the Project. Loud construction activities (e.g., unsilenced high pressure, steam blowing and pile driving, or other) shall be avoided from February 15 to April 15, which is when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles).	Owner & DB		Owner to implement measure. DB to report implementation in MCRs.					
	Final Decision	257	**LOUD CONSTRUCTION ACTIVITIES:** May be permitted from February 15 to April 15 only if: a). the DB 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 DB or BM 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.	Owner, DB & BM	**Precon & Con**	Owner to implement measure. Submit documentation to CPM or monitor nests. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going. Owner shall submit nest survey results to the CPM no more than 7 days before initiating such construction. If an active nest is detected within this survey area Owner shall submit a Nesting Bird Monitoring and Management Plan to the CPM for review and approval no more than 7 days before initiating noisy construction.	The Nesting Bird Monitoring and Management Plan will be incorporated into the Avian Protection Plan (BIO-15)				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	258	**AVOID VEHICLE IMPACTS TO DT:** Parking and storage shall occur within the area enclosed by DT 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 DT. If a DT is observed outside the areas permanently fenced with DT exclusion fencing. it shall be left to move on its own. If it does not move within 15 minutes, a DB or BM under the DB's direct supervision may move it out of harm's way as described in the USFWS Desert Tortoise Field Manual (USFWS 2009).	Owner, DB & BM	**Precon & Con**	Owner to implement measure. DB or BM to relocate DT. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going	If the USFWS Desert Tortoise Field Manual is updated during the construction period, the latest version of the manual should be consulted.			
	Final Decision	258	**BACKFILL TRENCHES:** At the end of each work day, the DB shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with DT 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 DT-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with DTexclusion fencing shall be inspected periodically throughout the day, at the end of each workday and at the beginning of each day by the DB or a BM. Should a DT or other wildlife become trapped, the DB or BM move it out of harm's way as described in the USFWS Desert Tortoise RelocationlTranslocation Plan Field Manual (USFWS 2009). Any other wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.	Owner, DB & BM	**Precon & Con**	Owner to implement measure. DB or BM to inspect potential wildlife pitfalls and exclusion fencing for compliance with conditions. DB or BM to relocate DT or other wildlife. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				
	Final Decision	258	**AVOID ENTRAPMENT OF DT:** Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within DT habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for DT 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.	Owner, DB & BM	**Precon & Con**	Owner to implement measure. DB or BM to inspect pipes for compliance with conditions. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				
	Final Decision	259	**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 DT and common ravens to construction sites. A BM shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.	Owner & BM	**Precon & Con**	Owner to implement measure. BM to patrol areas. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	259	**DISPOSE OF ROAD-KILLED ANIMALS:** Road killed animals or other carcasses detected by personnel on roads assocated with the Project area shall be reported immediately to a DB, BM, or Environmental Compliance Manager (ECM) who will promptly remove the roadkill for disposal (i.e. removal to a landfill or disposal at the BSPP facility. For special-status species road kill, the BM shall contact CDFG and USFWS within 1 working day of-detection of the carcass for guidance on disposal or storage of the carcass; all other roadkill shall be disposed of promptly. The BM shall provide the special-status species record as described in BIO-11 below.	DB, ECM & BM.	**Precon & Con**	Owner to implement measure. BM contact CDFG and USFWS within 1 working day of receipt of the carcass and report per BIO-11. DB to report compliance in MCRs. As part of the ACR each year following construction, the DB shall provide a report to the CPM that describes compliance with avoidance and minimization measures to be implemented during constriliction, 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.).	Precon: plans and specifications; Construction: on-going				
	Final Decision	259	**MINIMIZE HAZARDOUS MATERIALS SPILLS:** 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 DB 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.	Owner & DB	**Precon & Con**	Owner to implement measure. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				
	Final Decision	259	**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 Project 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 DT habitat shall not exceed 25 miles per hour.	Owner & DB	**Precon & Con**	Owner to implement measure. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	259	**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 slopes toward drainages shall be stabilized to reduce erosion potential.	Owner & DB	**Precon & Con**	Owner to implement measure. DB to report compliance in MCRs.	Precon: plans and specifications; Construction: on-going				
	Final Decision	260	**MONITOR GROUND DISTURBING ACTIVITIES PRIOR TO PRECON SITE MOBILIZATION:** If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a DB or BM shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.	Owner, DB & BM	**Precon**	Owner to implement measure. DB or BM to monitor. DB to report compliance in MCRs.	As-needed.				
	Final Decision	260	**REVEGETATION OF TEMPORARILY DISTURBED AREAS:** 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.	Owner	**Precon**	Prepare Revegetation Plan. See Plan below following Final Decision COCs.	No less than 30 days prior to construction, Owner shall submit to the CPM a final agency-approved Revegetation Plan that has been reviewed and approved by the CPM. All modifications to the Revegetation Plan shall be made only after approval from the CPM.				
	Final Decision	260		Owner	**Postcon**	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 ACR each year following construction, the DB 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 roadkilled animals during the year, implementation of measures to avoid toxic spills, erosion and sedimentation, efforts to enforce worker guidelines, etc.).	Within 30 days after completion of project construction.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-9	Final Decision	261	**DESERT TORTOISE EXCLUSION FENCE INSTALLATION:** Permanent exclusion fencing shall be installed along the permanent perimeter security fence (boundaries) as phases are constructed. Temporary fencing shall be installed along linear features or 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 BM is present in the immediate vicinity of construction activities for the linear facility. All fencing shall be flagged & surveyed w/in 24 hrs before the initiation of fence construction. Clearance surveys of the DT exclusionary fence & utility rights-of-way alignments shall be conducted by the DB using techniques outlined in the USFWS' 2009 Desert Tortoise Field Manual & may be conducted in any season w/USFWS & CDFG approval. BM may assist the DB under supervision. These fence clearance surveys shall provide 100-percent coverage of all areas to be disturbed & an additional transect along both sides of the fence line. Disturbance associated w/ DT exclusionary fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Before the surveys the Owner shall provide to the CPM, CDFG & 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. DT 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 DT 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 DT Relocation/Translocation Plan (BIO-10). Tortoise shall be handled by the DB in accordance with the USFWS' 2009 Desert Tortoise Field Manual.	Owner, DB & BM	**Precon & Con**	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 ACR each year following construction, the DB 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 roadkilled animals during the year, implementation of measures to avoid toxic spills, erosion and sedimentation, efforts to enforce worker guidelines, etc.).		USFWS assigns a single designation for biologists who can be approved to handle tortoises—"Authorized Biologist" (AB). AB will be responsible for relocating DT or arranging for translocation.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	262	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 DB and monitored by the BMs to ensure the safety of any tortoise present.	Owner, DB & BM	**Precon**						
	Final Decision	262	B. Fence Material and Installation. All desert tortoise exclusionary fencing shall be constructed in accordance with the USFWS' 2009 Desert Tortoise Field Manual (Chapter 8: Desert Tortoise Exclusion Fence).	Owner	**Precon**						
	Final Decision	262	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.	Owner	**Precon**						
	Final Decision	262	D. Fence Inspections. Following installation of the DT 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 DB shall inspect the area for tortoise.	DB & BM	**Precon & Con**						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	263	**DESERT TORTOISE CLEARANCE SURVEYS WITHIN THE PLANT SITE**: Clearance surveys shall be conducted in accordance with the USFWS' 2009 Desert Tortoise Field Manual (Chapter 6 Clearance Survey Protocol for the Desert Tortoise Mojave Population) and shall consist of two surveys covering 100 percent the Project area by walking transects no more than 15-feet apart. If a DT is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction to allow opposing angles of observation. 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 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. 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:	DB & BM	**Precon**						
	Final Decision	263	A. Burrow Searches. During clearance surveys all DT burrows, and burrows constructed by other species that might be used by DTs, shall be examined by the DB, who may be assisted by the BMs, to assess occupancy of each burrow by DTs and handled in accordance with the USFWS' 2009 Desert Tortoise Field Manual. 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.	DB & BM						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	264	B.Burrow Excavation/Handling. All potential DT burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked in accordance with the Desert Tortoise Relocation/Translocation Plan to prevent occupation by DTs. All DT handling, removal, and burrow excavations, including nests, would be conducted by the DB, who may be assisted by a BM in accordance with the USFWS' 2009 Desert Tortoise Field Manual.	DB & BM							
	Final Decision	264	**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 DB or BM 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.	DB & BM	**Con**	Monitor clearing and grading activities	Following site clearing				
	Final Decision	264	**REPORTING:** The DB shall record the following information for any DT handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether DT 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 DT. DT moved from within Project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan.	DB & BM	**Precon & Con**	Observe and record DT information	Ongoing				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-10	Final Decision	265	**DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN:** The 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 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 Relocationl/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 (AECOM 2010t) and shall include all revisions deemed necessary by BLM, USFWS, CDFG and the Energy Commission staff.	Owner & DB	**Precon**	Owner shall provide BLM's AO and the CPM with the final version of a Desert Tortoise Relocation/Translocation Plan that has been reviewed and approved by BLM's AO and the CPM in consultation with USFWS and CDFG.	At least 30 days prior to site mobilization				
BIO-11	Final Decision	265	**DESERT TORTOISE COMPLIANCE VERIFICATION:** The Owner shall provide CEC, CDFG, and USFWS, and BLM staff with reasonable access to the Project site and compensation lands under the control of the Owner and shall otherwise fully cooperate with the Energy Commission's and BLM's efforts to verify the Owner's compliance with, or the effectiveness of, mitigation measures set forth in the COCs. The DB shall do all of the following:	Owner & DB	**Con**	The DB 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 COCs 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.	No later than 45 days after initiation of Project operation				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	265	1. Notification. Notify the CPM at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify the CPM in writing if the Owner is not in compliance with any COC, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the COCs.	DB	**Precon**		As needed. Compliance letter submitted by DB to CPM on October 18, 2010 for this construction season.				
	Final Decision	266	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 BMs to check for compliance with all impact avoidance and minimization measures, include checking all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.	Owner, DB	**Con**	In the case of a sighting in an active construction area, the Owner shall, at the same time, submit a map (e.g., using GIS) depicting both the limits of construction and sighting location to the CPM, CDFG and USFWS.	Daily				
	Final Decision	266	3. Monthly Compliance Inspections. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a MCR to the CPM, USFWS and CDFG during construction.	DB	**Con**	Beginning with the first month after clearing. grubbing. and grading are completed and continuing every month until construction is complete. Owner shall submit describe results of the Monthly Compliance Inspections in the MCR for the CPM, BLM, USFWS and CDFG.	Monthly				
	Final Decision	266	Notification of Injured, Dead, or Relocated Listed Species. If an injured or dead listed species is detected within or near the Project Disturbance area, the CPM, the Ontario Office of CDFG, and Carlsbad Office of USFWS shall be notified immediately by phone. 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. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within 2 calendar days of the incident and include the following information as relevant.	DB	**Con & Ops**	Telephone and written notification to CPM, CDFG, USFWS	As-needed. Immediate notification by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within 2 calendar days of the incident describing all reported incidents of injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	266	A. Injured Desert Tortoise. If a DT is injured as a result of Project-related activities during construction, the DB or approved BM shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the Owner. Following phone notification as required above, the CPM, CDFG, 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.	DB							
	Final Decision	266	B. Desert Tortoise Fatality. If a desert tortoise is killed by Project-related activities during construction or operation, submit a written report to the CPM, CDFG, and USFWS with the same information as an injury report. These DTs shall be salvaged according to guidelines described in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise (Berry 2001). Owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.	DB							
	Final Decision	267	4. Stop Work Order. The CPM may issue the 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 COCs (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 Owner shall comply with the stop work order immediately upon receipt thereof.	CPM	**Con**	Issue Stop Work Order	As needed				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-12	Final Decision	267	**DESERT TORTOISE COMPENSATORY MITIGATION:** The Owner shall provide compensatory mitigation at a 1:1 ratio for impacts to 6,958 acres, 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 Project, including all linears, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the DT. To satisfy this condition, the Owner shall acquire, protect and transfer 1 acre of DT 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 (Appendix B, p. 318) may provide the Owner with another option for satisfying some or all of the requirements in this condition. In lieu of acquiring lands itself, the 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. 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:	Owner & CPM	**Phase 1a, Phase 1b, and Phase 2**	1) The Owner, or an approved third party, shall provide the CPM, CDFG, BLM and USFWS with a management plan for the compensation lands The CPM shall review and approve the management plan, in consultation with CDFG, BLM and the USFWS. 2) The Owner shall provide to the CPM, CDFG, 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.	The timing of the mitigation shall correspond with the timing of the site disturbance activities as stated in BIO-28 (Appendix B, p. 318). 1) Within180 days of the land or easement purchase, as determined by the date on the title. 2) Within 90 days after completion of all project related ground disturbance, .				
	Final Decision	268	1. Selection Criteria for Compensation Lands. The compensation lands selected for acquisition in fee title or in easement shall comply with geographic location and habitat requirements as set forth in BIO-12 (Appendix B, p. 268-269).								
	Final Decision	269	2. Review and Approval of Compensation Lands Prior to Acquisition. The Owner shall submit a formal acquisition proposal to the CPM, CDFG, 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 DT in relation to the criteria listed above. Approval from the CPM and CDFG, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels.	Owner		The Owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS, and BLM describing the parcels intended for purchase and shall obtain approval from the CPM and CDFG prior to the acquisition.	No fewer than 90 days prior to acquisition of the property.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	269	3. Compensation Lands Acquisition Requirements. The Owner shall comply with the following requirements requirements relating to acquisition of the compensation lands after the CPM and CDFG, in consultation with BLM and the USFWS, have approved the proposed compensation lands:	Owner							
	Final Decision	269	A. Preliminary Report. The 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. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM and CDFG, 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.	Owner		Provide documents to CPM and CDFG for review and approval					
	Final Decision	269	B. Title/Conveyance. The 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. 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, 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. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary.	Owner		Trasfer fee title and/or conservation easement to CDFG, or non-profit organization qualified to hold title to and manage compensation lands					

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	270	C. Initial Habitat Improvement Fund. The 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 and the CPM. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.	Owner							
	Final Decision	270	D. Property Analysis Record. Upon identification of the compensation lands, the 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.	Owner		Provide PAR					
	Final Decision	270	E. Long-term Maintenance and Management Fund. In accordance with BIO-28 (Appendix B, p. 318), the Owner shall deposit in NFWF's REAT Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR or PAR-like analysis conducted for the compensation lands. The CPM, in consultation with CDFG, 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 takes fee title to the compensation lands, CDFG 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 and with CDFG supervision.	Owner, CPM & CDFG		The Owner shall deposit the funds required (long term management and maintenance fee) and provide proof of the deposit to the CPM.	No fewer than 30 days after acquisition of the property.				
	Final Decision	270	F. Interest, Principal, and Pooling of Funds. The Owner, the CPM and CDFG shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the conditions as set forth in BIO-12 (Appendix B, p. 267).	Owner, CPM & CDFG							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	271	G. Other expenses. In addition to the costs listed above, the 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 or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.	Owner							
	Final Decision	271	H. Mitigation Security. The Owner shall provide financial assurances in accordance with BIO-28 (Appendix B, p. 318) to the CPM and CDFG 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 Owner fails to comply with the requirements specified in this condition, or shall be returned to the Owner upon successful compliance with the requirements in this condition. The CPM's or CDFG's use of the security (Security) to implement measures in this condition may not fully satisfy the Owner's obligations under this condition. Financial assurance can be provided to the CPM and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of Security. Prior to submitting the Security to the CPM, the Owner shall obtain the CPM's, in consultation with CDFG, BLM and the USFWS, of the form of the Security. Security shall be provided in the amounts $2,374,672 for Phase 1 A; $9,248,560 for Phase 1 B, and $9,859.984 for Phase 2. 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 acres of mitigation lands itself.	Owner	**Precon**	If the mitigation actions required under this COC are not completed prior to the start of ground-disturbing activities, the Owner shall provide the CPM and CDFG with an approved form of Security in accordance with this COC.	No later than 30 days prior to beginning project ground-disturbing activities.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	272	I. The 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 $2.465.611 for Phase 1 a; $9.481.161 for Phase 1 b; and $10.105.186 for Phase 2. If this option is used for the acquisition and initial improvement, the 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 REA T-NFWF Mitigation Account, July 23, 2010, or more current guidance from the REATagencies, the excess money deposited in the REAT Account shall be returned to the Owner. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the	Owner							
			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 CEC and CDFG. Such delegation shall be subject to approval by the CPM and CDFG, 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 CEC's approval.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-13	Final Decision	274	**RAVEN MANAGEMENT PLAN:** The 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 CPM, in consultation with BLM, USFWS and CDFG. 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 Raven Plan shall address raven monitoring and control at the new water source proposed in the McCoy Mountains in staff's proposed BIO-21 (Appendix B, p. 304).The Owner shall also provide funding for implementation of the USFWS Regional Raven Management Program by submitting 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 214, 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. More detail on the Raven Plan can be found following the list of COCs below.	Owner, CPM, BLM & DB	**Precon & Con**	1) The Owner shall provide the CPM, USFWS, and CDFG with the final version of a Raven Plan. 2) Owner shall submit payment to the project sub-account of the REAT Account held by the NFWFto support the USFWS Regional Raven Management Program.	1) No less than 10 days prior to the start of any project-related ground disturbance activities, the Owner shall provide the CPM, USFWS, and CDFG 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. 2) No less than 10 days prior to the start of any Project-related ground disturbance activities, the Owner shall provide documentation to the CPM, BLM, CDFG and USFWS that the one-time fee for the USFWS Regional Raven Management Program of has been deposited to the REAl - NFWS subaccount for the Project.	1. The Common 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. All modifications to the approved Raven Plan shall be made only with approval of CPM in consultation with USFWS and CDFG. Current estimate of the fee 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.			
	Final Decision	275		Owner & CPM	**Postcon**	The 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.	Within 30 days after completion of Project construction				
	Final Decision	275		Owner	**Postcon**	As part of the ACR, the DB 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.	Annually				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-14	Final Decision	275	**WEED MANAGEMENT PLAN:** The Owner shall implement a Weed Management 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 construction, operation, and 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. More detail on the Weed Management Plan can be found following the list of COCs.	Owner	**Precon, Con, Ops & Closure**	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 CDFG. Modifications to the approved Weed Mangement Plan shall be made only after consultation with the Energy Commission staff, BLM, USFWS, and CDFG.	No less than 10 days prior to start of any Project-related ground disturbance activities				
	Final Decision	276		Owner		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.	Within 30 days after completion of Project construction				
	Final Decision	276		DB		As part of the ACR, each year following construction the DB 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.	Annually following construction.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-15	Final Decision	276	**AVIAN PROTECTION PLAN:** The 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. More detail on the Avian Protection Plan can be found following the list of COCs.	Owner	**Precon**	Owner shall submit to the CPM, USFWS, and CDFG a final Avian Protection Plan.	No fewer than 30 days prior to commercial operation of any of the power plant units.	Modifications to the Avian Protection Plan shall be made only after approval from the CPM.			
	Final Decision	276		DB	**Ops**	Submit quarterly reports to the CPM, CDFG, and USFWS describing the dates, durations, results of monitoring, 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.	Quarterly for 1 year following the beginning of power plant operation. 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.				
	Final Decisioin	276		DB		Following the completion of the fourth quarter of monitoring, the DB shall prepare an Annual Report that shall be provided to the CPM, CDFG, and USFWS. The report shall summarize 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.	Annually				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-16	Final Decision	277	**PRE-CONSTRUCTION NEST SURVEYS:** Pre-construction nest surveys shall be conducted if construction activities would occur from February 1 through July 31. The DB or BM 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 DT surveys. The bird surveyors shall perform surveys in accordance with the following guidelines:	DB & BM	**Precon**	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.	At least 10 days prior to the start of any Project-related ground disturbance activities				
						Per a letter from the DB to the CPM dated October 18, 2010, the anticipated start of construction on the Project, defined as clear and grub, is scheduled for 15 November 2010. Nesting bird pre-construction surveys will not be conducted at this time since work will be initiated outside of the nesting season. Nesting bird pre-construction surveys will be conducted prior to disturbance of areas scheduled between February 1 and July 31, 2011.					
	Final Decision	277	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);	DB & BM							
	Final Decision	277	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;	DB & BM							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	277	3. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the DB in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM; and	DB & BM							
	Final Decision	277	4. The DB shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the DB disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.	DB & BM							
BIO-17	Final Decision	278	**AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES:** To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the DT surveys. Surveys shall be conducted as described below.	Owner	**Precon**	Submit a report to the CPM and CDFG. The report shall describe survey methods, results, impact avoidance and minimization measures implemented, and the results of those measures.	Within 30 days of completion of badger and kit fox surveys.				
	Final Decision	278	1. BMs 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.	BM				According to the USFWS' 2009 Desert Tortoise Field Manual http://www.fws.gov/ventura/speciesinfo/protocols_guidelines, ten-meter (~30-ft) wide belt transects should be used during DT surveys.			
	Final Decision	278	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.	BM							
	Final Decision	278	3. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the BM for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.	BM							
	Final Decision	278	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.	BM							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	278	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.	BM							
BIO-18	Final Decision	279	**BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATION MEASURES**: Owner shall implement the following measures to avoid, minimize and offset impacts to western burrowing owls (BO):					The BO Plan notes 'qualified biologists' may perform the actions. 'Qualified biologists' are equivelent to BMs.			
	Final Decision	279	1. Pre-Construction Surveys. The DB or BM shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of construction activities. Surveys shall be focused exclusively on detecting BO, and shall be conducted from two hours before sunset to one hour after or from one hour before to two 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 (Appendix B, p. 328).	DB & BM	**Precon**	Conduct pre-construction surveys.	No more than 30 days prior to initiation of construction activities.	If passive relocation has already occurred (see BO Plan below), this survey will serve to document that burrows excavated during passive relocation continue to be unoccupied by BO and no newly established BO-occupied or BO-suitable burrows are available for BO occupation in the Project Disturbance Area.			
	Final Decision	279	2. Implement BO Mitigation Plan. The Owner shall implement measures described in the final BO Mitigation Plan. The final BO Mitigation Plan shall be approved by the CPM, in consultation with BLM, USFWS and CDFG, 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; c. provide detailed methods and guidance for passive relocation of BOs 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 BO were relocated from and provide a reporting plan.	Owner	**Precon**	If pre-construction surveys detect burrowing owls within the Project Disturbance Area and relocation of the owls is required, Owner submit a BO Mitigation Plan and submit to BLM, the CPM, CDFG and USFWS.	Within 30 days of completion of the burrowing owl pre-construction surveys.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	279	3. Implement Avoidance Measures. If an active BO 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 BOs 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 through August 31st) the DB or BM shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.	Owner, DB & BM	**Precon & Con**	1) DB shall provide to the CPM documentation indicating that non-disturbance buffer fencing has been installed. 2) The Owner shall report monthly to BLM, the CPM, CDFG and USFWS for the duration of construction on the implementation of BO avoidance and minimization measures. 3.) Owner shall provide to the CDFG and CPM a report identifying how mitigation measures described in the plan have been completed. 4) As part of the ACR, each year following construction for a period of 5 years, the DB shall provide a report to the CPM, BLM, USFWS and CDFG that describes the results of monitoring and management of the BO relocation area.	1) At least 10 days prior to the start of any project-related site disturbance activities. 2) Monthly. 3.) Within 30 days after completion of construction. 4) Annually.	The documentation will include a description of the burrow, summary of the occupants of the burrow, account of the surrounding habitat conditions, a photograph of the burrow, and latitude/longitude coordinates for the burrow per BO Plan, p. 11.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	280	4. Acquire 39 Acres of BO Habitat. Owner shall acquire, in fee or in easement 39 acres of land suitable to support a resident population of BOs & provide funding for the enhancement & long-term management of these compensation lands. The responsibilities for acquisition & 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 & USFWS before 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 BO Mitigation Lands. The terms & conditions of this acquisition or easement shall be as described in BIO-12 [Appendix B, p. 267], with the additional criteria to include: 1) the 39 acres of mitigation land must provide suitable habitat for BOs, & 2) the acquisition lands must either currently support BOs or be no farther than 5 miles from an active BO nesting territory. The 39 acres of BO mitigation lands may be included with the DT mitigation lands ONLY if these two BO criteria are met.	Owner (or approved 3rd party)	**Precon**	1) Submit formal aqcusition proposal describing the parcels intended for purchase and a PAR or Par-like analysis for the parcels to the CPM, BLM, CDFG, and USFWS. 2) Provide management plan to the CPM and BLM for review and approval, in consultation with BLM, CDFG and USFWS, for the compensation lands and associated funds. 3) Provide a form of Security in accordance with this COC.	1) No less than 90 days prior to acquisition of the BO compensation lands. 2) Within 90 days of the land or easement purchase, as determined by the date on the title. 3) No later than 30 days prior to beginning Project ground-disturbing activities. No later than 7 days prior to beginnig Project ground-disturbing activities, the Owner shall provide written verification of the actual Security.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
			If the 39 acres of BO mitigation land is separate from the acreage required for desert tortoise compensation lands, the Owner shall fulfill the requirements described below in this condition. b. Security. If the 39 acres of BO mitigation land is separate from the acreage required for DT compensation lands, the Owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition. Alternatively, financial assurance can be provided by the Owner to the CPM and CDFG, according to the measures outlined in BIO-12 (Appendix B, p. 267). These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the CPM and the BLM's AO in the form of an irrevocable letter of credit, a pledged savings account or another form of 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 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 (Appendix B, p. 267).								
BIO-19	Final Decision	282	**SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATION**: The Owner shall implement the following measures in Section A, B, C, and D to avoid, minimize, and compensate for impacts to special-status plant species:	Owner	**Precon**						
	Final Decision	283	Section A: Special-Status Plant Impact Avoidance and Minimization Measures: To protect all special-status plants located outside of the Project Disturbance Area and within 100 feet of the permitted Project Disturbance Area from accidental and indirect impacts during construction, operation, and closure, the Owner shall implement the following measures:	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	283	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 BMs tasked with conducting botanical survey and monitoring work. During operation of the Project, the DB shall be responsible for protecting special-status plant occurrences within 100 feet of the Project boundaries.	Designated botanist, DB & BMs	**Con, Ops & Closure**						
	Final Decision	283	2. Special-Status Plant Impact Avoidance and Minimization Measures. 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:	Owner							
	Final Decision	283	a. Site Design Modifications: Incorporate site design modifications to minimize 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.	Owner	**Precon**						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	283	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. 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.	Designated botanist	**Precon**						
	Final Decision	284	c. Special-Status Plant WEAP. The WEAP (BIO-6; Appendix B, p. 252) shall include training components specific to protection of special-status plants as outlined in this condition.		**Precon, Con & Ops**						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	284	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 Control Program (BIO-14; Appendix B, p. 275) 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 , the U.S. Environmental Protection Agency, and the Pesticide Action Network Database.		**Precon, Con & Ops**						
	Final Decision	284	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, etc.). These measures shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under SOIL&WATER-1.		**Precon, Con & Ops**						
	Final Decision	285	f. 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.		**Precon, Con & Ops**						
	Final Decision	285	g. Monitoring and Reporting Requirements. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.	Designated botanist	**Con & Closure**						
	Final Decision	285	Section B: Conduct Late-Season Botanical Surveys: The 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:	Owner	**Precon**						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	285	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 1 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 COC BIO-28 (Appendix B, p.318) is authorized to commence following a September survey.								
	Final Decision	285	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. 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.	Qualified botanist							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	286	3. Survey Coverage. The survey coverage or intensity shall be in accordance with BLM Survey Protocols, 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.								
	Final Decision	286	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.	Owner							
			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 Owner shall also submit the raw GPS shape files and metadata, and completed CNDDB forms for each 'occurrence' (as defined by CNDDB).							
	Final Decision	40	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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	286	6. The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines, 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.	Owner							
	Final Decision	287	Section C: Avoidance Requirements for Special-Status Plants Detected in the Summer/Fall 2010 Surveys: The 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.	Owner	**To be determined**			Depending on the results of the sruveys, requirements of this section may not be necessary.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	287	1. Mitigation for CNDDB Rank 1 Plants (Critically Imperiled) - Avoidance Required: If late blooming species with a CNDDB rank of 1 are detected within the Project Disturbance Area, the Owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The goal of the Plan shall be to retain at least 75% of the local population of the affected species. Compensatory mitigation, as described in Section D of this condition, and at a mitigation ratio of 3:1, shall be required for the 25% or portion that is not avoided. The Plan shall include, at a minimum, the following components and definitions:								
	Final Decision	287	a. A description of the occurrences of the CNDDB rank 1 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.								
	Final Decision	288	b. 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).								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	288	c. 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).								
	Final Decision	288	d. If avoidance on the linears, construction laydown areas, and solar facility combined protect less than 75% of the local population of the affected species, the 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.								
	Final Decision	288	e. 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% avoidance requirement because such isolated populations are not sustainable.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	289	2. Mitigation for CNDDB Rank 2 Plants (Imperiled): Avoidance on Linears Required: If species with a CNDDB rank of 2 are detected within the Project Disturbance Area, the 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 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.	Owner							
	Final Decision	289	3. Mitigation for CNDDB Rank 3 Plants: No On-Site Avoidance Required Unless Local or Regional Significance: If species with a CNDDB rank of 3 are detected within the Project Disturbance Area, no onsite avoidance or compensatory mitigation shall be required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CNDDB rank 2 plant species. A plant occurrence would be considered to have local or regional significance if: a. It occurs at the outermost periphery of its range in California; b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or; c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or sub-species.							
	Final Decision	289	4. Pre-Construction Notification for State- or Federal-Listed Species, or BLM Sensitive Species. If a state or federal-listed species or BLM Sensitive species is detected, the Owner shall immediately notify the CDFG, USFWS, BLM, and the CPM.							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	289	5. 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 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.								
	Final Decision	290	Section D: Off-Site Compensatory Mitigation for Special-Status Plants: Where compensatory mitigation is required under the terms of Section C, above, the 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 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 ¼ acre than the compensatory mitigation will be ¾ 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.	Owner	**To be determined**			Depending on the results of the sruveys, requirements of this section may not be necessary.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	260	The 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 PAR report, and other transactional costs related to the use of compensatory mitigation.								
	Final Decision	260	The 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: 6. Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:								
	Final Decision	291	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).								
	Final Decision	291	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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	291	c. Unoccupied but Adjacent. The 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 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.								
	Final Decision	291	7. Review and Approval of Compensation Lands Prior to Acquisition. The 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.								
	Final Decision	291	8. Management Plan. The 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.								
	Final Decision	291	9. Integrating Special-Status Plant Mitigation with Other Mitigation lands. If all or any portion of the acquired DT, 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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	292	10. Compensation Lands Acquisition Requirements. The Owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:								
	Final Decision	292	Preliminary Report. The 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.								
	Final Decision	292	Title/Conveyance. The 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, 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 or another entity approved by the CPM. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	292	Initial Protection and Habitat Improvement. The 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 agencies, 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 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, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.								
	Final Decision	293	Property Analysis Record. Upon identification of the compensation lands, the Owner shall conduct a 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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	293	Long-term Maintenance and Management Funding. In accordance with BIO-28 (Appendix B, p. 318), the Owner shall deposit in NFWF's REAT Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR or PAR-like analysis conducted for the compensation lands.								
	Final Decision	293	The CPM, in consultation with CDFG, 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 takes fee title to the compensation lands, CDFG 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 and with CDFG supervision.	CPM							
	Final Decision	293	Interest, Principal, and Pooling of Funds. The 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:	Owner							
	Final Decision	293	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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	294	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.								
	Final Decision	294	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.								
	Final Decision	294	Other Expenses. In addition to the costs listed above, the 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 or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	294	Mitigation Security. The Owner shall provide financial assurances in accordance with BIO-28 (Appendix B, p. 318) 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 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 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 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 Owner's obligations under this condition, and the Owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Owner in whole or in part upon successful completion of the associated requirements in this condition.	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	295	The 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 REAT Account established with the NFWF. To use this option, the 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 Final Decision) 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 Owner, the 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 Owner, the remaining balance shall be returned to the 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	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	296	II. Compensatory Mitigation by Habitat Enhancement/Restoration: As an alternative or adjunct to land acquisition for compensatory mitigation the 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 ¼ acre than the improvements would be applied to an area equal to ¾ 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;	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
			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 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 with one of the following threat ranks: a) long-term decline >30%; b) an immediate threat that affects >30% 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').								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	296	If the 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 Energv 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 items listed in this section of BIO-19 (Appendix B, p. 296).								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	298	III. Compensatory Mitigation by Conducting or Contributing to a Special-Status Plant Species Distribution Study: As a contingency measure in the event that there are no opportunities for acquisition or restoration/enhancement, 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 each of the items listed in this section of BIO-19 (Appendix B, p. 298).								
BIO-20	Final Decision	302	**SAND DUNE/FRINGE-TOED LIZARD MITIGATION**: To mitigate for habitat loss and direct impacts to Mojave fringe-toed lizards the Owner shall provide compensatory mitigation at a 3:1ratio, 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 (58 acres or the acreage of sand dune/partially stabilized sand dune habitat impacted by the final Project footprint). If compensation lands are acquired, the 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.	Owner (or approved 3rd party), BLM & CPM	**Precon, Con & Postcon**	1) Owner to submit a formal acquisition proposal to BLM's AO, the CPM, CDFG and USFWS describing the parcels intended for purchase. 2) Owner to provide BLM, the CPM, CDFG and USFWS with a management plan for the compensation lands and associated funds the CPM shall review and approve the management plan, in consultation with BLM, CDFG and the USFWS. 3) Owner shall provide to the CPM and BLM an analysis with the final accounting of the amount of sand dune/stabilized sand dune habitat disturbed during Project construction. 4) Owner shall provide written verification to BLM, the CPM, USFWS, and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient .	1) No less than 90 days prior to acquisition of the property. 2) Within 180 days of the land or easement purchase, as determined by the date on the title. 3) Within 90 days after completion of Project construction. 4) No later than 18 months from the start of ground-disturbing activities.				
	Final Decision	302	1. Criteria for Compensation Lands: The compensation lands selected for acquisition shall:	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	302-303	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;	Owner							
			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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	303	2. Security for Implementation of Mitigation: The 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 and BLM's AO according to the measures outlined in BIO-12, and within the time period specified for this assurance (see Schedule). The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in BIO-12 (Appendix B, p. 267).	Owner	**Precon**	Owner shall provide written verification of approved form of Security in accordance with this COC.	No later than 30 days prior to beginning Project ground-disturbing activities. Actual Security shall be provided no later than 7 days prior to beginning of Project ground-disturbing activities.				
	Final Decision	303	3. Preparation of Management Plan: The Owner shall submit to the CPM, BLM, CDFG 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.	Owner							
BIO-21	Final Decision	304	**MITIGATION FOR IMPACTS TO BIGHORN SHEEP**: To compensate for Project contributions to loss of spring foraging habitat for Nelson's bighorn sheep, the Owner shall either do Item #1 or #2 below:	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	304	1. Create a New Water Source. The 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 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.	Owner & CPM	**Precon & Con**	1) Owner shall provide the CPM with a form of Security for installation, management and monitoring of the water source. 2) Owner shall submit to the CPM for review and approval a description of the proposed location of the water source that will be created. 3) Owner shall provide written verification to the CPM that construction of the water source has been completed. Owner shall: (a) provide a monitoring and management plan for bighorn use of the water source; and (b) 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. 4) the 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; a discussion of whether management goals for the year were met.	1) No later than 30 days prior to beginning project ground disturbing activities for approval. Actual Security shall be provided no later than 7 days prior to the beginning of project ground-disturbing activities. 2) No later than 6 months following start of ground disturbance activities. 3) No later than 24 months following the project ground-disturbing activities. 4) Annually as part of the ACR.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	304	Or, Owner may elect to fund the creation of a new water source by depositing funds into a REAT subaccount established with the NFWF. Actual costs shall be developed in consultation with the CPM, BLM and CDFG. 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. 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 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 Owner into the NFWF Account will discharge the Owner's obligations under this COC. 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.	Owner & CPM	**Precon**	Owner shall provide written verification to the CPM, BLM and CDFG that $100,000 has been deposited to that subaccount.	No less than 30 days prior to beginning project ground-disturbing activities.				
	Final Decision	304	2. Acquire Compensatory Habitat. As an alternative to providing a water source as described above, the 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 metapopolation Nelson's bighorn sheep. If the Owner selects this compensatory mitigation option the Owner shall acquire, in fee or in easement no less than 929 acres of lands that:	Owner (or approved 3rd party)	**See 'Schedule'**	1) Submit a formal acquisition proposal to the CPM, BLM, CDFG describing the 929 acres of lands intended for purchase and submit a PAR or PAR-like analysis for the parcels for review and approval by the CPM, in consultation with BLM and CDFG. 2) Owner shall provide written verification to the BLM, the CPM, and CDFG that no fewer than 929 acres of compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.	1) No less than 90 days prior to acquisition of the bighorn sheep compensation lands. 2) No later than 18 months from initiation of construction.				
	Final Decision	305	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	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	305	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								
	Final Decision	305	Acquisition Terms and Conditions. The terms and conditions of this acquisition or easement shall be as described in BIO-12 (Appendix B, p. 267)and the timing associated with BIO-28 (Appendix B, p. 318). 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.								
	Final Decision	305	Review and Approval of Compensation Lands Prior to Acquisition. The 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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	305	Acquisition Security. If the 929 acres of bighorn sheep mitigation land is separate from the acreage required for DT compensation lands, the Owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition. Alternatively, financial assurance can be provided by the Owner to the CPM and CDFG, according to the measures outlined in BIO-12 and BI0-28 (Appendix B, p. 267 and 318), 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 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.			Owner shall provide written verification to the CPM, BLM and CDFG that $100,000 has been deposited to that subaccount.	No less than 30 days prior to beginning project ground-disturbing activities.	Security shall be refunded to Project owner once land has been acquired and recorded in favor of the approved recipient.			
			The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in BIO-12 (Appendix B, p. 267).								
BIO-22	Final Decision	307	**MITIGATION FOR IMPACTS TO STATE WATERS**: The 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.	Owner (or approved 3rd party), CPM & BLM AO	**Precon, Con, Postcon**	1)Provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the best management practices will be implemented. 2) Complete and provide written verification of the proposed compensation lands acquisition. 3) Provide BLM, the CPM, CDFG, and USFWS with a management plan for the compensation lands and associated funds. The CPM shall review and approve the management plan, in consulation with CDFG. 4) Provide to the CPM and CDFG an analysis with the final accounting of the amount of jurisdictional state waters disturbed during Project construction. 5) Notify the CPM and CDFG, in writing.	1) No less than 30 days prior to the start of construction-related ground disturbance activities potentially affecting waters of the state. 2) Within 18 months of the start of Project ground-disturbing activities. 3) Within 180 days of the land or easement purchase, as determined by the date on the title. 4) Within 90 days after completion of Project construction. 5) At least 5 days prior to initiation of Project activities in jurisdictional state waters and at least 5 days prior to completion of Project activities in jurisdictional areas.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	310				1) Notify the CPM and CDFG 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. See Notes. 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. Provide a discussion of work in waters of the state in Compliance Reports for the duration of the Project.	1) No later than 7 days after the change of conditons is identified.	Changed Biological Conditions: includes, but is not limited to: 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. Changed Physical Conditions: includes, but is not limited to: 1) a change in the morphology of a river, stream, or lake, 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. Changd 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.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	307	1. Acquire Off-Site State Waters: The Owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 1,384 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 acres of ephemeral washes shall include at least 639 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 COC BIO-12 (Appendix B, p. 267) and the timing associated with BIO-28 (Appendix B, p. 318). 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.	Owner	**See 'Schedule'**	Provide written verification to BLM, the CPM, USFWS and CDFG 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 Project, which was September 15, 2010.				
	Final Decision	307	2. Security for Implementation of Mitigation: The Owner shall provide financial assurances to the CPM and CDFG 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 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 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 (Appendix B, p. 267).	Owner	**Precon**	1) Provide the form of Security in accordance with this COC. 2) Provide written verification of the actual Security.	1) No less than 30 days prior to beginning Project ground-disturbing activities. 2) No later than 7 days prior to beginning Project ground-disturbing activities.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	308	3, Preparation of Management Plan: The Owner shall submit to the CPM and CDFG 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.	Owner							
	Final Decision	308	4. Code of Regulations: The Owner shall provide a copy of this condition (COC BIO-22) from the Energy Commission Decision to all contractors, subcontractors, and the supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the Owner, the CPM, if the CPM in consultation with CDFG, determines that the 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 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.	Owner	**Precon**						
	Final Decision	308	5. Best Management Practices: The Owner shall also comply with the following conditions to protect drainages near the Project Disturbance Area:	Owner	**Precon, Con & Ops**						
	Final Decision	308	a. The Owner shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.								
	Final Decision	308	b. The 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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	308	c. The 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 Owner to ensure compliance.								
	Final Decision	308	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.								
	Final Decision	309	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 Owner or any party working under contract or with the permission of the Owner, shall be removed immediately.								
	Final Decision	309	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.								
	Final Decision	309	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.								
	Final Decision	309	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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-23	Final Decision	311	**DECOMMISSIONING AND RECLAMATION PLAN**: Upon Project closure, the 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.	Owner, CPM & BLM AO	**Postcon**	Owner shall provide to the CPM (for review) and BLM's AO (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 5 years thereafter and submitted to the CPM for review and to the BLM's AO for approval. Modifications to the approved Decommissioning and Reclamation Plan shall be made only after approval from BLM's AO. Owner shall provide a copy of the approved Decommissioning and Reclamation Plan and any BLM approved revisions to the CPM.	No fewer than 30 days prior to the start of Project-related ground disturbing activities				
BIO-25	Final Decision	311	**GOLDEN EAGLE INVENTORY AND MONITORING**: The Owner shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles.	Owner & CPM	**Con**	1) Owner shall submit a report to the CPM, CDFG, and USFWS documenting the results of the inventory. 2) If an occupied nest is detected within one mile of the Project boundary during the inventory the Owner shall contact staff at the USFWS Carlsbad Office and CDFG for interim guidance on monitoring and nest protection. 3) Owner shall provide the CPM, CDFG, and USFWS with the final version of the Golden Eagle Monitoring and Management Plan. This final Plan shall have been reviewed and approved by the CPM in consultation with USFWS and CDFG.	1) No fewer than 30 days from completion of the golden eagle inventory. 2) Within 1 working day of detection of the nest. 3) Within 30 days after detection of the nest				
	Final Decision	311	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 1 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 or more current guidance from the USFWS.								
	Final Decision	311	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.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	311	3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least 2 full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least 2 ground observation periods lasting at least 4 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.			2 full surveys during breeding season	At least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.				
	Final Decision	312	4. Monitoring and Adaptive Management Plan: If an occupied nest is detected within 1 mile of the Project boundaries, the 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 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 DB to be the source of golden eagle disturbance.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-25	Final Decision	313	**EVAPORATION POND NETTING AND MONITORING**: The 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 approved by the CPM in consultation with CDFG 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:	Owner, CPM & DB	**Ops**	1) Owner shall provide to the CPM as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. 2) DB shall submit quarterly reports to the CPM, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the DB shall submit annual monitoring reports with this information.	1) No less than 30 days prior to operation of the evaporation ponds. 2) Quarterly reports for the 1st year and annually thereafter.	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.			
	Final Decision	313	1. Monthly Monitoring. The DB or BM 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 DB within one day of the detection of the carcass. The DBs shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the CPM, CDFG, and USFWS.	DB & BM							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	313	2. Dead or Entangled Birds. If dead or entangled birds are detected, the DB shall take immediate action to correct the source of mortality or entanglement. The DB shall make immediate efforts to contact and consult the CPM, CDFG, 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 DB, prevent further mortality of birds or other wildlife at the evaporation ponds.	DB							
	Final Decision	313	3. 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 DB, monitoring can be reduced to quarterly visits.	DB							
	Final Decision	314	4. Biannual Monitoring. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the DB and with approval from the CPM, USFWS and CDFG, 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, monitoring outside the nesting season may be conducted by the ECM.	DB							
	Final Decision	314	5. Modification of Monitoring Program. Without respect to the above requirements the Owner, CDFG 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.								
	Final Decision	314	In addition, the Owner shall prepare and implement measures that will prevent Couch's spadefoot toads from using the evaporative basins (see COC BIO-26 below).	Owner							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
BIO-26	Final Decision	314	**COUCH'S SPADEFOOT TOAD IMPACT AVOIDANCE AND MINIMIZATION MEASURES**: The 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, 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, the items listed under BIO-26 (Appendix B, p. 315-317).	Owner & CPM	**Precon & Con**	1) Owner shall submit to the CPM and CDFG, a final Protection and Mitigation Plan. 2) Submit reports to the CPM documenting the capacity of the created ponds to hold water.	1) No less than 30 days prior to any Project-related ground disturbance. 2) At least 9 days during the spadefoot toad breeding season.	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. The annual reporting may be terminated upon satisfactory demonstration of this performance standard, and with approval of the CPM.			
	Final Decision	317	If the Protection and Mitigation Plan includes creation of ponds, the number and acreage of created ponds shall be described in the plan.	Owner	**Preops & Ops**	1) 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. 2) Submit reports to the CPM documenting the capacity of the created ponds to hold water for at least 9 days during the spadefoot toad breeding season. If ponds fail tohold 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.	1) No less than 90 days prior to operation of project the Owner. 2) On January 31st of every year following initiation of operation of the Project.				

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	318	Mitigation land is purchased as an alternative to pond creation.	Owner (or approved 3rd party) & CPM	**Precon**	1) Owner shall provide the CPM and CDFG with an approved form of Security and the calculation of such Security in accordance with this COC and BIO-12. 2) Actual Security shall be provided. 3) Owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition. 4) Owner shall submit a formal acquisition proposal to the CPM, CDFG and USFWS describing the parcels intended for purchase. 5) Owner, or an approved third party, shall provide the CPM, CDFG and USFWS with a management plan for the compensation lands and associated funds. The CPM shall review and approve the management plan, in consultation with CDFG. 6) Owner shall provide written verification to the CPM, and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.	1) No later than 30 days prior to beginning Project ground-disturbing activities. 2) No later than 7 days prior to the beginning of Project ground-disturbing activities. 3) Within 18 months of the start of Project ground-disturbing activities if Security is provided. 4) No less than 90 days prior to acquisition of the property. 5) Within 180 days of the land or easement purchase, as determined by the date on the title. 6) No later than 18 months from the start of ground-disturbing activities				
BIO-27	Final Decision	318	**IN-LIEU FEE MITIGATION OPTION**: The 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.	Owner		If electing to use this provision, the 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.					
BIO-28	Final Decision	318	**PROJECT CONSTRUCTION PHASING PLAN**: The Owner shall provide compensatory mitigation for the total Project Disturbance Area and may provide such mitigation in three phases, 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.	Owner	**Phase 1a, Phase 1b, and Phase 2.**	Owner shall submit a description of the proposed construction activities for that phase to CDFG, 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 the start of DT clearance surveys for each phase.	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.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Final Decision	319	The disturbance area for each project Phase and resource type is provided in Appendix B (p. 319). The tables 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 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 COC BIO-12 (Appendix B, p. 267), BIO-20 (Appendix B, p. 302), BIO-18 (Appendix B, p. 279), and BIO-22 (Appendix B, p. 307). Compensatory mitigation for each phase shall be implemented according to the timing required by each condition.					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 DT exclusionary fenced areas that have been cleared in accordance with USFWS protocols.			
	Reveg Plan (BIO-8 #17)	5	**REVEGETATION PLAN:** Revegetation methods described below apply to those areas of the Project that involve temporary uses that will cease at the end of the construction phase and are not required for the operational phase, facilities that involve temporary disturbances that will be allowed to return to natural conditions following the end of the construction period (e.g., natural gas pipeline corridor, pole erection sites along the transmission line corridor), or other areas that will be designated by BLM for revegetation following the end of the 30-year operational life of the Project.	Owner, Revegetation Contractor, Revegetation Ecologist, BMs	**Post-Con**	Restore all areas subject to temporary disturbance to pre-project grade and conditions. Revegetation Ecologist will coordinate with the Revegetation Contractor to monitor the installation effort in order to verify it is performed in accordance with the final project construction plans and specifications. The Revegetation Ecologist will attend site meetings to discuss and advise on the progress of the installation effort. Once the Revegetation Ecologist confirms in writing that installation effort is complete, the revegetation effort will begin the 2 year maintenance and monitoring period required by BIO-8, #17 (Appendix B, p. 260).		No requirement for fencing of the areas to be seeded. Signage will be installed at likely entry points to inform the public and workforce of restricted site access where the area could potentially attract foot or vehicle traffic. No irrigation system will be installed, and no hand watering will be required.			

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	Reveg Plan (BIO-8 #17)	5	Recontouring: Constrained to elevation changes that do not affect land form or drainage on adjacent active operation areas. Major drainages are to be diverted to artificial channels at the property boundaries; thus they will not be revegetated. If temporary impacts should affect major drainages, they will be configured to reconnect historic drainages across the revegetated areas. Shallow braided surface flow patterns will form according to localized slopes and elevation changes and can be influenced only in the most general way by recontouring. Any drainage anticipated on the temporary disturbance areas will be designed to deliver runoff to natural or artificial channels in a manner consistent with agency requirements. Any unanticipated re-shaping of the land form by storm water will be repaired as needed to route drainage to engineered channels within the operations area, then to natural drainages at the property boundaries. Any such emergency grading will be followed by re-seeding with the seed mix specified for general reseeding.								
	Reveg Plan (BIO-8 #17)	5	Decompaction: Before reseeding, test the soil locations throughout temporary disturbance areas, including the most heavily used roadways and other likely locations for compaction. Using a soil or engineering laboratory equipped to determine soil bulk density, a determination will be made of the areas that require decompaction. Any locations found to have a bulk density in excess of 1.6 grams per cubic centimeter (g/cc) will be cross-ripped to a depth of 12 inches.								
	Reveg Plan (BIO-8 #17)	6	Soil Amendments: Soil amendments will not be applied unless it is necessary to plant in sub-grade material that differs chemically from the surface soil. In that case a soil scientist will determine soil physical and chemical properties and recommend any necessary treatments. Treatments will be intended to decrease unfavorable conditions without attempting to create soil of agricultural quality. In no case will the soil be made more fertile than nearby undisturbed soil. Mycorrhizal inoculum will be added to the seed mix to assure that seedlings become mycorrhizal early in life, which, in this context, is not considered a soil amendment.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Reveg Plan (BIO-8 #17)	6	Weed Removal: Sites that show weed growth will be treated before seeding. If significant weed growth is present at the time of reseeding, the area will be treated with glyphosate or other suitable herbicide. All herbicide use will be in accordance with the label and under the direction of a certified pesticide applicator, and will observe precautions described in Bio-19 (Appendix B, p. 282). Any thatch of dead weeds should be left in place to minimize unnecessary soil disturbance. Weeds should not be removed by pulling, hoeing, or disking. If the soil must be ripped because of compaction there will be no restrictions on other soil disturbance until after seeding.								
	Reveg Plan (BIO-8 #17)	6	Seed Collection: Revegetation plant material will consist entirely of seeds, apart from some cacti that may be transplanted or planted from stem cuttings. The seed mix is based on Sonoran Creosote Bush scrub. No attempt will be made to plant desert wash vegetation. Seeds will be of local origin. The seeds to be used on this revegetation project include three categories (dominant, functional and trace), all treated differently during installation.								
	Reveg Plan (BIO-8 #17)	7	Cactus Salvage: Three cactus species will be salvaged and transplanted to undisturbed portions of the ROW--*Echinocactus polycephalus* var. *polycephalus* , *Ferocactus cylindraceus* var. *cylindraceus* , and *Mammillaria tetrancistra* . Three additional cactus species, *Opuntia basilaris* , *O. echinocarpa* , and *O. ramosissima* , will not be salvaged entirely but will be replanted with 3 stem sections per plant, broken at the joints and allowed to callus in the shade for 7 to 30 days. The sections will be placed in soil to a depth equal to one third of their length. If suitable planting sites are not available at the time of plant salvage, cacti will be temporarily planted in a trench 18 inches deep and at least 24 inches wide. The topsoil berms may optionally be used for temporary cactus storage. The cacti will be placed upright and in their original compass orientation until the final planting site is available. Plants may be watered in the trenches when first planted or when they show signs of water stress; however they will not be regularly watered, since excess moisture may promote root rot.								

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	Reveg Plan (BIO-8 #17)	7	Salvage of filamentous cyanobacteria: Filamentous cyanobacteria can be salvaged and stockpiled from sites to be temporarily disturbed. Salvage must be completed before temporary disturbance begins. The Restoration Ecologist will identify and flag areas from which a very thin upper layer is removed and stockpiled, bringing with it native cyanobacteria. Alternatively, a relatively simple collection method takes advantage of filamentous cyanobacteria attached to the lower edges of pebbles on the "desert pavement" areas. Abundant cyanobacteria were specifically noted on desert pavement at the Project site. Desert pavement areas that are subject to temporary disturbance could at the be used to re-inoculate topsoil storage berms and later be moved to the revegetation area. In all cases, the soil or pebbles used to supply cyanobacterial inoculum must be kept at the top of the piles; the cyanobacteria quickly die when buried.								
	Reveg Plan (BIO-8 #17)	8	Topsoil Salvage: Top 2 inches of soil under native vegetation. Include only material removed from areas of healthy native vegetation as identified by the Revegetation Ecologist. Soils dominated by exotic plants must not be re-applied. Topsoil from areas planned for revegetation must be salvaged before the initiation of temporary disturbance and stored until revegetation begins. Topsoil collection will take place when seeds and microorganisms are in a dormant state (typically in May through early July or late Sept through mid-Nov). Soil may be collected by a bulldozer, front loader, or scraper. Stockpile in berms to be no more than 4 feet in depth unless the soil is at least 80 percent sand, then it may be piled in berms up to 6 feet in depth. Material collected with topsoil should be re-applied. Protect stockpiles from compaction. Equipment delivering soil must not repeatedly traverse the lower layers while dropping an upper layer, nor must the berms be used as roads. Stockpiles compacted to bulk density greater than 1.6 g/cc are unsuitable. Topsoil may be stored for up to a year without seeding or covering the berms. If a longer period of storage is anticipated, the berms should be planted with native vegetation including annual or short-lived perennial native species from the families Poaceae and Asteraceae.	Revegetation Ecologist							

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	Reveg Plan (BIO-8 #17)	9	The common desert annual *Plantago ovata* will be planted liberally over the surface of berms intended for long term topsoil storage. Other species may be inter-planted with those listed in this Plan, and the berms with growing plants may be used as "seed farms" for future use in revegetation. Seeds grown on the berms must originate within the immediate vicinity of the Project except as otherwise approved by the resource agencies and the Revegetation Ecologist.	Revegetation Ecologist							
	Reveg Plan (BIO-8 #17)	9	Reapplication of Topsoil and Any Available Desert Pavement: Topsoil taken from areas designated for revegetation will be re-applied to the land surface after re-contouring and just before imprinting and seeding. Topsoil may be spread over no more than twice the area from which it was collected. It will be carried from the berms to the seeding sites by equipment capable of transporting soil without overheating or compacting it. The topsoil will be spread evenly by machinery or hand labor and left on the surface along with any small rocks, sticks, roots, or other organic material. Desert pavement rock material or other sources of filamentous cyanobacteria will be spread over the topsoil layer. Inoculum should be spread evenly over the topsoil to promote distribution of the desired organisms, and may be spread over as much as 10 times the area from which collected. Small rocks will not interfere with land imprinting, although it is expected that some will be buried by the imprinter.								

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	Reveg Plan (BIO-8 #17)	9	Mycorrhizal Inoculation: Mycorrhizal fungi will be supplied through a combination of topsoil salvage and application of commercial inoculum. Commercial mycorrhizal inoculum is supplied as fungi and spores attached to clay granules. Commercial inoculum will supplement native inoculum in the salvaged topsoil. Site-specific mycorrhizal inoculum is very difficult to arrange other than by storing topsoil. The inoculum will consist of a commercial strain of a single fungal species, *Glomus intraradices* unless otherwise specified by the Revegetation Ecologist. The finished revegation area is expected to be dominated by mycorrhizal plants with both plants and fungi of local origin, but only after inoculum from the topsoil has had1 to 3 years to spread throughout the revegetation area. If the Revegetation Ecologist or a qualified mycorrhizal laboratory can verify that salvaged topsoil has at least two viable native mycorrhizal propagules per gram of soil, the commercial mycorrhizal inoculum may be omitted from the seed mix. Mycorrhizal inoculum may be mixed with seeds for imprinting but must not be allowed to heat up in the sun or in the bin to more than 90°F.	Revegetation Ecologist							
	Reveg Plan (BIO-8 #17)	10	Seeds: Seeds for revegetation of temporary disturbance areas will be of local origin as permitted by BLM regulations that may apply on the ROW. See Table 2, Plant and Seed Rates in the Revegetation Plan for the distribution method of each species. No per-acre application rates are specified for trace species, the availability of which will be unpredictable.								
	Reveg Plan (BIO-8 #17)	12	Land Imprinting: Seeds to be used for revegetation of areas of temporary disturbance will be applied to large areas with a land imprinter, a heavy tractor-drawn roller with steel teeth that make a series of depressions in the soil while pressing seeds and mycorrhizal inoculum into firm capillary contact with the soil. The seed mixes will be sown between October 15 and January 1. Seed dispensed from land imprinting will be in firm contact with the soil. The seed bin will contain no residual seed from previous uses. Wheat bran or an approved substitute will be mixed with seed to appropriate dilution ratio to prevent seed segregation. The optimum mixing ratio is usually 1:1 by volume. The land imprinter must conform to the construction specifications given on the web site of the Imprint Foundation: (http://imprinting.org/). It will be operated at a speed not greater than mph.								

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	Reveg Plan (BIO-8 #17)	13	Hand Seeding: Only used for areas too isolated for imprinting & will also be used for spot seeding of species available only in small quantities. The seeds used on these areas will be deposited on the ground a few at a time rather than widely broadcast. Mycorrhizal inoculum or good quality topsoil, recently collected from under healthy native vegetation, will be dropped with the seeds & lightly covered or pressed into the soil. A volume of seed mix that contains only a few seeds (usually less than a 1/4 teaspoon of mix) will be dropped within an area small enough to press with the foot, assuring that seeds are in firm capillary contact with the soil. In spot seeding, a small quantity of seed is applied in a locally favorable spot (e.g., edges of shrub canopies and crevices between rocks). Quantities are not specified, but Table 2 (see the Revegetation Plan) lists candidates for spot seeding. In most cases, a pound of reasonably clean bulk seeds will allow spot seeding at numerous locations throughout the revegetation area. Spot-seeded mixes will be sown between Oct 15 and Jan 1, after imprinting.	Revegetation Ecologist							
			The Revegetation Ecologist will provide BLM with a list of available species & quantities that will be applied from the spot seeding list. The addition of quality topsoil will supply numerous species that may not be available for collection & is expected to be an important additional source of plant diversity.							
	Reveg Plan (BIO-8 #17)	17	Plant Care and Supplemental Seeding: The Revegetation Contractor will maintain the health of native plants in the revegetated areas, including transplants and cuttings, seeded species, and native volunteers. Native plant care includes maintaining proper soil conditions, removing weed species, providing supplemental water if necessary, and addressing any significant disease or pest problems.	Revegetation Contractor				Note red text contradicts with the 'no irrigation' statement above			
	DT Plan (BIO-10)	1	**DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN**: The purpose of this Plan is to identify measures that will be implemented for the maintenance, monitoring, reporting, and management of the tortoises and the relocation/translocation land, including measures to minimize the potential for repeated translocations.					USFWS defines “translocation” as when a tortoise must be moved more than 1,640 feet (500m) to clear it from the Project site, while “relocation” requires a movement of less than 1,640 feet (500 m).			

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	DT Plan (BIO-10)	9	The following general conditions will apply with translocation of an individual DT on the day of the collection: • Translocations will occur during the active DT season (late March through May and September through October) except for linear facilities that can occur any time of year. • Releases of DT will occur when temperatures range from 65 to 85 °F (18 to 30 °C) and are not forecasted to exceed 90°F (32°C) within 3 hours of release and 95°F (35°C) within 1 week of release. Additionally, daily low temperatures should not be cooler than 50°F (10°C) during releases. • DT will be transported to their release sites in clean, ventilated protective containers. If reused, these containers will be disinfected using 10-percent household bleach or other solution approved by USFWS and CDFG before being used for another DT. • Within 12 hours before release, all DT to be translocated will be hydrated according to existing protocols. • DT will be released at unoccupied, shelter sites. Shelters include unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs. • Data fields will be standardized and provided to Owner by USFWS during the planning process.	Authorized Biologist (AB) & BM				DT will be translocated to BLM lands located west of BSPP referred to as the McCoy Mountains Area. If during translocation activities, a health problem is identified in the recipient area, an alternate translocation site would be used. The alternative translocation site would be located on BLM lands in the Upper McCoy Wash or an alternate private parcel that is protected in perpetuity.			
	DT Plan (BIO-10)	13 - 14	Phasing Clearance and Relocation/Translocation Activities: See Table 2 in the DT Plan for a list of activies to undertake by phase and whether exclusion fenicng is used or not.	AB & BM							
	DT Plan (BIO-10)	20	If temporary fencing is erected (around the initial construction startup/primary staging areas, and potentially in portions of linear utilities), then rebar will be used to secure hardware cloth material (3-foot-wide, 1-by-2-inch mesh) every 4 to 5 feet, or other materials such as half-inch chicken wire, snow fencing, or silt fencing, may be used in designated areas to reduce encounters with tortoises on short-term construction activities. In this case, the fencing material will be attached to metal posts with a minimum of 12-gauge steel wire. The grid opening of the wire will not exceed 1 by 2 inches and the fence height will be no less than 30 inches. Posts will be not less than approximately 40 inches long. Concrete footings for metal posts will not be required.	AB & BM							

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	DT Plan (BIO-10)	21	DT Handling: DT handling and removal, and burrow excavations, including nests, will be conducted in accordance with USFWS approved protocols contained in the DT Council's "Guidelines for Handling Desert Tortoises during Construction Projects." Burrows that could potentially host a DT will be excavated with hand tools per the method prescribed under these guidelines. DT that need to be relocated from the Project Disturbance Area will be placed outside the Project Disturbance Area but within the BSPP application ROW to the extent feasible. DTs will be placed in suitable habitat as close to the capture location as possible. DTs will be placed in the deep shade of a large shrub or a known burrow for that tortoise, and monitored by the BM with oversight by the AB. DTs to be relocated, particularly those excavated from burrows, may be released into an unoccupied natural or artificial burrow outside the fenced site. The receiving burrow will be of the same size and orientation as the original burrow. The final determinations on placement of relocated/translocated DTs will take place during the protocol-level surveys being conducted for the Project site and before handling activities.	AB & BM		Maintain a record of DT encountered and relocated/translocated during Project surveys and monitoring. This information will include the following for each individual DT: • the location (narrative, vegetation type, and maps) and dates of observations; • burrow data; • animal gender; • carapace length, mass, general conditions and health; • any apparent injuries and state of healing; and diagnostic markings (i.e., identification numbers); • record UTM coordinates from a GPS unit for capture/release location; and, • photograph captured DTs		If any DT mortality is suspected as a result of burrow excavation, animal handling, or radio transmitter use methodology, theCPM, USFWS, BLM, and CDFG will be notified immediately.				

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	DT Plan (BIO-10)	22	Radio Transmitters: Placement and installation of radio antennae on DTs will be done in a manner that eliminates voids between the carapace and the antennae (i.e., the antennae attachment shall be flush with the carapace). Antennae may be left trailing unattached behind the DT. The total mass of the instrumentation that is attached to each DT, including antenna, epoxy, etc., shall not exceed 10 % of the animal's body mass. Radio transmitters that contain weak batteries will be removed or replaced before the batteries are likely to fail. For translocation purposes, captured DT may be held overnight and moved the following morning within the outlined temperature constraints.	AB & BM				Additional radio transmitter use direction is detailed below: • Radio transmitters may temporarily (up to 48 hrs) be attached with duct tape when full processing cannot be completed to comply with temperature guidelines, or when light levels do not allow for attachment. • Any shell damage from attachment or removal of radio transmitters will be reported in writing within 3 working days to USFWS, BLM, and CDFG. • Where transmitters are affixed to DT, monitor monthly to ensure that DTs are not lost due to long-range movements beyond the area capable of being detected by telemetry equipment. Replace malfunctioning transmitter before DT becomes active. • Transmitters and other equipment will be removed from all DTs that can be located before the end of monitoring. Every effort will be made to locate and remove nonworking transmitters and other equipment from DT that are handled.			

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	DT Plan (BIO-10)	35, 37	Monitoring and Reporting: Refer to USFWS guidance. DTs located during protocol clearance surveys would be transferred to an off-site quarantine facility located within the McCoy Mountains translocation recipient site. A report presenting the results of the DT clearance surveys will be submitted 30 days after completion of the surveys by the DB to BLM, the CPM, USFWS, and CDFG. The clearance survey report will include the DT survey results, capture and release locations of any relocated DTs, and any other information needed to demonstrate compliance with the measures required by the relevant compliance documents. Subsequent monitoring will include additional documentation. Monthly reports will include an analysis of all pertinent DT health and habitat use observations, data on animal movements recorded from telemetry study, and any issues encountered in translocation property management. Monthly reports will be submitted to USFWS. The Project's final translocation monitoring report will include recommendations on how to improve techniques and conservation property management to enhance translocation success.	Ab & BM							
	Raven Plan (BIO-13)	8, 10	**RAVEN MANAGMENT PLAN**: Raven Perching, Roosting, and Nesting Sites: Weekly monitoring will evaluate the presence of ravens during construction. If ravens are identified perching, roosting, or nesting on building materials, equipment, waste piles, or other construction debris, hazing will be employed to discourage use.	ECM	**Con**	Surveys will focus on all potential subsidies including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or there are recent surface disturbances.		Data will be recorded for each raven observed, including activity, categorized as flying, perched, or on the ground (likely scavenging); type of perch (if applicable); and the general location of the bird within the Project area. In addition, any nesting locations will be recorded and unoccupied nests will be removed (see Raven Management Plan for a discussion on nest removal). Data sheets be used to record survey information will be developed and submitted to the agencies prior to implementation of this Plan, after final Project design is complete.			

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		16				The ECM will prepare monthly monitoring reports during construction and the first year of operation summarizing the results of the biweekly and breeding season monitoring events as well as observations reported by operations staff and describing any noted raven activity in the Project area. These reports will summarize the survey results, discuss the success or failure of PDFs, and make recommendations for modification of PDFs or implementation of control measures as necessary. These monitoring reports will be submitted to the Owner and DB for review. Owner awill forward reports to the CEC, USFWS, BLM and CDFG.					
	Raven Plan (BIO-13)	8	Ponding Water: To minimize the occurrence of ponding water, the application rates of water for dust suppression activities will be predetermined to minimize excessive application. The application rate will consider soil infiltration and evaporation rates. The ECM or designee will patrol areas to verify water does not puddle for long periods (more than 1 hour) and make recommendations for reduced water application rates where necessary. The fill station will be designed to adequately drain water to prevent ponding.	ECM	**Con**						
	Raven Plan (BIO-13)	8	Raven Food Sources from Soil Disturbance: During construction activities, specifically grading, there is a potential for animals to be unearthed, providing a food subsidy for scavengers and thereby resulting in increased attraction of ravens to the Project Disturbance Area. Daily observations of the construction site and of access roads will expedite proper disposal of food subsidies to the extent feasible.	ECM	**Con**						

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	Raven Plan (BIO-13)	8	Human Food and Waste Management: A trash abatement program will be established during the construction phase. Trash and food items will be contained in closed, secured containers on the Project site and removed daily to reduce the attractiveness to opportunistic predators such as ravens. Daily observations of the construction site and access roads will expedite proper disposal of roadkill. In addition, the WEAP will assist in reinforcing with workers that no trash or roadkill, that might attract DT predators, will be left for ravens.	Owner & ECM	**Con**						
	Raven Plan (BIO-13)	9, 10	Raven Perching, Roosting, and Nesting Sites: Project Design Features (PDFs) will be implemented to avoid introducing new subsidies by minimizing the attractiveness of Project components. Potential PDFs that will be considered to reduce impacts from these Project components primarily include the use of physical bird deterrents such as, but not limited to, bird spikes, Bird-B-Gones, and WhirlyBirds, etc. In addition, nest removal will occur in conjunction with monitoring.	ECM & DB	**Ops**	1) The ECM, following training by the DB, will conduct biweekly surveys (every two weeks) for raven activity at predesignated locations throughout the Project area for the first 5 years of Project operation, commencing when the initail plant becomes operational. 2) After the first 5 years of Project operation, surveys will be conducted biweekly for 1 year, unless results, reviewed in consultation with USFWS, indicate more frequent or less frequent monitoring is necessary following completion of the first 5 years of Project operation. The ECM will be accompanied by the DB during the first four surveys to facilitate appropriate data collection. Survey locations will focus on Project components that may influence raven abundance, activity, and behavior by potentially allowing perching, roosting, and nesting opportunities or by providing supplemental resources such as food and water. These Project components include tower structures, transmission poles and lines, and support structures, as well as evaporation ponds and waste disposal facilities.	1) Every other week for 1st 5 years. 2) After the 1st 5 years, every other week for 1 year every 5 years.	Up to 5 permanent sampling locations will be identified by the DB based on areas that have the greatest likelihood of attracting ravens (e.g., tower structures, transmission poles and lines, evaporation ponds and waste facilities). A 5-minute sampling session observing and listening for ravens will occur at each survey location. The surveyor will record raven detections and will document the behavior of the raven (e.g., perched, flying, on the ground, nesting), perch type (if applicable), and distance and direction from the survey location. Additional data collected will include the survey start/stop time, and weather (including temperature, average wind speed, and percent cloud cover). In addition, the location of any nests detected during a survey will be noted and Universal Transverse Mercator (UTM) coordinates recorded immediately following the conclusion of the survey session. To aid the ECM and ensure consistency throughout the duration of the Project's life, a data sheet will be prepared in advance outlining the required data to be collected. Surveys will be conducted unless wind or rain interferes with audible or visual detection of ravens.			

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	Raven Plan (BIO-13)	11		Owner, ECM & DB		Breeding season surveys will conducted by the ECM biweekly starting at the beginning of the typical breeding season (mid-February) and continue to the end of June to identify nests and evidence of DT predation at nests. These surveys will be conducted for the life of the Project on Project controlled lands and along the Project transmission line and switchyard. Each survey will consist of systematically searching a survey area, which will include the Project site and the aboveground linear features associated with the Project.	Every other week durring breeding season for life of project	Surveys will be conducted by vehicle when possible and on foot when necessary. Native trees, landscape trees, utility poles, transmission towers, and other structures within the survey area will be searched for nests. If nests are identified, the DB will be contacted to verify the nest conditions. UTM coordinates, as well as nesting substrate and current breeding status (if detectable) will be recorded for each nest. DB will determine if the nest is unoccupied, and if so, the nest will be removed by the DB or the ECM (see Raven Plan for a description of nest removal). The DB will search a 98 foot radius surrounding each nest or perch site for evidence of DT predation. All DTs depredated will be photographed, a UTM coordinate collected, and the length measured (or estimated). In addition, each DT will be marked to avoid duplication of data recording on subsequent surveys. If occupied nests are detected during surveys, the Owner will notify the Raven Management Workgroup for assistance with control measures. Descriptions of nesting behavior and DT predation will be semi-quantitative and qualitative and will produce data valuable for assessing raven behavior and documenting potential problem individuals for management actions. In addition, an increase in the number of raven nests in the Project area may suggest the potential need for revisions to PDFs or additional control measures.			

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	Raven Plan (BIO-13)	16		ECM	**Ops**	The ECM will prepare monthly monitoring reports the first year of operation summarizing the results of the biweekly and breeding season monitoring events as well as observations reported by operations staff and describing any noted raven activity in the Project Disturbance Area. Following the first year of operation, a summary of monitoring data will be provided monthly and a report will be submitted annually. These reports will summarize the survey results, discuss the success or failure of PDFs, and make recommendations for modification of PDFs or implementation of control measures as necessary. These monitoring reports will be submitted to the DB for review and then reports will be provided to the CEC, USFWS, BLM, and CDFG.	Monthly for 1st year, annually thereafter				
	Raven Plan (BIO-13)	9	Ponding Water: To minimize the occurrence of ponding water, the application rates of water for dust suppression activities will be predetermined to minimize excessive application. The application rate will consider soil infiltration and evaporation rates. The ECM or designee will patrol areas to ensure water does not puddle for long periods and make recommendations for reduced water application rates where necessary. During operations, deionized water will be used to wash mirrors; however, the amount of water used will be minimal and is not anticipated to result in ponded water onsite. If water should be found to be a concern, changes will be made through adaptive management.	ECM	**Ops**	Patrol areas and make recommendations as necessary.					
	Raven Plan (BIO-13)	9	Human Food and Waste Management: The trash abatement program developed for the construction phase will be carried forward for the life of the Project. Trash and food items will be contained in closed, secured containers and removed daily to reduce the attractiveness to opportunistic predators such as ravens. The ECM will continue to ensure that these practices are enforced and make recommendations for improvements where applicable.	ECM	**Ops**	Ensure proper trash disposal.					

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	Raven Plan (BIO-13)	12	Decommissioning Phase: Conduct a biweekly reconnaissance-level survey in the Project area during ground disturbance activities associated with decommissioning. Surveys will focus on all potential subsidies including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or there are recent surface disturbances. Data will be recorded for each raven observed, including activity, categorized as flying, perched, or on the ground (likely scavenging); type of perch (if applicable); and the general location of the bird within the Project Disturbance Area. In addition, any nesting locations will be recorded and unoccupied nests will be removed (see nest removal in the Raven Mangement Plan).	ECM	**Closure**	Perform reconnaissance level surveys in the Project area during ground disturbance activities associated with decommissioning. Surveys will focus on all potential subsidies including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or there are recent surface disturbances.	Biweekly				
	Raven Plan (BIO-13)	13	Adaptive Management Triggers: Implementation of adaptive management measures (described below) would occur if both of the following conditions are met:	ECM & DB		Adaptive management measures will be identified during implementation of the monitoring program and will be discussed by the Owner, CEC, USFWS, BLM, and CDFG before any decisions are made. Adaptive management measures may include modifications to PDFs, monitoring strategies, or implementation of additional control measures. Key examples will be 1) modifications to the monitoring program survey frequency, including increase or reduction of the monitoring frequency and survey points, should results of surveys deem it warranted; 2) eliminating or refining a PDF or management measure if it is not working; or 3) incorporating a defined control measure, if impacts are observed, that will not otherwise be implemented (triggered). Potential control measures are discussed in the Raven Plan.	As-needed				
	Raven Plan (BIO-13)	13	a. The results of annual breeding season raven monitoring and/or Project area monitoring during the operational phase suggest that current PDFs provide evidence that the number of raven occurrences in the Project area is increasing, thereby increasing the potential for DT predation.	DB							

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	Raven Plan (BIO-13)	13	b. Owner has made an attempt to adjust PDFs to control raven occurrences and avoid the need for additional control measures, and has contacted and worked with the DB and the resource agencies to identify other sources of ravens and/or management measures, but increased raven occurrences continue.	Owner & DB							
	Weed Plan (BIO-14)	12, 28, 29	**WEED MANAGEMENT PLAN** 1. Weed Risk Assessment: Consistent with BLM guidelines for weed management, the Owner will conduct a weed risk assessment for each component of the Project, including construction, operation and closure which will involve soil disturbing activities or altering vegetation. BLM's stepwise risk assessment is available online at: http://blm.gov/ca/st/en/prog/weeds/9015.html	Owner	**Con, Ops & Closure**	Conduct weed risk assessment using BLM's stepwise risk, which is available on-line. Prepare monitoring reports.	1) Weed management activities will be documented as part of the MCR. 2) Upon completion of construction activities for Units # 1 and 2, a post-construction report will be prepared describing the overall results of invasive weed management and current weed status of the Project. 3) Annual long-term weed control progress reports will be produced during the operational phase. See Weed Management Plan pp. 28-29	The risk assessment per BLM standards provides for a 3-year monitoring program. The BM will initiate weed mapping and regular inventories if more modest procedures cannot adequately prevent spread of weeds (see p. 18 of the Weed Management Plan) fo rfurther information.			
	Weed Plan (BIO-14)	17	2. Weed Identification: Inspect all vulnerable areas of the ROW where construction activity has occurred in the winter and summer rainy seasons	BM & qualified staff	**Con, Ops & Closure**	Conduct inspections.					
	Weed Plan (BIO-14)	18	3. Surveys and Monitoring Methodology: Surveys and monitoring will verify timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management.	BM & ECM	**Con**	BM will be present during site clearing and construction activities and will be responsible for inspecting all construction areas, identifying the presence of invasive weeds, and inspecting equipment-cleaning facilities for weed seed removal. The ECM will be responsible for prescribing management activities consistent with this plan when weeds become established. Monitoring of active construction areas will include access routes and will consist of walking or driving slowly over construction areas and searching for seedlings of exotic species. Staff trained to recognize common weeds will alert the BM and ECM to the presence of any potential weed invasions that the BM may have overlooked.	Monitoring will be done with sufficient frequency that the entire construction area is inspected during both early and in later phases of construction, within the summer and winter rainy seasons, and until ground-disturbing construction activities are completed. Monitoring thereafter will be of sufficient frequency to cover the entire disturbed area at least once during early to mid portions of both summer and winter rainy seasons.				
	Weed Plan (BIO-14)	19		Grounds personnel	**Ops**	General site monitoring of the operating facility will be conducted by grounds personnel on an ongoing basis. Weed control will be conducted, as needed, by Project personnel, whenever notified by the BM or ECM the presence of weeds.	Need not be conducted more often than every other week during the growing season (March through August) and once a month otherwise.				

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	Weed Plan (BIO-14)	20	4. Preventive Measures: The most appropriate management action should be chosen based on the weed species, the physical characteristics of the Project, and economic and social considerations. The use of herbicides will also take into account the chemical nature of the active compounds to avoid chemical drift or residual toxicity to special-status plants adjacent to the treatment areas. Monitoring and rapid implementation of control measures should be performed to verify early detection and eradication for weed invasions.	BM, ECM & grounds personnel	**Con, Ops, Closure**	1) Limit ingress and egress to designated routes. 2) Monitor materials brought onto the Project site to minimize the potential for weed introduction. 3) Educate workers about invasive weeds that are potentially problematic at the Project and enlist their help in preventing invasive weed introduction and spread. 4) Reestablish vegetation as quickly as practicable on temporarily disturbed sites as the most effective long-term strategy to avoid weed invasions. 5) Preventing introduction through contaminated seed, feed, mulch, gravel or fill. 6) Preventing introduction through movement of animals, people, or machinery through erection of fencing and/or gates to restrict access. 7) Clean equipment before entering BLM lands, 8) Preventing introduction through proper planning.		Construction: Worker Environmental Training; Weed-Free Products; and Weed-Free Seed. Operations: Infestation Containment and Control and Early Detection and Rapid Response			
	Weed Plan (BIO-14)	21	5. Eradication and Control Methods: Weed infestations are typically targeted to a level of control located between eradication and elimination of seed production. Best management practices approved by BLM will be incorporated prior to implementation of eradication and control methods.	Grounds personnel	**Con, Ops, Closure**	1) Cut Stump (Chemical): Effective on all plants over 3/8-inch diameter; reserved for tamarisk and other weedy trees. 2) Foliar Spray (Chemical): For dense stands of small plants and regrowth on salt cedar. 3) Wipe Method (Chemical): For dense stands of small plants and regrowth on perennial plants; similar to foliar spray, but more selective, as only target plants receive the chemical treatment. 4) Mowing: Mowing can be conducted with string trimmers or tractor-mounted mower.	Monitoring will be conducted yearly until the weeds are eradicated.	Monitoring will collect data on percent kill, survival, damage to nontarget species, reinvasion of weed species, reintroduction of native species, and the need for retreatments. Treatments over or adjacent to water would include monitoring for water quality as specified in the State guidelines and BLM guidance.			
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	1	**AVIAN PROTECTION PLAN** This Plan addresses avian and nesting bird protection during pre-construction, construction, and operations phases of the Project. The Avian Powerline Interaction Committee (APLIC) has provided guidelines for preparing a utility-specific Avian Protection Plan, designed to reduce the potential risk for avian mortality from collisions with electrical transmission and distribution systems. This Plan incorporates the principles of an Avian Protection Plan and establishes a process for monitoring and evaluation, data collection and reporting, design considerations, and remedial action implementation.								

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	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	12	Corporate Policy: • Implement and comply with this Plan. • Ensure its actions comply with applicable laws, regulations, permits, and Plan procedures. • Document bird mortalities, problem poles, lines, structures, and problem nests through active biological monitoring. • Provide information, resources and training to familiarize the construction and operational workforces with bird protection objectives and the specific requirements of this Plan. • Undertake adaptive management methods to apply information gained from construction and operation of the Project to improve protection of avian species.	Owner							
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	13	Training: This is part of the WEAP training. Focus on staff with direct and indirect implementation of responsibilities including managers, supervisors, first responder's field crews, engineers, dispatch staff and design staff, and consists of the following elements: • Corporate Policy; • Identification of bird-related issues; • Description of avian resources within the Project area and species most susceptible to electrocution and collision mortality; • Discussion of regulations that protect birds, legal implications and the need for compliance; • Construction and design standards and retrofitting standards designed to reduce mortality; • Protocols of Plan implementation including assessing problems, proactive approaches, and recording/reporting data; • Discussion of each of the Plan elements; and • Responsibilities of staff to implement the Plan.								

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	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	15	Construction Phase Nesting Bird Monitoring and Management: If an active nest is found during the pre-construction surveys (see BIO-16 above), its location will be recorded utilizing a hand-held GPS unit so that an accurate buffer of 500 feet can be established. BMs will verify that construction activities do not encroach into these identified buffers until the nesting cycle is complete or the nest fails. Follow-up surveys will be completed on identified nests on a weekly basis to determine expected date of fledging. Survey teams will re-inspect all identified nests for activity to confirm that birds have left. Nests that are determined to be inactive will be noted as such, and the associated buffer zone will be removed. This information will be recorded on the Migratory Bird Treaty Act (MBTA) Survey Form (See Appendix A fo the Avian Protection Plan). Construction activities will not resume within the buffer area until it is determined that birds are no longer utilizing the nest.	BMs	**Cons**						
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	16	Owner will ensure that any new connections and transformer designs will comply with the suggestions of APLIC to minimize electrocution potential for birds at the facility. These include insulators, covers, perch guards, and flight diverters.	Owner							
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	17	If it is determined after monitoring for avian mortality at the Project that birds are colliding with the transmission lines and structures on site, the deterrents and visual markers will be installed along affected segments of the transmission line routes.	Owner							
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	17	Where nests are detected, data will be recorded on a standardized field form (Appendix B of the Avian Protection Plan). Once the bird species is identified, the ECM will conduct a risk assessment to determine if nest removal or relocation is warranted. If it is determined that the nest poses no risk to system function, maintenance procedures, or to the birds, the nest will be allowed to remain. Data will be recorded on the Raptor/Bird Nesting Record form (Appendix B of the Avian Protection Plan), and the site will be periodically monitored. If it is determined that the nest poses a potential risk, then a further assessment will be conducted to determine if the risk is non-imminent, or imminent (i.e., if the risk of electrocution is high or if the nest compromises system function).	BM, ECM		Depending on the species, Ower will coordinate with CDFG or the USFWS to determine whether the nest will be removed and discarded or relocated to an alternative location. Nest relocation will primarily involve large raptor species due to the large size of their nests.					

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	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	18	Non-Imminent Risk: Unless there is an immediate threat to birds or system function, nest removal or relocation (excluding eagles and state or federally listed species) will occur only during the non-breeding season when the nest is not being used or during the breeding season if the nest is unoccupied. Owner will coordinate with CDFG by providing notification and a nest removal plan. Upon removal of the nest,Owner will either monitor the site during the early part of the breeding season to prohibit nest building activities or install devices to the structure to prevent future nesting at that location. If removal or relocation of an eagle or state or federally listed species nest is necessary, Owner will coordinate with CDFG and the USFWS regarding permitting and authorization pursuant to the California Endangered Species Act (CESA) or federal ESA and Bald and Golden Eagle Protection Act (BGEP).	Owner							
	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	18	Imminent Risk: Nest removal or relocation will occur when the nest is occupied only in cases where it is deemed warranted based on the risk to system function or electrocution risk of the birds. This activity requires coordination and permitting and authorization with CDFG and the USFWS pursuant to CDFG Code and the MBTA (and CESA/ESA or BGEPA if an eagle or state or federally listed species nest). A plan will be developed that will include the timing, location, and techniques used to remove or relocate the nest. If possible, the nest will be relocated intact with young or eggs to an alternate location on the pole or tower structure. If necessary, and based on consultation with CDFG and the USFWS, eggs or young will be collected from the nest and transported to a rehabilitation facility where they will be hatched and cared for until the earliest releasable date.							

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	Avian Protection Plan (BIO-15/BIO-8, Item #8b)	18	Avian Mortality Monitoring: Portions of the site and associated linears that are undergoing construction will be surveyed by the DB to evaluate the potential for avian electrocution and collision. The surveys will be conducted during both the summer breeding months and winter migration period. The site will be visited twice per week from May 1 to June 1 to investigate impacts to resident species, and once a week from Sept 1 to May 1 for migratory, non-resident species. The DB will walk and examine within 15 feet around all the Project structures and wires looking for and recording any evidence of avian activity or the presence of dead birds. Once detected, the DB will record the circumstances associated with dead or injured birds. Data will be recorded on standardized field forms (Appendix C of the Avian Protectin Plan). If the cause of power outages is bird-related, the site assessment will include a determination of bird species using the bird guide booklet that accompanies the Avian Protectoin Plan; the types of injuries; the pole type and configuration; the specific cause of the fatality if possible; and other relevant data. To enhance the probability of incidental detections, all field staff will be directed to be alert for dead or injured birds in the vicinity of the Project.	DB				To assess the rate of carcass removal by scavengers, 20 bird carcasses will be placed within and just outside the Project. Bird carcasses will consist of rock dove, European starling and house sparrows. Surveyors will not be informed when this will occur as the results of this assessment will be used to determine searcher bias.			
	BO Plan (BIO-18)	1	**BURROWING OWL RELOCATION/TRANSLOCATION PLAN**: The primary purpose of this Plan is to provide a strategy that will facilitate the protection of burrowing owls (BO). The Plan specifies a passive relocation approach that, when implemented, will facilitate avoidance, minimization, and the offset of impacts to BO relocated from the Project Disturbance Area.			Include results in MCR and ACR.					
	BO Plan (BIO-18)	7	1. Nonnesting Season Preactivity Surveys (OPTIONAL): Conduct surveys in the Project Disturbance Area for that consturction year plus a 500-foot constuction buffer of that area.	DB & qualified biologists	**Precon**	Conduct preactivity surveys (per California Burrowing Owl Consortium [CBOC] Phase II guidelines) by walking survey transects spaced to allow 100 percent visual coverage of the ground surface; distance between transect center lines will be no more than 98 feet and will be reduced to account for differences in terrain, vegetation density, and ground surface visibility. This survey will be conducted by walking through suitable habitat over the Project Disturbance Area for the year and in areas within 492 feet of the Project Disturbance Area.	September 1 to January 31 prior to planed activity in all Project Disturbance Areas.	If Project disturbance is scheduled to start within 30 days of this preactivity survey, this survey serves as the preconstruction survey (see BIO-18 (1) above).			

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	BO Plan (BIO-18)	8	2. Passive Relocation: BOs must be excluded from BO-occupied and BO-suitable burrows identified during the nonnesting preactivity survey prior to the following nesting season (February 1 through August 31) and any Project Disturbance Area.	DB & qualified biologists	**Precon**	BOs will be excluded from identified burrows by installing one-way doors (e.g., 4-inch corrugated irrigation pipe with gravity-closing see-through door), in each burrow entrance within the Project Distrbance Area and 500-foot buffer area. See BO Plan for sequence of events to exclude BO.		If work in the Project Disturbance Area is scheduled to commence more than 30 days after passive relocation activities are complete, monitoring of that area will occur until disturbance commences. The frequency of the monitoring will depend on the abundance of fossorial mammal activity and the friability of soils in the passive relocation area.			
	BO Plan (BIO-18)	10	3. Burrow Enhancement/Artificial Burrow and Relocation Location Sites: Burrows will be enhanced and/or artificial BO burrows will be installed at a ratio of 2:1 to replace occupied burrows from which BO are excluded during passive relocation. These burrows will be installed/enhanced on BO suitable habitat, with natural burrows where available, located on BLM lands greater than 500 feet from, but within 1 mile of, the combined Project Disturbance Areas of all phases of the Project. The specific location of each burrow enhancement site or artificial burrow will be determined in consultation with BLM, CDFG, USFWS, and the CPM. A 250-foot buffer will be enclosed with fencing surrounding the enhanced/artificial burrow and relocation areas and signs will be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer. Provide maintaintenance for 24 months.	DB, BM & qualified biologists	**Precon**	1) Enhance or install BO burrows. 2) Repair any damage to the perimeter fence, signage, or any unoccupied artificial burrows observed during monthly visits. Monthly visits will occur for a total of 24 months (for each enhancement/artificial burrow and relocation area) after the enhancement and/or construction of the artificial burrows, at which point the fence surrounding the area will be removed and the artificial burrows will be left in place.	1) **NEED TO DETERMINE.** 2) First month after enahancement/installation for a period of 24 months.	Prior to ground disturbance at an enhancement/artificial burrow installation site, surveys for other sensitive species (e.g., DT, sensitive plants) may be required to verify that the construction of artificial burrows at the relocation site will not adversely impact those species. During monthly visits, the DB or a BM will record observations of relocated BO and/or occurrences of migrating or other local BO using the artificial burrows and relocation site, evidence of known predators or humans visiting or disturbing the site, any damage to the fence or signage, and any other pertinent data gathered through monitoring.			
	BO Plan (BIO-18)	11	In the event any BO-suitable burrows with no sign of occupation are found (e.g., no wash, pellets, feathers, etc.) during the pre-construction survey, such burrows will be remotely investigated to ensure BO and other wildlife do not occupy the burrow (e.g., with a fiber-optic scope camera), excavated with hand tools using flexible pipe to allow wildlife to escape, and refilled to prevent occupation by BO.	DB & qualified biologists	**Precon**	Conduct remote investigation, excavate burrow and refill to prevent occupation.					
	SSP Plan (BIO-19)		**SPECIAL-STATUS PLANT SPECIES AVOIDANCE AND MITIGATION PLAN**: A draft Special-Status Plant (SSP) Species Avoidance and Mitigation (DR-BIO-95) was prepared January 2010. This plan would only be affected if late season sensitive plant species are found, in which case Sections B-D would be applicable.								

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	SSP Plan (BIO-19)	14	1. Designated Persons: In addition to the responsible parties listed for BIO-19 COC above, the SSP Plan reccommends A Field Contact Representative (FCR) to be appointed to oversee compliance with the final SSP Plan. Owner's ECM will act as the FCR. The FCR will be responsible for upper-level management decisions related to special-status plant species issues associated with the Project. This person will be the primary point of contact with the resource agencies during construction. The FCR will have the authority to halt any activities that may result in the loss of a special-status plant species and/or noncompliance with the measures contained within the final Plan. The FCR will also submit the MCRs to the CPM.	FCR/ECM	**Con, Ops, Closure**						
	SSP Plan (BIO-19)	14	2. The BM will be responsible for the Worker Environmental Awareness Program (WEAP) training, special-status plant surveys, compliance monitoring and reporting.								
	SSP Plan (BIO-19)	15	3. Preconstruction surveys will be conducted in accordance with the standardized guidelines issued by USFS, CDFG and the California Native Plant Society. Preconstruction surveys will be performed by BMs where land disturbance will occur. Pre-construction surveys for special-status plants will be conducted during the blooming or identification period of special-status plants with potential to occur in the Project Disturbance Area.	BM	**Precon**	Conduct pre-construction surveys.	Within the 30 days prior to commencement of construction activities. If this is not possible, due to the identification period of certain special-status plant species, the surveys will be conducted at the time of year when the target species are in bloom or otherwise clearly identifiable and the locations will be clearly marked in the field (by staking or flagging) for avoidance.				

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	SSP Plan (BIO-19)	16	4. The special-status plant component of the WEAP will be comprised of, but not limited to, the following key components: a. Information on special-status plant species known to occur within the Project Site and buffer. At a minimum, the program will contain information on the species' physical characteristics, distribution, ecology, sensitivity to human activities, legal protection, penalties for violation, and reporting requirements; b. The types of construction activities that may adversely affect special-status plant species; c. A summary of the environmental laws, regulation, and penalties driving implementation of the WEAP; d. Explanation of worker responsibilities and general work practices; e. Explanation of the BM duties; f. The protective measures developed for special-status plant species and the consequences of noncompliance; g. Clear guidance on identification of special-status plant ESAs in the Project area; h. A detailed explanation of the onsite communication plan and how it applies the WEAP, including reporting procedures and notifying onsite personnel if there are any changes to this Plan; and i. Key contact information.	FCR, DB, Designated Botanist, or BM	**Precon, Con & Ops**			Participants will sign an attendance sheet. The WEAP sign-in sheets will be kept on file for at least 6 months after the start of commercial operation.			
	SSP Plan (BIO-19)	18	5. Plant Protection: a. Construction and Operation Dust: Enforcing a 20 mph speed limit within the Project site boundary; Applying water or other acceptable material to keep fugitive dust to a minimum; Suspending grading activities when wind gusts at or above 25 mph occur more than once an hour and create a dust plume that leaves the project boundaries; Limiting road construction to 100 feet away from any known special status plant populations (ESAs), where feasible; and Graveling dirt access roads that fall within 100 feet of known special status plant populations, where feasible.	DB & BM	**Con & Ops**			Plan called for 300 feet, but BIO-19 states that 100 feet is adequate			

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	SSP Plan (BIO-19)	20	b. Fire: Exercising care when driving and not parking vehicles in areas where catalytic converters can ignite dry vegetation; In times of high fire hazard (e.g., high wind or drought conditions), construction support vehicles may need to carry water, shovels, or fire extinguishers in the field. In extreme fire hazard conditions, high fire risk installations may need to be delayed; The use of shields, protective mats, or other fire prevention equipment shall be used during grinding and welding to prevent or minimize the potential fire; Smoking and disposal of cigarette butts will be prohibited in vegetated areas.	Owner	**Con & Ops**						
	SSP Plan (BIO-19)	21	c. Alteration of Site Hydrology: Alteration of site hydrology will be avoided and minimized by the proposed drainage modifications, which replicate as nearly as possible the existing flow patterns for the drainages as they exit the Project. A Post-Development Conditions Report will provide an analysis that confirms the project design for the rerouted drainages for the Project create post-development flows that mimic pre-development flows; thereby avoiding and minimizing impacts to special-plant species downstream of the Project.	Owner	**Precon & Con**						
	Decommission Plan (BIO-23)	1 and 6	**DECOMMISSIONING PLAN** The Phase 1a Decommissioning Plan (Plan),describes how the Project and its component structures from the initial phase of construction will be properly removed, if necessary, at the end of the Project's useful lifespan, and the Project site reclaimed in accordance with the requirements of the BLM.	Owner				Decommissioning will not require that the Project site be returned to preconstruction topographic grade. The decommissioning of Phase 1a would involve the removal of facilities, structures and appurtenances placed on the Project site during the first 7 months of site development. It is Ower's understanding from these discussions with BLM that, as part of decommissioning, the site would need to be cleared of surface improvements and reseeded with native plant seeds.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	4	Emergencies: In the case of an emergency at the Project site, Owner's on-site management team will provide notification to the appropriate Federal, State, and county authorities including but not limited to the BLM Field Office in Palm Springs, the CPM, the Riverside County Fire Department and County Health Services, and the County Sheriff's Department.	Owner							
	Decommission Plan (BIO-23)	5	Removal of Hazardous Materials/Hazardous Waste: If there is no actual or threatened release of hazardous materials associated with construction, a contingency plan will be implemented for the temporary halting of construction operations. This contingency plan ensure compliance with all applicable laws, ordinances, regulations, and standards (LORS) and appropriate protection of public health, safety, and the environment. Depending on the expected duration of the temporary suspension, the contingency plan may include the draining and proper disposal of any hazardous liquids that may be stored, such as equipment refueling tanks, the safe shutdown of all equipment, and various other measures to protect Project workers, the public, and the environment. If the temporary closure involves an actual or threatened release of hazardous materials to the environment, procedures will be implemented as provided in a Risk Management Plan and a Hazardous Materials Business Plan that will be developed. Procedures will include measures to control the release of hazardous materials, notifications of the appropriate agencies and the public, emergency response, and training for Project personnel in hazardous materials release response and control.	Owner							
			Once the hazardous materials release has been resolved, temporary closure will proceed as described above for temporary closure without hazardous materials release.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	6	Pre-Decommissioning Activities: Prior to the actual removal of the man-made site improvements of Phase 1a, the Project site will be assessed for the general level of effort required to clear and reclaim the site. These activities would include: • Preparation of maps and plans to show the extent of required reclamation; • Surveys of topsoil and growth medium stockpiles to determine the amounts available; • Sample and analyze waste materials, heap material, surface and groundwater for special handling, treatment and disposal actions; • Evaluate the structures to determine the requirements for demolition and removal; • Evaluate storm water facilities or water impoundments to determine if treatment is necessary (if applicable); and, • Prepare environmental analysis or site studies prior to reclamation. • Obtain BLM authorization for decommissioning activities and other agency permits that may be required.	Owner							
	Decommission Plan (BIO-23)	7	Dismantling of Equipment and Demolition of Above-Ground Structures: These include any man-made improvements to the Project site from the ground surface up. The Phase 1a improvements that may be included in this category would be access road pavement, the temporary construction power lines (including poles), the paved laydown area and the large assembly hall. A small portion of the Unit #1 solar field will also be completed during Phase 1a; therefore some steel racking for the solar panels will have been assembled. Decommissioning of these preliminary structures will entail the removal of pavement, structural steel, steel framing, steel racking systems, and large and small bore aboveground piping. Aboveground concrete structures will be broken up and crushed to extract the steel rebar. Any cable and conduit that may have been installed during Phase 1a will also be disassembled and temporary poles will be removed. All the reclaimed materials will be separated and stockpiled for eventual transport.	Owner				Once the aboveground and belowground structures have been removed, the site surface will be leveled to cover all the pits formed by the foundation removal activities.			

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	7	Belowground Facilities and Utilities: This includes any man-made improvements to the site from the ground surface level down to approximately 3 feet below ground surface (bgs). The Phase 1a improvements that may be included in this category would be the access road culverts and underground utility lines. The large majority of the materials to be removed will consist of foundation materials, concrete and rebar. The foundation work for the assembly hall, ductbanks in the Unit #1 power block area and a portion of the Unit #1 solar field will have been installed. These will be decommissioned at the end of Phase 1a if the Project does not proceed. The on-site wells installed during Phase 1a will also be decommissioned and plugged in accordance with all applicable Federal and State requirements. Decommissioning belowground structures from Phase 1a construction will consist of excavating and removing any underground piping or conduit that may have been installed in the power block area and removing building foundations shallower than 3 feet bgs. The vast majority of this work will involve breaking up the subsurface concrete foundations and any installed solar field caissons to 3 feet bgs. This reinforced concrete will also be crushed to extract the steel rebar. All the reclaimed materials will be separated and stockpiled for eventual transport.	Owner							
	Decommission Plan (BIO-23)	9	Closure Site Assessment: The Phase 1a areas to be closed in the event of a permanent work suspension during or at the end of Phase 1a construction will be visually assessed by one or more personnel who are experienced in site assessments in accordance with the prevailing industry standard, American Society for Testing and Materials E1527-05 for Phase I Site Assessment, or who are experienced in closure assessments under closure guidance from the U.S. Environmental Protection Agency (EPA) for hazardous waste facilities and/or for hazardous material storage facility closures under Chapter 27 of the California Fire Code or applicable Riverside County Fire Code or other local standard. The locations of the subject facilities shall be physically inspected to document where hazardous materials were used or stored and whether there are any surface indications of spills or releases of hazardous materials (such as soil staining or distressed vegetation).	Owner, Assessment Specialist							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	9	Facility Closure/Decontamination Activities: A diesel and gasoline refueling area may be established on site during Phase 1a. Any such hazardous material handling operations will be closed or decommissioned in a manner that: • Minimizes the need for further maintenance; • Controls to the extent that a threat to public health or safety or to the environment from residual hazardous materials in the facility is minimized or eliminated; and • Demonstrates that hazardous materials that were stored in the facility and/or contaminated soils or groundwater caused by any unauthorized discharge, will be removed, disposed of, neutralized, or reused in an appropriate manner.	Owner, CEC, BLM, DEH							
			To accomplish this: • Coordination will occur with the CEC, BLM, and the County of Riverside Department of Environmental Health (DEH) Environmental Protection and Oversight division to determine any local standards or notifications that may be required. • Hazardous materials will be removed from the areas to be decommissioned, except for those which remain in equipment that are integral to the operation of the Project (e.g, transformers). • Portable containment berms will be constructed for cleaning any small parts. • Where possible, all non-metal materials (e.g., spill pallets or small containers) will be cleaned to a reusable standard. When this is not possible, the items will be discarded in accordance with applicable LORS as closure debris . All metallic components will be managed as scrap metal unless they do not meet the definition of scrap metal in Title 22 California Code of Regulations (CCR) Section 26626.10 (i.e., contaminated with oil or other hazardous waste).							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	10	Management of Decontamination Wastes: Decontamination wastes must be classified as hazardous or nonhazardous prior to disposal. The general methodology will be to first determine if the waste is a Federal Resource Conservation and Recovery Act (RCRA) hazardous waste or if it is a California-only (non-RCRA) hazardous waste, consistent with Title 22 CCR Section 66262.11. If the waste is not hazardous under either Federal or State laws and regulations, the decontamination wastes may be disposed of as nonhazardous industrial trash. Wastes that are determined to be hazardous from this testing will be manifested and transported to an off-site permitted facility for recycling or disposal as hazardous waste. Reasonable efforts will be made to divert all wastes from landfills within LORS governing the Project.								
	Decommission Plan (BIO-23)	10	Field Records: Records of decontamination activities will be retained and included in the final decontamination and decommissioning report. Photos will be taken as warranted. Records may include: • Decontamination procedures, • Field observation reports, • Description of any sampling locations, • Laboratory results of samples analyzed, • Manifests or Bills of Lading showing disposition of waste inventory, and/or • Miscellaneous documentation (e.g., photographs).								
	Decommission Plan (BIO-23)	10	Verification Sampling: Based on the professional judgment of the assessment specialist, sampling may be required for components to verify their cleanliness or level of contamination to determine their suitability for reuse or for proper disposal. Standard sampling techniques such as those described in EPA Publication SW-846 are to be used. These can include wipe sampling for assessment of surficial contamination on non-porous surfaces. All sampling procedures and analytical methods used are to be described in the Field Records (See above). When each sample is collected, that sample will be noted in the log and labeled. Each sample will be labeled with the following information: Facility name; • Sample number; • Sample location; • Sample type; • Date of sample; • Time of sample; and • Name of sampler.	Assessment Specialist						

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	11	Chain-of custody protocols shall be followed. Under no circumstances will sealed sample containers be opened by anyone other than the laboratory personnel who will perform the requested analyses. If it is necessary for samples or sample chests to leave the immediate control of the sampler before delivery to the laboratory, a custody seal will be placed on each sample container and/or sample chest to ensure that the samples have not been tampered with during transportation. The custody seal is initialed by the sampler, and includes the date and time that the seal was placed. Seals will be applied to each container immediately after collection to prevent tampering with the samples.								
	Decommission Plan (BIO-23)	11	Subsurface Sampling: Based on the professional judgment of the assessment specialist, subsurface sampling may be required to asses if any residual contamination remains in the soils on site. The minimum volume of sample to be collected will be determined by the analytical laboratory. At least 48 hrs before drilling, the site boundaries will be marked with white paint, & Underground Service Alert will be notified as required by law. In addition, a drilling permit will be obtained from the local Water District, if required. A professional utility locating service may also be hired to identify the location of underground utilities in the near the proposed boring locations. The borings will be advanced using truck-mounted direct push equipment or hand-auger techniques. All subsurface sampling will be performed under the direction of a field geologist. The borings will be advanced to at least 3 feet bgs. Soil samples will be collected at 6 inches to 1 foot bgs & also at about 3 feet bgs. Based on the assessment specialist's or field geologist's expertise, samples may be collected at a deeper location such as 6 feet bgs. Soil samples will be collected in plastic (acetate), stainless steel, or brass liners. If soil samples are to be collected for metals analysis, it will be necessary to compare them to background samples from areas known not to have been impacted.	Assessment Specialist or Field Geologist							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Decommission Plan (BIO-23)	12	Hazardous Material/Hazardous Waste Post Closure Report: A closure report will be prepared to document decontamination procedures used and the sampling and analytical results of all confirmation samples. The report will include copies of the applicable permits, field observations, boring logs, certified laboratory analytical results, risk assessment evaluation, conclusions and recommendations. The report will be prepared under the supervision of and signed by a California Professional Geologist if any subsurface samples were collected. Records of the disposition of all hazardous wastes and hazardous materials will be included in the closure report.	Owner, Professional Geologist	Prepare clossure reprot 45 days of completion of closure or decontaminatio n activities.						
	Decommission Plan (BIO-23)	12	Demolition Debris Management, Disposal, and Recycling: The materials will be segregated and stockpiled on site until such time as the stockpiled material analyses are complete and the materials are deemed safe for shipment. In addition, appropriate receiving facilities must be identified for each of the materials and appropriate truck transportation must be arranged. The materials will then be transported by licensed haulers to permitted facilities.	Owner							
	Golden Eagle Monitoring and Management Plan (BIO-24)		**GOLDEN EAGLE MONITORING AND MANAGEMENT PLAN**	DB		Per a letter from the DB to the CPM dated October 18, 2010, a golden eagle inventory is not necessary for construction initiated calendar year 2010. Construction is scheduled to continue through spring 2011. Therefore, an inventory will be conducted during late winter/early spring 2011, depending on when nesting activities begin and in accordance the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations or more current guidance from the USFWS, to determine if golden eagle territories occur within 1 mile of the project boundaries.					
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)	1	**COUCH'S SPADEFOOT TOAD PROTECTION AND MITIGATION PLAN** The Plan describes the actions to be taken to protect resident and/or breeding Couch's spadefoot toad (CST), which have potential to occur within and near the Project. The purpose of the Plan is to specify an approach that, when implemented, will facilitate avoidance, minimization, and the offset of impacts to CST that may occur within and/or adjacent to the Project Disturbance Area.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)	8	Preconstruction Phase: 1) Establish CST Management Area.	DB		1) Highly visible exclusion fencing and signage will be installed around potential breeding pools to be avoided (pool 6 and possibly pools 4 and 5) and will include a minimum 10-foot buffer of surrounding vegetation. This will be considered a CST Management Area and protective fencing will be inspected and maintained as necessary by the ECM or DB to exclude construction traffic and personnel. Construction personnel will be instructed to stay out of the CST Management Area.					
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)	8	2) WEAP	DB		2) Incorporate CST identification, habitat description, limits of construction activities in the Project area, and guidance regarding general measures being implemented to conserve CST as they relate to the Project. The potential CST pools to be avoided will be discussed and a map of these areas provided. Photos of CST will also be provided as part of the WEAP.					
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)	9	3) Monitor Ground-Disturbing Activities Prior to Preconstruction Site Mobilization.	DB or BM		3) If preconstruction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a DB or BM will be present to monitor any actions that could disturb soil, vegetation, or wildlife.					
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)	9 to 11	Construction Phase: See BIO-8 measures above for minimizing impacts from roads and traffic; monitoring during construction; minimizing impacts from transmission/pipeline alignments, roads, and staging areas; avoiding use of toxic substances; minimizing lighting and noise impacts; avoiding vehcile impacts; avoiding wildlife pitfalls (e.g., backfill trenches); minimizing standing water; disposal of road-killed animals; minimizing spills of hazardous materials; worker guidelines; implementing erosion control measures and revegetation plan.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	Couch's Spadefoot Toad Protection and Mitigation Plan (BIO-26)		Operations Phase: See BIO 8 above for minimizing traffic impacts and implementing erosion control measures. See BIO-25 above for maintaining and monitoring evaporative ponds and netting. 1) Prevent Establishment of Potential Upland Habitat.	DB		1) Regular removal of any weeds or other vegetation will occur as a normal maintenance practice within the entire plant site to prevent establishment of potential upland habitat for CST in the vicinity of evaporative ponds. The DB will evaluate and confirm the absence of rodent activity and burrow creation during the pond monitoring. If burrowing rodent activity develops within the plant site it will be reported to the CPM to evaluate measures to eliminate and prevent creation of burrows on the site.					
	USFWS Biological Opinion	36	**REASONABLE AND PRUDENT MEASURES:** The Applicant shall monitor and report the level of incidental take of DT to the Carlsbad Fish and Wildlife Office (CFWO) throughout the life of the Project and report on the effectiveness of the Project minimization measures to reduce the impact of incidental take of DT.								
	USFWS Biological Opinion	36	**TERMS AND CONDITIONS**: The following term and condition implements the reasonable and prudent measure above. a) The applicant shall prepare and provide to the Service and BLM an annual report by December 31 of each year of the project. The annual report shall document but not be limited to, the following: • Compliance with project-specifications and conservation measures outlined in this biological opinion, including BIO-1 thru BIO-14, BIO-27, and BIO-28 outlined in the CEC's Commission Decision on the BSPP project, as they relate specifically to tortoises. • Any activities determined by the Designated Biologist or Biological Monitors to be out of compliance with project-specifications and conservation measures outlined in this biological opinion and the corrective measures implemented to bring the project back into compliance.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	USFWS Biological Opinion	37	• The total amount and location of tortoise habitat disturbed by construction and O&M activities during the reporting year. • The number and location of tortoises killed or injured during project construction or O&M activities during the reporting year and a description of the circumstances leading to the death or injury of individuals of the species. • Activities conducted under the Desert Tortoise Relocation/Translocation Plan (BIO-10) during the reporting year, including but not limited to, the number and location of tortoise eggs, hatchlings, juveniles, subadults, or adults located during project activities and relocated or translocated during preconstruction, construction, and/or O&M activities during the reporting year and a detailed description of the relocation / translocation activities, and a detailed description of monitoring activities conducted at the recipient and control sites during the reporting year.								
	USFWS Biological Opinion	37	If more than 20 adult tortoises, or any eggs, hatchlings, juveniles or subadults are found within the project footprint, the Designated Biologist shall immediately report the observation to the CFWO, prior to any relocation/ translocation activities. The CFWO will review the information to determine its consistency with the effects analysis above and if relocation/translocation of additional tortoises would benefit their survival and be consistent with our assumptions in the biological opinion, and if reinitiation of consultation is warranted. • Activities conducted under the Raven Management Plan (BIO-13) during the reporting year, including but not limited to, the results of raven nest monitoring and removal of raven nests and offending ravens. • Activities conducted under the Weed Management Plan (BIO-14), including but not limited to, invasive plant species control activities conducted during construction or O&M activities in the project disturbance area during the reporting year and the status of control activities conducted the previous year.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	USFWS Biological Opinion	37	*Disposition of Sick, Injured, or Dead Specimens* The CFWO is to be notified immediately at (760) 431-9440 if any desert tortoises are found sick, injured, or dead in the action area. Immediate notification means verbal (if possible) and written notice within 1 workday, and must include the date, time, and location of the carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state. The CFWO should also be notified immediately at (760) 431-9440 if any endangered or threatened species not addressed in this biological opinion is found dead or injured in the project footprint during the life of the project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location.								
	USFWS Biological Opinion	38	**CONSERVATION RECOMMENDATIONS**: 1. We recommend that the BLM work with the applicant and Service to determine if the transmittered desert tortoises associated with the translocated populations can be used to answer additional research questions related to translocation or desert tortoise biology.								

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	USFWS Biological Opinion	38	2. We recommend that the BLM amend the California Desert Conservation Area Plan to prohibit additional renewable energy development (e.g., solar energy facilities, wind development) within the unused portion of the 3,804-ha (9,400-ac) ROW granted for construction and O&M of the BSPP project, particularly within the proposed McCoy Mountains recipient site. We offer this recommendation because this area is likely to be used as a recipient site for translocated desert tortoises from the BSPP project. Additionally, we are aware of two other ROW applications filed with the BLM for development of large-scale solar facilities directly north of the BSPP project (NextEra's McCoy and EnXco's McCoy Soleil projects). Given these proposed projects, the potential exists that desert tortoise habitat adjacent to the McCoy Mountains may be disturbed and fragmented to the extent that desert tortoises and other wildlife populations in the area may be severely compromised.								
	USFWS Biological Opinion	38	3. We recommend that the BLM amend the California Desert Conservation Area Plan to prohibit additional renewable energy development (e.g., solar energy facilities, wind development) within the upper bajadas (mapped as "dissected fans" on the NECO Map 3-4, Landforms) in the mountains of northeastern Riverside County. We offer this recommendation because this action would protect the higher quality tortoise habitat in the CDCA plan area. At a minimum, we recommend that BLM prohibit or limit development in the upper bajadas of the McCoy Mountains (mapped as "dissected fans" on the NECO Map 3-4, Landforms) to protect the higher quality tortoise habitat in the region and prevent isolating the proposed McCoy Mountains recipient site in light of potential future large-scale solar development.	4. We recommend that the BLM ensure that the gen-tie transmission line associated with the BSPP project also is adequate to provide for transmission of electricity from the two other solar projects proposed for construction directly north of the BSPP project: NextEra's McCoy and EnXco's McCoy Soleil projects							

Condition ID	Source	Page No	Mitigation Measure	Responsible Party	Timing	Action	Schedule	Notes	Performance Standard	Remedial Action	Status
	USFWS Biological Opinion	39	4. We recommend that the BLM ensure that the gen-tie transmission line associated with the BSPP project also is adequate to provide for transmission of electricity from the two other solar projects proposed for construction directly north of the BSPP project: NextEra's McCoy and EnXco's McCoy Soleil projects. Use of a shared gen-tie transmission line through the BSPP project footprint will reduce, and perhaps negate, the need for additional gen-tie transmission lines to the west or east of the BSPP site and thereby, reduce additional destruction/degradation of desert tortoise habitat in these adjacent areas, including the McCoy Mountains recipient site where tortoises translocated from the project footprint may be released.								

Notes:

Source: Final Decision refers to the CEC Commission Decision September 15, 2010. The biological resources COCs are found in Appendix B.

Responsible Party: In the BRMIMP report, 'PVSI' is used instead of 'Owner.' 'Owner' used in this table to be consistent with useage in COCs.

Precon: Preconstruction; Con: Construction; Postcon: Postconstruction; Ops: Operations

Yellow highlighted columns: to be filled out

CPM - refers to the CEC Compliance Project Manager

APPENDIX B

FINAL DECISION CONDITIONS OF CERTIFICATION
CONDITIONS: BIOLOGICAL RESOURCES

CONDITIONS OF CERTIFICATION

Designated Biologist Selection and Qualifications[37]

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 and USFWS.

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 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 days prior to the start of site mobilization or construction-related ground disturbance, the project Owner shall submit the names of the Designated Biologist (s) along with completed

[37] 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 (CDFG) 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.

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, 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 performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring or trenching activities. 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 Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers 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 of any non-compliance with any biological resources Conditions of Certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;
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>; and
10. Maintain the ability to be in regular, direct communication with representatives of CDFG, 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 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 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 days prior to the start of any site mobilization or construction-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 in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring or trenching. The Designated Biologist shall remain the contact for the project owner and 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 and Biological Monitor(s) 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 and Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching and operation activities in areas specified by the Designated Biologist. 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 and the construction/operation manager when to resume activities; and
3. Notify the CPM and 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 Office of USFWS and the Ontario Office of CDFG shall also be notified.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM 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. 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 Office of USFWS and Ontario Office of CDFG 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 USFWS and CDFG**,** within 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 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 site preconstruction, construction, 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 harmed;
3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity

to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;

4. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
5. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
7. 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.

Verification: At least 30 days prior to construction-related ground disturbance the project owner shall provide to the CPM for review and approval and to BLM, USFWS, and CDFG 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 construction-related ground disturbance activities the project owner shall submit two copies of the final WEAP.

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 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 Raven Management Plan, the Closure, Conceptual Restoration 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, 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;
6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
9. All performance standards and remedial measures to be implemented if performance standards are not met;
10. Biological resources-related facility closure measures including a description of funding mechanism(s);

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

Verification: The project owner shall submit the draft BRMIMP to the CPM at least 30 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, 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 at least seven days prior to the start of any construction-related ground disturbance, grading, boring, or trenching. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No 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 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit conditions.

To verify that the extent of construction disturbance does not exceed that described in these Conditions, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM, BLM, USFWS, and CDFG. 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 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 in consultation with CDFG 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-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 in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Areas. 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 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 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 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.

4. Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing but have been cleared, the Designated Biologist 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 ahead of equipment during brushing and grading activities. If desert tortoise are found during construction monitoring, procedures outlined in **BIO-9** shall be implemented.

5. 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) S*uggested 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.

6. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

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

8. 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, 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.

9. 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:

    a. Backfill Trenches. At the end of each work day, the Designated Biologist 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 USFWS Desert Tortoise Field Manual (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 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 CDFG and USFWS within 1 working day of detection of the carcass for guidance on disposal or storage of the carcass; all other roadkill shall be disposed of promptly. 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. 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.

16. 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.

17. 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.

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 construction, the project owner shall submit to the CPM a final agency-approved Revegetation Plan that has been reviewed and approved by the CPM. 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 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 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 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 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 USFWS' Desert Tortoise Field Manual (USFWS 2009) <http://www.fws.gov/ventura/speciesinfo/protocols_guidelines> or more current guidance provided by CDFG 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 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) using techniques outlined in the *Desert Tortoise Field Manual* (USFWS 2009) and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her 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, CDFG 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).

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) 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. Each separate survey shall be walked in a different direction to allow opposing angles of observation.—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 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. 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 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 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 (AECOM 2010t) and shall include all revisions deemed necessary by BLM, USFWS, CDFG and the Energy Commission staff.

Verification: At least 30 days prior to site mobilization 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. All modifications to the approved Plan shall be made only after approval by the CPM, in consultation with BLM, USFWS and CDFG.

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, 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 activities; immediately notify the CPM in writing if the project owner is not in

compliance with any Conditions of 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 clearing, grubbing, and grading are completed and submit a monthly compliance report to the BLM, CPM, USFWS and CDFG during construction. Notification of Injured, Dead, or Relocated Listed Species. If an injured or dead listed species is detected within or near the Project Disturbance area, the CPM, the Ontario Office of CDFG, and Carlsbad Office of USFWS shall be notified immediately by phone. 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. 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-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, 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, CDFG, and 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). 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.

4. 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 days following the above required notification of a sighting, kill, or relocation of a listed species, the project owner shall deliver to the CPM, CDFG, 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, CDFG 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.

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 6,958 acres, 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 Project, including all 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 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 prioritized 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. be connected to lands with desert tortoise habitat equal to or better quality than the project Site, ideally with populations that are stable, recovering, or likely to recover;

    e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or 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 that the site could not provide suitable habitat; and

    h. have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with CDFG,

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, 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, 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, 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. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM and CDFG, 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. 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, 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. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary.

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 and the CPM. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG 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 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, 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 takes fee title to the compensation lands, CDFG 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 and with CDFG supervision.

f. Interest, Principal, and Pooling of Funds. The project owner, the CPM and CDFG 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 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 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 takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG.

iii. Pooling Long-Term Maintenance and Management Fee Funds. CDFG, or a CPM-and CDFG-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 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 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 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'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 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, BLM and the USFWS, of the form of the Security. Security shall be provided in the amounts of $2,374,672 for Phase 1A; $9,248,560 for Phase 1B, and $9,859,984 for Phase 2. 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 acres of mitigation lands itself.

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

i. 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 $2,465,611 for Phase 1a; $9,481,161 for Phase 1b; and $10,105,186 for Phase 2. 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. Such delegation shall be subject to approval by the CPM and CDFG, 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, the project owner shall provide the CPM and CDFG 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. 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, BLM and USFWS of the compensation lands acquisition and transfer within 18 months of the start of project ground-disturbing activities.

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 of this 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, USFWS, and BLM describing the parcels intended for purchase and shall obtain approval from the CPM and CDFG 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, BLM and USFWS with a management plan for the compensation lands within180 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, BLM and the USFWS.

Within 90 days after completion of all project related ground disturbance, the project owner shall provide to the CPM, CDFG, 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. The draft Raven Plan submitted by the Applicant (AECOM 10a, Attachment DR-BIO-49) shall provide the basis for the final Raven Plan, subject to review, revisions and approval from BLM, the CPM, CDFG 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.**The project owner shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below.

<u>The Raven Plan shall:</u>

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.

<u>USFWS Regional Raven Management Program.</u> The project owner shall submit 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.

Verification: No less than 10 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM, USFWS, and CDFG 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.

No less than 10 days prior to the start of any project-related ground disturbance activities, the project owner shall provide documentation to the CPM, BLM, CDFG 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 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 construction, operation, and 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 (AECOM 2010a, Attachment DR-BIO-97) shall provide the basis for the final plan, subject to review and revisions from the CPM.

Verification: No less than 10 days prior to start of any project-related ground disturbance activities, 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 CDFG. Modifications to the approved Weed Control Plan shall be made only after consultation with the Energy Commission staff, BLM, USFWS, and 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.

PRE-CONSTRUCTION NEST SURVEYS

BIO-16 Pre-construction nest surveys shall be conducted if construction 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. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM; and
4. 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 project-related ground disturbance 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.

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 CDFG 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.

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 construction activities. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted from two hours before sunset to one hour after or from one hour before to two 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, 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;

    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 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 BLM, 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.

   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 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 CDFG, 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, CDFG 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 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 documentation indicating that non-disturbance buffer fencing has been installed. The project owner shall report monthly to BLM, the CPM, CDFG 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 CDFG and CPM a report identifying how mitigation measures described in the plan have been completed.

If pre-construction surveys detect burrowing owls within the Project Disturbance Area and relocation of the owls is required, the project owner shall do the following:

a. Within 30 days of completion of the burrowing owl pre-construction surveys, submit to BLM, the CPM, CDFG and USFWS a Burrowing Owl Mitigation Plan.

b. No less than 90 days prior to acquisition of the burrowing owl compensation lands, the project owner, or an approved third party, shall submit a formal acquisition proposal to the CPM, BLM, CDFG, and USFWS describing the parcels 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, BLM, CDFG and USFWS.

c. Within 90 days of 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 BLM, CDFG and USFWS, for the compensation lands and associated funds.

d. No later than 30 days prior to beginning project ground-disturbing activities, the project owner shall provide a form of Security in accordance with this Condition of Certification. No later than seven days prior to beginning project ground-disturbing activities, the project owner shall provide written verification of the actual Security.

e. No later than 18 months from an initiation of construction the project owner shall provide written verification to BLM, the CPM, and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.

f. 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 CDFG that describes the results of monitoring and management of the burrowing owl relocation area.

SPECIAL-STATUS PLANT impact avoidance, minimization and compensation

BIO-19 This Condition contains the following four 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 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: 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, B, C, and D to avoid, minimize, and compensate for impacts to special-status plant species:

Section A: Special-Status Plant Impact Avoidance and Minimization Measures

To protect all special-status plants[38] located outside of the Project Disturbance Area and within 100 feet of the permitted Project Disturbance Area from accidental and indirect impacts during 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.

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 site design modifications to minimize 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.

   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

[38] 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).

spring 2009-2010 surveys and the late season 2010 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. **S**pecial-status plant occurrences within 100 feet of the Project Disturbance Area shall be protected from herbicide and soil stabilizer drift. The Weed 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*[39] , the U.S. Environmental Protection Agency, and the Pesticide Action Network Database[40].

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, etc.). These measures shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.

[39] 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.

[40] 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>

f. 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.

g. Monitoring and Reporting Requirements. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and 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)[41], 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);

[41] Bureau of Land Management (BLM), California State Office. *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species*. Issued July 2009.

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 for Special-Status Plants Detected in the Summer/Fall 2010 Surveys

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. <u>Mitigation for CNDDB Rank 1 Plants (Critically Imperiled) - Avoidance Required:</u> If late blooming species with a CNDDB rank of 1 are detected within the Project Disturbance Area the project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The goal of the Plan shall be to retain at least 75 percent of the local population of the affected species. Compensatory mitigation, as described in Section D of this Condition, and at a mitigation ratio of 3:1, shall be required for the 25% or portion that is not avoided. The Plan shall include, at a minimum, the following components and definitions:

   a. A description of the occurrences of the CNDDB rank 1 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.

b. 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).

c. 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).

d. 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.

e. “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.

2. Mitigation for CNDDB Rank 2 Plants (Imperiled) –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.

3. Mitigation for CNDDB Rank 3 Plants – No On-Site Avoidance Required Unless Local or Regional Significance: If species with a CNDDB rank of 3 are detected within the Project Disturbance Area, no onsite avoidance or compensatory mitigation shall be required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CNDDB rank 2 plant species. A plant occurrence would be considered to have local or regional significance if:

   a. It occurs at the outermost periphery of its range in California;

   b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or;

   c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or sub-species.

4. Pre-Construction Notification for State- or Federal-Listed Species, or BLM Sensitive Species. If a state or federal-listed species or BLM Sensitive species is detected, the project owner shall immediately notify the CDFG, USFWS, BLM, and the CPM.

5. 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.

Section D: 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:

6. 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.

7. 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.

8. 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.

9. 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.

10. 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, 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 or another entity approved by the CPM. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, 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 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, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG 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 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, 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 takes fee title to the compensation lands, CDFG 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 and with CDFG 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 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.

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). 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 Applicant, 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, 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[42] 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

[42] 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

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:

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. Compensatory Mitigation by Conducting or Contributing to a Special-Status Plant Species Distribution Study: As a contingency measure in the event that there are no opportunities for acquisition or restoration/enhancement, 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 within two 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 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 ground-disturbing activities.

The project owner shall immediately provide written notification to the CPM, CDFG, 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 decommissioning.

No fewer 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 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 days prior to start of 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, 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 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 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 3:1ratio, 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 (58 acres or the acreage of sand dune/partially stabilized sand dune habitat impacted by the final project footprint). 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 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 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 and USFWS describing the parcels intended for purchase.

The project owner, or an approved third party, shall provide BLM, the CPM, CDFG 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 BLMCDFG 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 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 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 acres of ephemeral washes shall include at least 639 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 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 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 BLMCDFG 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 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 Applicant'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 personnel upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner, the CPM, if the CPM in consultation with CDFG, 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 Applicant 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 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 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 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.

Within 90 days after completion of project construction, the project owner shall provide to the CPM and CDFG 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 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, 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 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 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.

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 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.

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[43] 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.

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.

[43] 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.

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 approved by the CPM in consultation with CDFG 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:

1. 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, and USFWS.

2. 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, 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.

3. 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.

4. 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, 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, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.

5. Modification of Monitoring Program. Without respect to the above requirements the project owner, CDFG 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.

   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, 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, 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 Applicant chooses to mitigate in whole or in part by purchasing habitat:

      i. The Applicant 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 Applicant 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, 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.

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 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 and USFWS describing the parcels intended for purchase.

The project owner, or an approved third party, shall provide the CPM, CDFG 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.

The project owner shall provide written verification to the CPM, and CDFG 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.

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 phases, 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.

Project construction will occur in three 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 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 disturbance area for each project Phase and resource type is provided in the tables below. 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 Condition.

Phase	**Desert Tortoise**		**MFTL**		**WBO**	
	Impact (acres)	**Mitigation (acres)**	**Impact (acres)**	**Mitigation (acres)**	**Impact (individuals/pairs)**	**Mitigation(acres)**
Phase 1a	769	769	0	0	0	0
Phase 1b	2,995	2,995	58	174	1	19.5
Phase 2	3,193	3,193	0	0	1	19.5
Total	6,958	6,958	58	174	2	39

Phase	**Desert Tortoise**		**MFTL**	
	Impact (acres)	**Mitigation (acres)**	**Impact (acres)**	**Mitigation (acres)**
Phase 1a	67	130	0	0
Phase 1b	231	409	36	51
Phase 2	294	665	146	189
Total	593	1,205	133	179

Phase	State Waters - Direct		State Waters – Indirect		Bighorn Sheep	
	Impact (acres)	**Mitigation (acres)**	**Impact (acres)**	**Mitigation (acres)**	Impact (acres)	Mitigation (acres)
Phase 1a	67	130	0	0	27	27
Phase 1b	231	409	36	51	488	488
Phase 2	294	665	146	189	414	414
Total	592	1204	182	240	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, 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.

APPENDIX C

REVEGETATION PLAN

BLYTHE SOLAR POWER PROJECT
REVEGETATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

09-AFC-6C

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1.0 INTRODUCTION

1.1 Purpose of the Plan

This Revegetation Plan (Plan) responds to revegetation requirements outlined in Condition of Certification BIO-8 as set forth in the California Energy Commission's Final Decision issued for the Blythe Solar Power Project on September 15, 2010. The Project will be developed by Palo Verde Solar I, LLC (PVSI). Condition BIO-8 defines the purpose of this Plan, the areas included in the term "temporary disturbance," and set performance standards for revegetation results, as described below.

> *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.*

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre right-of-way (ROW) owned by the federal government and managed by the U.S. Bureau of Land Management (BLM), pursuant to an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by California Energy Commission (CEC).

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates.

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1a	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Wells and initial portion of Unit #1	772.68
Phase 1b	Remainder of Unit #1, Unit #2 and Gen-tie line	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
Total		**7,024.5**

1.4 Roles and Responsibilities

PVSI: PVSI is ultimately responsible for implementing this Plan. It is anticipated that the PVSI's contractors and other designees responsible for implementing components of this Plan will include the following:

Environmental Compliance Manager (ECM): PVSI will assign an ECM to the Project. The ECM is responsible for facilitating implementation of the environmental conditions of the Project. Typical ECM duties involve managing, supervising, and/or providing advice on work affecting air quality, water/streambed permits, and biological resources environmental compliance programs. The contact information for the ECM who will oversee the Project will be incorporated into the Final Biological Resources Mitigation, Implementation, and Monitoring Plan.

The ECM will have experience in the implementation of general environmental compliance measures and must have specific training by the Designated Biologist to conduct biological monitoring activities specified in this Plan.

Revegetation Contractor(s): The Revegetation Contractor, contracted by PVSI, will be responsible for installation, maintenance, weed control, and remedial seeding as required by this Plan.

The Revegetation Contractor will have experience with installation and maintenance of desert revegetation projects and all crew members engaging in weed control will be trained to distinguish common weeds from native vegetation.

Revegetation Ecologist (including Biological Monitor[s]): PVSI will designate a Revegetation Ecologist and Biological Monitor(s) to provide oversight of the Revegetation Contractor practices and verify compliance with the provisions of this Plan. The Revegetation Ecologist will be responsible for inspection and monitoring of seeding and ongoing weed control and re-seeding if required. The Restoration Ecologist will communicate maintenance needs to the Revegetation Contractor and will provide guidance for the specified methods.

California Energy Commission: The CEC, acting through the Compliance Project Manager (CPM), has provided guidelines and COCs for the Project. CEC will determine whether the performance standards have been satisfied at the end of the scheduled monitoring period.

Bureau of Land Management: As the administering land management agency, BLM will provide ultimate approval of the contents of this Plan and compliance oversight of its provisions. BLM will provide timely review of work products including this Plan, modifications or amendments to this Plan, and subsequent reports as required by this Plan.

2.0 REVEGETATION METHODS

The characteristics of the temporarily impacted areas will influence the revegetation methods to be employed. Specifically the climate of the site can be characterized as "low desert," with low precipitation and high temperatures. Temperature can be quite variable; average maximum temperature in July is 108 degrees Fahrenheit (°F) and in December is 66.7 °F.

The topography of the site is a gentle slope from the McCoy Mountains on the west toward lower ground on the east. Elevation ranges from 830 feet above mean sea level (amsl) in the west to 410 feet amsl in the east. The slope is gradual, although some steeper slopes are found locally.

Water flow is mostly through unnamed ephemeral washes flowing from west to east. The sandy substrate of the washes has a very high infiltration rate, and surface water exists only during or immediately following storm events.

The disturbance area includes three soil complexes:

1. Gunsight-Rillito-Chuckwalla
2. Cherioni-Hyder-Cipriano
3. Aco-Rositas-Carrizo

The three complexes occur generally in the order listed from west to east. The soils are coarsest near the mountains (west) and generally become finer toward the east; however the larger washes contain coarse material even toward the east. Mapping of soils at the site has been at large scale.

The revegetation methods described below apply to those areas of the Project that involve temporary uses that will cease at the end of the construction phase and are not required for the operational phase (e.g., temporary laydown areas, construction power line corridor as stated in the COCs), facilities that involve temporary disturbances that will be allowed to return to natural conditions following the end of the construction period (e.g., natural gas pipeline corridor, pole erection sites along the transmission line corridor), or other areas that will be designated by BLM for revegetation following the end of the 30-year operational life of the Project. The latter are to be determined by the BLM as part of end use decisions and the review and approval process for the Project Decommissioning Plan to be submitted to the CEC CPM and BLM when the Project is at the end of its life and to be closed out and abandoned.

2.1 Site Preparation

2.1.1 Recontouring

The COC requires that the land be returned to its original configuration. Since Project operations are expected to continue long after revegetation of temporary impact areas, this Plan assumes that recontouring will be constrained to elevation changes that do not affect land form or drainage on adjacent active operation areas.

Major drainages are to be diverted to artificial channels at the property boundaries; thus they will not be revegetated. If temporary impacts should affect major drainages, they will be configured to reconnect historic drainages across the revegetated areas. Shallow braided surface flow patterns will form according to localized slopes and elevation changes and can be influenced only in the most general way by recontouring. Any drainage anticipated on the temporary disturbance areas will be designed to deliver runoff to natural or artificial channels in a manner consistent with agency requirements.

Any unanticipated re-shaping of the land form by storm water will be repaired as needed to route drainage to engineered channels within the operations area, then to natural drainages at the property boundaries. Any such emergency grading will be followed by re-seeding with the seed mix specified for general reseeding.

2.1.2 Decompaction

Most of the temporary impacts will involve vehicle and equipment traffic, which often leads to soil compaction. Prior to reseeding, it is important to test the soil locations throughout the areas of temporary disturbance, including the most heavily used roadways and other likely locations for compaction. Using a soil or engineering laboratory equipped to determine soil bulk density, a determination will be made of the areas that require decompaction. Any locations found to have a bulk density in excess of 1.6 grams per cubic centimeter (g/cc) will be cross-ripped to a depth of 12 inches.

2.1.3 Soil Amendments

Soil amendments will not be applied unless it is necessary to plant in sub-grade material that differs chemically from the surface soil. In that case a soil scientist will determine soil physical and chemical properties and recommend any necessary treatments. Treatments will be intended to decrease unfavorable conditions without attempting to create soil of agricultural quality. Fertile soil is of much greater benefit to weeds than to native perennials (Mclendon and Redente 1992, Morgan 1994, Riefner et al. 1998, St. John 1988, St. John, 1998), and in no case will the soil be made more fertile than nearby undisturbed soil.

Mycorrhizal inoculum will be added to the seed mix to assure that seedlings become mycorrhizal early in life. In this context, mycorrhizal inoculum is not considered a soil amendment.

2.1.4 Weed Removal

It is expected that temporarily disturbed sites designated for revegetation will not carry significant weed seed loads at the time of revegetation, since most sites will have been graded and subjected to vehicle and foot traffic. Sites that show weed growth will be treated before seeding. If significant weed growth is present at the time of reseeding, the area will be treated with glyphosate or other suitable herbicide. All herbicide use will be in accordance with the label and under the direction of a certified pesticide applicator, and will observe precautions described in Bio-19, special status plant impact avoidance, minimization, and compensation.

Herbicide is the preferred method for initial weed removal. Any thatch of dead weeds should be left in place to minimize unnecessary soil disturbance. Weeds should not be removed by pulling, hoeing, or disking because these methods stimulate weed germination and interrupt the development of soil microbiology. If the soil must be ripped because of compaction there will be no restrictions on other soil disturbance until after seeding.

2.1.5 Seed Collection

The revegetation plant material will consist entirely of seeds, apart from some cacti that may be transplanted or planted from stem cuttings. The seed mix is based on Sonoran Creosote Bush scrub. Washes and stream channels are being directed elsewhere within the Project boundaries, so no attempt will be made to plant desert wash vegetation.

Seeds will be of local origin. The seeds to be used on this revegetation project include three categories, all treated differently during installation.

1. Dominant species define the vegetation and are expected to make up the most visible component over the long term. Dominant species typically have seed dormancy or specific requirements for soil biology. They will be planted over the entire temporary disturbance area designated for revegetetation, but will be less conspicuous than functional species in the first years of growth.

2. Functional species may also be featured in the long-term vegetation but are chosen particularly for useful functions they perform during the early stages, including build-up of mycorrhizal fungi. Seeds of *Plantago ovata* along with most annual or short-lived perennial native species from the families Poaceae and Asteraceae are able to build the mycorrhizal network and associated soil biology. Functional species will be planted liberally over the entire project and are expected to be the most visible component of the vegetation during establishment of the habitat. They will be gradually replaced by dominant species as they make the soil suitable for more demanding plant species.

3. Trace species are individually uncommon but collectively contribute an important part of the vegetation. Seeds are often difficult to purchase or prohibitively expensive. Many are annual species that vary greatly in abundance from year to year. Most trace species will come from the re-applied topsoil, but a few trace species available at the time of project installation will be spot-seeded in locally favorable locations.

2.1.6 Cactus Salvage

Three cactus species known to occur at the Project site will be salvaged and transplanted to undisturbed portions of the ROW. The three species are *Echinocactus polycephalus* var. *polycephalus*, *Ferocactus cylindraceus* var. *cylindraceus*, and *Mammillaria tetrancistra*. Three additional cactus species, *Opuntia basilaris*, *O. echinocarpa*, and *O. ramosissima*, will not be salvaged entirely but will be replanted with three stem sections per plant, broken at the joints and allowed to callus in the shade for 7 to 30 days. The sections will be placed in soil to a depth equal to one third of their length.

If suitable planting sites are not available at the time of plant salvage, cacti will be temporarily planted in a trench 18 inches deep and at least 24 inches wide. The topsoil berms may optionally be used for temporary cactus storage. The cacti will be placed upright and in their original compass orientation until the final planting site is available. Plants may be watered in the trenches when first planted or when they show signs of water stress; however they will not be regularly watered, since excess moisture may promote root rot.

2.1.7 Salvage of filamentous cyanobacteria

Much of the soil surface in undisturbed portions of the Project is covered with a biotic crust, of which the most abundant component is filamentous cyanobacteria ("blue-green algae"). These organisms play an important role in suppressing the growth of exotic grasses and other weeds. Successful re-establishment of the biotic crust on topsoil stockpiles and on the revegetation areas will greatly reduce weed growth. The biotic crust can be re-established more quickly if salvaged and re-applied over the topsoil. It may be propagated as an upper layer on the topsoil stockpile if salvaged biotic crust is kept at the surface of other stockpiles.

Filamentous cyanobacteria can be salvaged and stockpiled from sites to be temporarily disturbed. Salvage must be completed before temporary disturbance begins. The Restoration Ecologist will identify and flag areas from which a very thin upper layer is removed and stockpiled, bringing with it native cyanobacteria. Alternatively, a relatively simple collection method takes advantage of filamentous cyanobacteria attached to the lower edges of pebbles on the "desert pavement" areas (Rosentreter and Belnap 2002). Abundant cyanobacteria were specifically noted on desert pavement at the Project site (T. St. John unpublished data). In the case of quartz or other translucent minerals, the algae may coat the entire lower surface and grow into any fissures in the rock. Desert pavement areas that are subject to temporary disturbance could at the be used to re-inoculate topsoil storage berms and later be moved to the revegetation area. In all cases, the soil or pebbles used to supply cyanobacterial inoculum must be kept at the top of the piles; the cyanobacteria quickly die when buried.

2.1.8 Topsoil Salvage

Since desert soils have little profile development, the term "topsoil" is defined as the top two inches of soil under native vegetation. This layer conserves most of the seeds and beneficial microorganisms. Collecting a deeper layer is not beneficial since it dilutes the seeds and other soil resources with inert material (Scoles-Sciulla and DeFalco 2009). It is important that the topsoil include only material removed from areas of healthy native vegetation as identified by the Revegetation Ecologist. Soil from areas dominated by exotic plants must not be re-applied at the soil surface.

Topsoil from areas planned for revegetation must be salvaged before the initiation of temporary disturbance and stored until revegetation begins. Topsoil collection will take place when seeds and microorganisms are in a dormant state. This can be any time that the upper layer is thoroughly dry, typically in May through early July or late September through mid November. Soil may be collected with equipment that is capable of removing a thin upper layer, such as a bulldozer, front loader, or scraper. The topsoil will be stockpiled in berms to be no more than 4 feet in depth unless the soil is at least 80 percent sand. Sandy soils may be piled in berms up to 6 feet in depth (Abdul-Kareen and McRae 1984). Material collected with topsoil, including small rocks and organic matter, is desirable and should be re-applied when the soil is returned to the site.

Stockpiles will be protected from compaction. Equipment delivering soil must not repeatedly traverse the lower layers while dropping an upper layer, nor must the berms be used as roads. Stockpiles that are compacted to bulk density greater than 1.6 g/cc will be considered unsuitable for re-application to a seeding site.

Topsoil may be stored for up to a year without seeding or covering the berms. If a longer period of storage is anticipated, the berms should be planted with native vegetation including annual or short-lived perennial native species from the families Poaceae and Asteraceae. Most such plant species are able to build up the population of mycorrhizal fungi (T. St. John, unpublished data).

In addition to the two families mentioned above, the common desert annual *Plantago ovata* will be planted liberally over the surface of berms intended for long term topsoil storage. Other species may be inter-planted with those listed in this Plan, and the berms with growing plants may be used as "seed farms" for future use in revegetation. Seeds grown on the berms must originate within the immediate vicinity of the Project except as otherwise approved by the resource agencies and the Revegetation Ecologist.

2.2 Seeding

Plant material will come entirely from seeds, unless certain cacti are transplanted to the revegetation areas. This section describes the techniques to be used for seeding and associated activities.

2.2.1 Reapplication of Topsoil and Any Available Desert Pavement

Topsoil taken from areas designated for revegetation will be re-applied to the land surface after re-contouring and just prior to imprinting and seeding. Topsoil may be spread over no more than twice the area from which it was collected. It will be carried from the berms to the seeding sites by equipment capable of transporting soil without overheating or compacting it. The topsoil will be spread evenly by machinery or hand labor and left on the surface along with any small rocks, sticks, roots, or other organic material.

Desert pavement rock material or other sources of filamentous cyanobacteria will be spread over the topsoil layer. Inoculum should be spread evenly over the topsoil to promote distribution of the desired organisms, and may be spread over as much as 10 times the area from which collected. Small rocks will not interfere with land imprinting, although it is expected that some will be buried by the imprinter.

2.2.2 Mycorrhizal Inoculation

Mycorrhizal fungi, beneficial soil organisms that form a vital symbiosis with most native plant species (Brundrett 1991; Miller et al. 1985), will be supplied through a combination of topsoil salvage and application of commercial inoculum.

Commercial mycorrhizal inoculum is supplied as fungi and spores attached to clay granules. The granules lend themselves to handling by machinery and have worked well when applied with the seed mix. The symbiosis is vital to plant nutrient and water uptake and, when abundant in the soil, has considerable ability to suppress weed growth.

To encourage newly germinating seedlings to become mycorrhizal at the earliest possible stage, commercial inoculum will supplement native inoculum in the salvaged topsoil. Site-specific mycorrhizal inoculum is very difficult to arrange other than by storing topsoil. The inoculum will consist of a commercial strain of a single fungal species, *Glomus intraradices* unless otherwise specified by the Revegetation Ecologist. Although mixtures of fungal species are readily available from suppliers, a single high-quality species is preferred. This is because a

mixture of species may be more likely to include fungi that can compete successfully with native fungi. The finished revegation area is expected to be dominated by mycorrhizal plants with both plants and fungi of local origin, but only after inoculum from the topsoil has had one to three years to spread throughout the revegetation area.

If the Revegetation Ecologist or a qualified mycorrhizal laboratory can verify that salvaged topsoil has at least two viable native mycorrhizal propagules per gram of soil, the commercial mycorrhizal inoculum may be omitted from the seed mix.

Mycorrhizal inoculum may be mixed with seeds for imprinting but must not be allowed to heat up in the sun or in the bin to more than 90°F.

2.2.3 Seeds

The revegetation plant material to be used in areas of temporary disturbance will consist entirely of seeds, with the possible exception of some cacti as described in the section on cactus salvage. The seed mix is based on Sonoran Creosote Bush scrub. Washes and stream channels are being directed elsewhere within the Project boundaries, so no attempt will be made to plant desert wash vegetation; however certain shrubs in the seed mix (*Bebbia juncea*, *Hymenoclea salsola*) are expected to disproportionately occupy any shallow surface drainages that may form.

Seeds for revegetation of temporary disturbance areas will be of local origin as permitted by BLM regulations that may apply on the ROW. Table 2, Plant and Seed Rates, indicates the distribution method of each species. No per-acre application rates are specified for trace species, the availability of which will be unpredictable.

Table 2 Plant and Seed Rates

Scientific Name	Common Name	Bulk Pounds Per Acre
Species to be applied by land imprinter		
Ambrosia dumosa	burroweed, white bursage	0.5
Bebbia juncea var. *aspera*	sweetbush	0.2
Calycoseris wrightii	white tackstem	0.1
Camissonia boothii ssp. *desertorum*	desert suncup	0.2
Camissonia brevipes ssp. *brevipes*	golden suncup	0.2
Cryptantha angustifolia	narrow leaved cryptantha	0.1
Encelia farinosa	brittlebush, incienso	2
Ephedra sp.	ephedra	0.5
Eriogonum inflatum	desert trumpet	0.2

Table 2 Plant and Seed Rates

Scientific Name	Common Name	Bulk Pounds Per Acre
Eriogonum thomasii	Thomas eriogonum, Thomas buckwheat	0.1
Eschscholzia glyptosperma	desert poppy	0.5
Eschscholzia minutiflora	pygmy poppy, Coville's poppy	0.1
Geraea canescens	desert sunflower	0.5
Hymenoclea salsola	cheesebush	0.5
Larrea tridentata	creosote bush	1
Lupinus cf. arizonicus	Arizona lupine	0.5
Malacothrix glabrata	desert dandelion	0.5
Phacelia crenulata var. *minutiflora*	cleftleaf wild heliotrope	0.2
Plantago ovata	desert Indianwheat, woolly plantain	3
Rafinesquia neomexicana	desert chicory	0.3
Senecio mohavensis	Mojave ragwort, Mohave groundsel	0.5
Senna armata	spiny senna, desert senna	0.5
Sphaeralcea ambigua	desert globemallow, apricot mallow	0.5
Species to be applied by spot seeding		
Allionia incarnata	trailing allionia, windmills	N/A
Brandegea bigelovii	desert starvine	N/A
Chaenactis stevioides	desert pincushion	N/A
Chamaesyce polycarpa	smallseed sandmat	N/A
Chorizanthe brevicornu	brittle spineflower	N/A
Chorizanthe rigida	spiny-herb	N/A
Cryptantha maritime	Guadalupe cryptantha	N/A
Dalea mollis	silky dalea, hairy prairie clover	N/A
Ditaxis neomexicana	New Mexico ditaxis	N/A
Encelia frutescens	button brittlebush	N/A
Eremalche rotundifolia	desert five-spot	N/A
Erodium texanum	Texas storksbill, desert heron's bill	N/A
Fouquieria splendens ssp. *splendens*	ocotillo	N/A
Hibiscus denudatus	paleface	N/A
Hyptis emoryi	desert-lavender	N/A

Table 2 Plant and Seed Rates

Scientific Name	Common Name	Bulk Pounds Per Acre
Krameria grayi	white rhatany	N/A
Langloisia setosissima ssp. *setosissima*	bristly langloisia	N/A
Linanthus jonesii	Jones' linanthus	N/A
Loeseliastrum schottii	Schott's calico	N/A
Lycium andersonii	Anderson's desert thorn	N/A
Marina parryi	Parry's false prairie clover	N/A
Mentzelia cf. albicaulis	small flowered blazingstar	N/A
Mentzelia involucrata	whitebract blazingstar	N/A
Mohavea confertiflora	ghost flower	N/A
Monoptilon bellioides	Mojave desertstar	N/A
Nama demissum var. *demissum*	purplemat	N/A
Palafoxia arida var. *arida*	Spanish needle, desert palafox	N/A
Perityle emoryi	Emory's rockdaisy	N/A
Phacelia crenulata var. *ambigua*	purplestem phacelia	N/A
Pleuraphis rigida	big galleta grass	N/A
Psorothamnus emoryi	dye bush	N/A
Stephanomeria pauciflora var. *pauciflora*	wire lettuce	N/A

2.2.4 Land Imprinting

Seeds to be used for revegetation of areas of temporary disturbance will be applied to large areas with a land imprinter, a heavy tractor-drawn roller with steel teeth that make a series of depressions in the soil while pressing seeds and mycorrhizal inoculum into firm capillary contact with the soil. This method is effective and economical and gives particularly good results in areas subject to low rainfall. The seed mixes will be sown between October 15 and January 1.

Seed dispensed from land imprinting will be in firm contact with the soil. The seed bin will contain no residual seed from previous uses. Wheat bran or an approved substitute will be mixed with seed to appropriate dilution ratio to prevent seed segregation. The optimum mixing ratio is usually 1:1 by volume.

The land imprinter must conform to the construction specifications given on the web site of the Imprint Foundation: (http://imprinting.org/). It will be operated at a speed not greater than 4 miles per hour.

2.2.5 Hand Seeding

Hand seeding will only be used for areas too isolated for imprinting and will also be used for spot seeding of species available only in small quantities. The seeds used on these areas will be deposited on the ground a few at a time rather than widely broadcast. Mycorrhizal inoculum or good quality topsoil, recently collected from under healthy native vegetation, will be dropped with the seeds and lightly covered or pressed into the soil. A volume of seed mix that contains only a few seeds (usually less than a quarter teaspoon of mix) will be dropped within an area small enough to press with the foot, assuring that seeds are in firm capillary contact with the soil. The seeded ground surface will be left with depressions from pressing the seeds into the soil. The depressions will collect blowing organic debris and may help concentrate moisture as happens with the depressions left by imprinting.

In spot seeding, a small quantity of seed is applied in a locally favorable spot. Favorable spots to be spot seeded are locations with some protection from sun, wind, and herbivory and possessing features that concentrate moisture from precipitation. Examples are the edges of shrub canopies and crevices between rocks, where seedlings are shaded and rainwater collects around the edges. Quantities are not specified, but Table 2 lists candidates for spot seeding. In most cases, a pound of reasonably clean bulk seeds will allow spot seeding at numerous locations throughout the revegetation area. Spot- seeded mixes will be sown between October 15 and January 1, after imprinting.

The Revegetation Ecologist will provide BLM with a list of available species and quantities that will be applied from the spot seeding list. The addition of quality topsoil will supply numerous species that may not be available for collection, and is expected to be an important additional source of plant diversity.

2.2.6 Cactus Transplantation

The three cactus species to be salvaged and transplanted (*Echinocactus polycephalus* var. *polycephalus*, *Ferocactus cylindraceus* var. *cylindraceus*, and *Mammillaria tetrancistra*) will be moved to undisturbed portions of the ROW. Three additional cactus species, *Opuntia basilaris*, *O. echinocarpa*, and *O. ramosissima*, will not be salvaged entire but will be replanted with three stem sections per plant, broken at the joints and allowed to callus in the shade for 7 to 30 days. The sections will be placed in soil to a depth equal to one third of their length.

Cacti will be transported to a suitable location with soil similar to that of the original site. Each plant will be placed in the same compass orientation that it had in the original site. The planting hole will be as large as the salvaged root system but not larger. No organic soil amendments or fertilizer will be added to the backfill.

If suitable planting sites are not available at the time of plant salvage, cacti will be temporarily planted in a trench 18 inches deep and 24 or more inches wide. The cacti will be placed upright and in their original compass orientation until the final planting site is available. Plants may be watered in the trenches when first planted or when they show signs of water stress; however they will not be regularly watered, since excess moisture will promote root rot.

2.2.7 Irrigation

No irrigation system will be installed, and no hand watering will be required. Imprinted seeds commonly survive as long as five years before sufficient rainfall brings about germination (Dixon 1993, Dixon and Carr 2004). The revegetation effort depends on seeds native to the local climate. Success of revegetation in both planted and natural areas of temporary disturbance will be limited by rainfall.

Irrigation introduces a greater weed problem than is usually found without irrigation and may introduce weed control measures that will be harmful to soil-building processes. An example of damaging weed control methods would be pulling and hoeing, which bring about soil disturbance. Soil disturbance typically disrupts formation of the mycorrhizal network (Brundrett 1991).

2.2.8 Season of Seeding

Seeding of areas designated for revegetation will take place between November 1 and January 1. If planting cannot be done by January 1, seeding will be delayed until the following year. While imprinted seeds commonly survive several years (Dixon and Carr 2004) diversity and progress toward the performance criteria will be most rapid if seeding is done within the specified seasonal limits.

Cactus transplants or stem cuttings may be installed between November 1 and February 1.

2.3 Installation Monitoring

The Revegetation Ecologist will coordinate with the Revegetation Contractor to monitor the installation effort in order to verify it is performed in accordance with the final project construction plans and specifications. The Revegetation Ecologist will attend site meetings to discuss and advise on the progress of the installation effort. Once the Revegetation Ecologist confirms in writing that installation effort is complete, the revegetation effort will begin the two-year maintenance and monitoring period required by CEC condition Bio-8.

2.4 Site Protection and Erosion Control

This plan provides no requirement for fencing of the areas to be seeded. Signage will be installed at likely entry points to inform the public and workforce of restricted site access where the area could potentially attract foot or vehicle traffic.

If erosion control measures are required, the Revegetation Contractor will be responsible for installing and maintaining the erosion control materials. Any site protection or erosion control problems will be addressed in a timely manner (within 48 hours). Erosion control materials include, but are not limited to, natural fiber matting, straw wattles, silt fence, and gravel bags.

3.0 MAINTENANCE ACTIVITIES

Once the Revegetation Ecologist and Revegetation Contractor determine that installation is complete, a two-year maintenance program will be implemented per CEC condition BIO-8 to assist the success of the revegetated areas consistent with the performance standards.

Maintenance activities include site protection and erosion control, weed control, trash and debris removal, plant care, and supplemental seeding. The Revegetation Ecologist will coordinate with the Revegetation Contractor to identify priority maintenance items during different phases of the maintenance period. Maintenance activities must remain flexible since the needs of the revegetation areas may vary over time.

Maintenance of the planted areas will consist of weed control when exotic invasions threaten to endanger the revegetation effort. Spot seeding of native species from Table 2 may be needed to fill in areas that are not developing as fast as the schedule requires.

3.1 Weed Control

Some weed growth is inevitable and a distinction will have to be made between invasive weeds that compromise success of the revegetation efforts and less conspicuous weeds that have only a minor effect.

Table 3 identifies exotic plant species that are known to occur at the Project site. Table 3, Nonnative Weed Species Including Priority for Removal, designates *Brassica tournefortii, Bromus madritensis* ssp. *rubens,* and *Tamarix* sp. as high priority for removal (California Invasive Plant Council 2006). *B. tournefortii* will be removed by cutting with a string trimmer or suitable mowing device. Height of trimming should be the lowest that does not cause severe damage to any native plants that may be present below the weeds. Hoeing and pulling are not suitable control methods because they result in soil disturbance and may set back soil development by weeks or months. Herbicide may be used by agreement with the Revegetation Ecologist but must be applied by qualified personnel in accordance with the label and only in conditions of no wind. Herbicide applicators must know the difference between the weeds and natives found at the Project site and assure that no herbicide makes contact with native plants.

Table 3 Nonnative Weed Species Including Priority for Removal

Scientific Name	Common Name	California Invasive Plant Council rating
Brassica tournefortii	Saharan mustard, Sahara mustard	High
Bromus madritensis ssp. *rubens*	red brome, foxtail chess	High
Schismus sp.	Mediterranean grass	Limited
Salsola tragus	Russian thistle, tumbleweed	Limited
Tamarix sp.	Tamarisk	High
Vulpia bromoides	brome fescue	Eval- no list

Bromus madritensis ssp. *rubens* is an annual grass that is able to fuel wildfires when in dense stands. If growth is sufficiently dense to provide continuous fuel, this species must be removed by trimming or herbicide, subject to the same caveats as *Brassica tournefortii.*

In the unlikely event that *Tamarix* sp. is found in the upland revegetation area, it will be removed as soon as noticed with foliar or basal bark herbicide application. If any *Tamarix* tree of more than 6 inches diameter should be discovered, the plant must be felled and the freshly cut surface immediately painted with undiluted herbicide, taking care not to spill herbicide anywhere other than the cut stem of the weedy tree.

The remaining exotic species on the list are best controlled by growth of a healthy ecosystem. In addition to a network of mycorrhizal fungi, a surface biological crust is a key feature of desert sites that lack these invaders. The most practical way to promote the development of a surface biological crust is to avoid weed control methods that disturb the soil surface. Available weed control methods include trimming and precisely-directed herbicide application. If soil algae are applied with a suitable source of inoculum, development of the crust may be substantially accelerated (Belnap 1993).

Salsola tragus grows quickly but cannot survive the formation of a mycorrhizal network in the soil. Trimming, mowing, and precisely-directed herbicide application are the best control methods; *S. tragus* must not be allowed to cast deep shade on smaller native plants during the growing season.

Weed control will be triggered when relative cover, density, and number of native species fall below the percentages specified by the target conditions.

3.2 Schedule

Maintenance activities are most critical soon after seeding and during growing seasons when there is moisture in the soil. Plant inspection and weed control will be conducted monthly during the three months following installation. For the remainder of year 1 and for all of year 2, maintenance activities will be conducted monthly during the winter and summer rainy seasons.

3.3 Trash Removal

As necessary, the Revegetation Contractor or EPC Contractor will remove trash and debris by hand from the revegetated areas. Trash will be properly disposed of off site. Organic debris such as branches, leaves, and dead plant material will be left in place.

3.4 Irrigation

No irrigation system is specified by this Plan and maintenance activities include no hand watering or other form of irrigation.

3.5 Plant Care and Supplemental Seeding

The Revegetation Contractor will maintain the health of native plants in the revegetated areas, including transplants and cuttings, seeded species, and native volunteers. Plant care will be sufficient for revegetated areas to meet the performance standards on schedule. Native plant care includes maintaining proper soil conditions, removing weed species, providing supplemental water if necessary, and addressing any significant disease or pest problems.

Conditions under which supplemental seeding will be required are given in the final subsection under 5.6, Contingency Measures.

4.0 PERFORMANCE STANDARDS

Performance standards are provided in this Plan to verify that the areas designated for revegetation are successfully reestablished. Specifically, the COC states:

"... 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."

Note that the CEC condition does not state that there must be 80 percent cover or 60% cover. Part A says that 80% (four out of five) of whatever species are present must be native. "Relative cover" in Part B refers to a percentage of all plants present, not a measure of the amount of ground covered (Bonham 1989). This Plan assumes the requirement to mean that 80 percent of

the species and 60 percent of cover and density (number of plants per unit area) must be plants that naturally occur in desert scrub habitats. Any species that are not native will be volunteer weedy species and will be controlled per the methods given for weed control.

During the two-year maintenance and monitoring period, qualitative and quantitative data will be collected on revegetation areas. Photographs will be taken from permanent photo stations to track visual development of the revegetated areas. A combination of observations (including visual estimates of cover), photographs, and botanical transect data will be used to determine how the revegetated areas are progressing relative to the performance standards.

5.0 MONITORING ACTIVITIES

Monitoring activities will document the progress of the revegetated areas by comparing qualitative and quantitative data and by tracking and directing maintenance activities so that maintenance priorities and remedial measures are identified and implemented.

Monitoring of the revegetation areas will begin once all seeding has taken place and will continue for a period of two years per CEC conditions. The Revegetation Ecologist and the Biological Monitor will perform the monitoring tasks as described in this section, subject to approval by the CEC and BLM.

5.1 Schedule

Monitoring activities will follow the schedule given for the Revegetation Contractor. Plant inspection and weed control will be conducted monthly during the three months following installation. For the remainder of year 1 and for all of year 2, maintenance activities will be conducted monthly during the winter and summer rainy seasons.

5.2 Qualitative Monitoring

During each monitoring visit, the entire area that has been revegetated will be inspected and qualitative determinations about the success of the revegetation areas will be made. The Revegetation Ecologist will perform the qualitative assessments, which will focus on general soil conditions and overall plant health and vigor. One of the important goals of the qualitative monitoring effort is to proactively assess site conditions in order to address issues before they pose a significant problem.

5.2.1 Photo Documentation

Permanent photo points will be established during baseline monitoring and each point numbered with a unique identifier. Locations of photo points, to be placed at the southernmost end of each permanent transect, will be recorded using GIS and GPS data so each point can be easily re-located by the Revegetation Ecologist. Photo points will be documented in the monitoring reports. Photos will be taken from the southernmost end of each permanent transect, looking in

the direction of the northernmost end. Photo point photographs will be taken at the same time of year or during the same growth stage each year of the monitoring effort. The photos will be compared with the past year's data to qualitatively assess changes in the general site conditions as well as the vegetative composition, percent cover, and dominance.

Interpretation of the photo documentation will be included in the monitoring reports to record progress of the revegetation site over the course of the monitoring period.

5.3 Quantitative Monitoring

Quantitative monitoring will be performed by the Biological Monitor in coordination with the Revegetation Ecologist. Percent cover of shrub species will be assessed by the field sampling protocol of the California Native Plant Society (Sawyer and Keeler-Wolf 1995). There will be two 50-meter permanent transects per acre spread out over the revegetation areas, with location and orientation chosen randomly on the first annual sample date. If a 50-meter transect cannot fit within the boundaries of the revegetation area, it will be divided into shorter segments with the remaining length completed elsewhere on the Project. After each transect is established, a vertical line will be projected into the vegetation at 0.5-meter intervals along the transect. The absolute cover by species will be equal to the number of intercepts of each species recorded on the transect. Plant species touching the vertical line are recorded as "hits" and used to estimate the cover by species in each habitat. Plants will be categorized into mature, intermediate, and seedling stages according to height and development.

Five 1-meter-square quadrats will be randomly placed along each of the line transects. Quadrat locations will be recorded and the same locations will be used for both annual performance surveys. Within quadrats the number of plants of each species will be determined and averaged to report plant density and to calculate the fraction of density (number of individual plants) that are native.

A permanent photo point will be established at the southernmost end of each permanent transect, with photos taken in the direction of the northernmost end. At each annual sampling date one photograph will be taken at each permanent transect.

Plant species encountered within the revegetation area but not on a transect will be recorded and added to the plant species list for the annual survey. The number of species listed will be reported as "species richness," and used to calculate percentage of plant species that are native.

Sampling will take place in mid-Spring during peak wildflower season. Most years this will be in mid-April.

5.4 Reporting Plan

5.4.1 Annual Monitoring Reports

Monitoring Reports will be provided to the CPM and BLM on an annual basis. The annual monitoring reports will present all monitoring data, assess the implications of that data, and make recommendations for remedial actions, if necessary.

The following information will be included, at a minimum, in each Monitoring Report:

- Native plant cover data,
- Native relative cover and density data,
- General overview of the revegetation areas,
- Status of the revegetation site relative to the performance standards,
- Recommendations for remedial measures, if necessary, and
- Photo point documentation.

Annual reports will be submitted to the CPM and BLM no later than June 30 for the year's monitoring effort. Annual reports will include a summary of the maintenance and monitoring efforts since the previous report and will include recommendations for remedial measures and any additional actions taken by the Revegetation Contractor over the course of the year.

5.5 Completion of Revegetation Activities

Once final performance standards have been met, a notification will be included with the year 2 Monitoring Report that the monitoring period has been completed. No further actions will be required as long as the performance standards have been met by the end of year 2. A site visit to confirm completion of the revegetation effort will be conducted with PVSI, the CPM, and BLM prior to final confirmation of completion. If the first two years after seeding are particularly dry years the monitoring may have to be extended to achieve the CEC performance standard.

5.6 Contingency Measures

In the event that revegetated areas do not meet the performance standards as outlined in this Plan by the end of year 2, measures will be implemented to achieve success of the revegetated areas. If the two years are nearly or completely devoid of rainfall the only available measure will be to await sufficient rainfall. If there has been enough rainfall to generate a crop of weeds, the contingency measures will include eradication of exotic vegetation and re-seeding. Any concentrations of weeds will be controlled by methods detailed in the Maintenance section of this Plan. Those areas will be re-seeded with the original imprinting seed mix. If the areas still show the imprinting pattern and organic debris has collected in the depressions, the expected conditions within the first two years, seeds will be broadcast over the substandard areas. If the imprints are no longer evident the area will be re-imprinted. Imprinting may be done over small

native shrubs, which usually survive a second pass of the imprinter. Hand seeding may be substituted in areas too small or inaccessible for the land imprinter.

Reseeding will be performed as necessary during the appropriate period as determined by the Revegetation Ecologist in consultation with the CEC and BLM, to help achieve the performance standards. Annual performance monitoring and reporting will be continued until the standards have been met.

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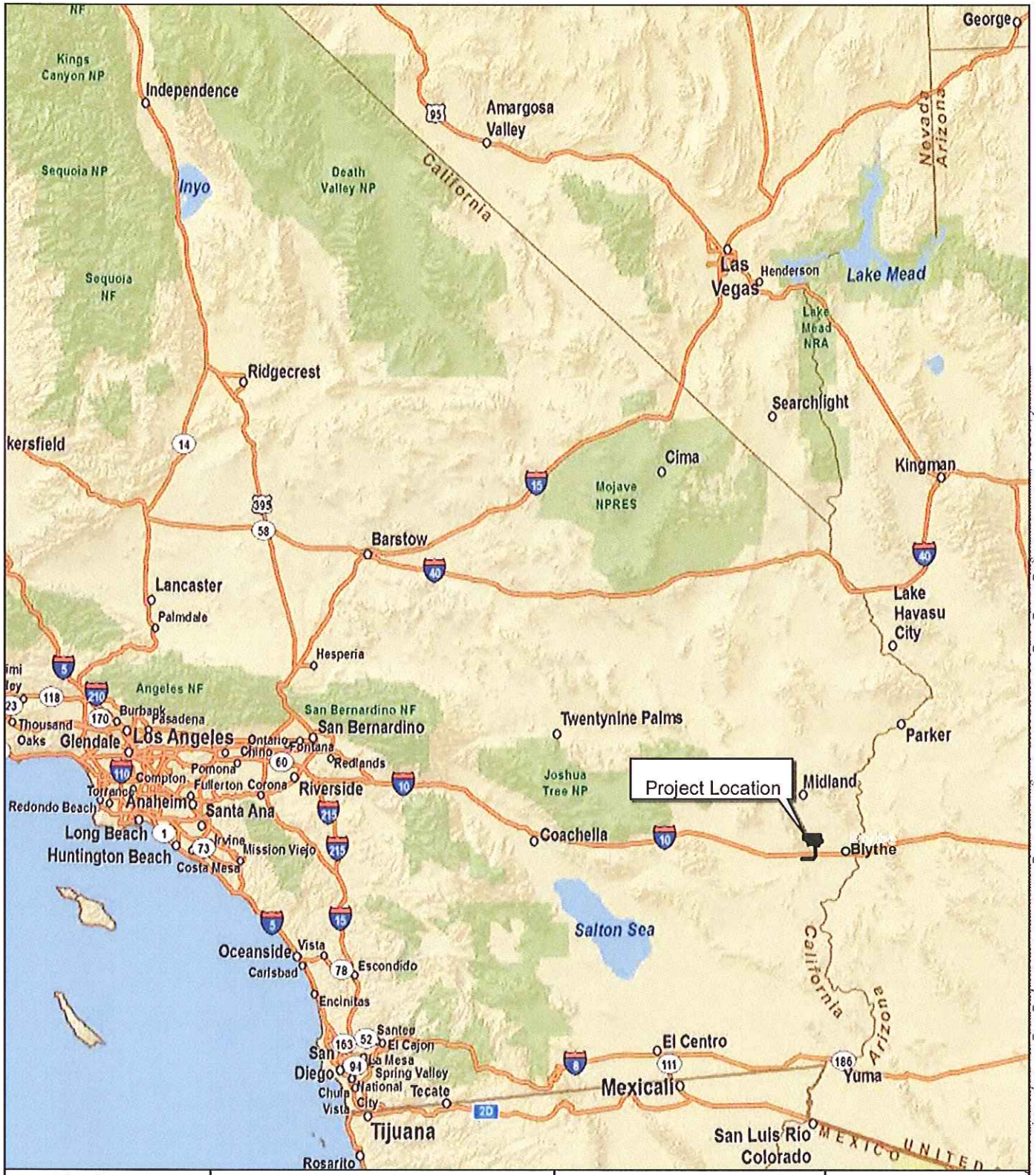
FIGURES



Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project
Revegetation Plan

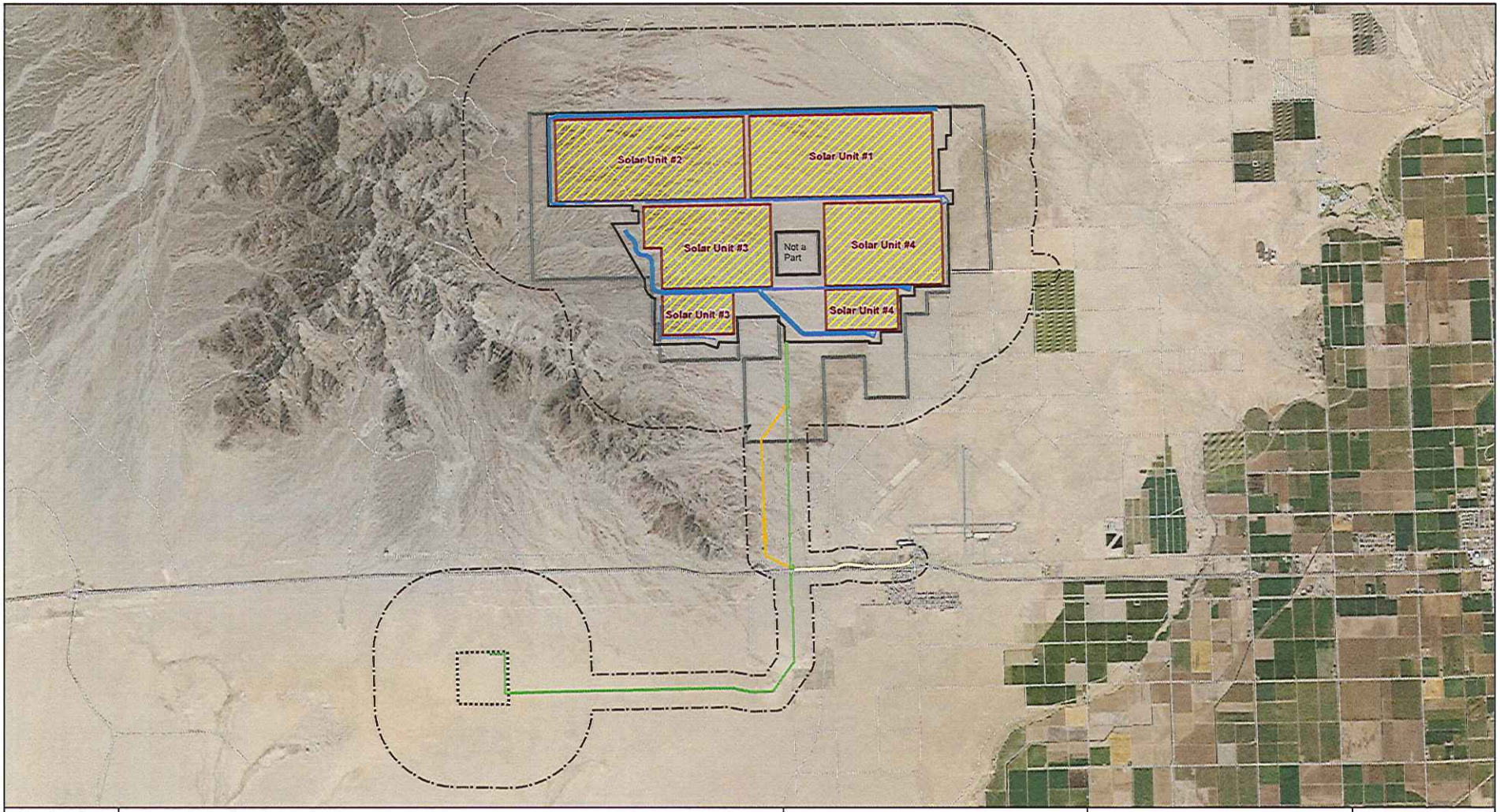
Figure 1
Regional Map

Source: ESRI; AECOM 2009

Solar Millennium

AECOM

Date: August 2010



Map Location

Legend

- Solar Units
- Substation Survey Area
- ROW
- Rerouted Drainage
- Biological Resource Survey Area (BRSA)
- Facility Footprint
- Utilities Corridor
- Gen-Tie Line
- Temporary Construction Power
- Black Rock Road Improvements

0 3,000 6,000 12,000 Feet

1 inch = 6,000 feet

Source: NAIP 2005; AECOM 2010

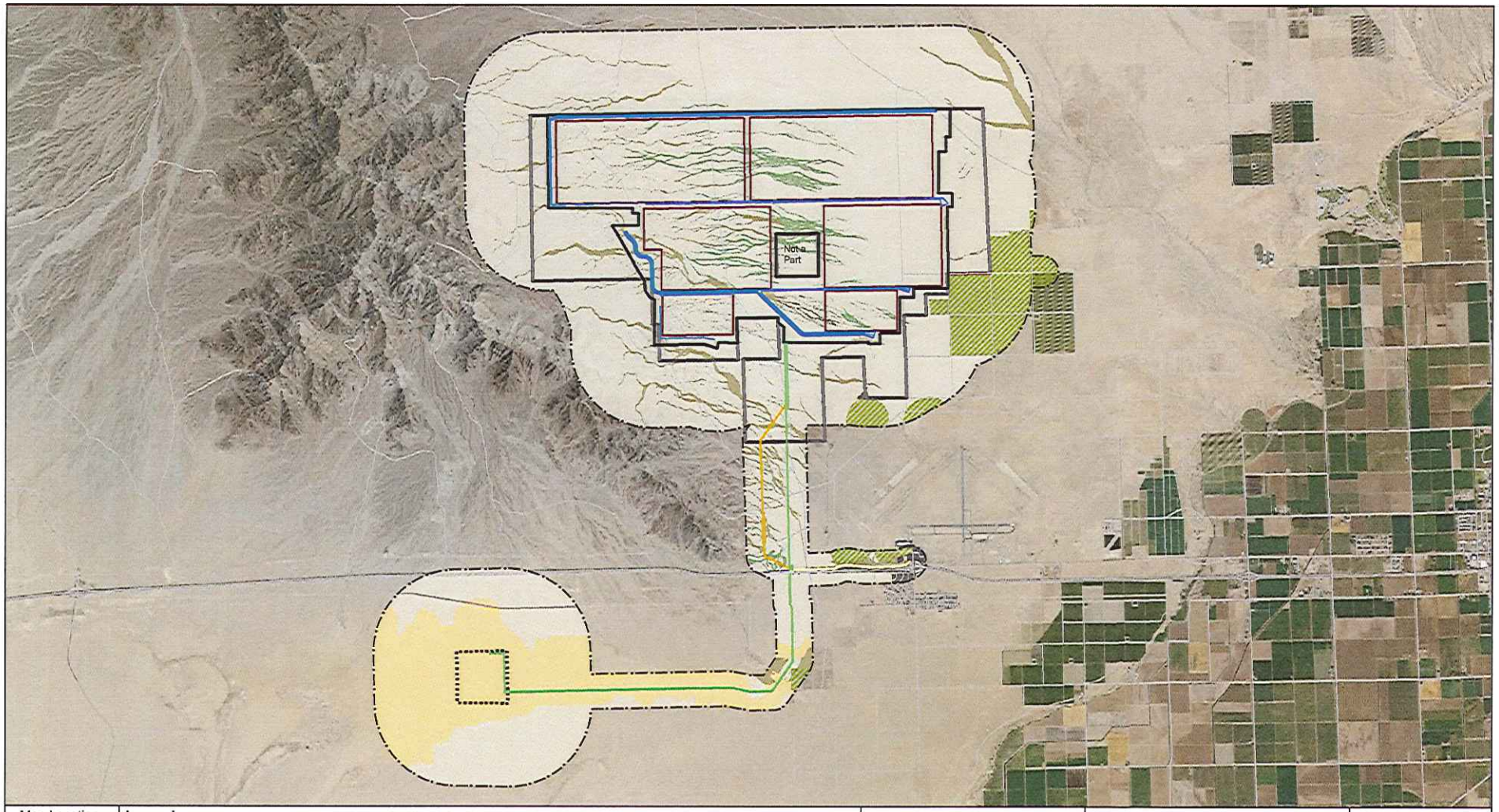
Blythe Solar Power Project
Revegetation Plan

Figure 2
Proposed Project Elements and Project Area

Solar Millennium

AECOM

Date: August 2010



Map Location

Legend

- Rerouted Drainage
- Solar Units
- Substation Survey Area
- ROW
- Biological Resource Survey Area (BRSA)
- Facility
- Utilities Corridor
- Gen-Tie Line
- Temporary Construction Power
- Black Rock Road Improvements

Riparian

- Creosote Bush - Big Galleta Association
- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

Upland

- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

Other

- Agriculture (Active and Fallow)
- Disturbed
- Developed

0 3,000 6,000 12,000 Feet

1 inch = 6,000 feet

Source: NAIP 2005; AECOM 2010

Blythe Solar Power Project Revegetation Plan

Figure 3
Proposed Project Elements and Vegetation Communities

Solar Millennium

AECOM

Date: August 2010

APPENDIX D

DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN

BLYTHE SOLAR POWER PROJECT
DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

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September 2010

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B Recommended Specifications for Permanent Desert Tortoise Exclusion Fence

C-1 USFWS Field Survey Protocol for Any Non-Federal Action That May Occur within the Range of the Desert Tortoise (1992)

C-2 USFWS Preparing for Any Action That May Occur within the Range of Mojave Desert Tortoise (2009)

D Guidelines for Handling Desert Tortoise during Construction Projects

1.0 INTRODUCTION

Palo Verde Solar I, LLC (PVSI) will construct, own, and operate the Blythe Solar Power Project (BSPP or Project). Project activities have the potential to both directly and indirectly adversely affect the desert tortoise (*Gopherus agassizii* or DT), a State-listed (California Department of Fish and Game [CDFG]) and federally listed (US Fish and Wildlife Service [USFWS]) threatened species. Installation of DT exclusion fencing and Project site grading will preclude post construction use of habitat by this species and will affect local movement for the DT. Although DT is not a migratory species, opportunities for local movements within tortoises' home ranges and juvenile dispersal are important for maintaining viable populations. Desert tortoise home ranges are small (25 to 200 acres). Behavioral avoidance by DT of human-made structures and associated edges can also decrease movement. In addition, the BSPP may indirectly affect movement because of DT avoidance of artificial light and increased noise. DT also may change daily activities in response to human presence. Other indirect impacts to DT will occur from increased common raven (*Corvus corax*) presence associated with the construction of new elevated perching and nesting sites (e.g., new transmission line structures, perimeter fencing).

"Incidental take" permitting under the Federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA) has been initiated. The state permit coverage has been provided through the California Energy Commission (CEC) license process, with the permit issued on September 15, 2010.

1.1 Purpose of the Plan

The purpose of this Plan is to identify measures that will be implemented for the maintenance, monitoring, reporting, and management of the tortoises and the relocation/translocation land, including measures to minimize the potential for repeated translocations. As required by CEC Condition of Certification (COC) BIO-10, this Desert Tortoise Relocation/Translocation Plan (Plan) is consistent with resource agency-approved guidelines and outlines the methods that will be used to transport tortoises out of harm's way prior to the onset of phased construction activities by either simply removing DT a short distance to another part of its home range (relocation), or moving DT outside its home range to designated off-site areas (translocation).

This Plan includes a Project background, DT survey results, relocation/translocation methods, reporting requirements, and contingency planning. This Plan incorporates the standards set forth by CDFG and USFWS for the translocation of DTs. This Plan also meets the requirements of the translocation guidelines specified in Appendix B of the 1994 desert tortoise recovery plan (USFWS 1994). In addition, this Plan's principal resource for protocols and guidelines is the USFWS website http://www.fws.gov/ventura/speciesinfo/protocols_guidelines, which provides the Desert Tortoise Field Manual (USFWS 2009) containing the following information:

- Pre-project Survey Protocol (for the 2010 field season) and updated Clearance Survey Guidelines,
- Handling Guidelines
- Exclusion Fence Specifications
- Qualifications and Requirements for Authorized Biologists
- Desert Tortoise Authorized Biologist Request Form

These resource issues are individually referenced further in this document, as applicable.

In addition to coordination with USFWS and CDFG, this Plan has been closely coordinated with the Bureau of Land management (BLM). Once approved, this Plan would be included as part of the overall action by USFWS for issuance of a Biological Opinion (BO).

The objectives of these relocation/translocation efforts outlined in the Plan are to:

- Successfully relocate at-risk tortoises to suitable habitat located adjacent to the Project site,
- If relocation is not feasible, successfully translocate at-risk tortoises from the Project site to selected translocation site(s),
- Minimize impacts of relocation to resident DTs,
- Minimize the impacts of translocation on recipient tortoise populations, and
- Collect monitoring data to enhance understanding of translocation as a viable conservation technique.

1.2 Project Background

The BSPP site is located in the Southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate 10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 9,400-acre right-of-way (ROW) owned by the Federal government and managed by BLM, pursuant to a ROW grant issued to PVSI from BLM and the solar thermal electric power plant certification to be issued by the CEC.

The BSPP is a nominal 1,000-MW commercial solar thermal power-generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation), will be 7,025 acres.

The Project will have a nominal output of 1,000 MW, consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction

scheduled to begin in late 2010 on the first unit. That unit will come on line in mid-2013 and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system, emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). In addition, the plant site will consist of two Land Treatment Units (12-acre and 4-acre) to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler. Natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located 1,800 feet south of the I-10 freeway. Water for the Project will be supplied from onsite wells.

The BSPP will require a new double-circuit 230-kilovolt (kV) transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the plant site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation that will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the BSPP plant site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the BSPP plant site will be secured with chain-link metal-fabric security fencing and controlled access gates.

Once the Project is completed and the site is developed, the site will be devoid of vegetation and no longer provide suitable habitat for DT.

1.3 Project Phasing

Project construction will occur in phases that generally follow development of the solar units, with the exception of Phase 1a. Phase 1a has been defined to facilitate development in fall of 2010 through the first half of 2011.

The first phase of the Project (Phase 1a) will occur in areas that are considered biologically of very low risk to DT, characterized by inactive habitat with no detections of live DT and no recent sign (all sign is class 4 or 5). Phase 1a will consist of two types of construction areas: (1) linear facilities, including the access road, temporary construction power line, well area, and communication lines; and, (2) nonlinear facilities to include a staging/laydown area and a portion of the Unit 1 solar block area. A conceptual drawing showing potential limits of the Phase 1a area for the BSPP is shown in association with DT data in Figure 2. This drawing is a conceptual presentation of the anticipated extent of Phase 1a and is not a final delineation of construction areas. The total disturbance area proposed for Phase 1a nonlinear features is less than 10 percent of the total Project Disturbance Area for BSPP and constitutes those critical Project areas that need to be constructed in 2010 and early 2011. Phase 1a activities are summarized below for both linear and nonlinear features.

Linear Features

Linear features can be cleared during any season after Project approval for all sites. Linear features included as part of Phase 1a include the access road (including portion of Black Rock Road), utilities corridor, the temporary construction power line, and the well area alongside the temporary construction power line. Other linear features, including DT exclusion fencing around plant site areas, may also be cleared and constructed during any season.

Nonlinear Features

Phase 1a nonlinear features include the area around shared facilities and a portion of the Unit 1 solar field. These areas are located in predominantly low-quality DT habitat and are considered unoccupied with a very low potential for finding DT. Since construction activities are planned to start in November 2010, the clearance surveys for the nonlinear areas will occur outside of the active season (late March through May; September through October). However, clearance surveys will be conducted in accordance with standard clearance protocol methodologies. In the unlikely event that a DT is detected during clearance surveys conducted outside the active season (Phase 1a), a 2.47-acre (1-hectare) buffer will be established around the DT and monitoring will be implemented until the active season when the DT can be safely relocated/translocated. The details on this method are presented in Section 5.0 of this relocation/translocation plan.

The Phase 1a nonlinear construction sequence is scheduled to occur outside of the active season for DT defined by the USFWS to meet the required construction timelines. For Phase 1a nonlinear areas, deviations from the limitations on DT clearance surveys in nonlinear areas as defined by USFWS have been requested and accepted by USFWS, the CDFG, and BLM. Phase 1a nonlinear areas have been defined to avoid and minimize effects to DT. Phase 1a construction activities are planned and timed so that the critical nodes for the construction of the site are completed first. Construction is scheduled to begin in November, one month after the active season. To continue future construction activities, both a water supply and the access road are needed and will be constructed early in the Phase 1a schedule. The construction power line will also be constructed to provide power to the site. The shared facilities area will be cleared for laydown of equipment and materials, and construction of the assembly hall for the solar facilities.

The remaining phases of the Project will be refined as the Project progresses but will generally include installation of fencing, clearing, grubbing and grading, and development of common facilities first, followed by the remaining power block units. Construction activities for the nonlinear features during these subsequent phases will occur within DT exclusion fenced areas that have been cleared in accordance with USFWS protocols. DT clearance surveys, including relocation/translocation, for all other Project areas that consist of nonlinear facilities will not occur outside the active season during remaining phases of the Project. Conceptual areas and acreages for the remaining forecasted phases are summarized in Table 1 below.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (Acres)
Phase 1a	Black Rock Road, access road, Shared Facilities, Construction Power, Utilities Corridor, Water Well, and Initial Portion of Unit 1	772.68
Phase 1b	Remainder of Unit 1, Unit 2, and Gen-tie	3,024
Phase 2	Unit 3, Unit 4, and Construction Area	3,227.82
	TOTAL	**7,024.5**

1.4 Definitions

- AFC Disturbance Area: This is the original Disturbance Area as reported in the Application for Certification (AFC), submitted in August 2009.
- Project Disturbance Area: The Blythe Solar Power Project (BSPP) Disturbance Area includes the area of anticipated ground disturbance associated with implementation of the

Project. This includes the entire Project footprint (area within solar plant site perimeter security fence [e.g., chain-link] including solar fields, power block, evaporation ponds, on-site transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields) and area outside the perimeter security fence (i.e., chain-link) including transmission and utility corridors, access road (including portion of Black Rock Road), rerouted drainage channels, and additional areas requiring disturbance during construction.

- Project Study Area: This includes current BSPP Disturbance Area plus additional areas surveyed during 2009 and 2010 but that ultimately will not be disturbed by BSPP.

- Project Biological Resources Survey Area (BRSA): The Project BRSA includes the Project Disturbance Area, Proposed Project Study Area, and all associated buffers.

- Action Area: The action area, or Project action area, is defined as all areas to be affected directly or indirectly by full implementation of the Federal action (i.e., the Project), and not merely the immediate area involved in the action (50 CFR Section 402.02). The action area (Figure 2) is composed of the Project Disturbance Area (i.e., area of anticipated ground disturbance associated with the Project), totaling 7,025 acres, and a buffer area (1-mile buffer of nonlinear Project elements [e.g., solar fields, power block] and a 1,000-foot buffer of linear Project elements [i.e., transmission line]). The action area is the equivalent of the BRSA for the Project.

1.5 Desert Tortoise Survey Results

Elevation at the Project site ranges from approximately 200 to 650 feet above sea level and topography at the Project site slopes gently away from the west to the southeast. The ground surface in the western portion of the site is dominated by areas of desert pavement with layers of flat-lying gravel overlying finer-grained sandy materials. East toward Black Creek Road, the surface becomes less dominated by desert pavement and becomes sandier. Several unnamed ephemeral washes occur west of the Project Disturbance Area, flowing east and southeastward from the McCoy Mountains located west of the Project site (see Figure 3).

Based on the surveys conducted for the BSPP, eight major vegetation communities and other cover types were identified within the limits of the Biological Resources Survey Area (BRSA). These include Desert Dry Wash Woodland; Unvegetated Ephemeral Dry Wash; Sonoran Creosote Bush Scrub; Stabilized and Partially Stabilized Desert Dunes; Creosote Bush – Big Galleta Grass; Agricultural Land; Developed Areas; and Disturbed Habitat. Sonoran Creosote Bush Scrub is the dominant vegetation type outside of the Project Disturbance Area (see Figure 3).

Three DT were observed in the action area during Project surveys in 2009: one located in the southwest corner of the Project Disturbance Area (adult male) and two along the west side of action area (Project Disturbance Area and associated buffers) within the buffer (Figure 4). No active burrow was noted to be associated with the DT detected in the Project Disturbance Area. The two DT observed in the buffer were each observed in association with caliche burrows, comprising two occupied burrow records (Figure 4).

During spring 2010 surveys, three adult DT were encountered during surveys of the Project BRSA, but outside the BSPP Project Disturbance Area. A single adult male DT observed within the southwest buffer of the Project on March 19, 2010, was seen at the entrance to a DT burrow. This individual was seen again on March 20, 2010, traversing the desert pavement. On March 14, 2010, an adult DT was observed at the entrance of a DT burrow about 0.75 mile west of the Project study area during buffer zone surveys. On May 14, 2010, a single adult male DT was observed by the burrowing owl survey crew inside a DT burrow 300 feet to the west of the Project utility corridor.

Numerous observations of DT sign were recorded in the action area during surveys conducted in 2009 and 2010. Sign indicating recent use by DT was primarily concentrated in the western portions of the action area (Figure 4). A total of 120 burrows were detected in the action area, of which 15 were active (showing sign of recent use) and four were occupied (see above). All 15 active burrows were detected on the west side of the action area, 5 of which were located in the Project Disturbance Area on the west side (Figure 4). Additionally, 172 pallets or shallow depressions under low shrubs were detected in the action area, 12 of which were active (Class 1 or 2): six in the buffer and six in the Project Disturbance Area. All 12 active pallets were observed on the west side of the action area. Remaining sign observed in the action area included 55 observations of scat (13 observations were Class 1 or 2 and occurred on the west side of the action area; nine of these occurred in the Project Disturbance Area), 42 carcasses, and 449 observations of bone fragments (many of which may have been washed down drainages from the west side of the action area). However, this is unlikely the case for the entire BSPP action area because of the numerous observations of recent DT scat and active burrows, particularly on the west side of the Project Disturbance Area and buffer, suggesting that more DT use this area than were observed.

The BSPP would impact a total of 6,958 acres of suitable habitat for DT. Habitat occurring on the east side and south of I-10 was characterized as low quality for DT (2,968 acres), and habitat on the west side was characterized as moderate quality for DT (3,990 acres). The density of DT observed within the BSPP site is low.

Habitat quality for DT improves closer to the mountain areas or near large drainages (which are also usually associated with the mountainous areas). The dry desert wash woodlands and the drainages that flow west from the mountains onto the western areas of the BRSA provide areas

with higher forage productivity for DT as compared to the eastern portion of the BRSA. The eastern portion of the BRSA is generally drier and annual cover dries up earlier in the season than in the west. Habitat quality for DT within the area south of I-10 (transmission line disturbance area) is low. Habitat quality there is similar to habitat within the eastern portions of the BRSA—dry, with limited annual plants available for forage and limited shrub cover. Also, the sandy soils there may be less desirable for burrowing. The only DT sign observed south of I-10 were two Class 4 burrows and some mineralized DT bone fragments (AECOM 2009).

The BSPP is situated between, although not within the boundary, of several Northern and Eastern Colorado Desert (NECO) Plan management areas. The Chuckwalla Critical Habitat Unit is located approximately 2 miles from the BSPP. Figure 5 shows the location of the Project site relative to the NECO Plan area. The Project site is located within the Colorado Desert Recovery Unit as defined in the 1994 recovery plan for desert tortoise (USFWS 1994). A draft revision of the DT recovery plan was released in 2008, and although not final, indicated that the BSPP site will remain in the Colorado Desert Recovery Unit (USFWS 2008). The Project site does not fall within any critical habitat or Desert Wilderness Management Areas (DWMAs) as defined by the NECO Plan.

Nussear, et al., (2008) indicated that surveyors find approximately 70 percent of live tortoise in any given area. Three DT were detected within the Action Area during each survey season (2009 and 2010); however, only one DT was observed within the Project Disturbance Area (2009). Based on DT survey results and habitat quality, a conservative estimate of the number of DT that may require relocation or translocation as a result of the BSPP is 3 DT. Assuming the three DT detected in the Action Area were all within the Project Disturbance Area, a conservative estimate of DT requiring relocation/translocation would be 5. Requirements for moving fewer than 5 and more than 5 DT are included within this plan in such case as 5 or more DT require translocation.

2.0 RELOCATION/TRANSLOCATION METHODS

USFWS defines “translocation” as when a tortoise must be moved more than 1,640 feet (500 meters) [m]) to clear it from the Project site, which typically removes the tortoises out of their home range, while “relocation” requires a movement of less than 1,640 feet (500 m). Both are addressed in this Plan. While the preference would be to relocate tortoises to suitable areas adjacent to the BSPP, translocation is an option that is also discussed in this Plan given anticipated distances to recipient sites, in consideration of potential density constraints, available suitable habitat, and constraints from current and future unforeseeable changes in land use surrounding the Project site.

Relocation/translocation of tortoises may be necessary during fence construction, utilities construction, facility site clearance, rerouted wash construction, or initial grading at the Project

site. Translocation would be used to accommodate all Project site DTs that cannot be moved to safe locations within 1,640 feet (500 m) of their capture location.

The following general conditions will apply with translocation of an individual DT on the day of the collection:

- Translocations will occur during the active DT season (late March through May and September through October) except for linear facilities that can occur any time of year.
- Releases of DT will occur when temperatures range from 65 to 85 degrees Fahrenheit (°F) (18 to 30 degrees Celsius [°C]) and are not forecasted to exceed 90°F (32°C) within 3 hours of release and 95°F (35°C) within 1 week of release. Additionally, daily low temperatures should not be cooler than 50°F (10°C) during releases.
- DT will be transported to their release sites in clean, ventilated protective containers. If reused, these containers will be disinfected using 10-percent household bleach or other solution approved by USFWS and CDFG before being used for another DT.
- Within 12 hours before release, all DT to be translocated will be hydrated according to existing protocols.
- DT will be released at unoccupied, shelter sites. Shelters include unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs.
- Data fields will be standardized and provided to PVSI by USFWS during the planning process.

DT will be translocated to BLM lands located west of BSPP referred to as the McCoy Mountains Area (Figure 6). This area was included in the Action Area for the BSPP as it is within the buffer area. Therefore, there is some data regarding habitat quality and DT presence in the area. If during translocation activities, a health problem is identified in the recipient area, an alternate translocation site would be used. The alternative translocation site would be located on BLM lands in the Upper McCoy Wash or an alternate private parcel that is protected in perpetuity (Figure 7). Site considerations and options are discussed in Section 4.0.

Relocation/translocation efforts will be carefully implemented to avoid adverse health impacts to the tortoises and to minimize adverse impacts to tortoises or receiving tortoise populations. To maximize relocation/translocation success, Project construction activities must be closely coordinated with appropriate tortoise clearance surveys, handling procedures, environmental considerations such as ambient temperature, animal health screening, and relocation/translocation scheduling.

Sufficient measures will be implemented concurrent with the relocation/translocation efforts to ensure other tortoises do not enter the active construction areas. DT that utilize habitats proximal to the Project's linear utility features will also be excluded from potential impact and removed from harm's way should they approach an active construction zone. Additionally, any considered translocation site and required compensatory habitat selection designed to fulfill permit conditions will be based on maximizing translocated animal survivorship and long-term conservation planning pertinent to all aspects of the Project.

2.1 Qualifications of Authorized Handlers

USFWS (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt) assigns a single designation for biologists who can be approved to handle tortoises—"Authorized Biologist" (AB). Such biologists have demonstrated to USFWS that they possess sufficient DT knowledge and experience to handle and move tortoises appropriately. The AB is permitted to then approve specific monitors to handle tortoises, at their discretion. CDFG must also approve such biologists, including individual approvals for monitors approved by the AB. Although CEC only has designations for "Designated Biologist" and "Biological Monitor" (BM) only the biologists (AB or other appointed monitors) authorized by USFWS and CDFG can handle DT.

An AB and a BM would be appointed for overseeing relocation/translocation activities and monitoring. The primary responsibility of the BM is monitoring construction activities, such as fence installation while the AB would be the Lead Biologist responsible for directing the overall BSPP translocation/relocation program, including the clearance surveys, monitoring, and reporting. The AB would be a qualified biologist experienced with DT ecology and the principles of conservation biology and would also be permitted by USFWS to handle DT. The BM would assist the AB in other aspects of relocation/translocation program, as necessary.

2.2 Consistency with Plans and Permits

Relocation/translocation techniques to be used per this Plan would adhere to terms and conditions specified in the State (Section 2081) (through the joint CEC and CDFG action as defined in the finalized CEC COCs) and Federal (BO) Incidental Take Permit (ITP), once they are obtained.

A number of guidelines and sources of information have provided primary direction for relocation/translocation plan elements described in this document. Handling of DT would be conducted in accordance with USFWS approved protocols (DTC 1994, rev. 1999). In addition, all handling of DT will be conducted under the authorities of an ITP or BO and applicable state permits. The techniques and translocation site options recommended herein are intended to be consistent with pertinent regulatory plans developed for long-term conservation of the DT and specific permits issued for this Project. In addition, actions discussed are based upon ecological

considerations and information gleaned from previous DT translocations. This Plan has also been developed under the technical guidance of Alice Karl, PhD, a desert tortoise biologist. Off-site translocation procedures identified in this document are based on established translocation guidelines prescribed in the Desert Tortoise Recovery Plan (USFWS 1994, Attachment A) and will be modified as necessary based on project-specific USFWS recommendations, and any new applicable guidelines that may be available from agencies.

2.3 Site Fencing

To facilitate tortoise relocation/translocation and exclusion, permanent tortoise exclusion fencing will be installed around the perimeter of the entire Project. Temporary DT-proof fencing will be installed prior to clearance surveys around linear features, unless a BM is present in the immediate vicinity of construction activities, or any subset of the plant site phasing that does not correspond to permanent perimeter fencing. Following construction of DT exclusion fencing (permanent or temporary), the plant site, or portion thereof, will be cleared of DT in accordance with USFWS protocols. For portions of the power plant site that will be fenced with temporary tortoise exclusion fence to facilitate construction of the plant site in phases, the area within the DT exclusion fence would be cleared of DT and any common fences (temporary exclusion fencing that is shared between different construction phases) will not be removed before new areas added to the Project Disturbance Area have been fenced and cleared.

Prior to translocation/relocation activities, the boundary of the unit being developed will be fenced with DT exclusionary fencing. Where the boundary corresponds to the perimeter security fencing location (i.e., an 8-foot-high chain-link fence for security purposes), the permanent exclusionary fencing may be attached to the security fencing or placed outside the final perimeter security fencing location. Temporary fencing may be installed prior to clearance surveys around the initial construction startup/primary staging areas, in common areas between phases (as stated above), and potentially in portions of linear utilities. Both permanent and temporary fences involve the installation of 3-foot-wide, 1-by-2-inch mesh hardware cloth, situated at 24 inches above the ground, with 12 inches of material buried. Specifications for DT-proof fencing are provided in Attachment B and can be found at the following website: http://www.fws.gov/ventura/sppinfo/protocols/DT Exclusion-Fence 2005.pdf

For temporary exclusion fences, including areas that will not be permanently fenced such as the transmission line, rebar will be used to secure hardware cloth material every 4 to 5 feet. Fencing would be overseen by qualified biological monitors and would be monitored at least monthly, and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which surface 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. Sand and debris will be removed as necessary. Repairs will be made weekly if fence cutting by recreational vehicle users becomes a problem. All fencing will be constructed with durable materials (i.e., 11 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion.

2.4 Clearance Surveys

The following general procedures will apply for clearance surveys, depending upon whether the clearance surveys are being conducted for the linear facilities (i.e., transmission lines), installation of perimeter fence, or the plant site. A summary of DT clearance and relocation/translocation activities by phase is provided in Table 2.

Linear Facilities: DT found during clearance of linear facilities will be moved out of harm's way (within 1,000 feet) following clearance and handling procedures outlined in the USFWS guidance document (USFWS 2009) or more current guidance. If DT are found during clearance surveys of linear facilities within the Plant Site, they will be fitted with a transmitter, moved out of harm's way (within 500 m), and monitored monthly (see Section 5.0). If the DT is found in a burrow, it will be placed in a burrow (natural or artificial) out of harm's way. Any DT moved will undergo a health assessment.

Perimeter Fence: DT found during clearance surveys of the perimeter fence, or temporary DT exclusion fencing around a subset of the plant site, will be fitted with a transmitter, moved out of harm's way (within 500 m), and monitored monthly (see Section 5.0). Any DT moved will undergo a health assessment.

Power Plant Site: All DT found during clearance of the power plant site during the active season will be subjected to a health assessment. If no clinical signs of disease are detected, these animals will be assigned a unique identifier (provided by USFWS), fitted with a transmitter by qualified personnel approved by USFWS (via the BO) and State wildlife agencies, and then moved to the agreed upon translocation site. As identified earlier, all clearance and handling procedures will follow the guidelines prescribed in the USFWS Desert Tortoise Field Manual (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines) or follow a more current guidance if available.

During Phase 1a, initial construction activities that are to occur on the Project site may occur outside of the DT active season in unoccupied or inactive areas (i.e., the eastern portion of the power plant site where power block Unit No. 1 will be located. In the unlikely event that a DT is detected during clearance surveys conducted outside the active season (Phase 1a), a 2.47-acre (1-

hectare) buffer will be established around the DT and monitoring will be implemented until the active season when the DT can be safely relocated/translocated.

Table 2 Phasing Clearance and Relocation/Translocation Activities

Area of Site	Activity
Phase 1a	
Linear Features	If exclusion fencing is used: • Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • Move DT found outside harm's way, within 1,000-feet. Include a health assessment of DT moved. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows. • Move DT found outside harm's way, within 1,000-feet. • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 1,000 feet.
Linear Features in Plant Site	If exclusion fencing is used: • Stake limits of disturbance (fence lines) • Conduct fence clearance surveys • Install DT exclusionary fencing • Conduct clearance survey inside fencing • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows.

Area of Site	Activity
	• Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 500 meters.
Plant Site	• Stake limits of disturbance (fence lines) • Conduct fence clearance surveys • Install DT exclusionary fencing • Conduct clearance survey inside fencing • Any DT found shall be penned onsite where found in a 2.47-acre (1-hectare) pen. Pens must include a burrow and vegetation for cover and forage. DT must be monitored. DT will be fitted with transmitters and translocated during the following active season (spring 2011) to the McCoy Mountains Recipient Site (BLM land west of Project Site) and released pending blood draw test results and health clearance. DT will remain in the pens within Phase 1a until the medical clearance is achieved or will be moved to the offsite quarantine facility in the McCoy Mountains Translocation Area prior to release. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.
Perimeter and Plant Site Subset Exclusionary Fencing	• Stake limits of disturbance (fence lines) • Conduct fence clearance surveys • Install DT exclusionary fencing • Conduct clearance survey inside fencing • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location) • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.

Area of Site	Activity
Phase 1b	
Linear Features	If exclusion fencing is used: • Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • Move DT found outside harm's way, within 1,000-feet. Include a health assessment of DT moved. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows. • Move DT found outside harm's way, within 1,000-feet. • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 1,000 feet.
Linear Features in Plant Site	If exclusion fencing is used: • Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows. • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area

Area of Site	Activity
	whenever possible (based on location). • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 500 meters.
Plant Site	• Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • DT will be translocated to the McCoy Mountains recipient site and released pending blood draw test results and health clearance. DT will be fitted with a transmitter and left onsite until the medical clearance is achieved or will be moved to the offsite quarantine facility in the McCoy Mountains recipient site prior to release. If DT are far enough west and will be moved less than 500 m, no blood test would be required and DT would be given a health assessment, fitted with a transmitter, and moved to the McCoy Mountains recipient site upon detection. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.
Perimeter Exclusionary Fencing	• Stake limits of disturbance (fence lines) • Conduct fence clearance surveys • Install DT exclusionary fencing • Conduct clearance survey inside fencing • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.
Phase 2	
Linear Features	If exclusion fencing is used: • Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • Move DT found outside harm's way, within 1,000-feet. Include a

Area of Site	Activity
	health assessment of DT moved. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows. • Move DT found outside harm's way, within 1,000-feet. • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 1,000 feet.
Linear Features in Plant Site	If exclusion fencing is used: • Stake limits of disturbance (fence lines). • Conduct fence clearance surveys. • Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities. If exclusion fencing is not used: • Stake limits of disturbance. • Conduct initial clearance surveys, including collapsing burrows. • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM present in immediate vicinity of construction activities at all times. • If DT detected during construction activities, activities stop until the DT is moved out of harm's way, within 500 meters.
Plant Site	• Stake limits of disturbance (fence lines). • Conduct fence clearance surveys.

Area of Site	Activity
	• Install DT exclusionary fencing. • Conduct clearance survey inside fencing. • DT will be translocated to the McCoy Mountains recipient site and released pending blood draw test results and health clearance. DT will be fitted with a transmitter and left onsite until the medical clearance is achieved or will be moved to the offsite quarantine facility in the McCoy Mountains recipient site prior to release. If DT are far enough west and will be moved less than 500 m, no blood test would be required and DT would be given a health assessment, fitted with a transmitter, and moved to the McCoy Mountains recipient site upon detection. • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.
Perimeter Exclusionary Fencing	• Stake limits of disturbance (fence lines) • Conduct fence clearance surveys • Install DT exclusionary fencing • Conduct clearance survey inside fencing • Move DT found outside harm's way, within 500 meters. Include a health assessment of DT moved. Prior to moving, DT must be fitted with a transmitter. If a DT is found in a burrow, it should be released in a natural or artificial burrow within 500 meters of the location where found and outside the project disturbance area whenever possible (based on location). • Construction activities may occur with DB or BM onsite during grubbing, grading, and ground-disturbance activities.

Prior to the DT clearance surveys, the following best management practices (BMPs) will be implemented for the protection of the DT.

- For any work that requires ground disturbance with heavy equipment, the entire Project Disturbance Area will be enclosed with a DT-proof fence to keep DT in habitat adjacent to the site from entering the site during construction. For linear features, exclusionary fencing is not required if a biological monitor may be present in the immediate vicinity of construction activities.
- Fence installation will be monitored by the BM to verify that no tortoises are harmed. Following installation, the permanent fencing will be inspected monthly and during major rainfall events (i.e., those that result in runoff). Temporary fencing will be inspected

weekly and during all major rainfall events that result in sheet flow across the site, or more often, as necessary. Damage to the fencing will be repaired immediately.

- A clearance survey for any DTs that may be in the Project Disturbance Area will be conducted in areas with shrub cover. A minimum of two clearance passes will be completed after DT-proof fencing is installed and these will coincide with heightened DT activity, from late March through May and during September and October. This will maximize the probability of finding DTs. Any DT found will be moved by an AB to a location outside of the DT-proof fencing using techniques in this Plan.
- Temperature restrictions described in Section G will apply to determine when relocation or translocation will be performed so that DT can safely find refuge in potentially unfamiliar areas without the added constraints of lethal temperatures. Once the site is deemed free of DTs after two consecutive clearance passes, then heavy equipment will be allowed to enter to perform ground-disturbing activities.
- Outside the fenced, DT cleared areas, personnel will use established roadways (paved or unpaved) and also will use existing tracks whenever possible. Cross-country vehicle and equipment use outside designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of DTs, a speed limit of 25 miles per hour will be established for travel when transporting DT or when travelling within DT habitat.
- Anytime a vehicle or construction equipment is parked in unfenced DT habitat, the ground under the vehicle will be inspected for the presence of DT before the vehicle is moved. If a DT is observed, it will be left to move on its own. If it does not move within 15 minutes, the AB will be contacted to remove and relocate the DT to a safe location.

Clearance surveys will be performed per USFWS protocol guidelines (USFWS 1992). A copy of the guidelines is provided in Attachment C-1. A copy of recently released (USFWS 2009) recommendations for survey methodology to be implemented in determining presence/absence and abundance of DTs for projects occurring within the species' range on Federal and non-Federal lands is also provided in Attachment C-2. Clearance surveys will be conducted by experienced biological personnel under the supervision of the AB. Transect spacing between monitors will be appropriate for the vegetation present in the DT survey area. Tortoise sign encountered during clearance surveys will be recorded on a standardized field form and studied for its possible indication of tortoise presence. The content of the field form will be coordinated with USFWS prior to use.

Within 24 hours prior to the initiation of construction of the DT exclusion fence, a survey will be conducted using techniques providing 100-percent coverage of the areas to be disturbed and an additional transect along both sides of the fence line. The fence line survey area will be 90 feet

wide centered on the fence alignment. Where construction disturbance for fence line installation is limited to 15 feet on either side of the fence line, this fence line survey area will be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects will be no greater than 15 feet apart. DT burrows, and burrows constructed by other species that might be used by DTs, will be examined to determine occupancy. Any burrow along and inside the fence line will be collapsed after confirmation that it is not occupied by a DT, or if occupied, that the DT has been moved by the AB.

If temporary fencing is erected (around the initial construction startup/primary staging areas, and potentially in portions of linear utilities), then the hardware cloth described earlier, or other materials such as half-inch chicken wire, snow fencing, or silt fencing, may be used in designated areas to reduce encounters with tortoises on short-term construction activities. In this case, the fencing material will be attached to metal posts with a minimum of 12-gauge steel wire. The grid opening of the wire will not exceed 1 by 2 inches and the fence height will be no less than 30 inches. Posts will be not less than approximately 40 inches long. Concrete footings for metal posts will not be required.

As in the case of the permanent tortoise exclusion fence installation, within 24 hours prior to the initiation of construction of the temporary exclusion fence, a DT survey will be conducted using techniques providing 100-percent coverage. The entire fence installation activities (permanent and temporary exclusion fence) will be monitored by the BM. The AB will be available at all times to move any DTs that are within the path of the fence line work.

After the area to be cleared is fully enclosed with combined security and/or tortoise fencing, a DT clearance survey will be performed per USFWS protocol. Two complete passes with complete coverage will be conducted as described above. If no DTs are observed during the second survey, a third survey will not be conducted. Each separate survey will be walked in a perpendicular direction or offset transects to allow different angles of observation. If a DT is located on the second survey, a third survey will be conducted.

The AB will be primarily responsible for the clearance surveys and will be assisted by the BM and other qualified biologists with experience in conducting clearance surveys. Once the sites are deemed free of DTs after at least two consecutive clearance surveys then heavy equipment will be allowed to enter the construction site to perform earthwork such as clearing or cutting vegetation, grubbing, leveling, and trenching. The BM will monitor initial clearing and grading activities to find and relocate any tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, then the AB will be responsible for relocating it outside the fence or arranging translocation.

2.5 Desert Tortoise Handling

Tortoise handling and removal, and burrow excavations, including nests, will be conducted under the supervision of the AB, in accordance with USFWS approved protocols contained in the Desert Tortoise Council's "Guidelines for Handling Desert Tortoises during Construction Projects" (DTC 1994, rev. 1999). A copy of these guidelines is provided in Appendix A of this document. Burrows that could potentially host a tortoise will be excavated with hand tools per the method prescribed under these guidelines.

Only persons permitted by USFWS and CDFG through the auspices of ESA BO and CESA incidental take permit will handle DTs. Handling will be conducted using approved techniques (DTC 1994, rev. 1999) that incorporate the most recent, pertinent research data (Brown 2003).

Desert tortoises that need to be relocated from the Project Disturbance Area will be placed outside the Project Disturbance Area but within the BSPP application ROW[1] to the extent feasible. Tortoises will be placed in suitable habitat as close to the capture location as possible.

Tortoises will be placed in the deep shade of a large shrub or a known burrow for that tortoise, and monitored by the BM with oversight by the AB. Tortoises to be relocated, particularly those excavated from burrows, may be released into an unoccupied natural or artificial burrow outside the fenced site. The receiving burrow will be of the same size and orientation as the original burrow. The final determinations on placement of relocated/translocated tortoises will take place during the protocol-level surveys being conducted for the Project site and prior to handling activities. If any tortoise mortality is suspected as a result of burrow excavation, animal handling, or radio transmitter use methodology, the CEC Compliance Project Manager (CPM), USFWS, BLM, and CDFG will be notified immediately.

Within the Project site, it is unlikely that even a small tortoise will not be highly visible following initial site grubbing and grading. A DT found during Project operations therefore is most likely to have entered the site through a gate or breach in the exclusion fence. It is likely, although not impossible, that any tortoise found during Project operations will not yet have constructed a burrow and will have only recently entered the site. Any such DT will be relocated to the nearest native habitat outside the fence, as described in the previous paragraph, and monitored as identified in Section 5.0.

[1] It is generally appropriate that any tortoise removed from utility ROWs or fenced construction areas be placed 100 to 200 feet outside a known or suspected burrow for that tortoise (it is anticipated that the BMs would have found and mapped most burrows close to the ROWs). This distance would be within the home range of any tortoise found on the ROW but sufficiently far from construction activity for minimal disturbance to the tortoise from construction activities. It would also be close enough that if the desert tortoise had been placed on the wrong side of the ROW, it would not be too far for the tortoise to travel to reach its normal activity areas.

Tortoises observed on the utility corridors during inspection activities in the O&M phase will not be disturbed or handled. Any maintenance activities that require surface disturbance or heavy equipment will require the same protection measures as for construction.

2.6 Data Gathering

The AB, with assistance from qualified biologists, will maintain a record of DT encountered and relocated/translocated during Project surveys and monitoring. This information will include the following for each individual DT:

- the location (narrative, vegetation type, and maps) and dates of observations;
- burrow data;
- animal gender;
- carapace length, mass, general conditions and health; and,
- any apparent injuries and state of healing; and diagnostic markings (i.e., identification numbers).

If moved, the location from which it was captured and the location in which it was released (whether animals voided their bladders) will also be noted. UTM (Universal Transverse Mercator) coordinates from a Global Positioning System, or GPS, will be gathered of such locations. Tortoises handled will be photographed and closely examined for clinical signs of animal disease (discussed further in Subsection I) at the time of capture. Processing of tortoises found during the clearance surveys will be done in an appropriate facility to provide shade, should temperatures require such. Other options for a processing facility may be the use of temporary shade structures (e.g., E-Z Ups) or a temperature-controlled facility (e.g., a recreational vehicle).

Every effort will be made to ensure that the well-being of the DT is not compromised by either the process of attaching radio transmitters or the location and operation of the transmitters. Attachments of transmitters will be performed under the supervision of the USFWS AB. Placement and installation of radio antennae on DTs will be done in a manner that eliminates voids between the carapace and the antennae (i.e., the antennae attachment shall be flush with the carapace). Antennae may be left trailing unattached behind the tortoise.

The total mass of the instrumentation that is attached to each DT, including antenna, epoxy, etc., shall not exceed 10 percent of the animal's body mass. Radio transmitters that contain weak batteries will be removed or replaced before the batteries are likely to fail. For translocation purposes, captured tortoises may be held overnight and moved the following morning within the outlined temperature constraints.

Additional radio transmitter use direction pertinent to this Plan and tortoises is detailed below:

- Radio transmitters may temporarily (up to 48 hours) be attached to tortoises with duct tape in situations in which full processing cannot be completed to comply with temperature guidelines, or when light levels do not allow for formal and final transmitter attachment.

- Any shell damage from attachment or removal of radio transmitters will be reported in writing within 3 working days to USFWS, BLM, and CDFG.

- Where transmitters are affixed to tortoises, these animals will be monitored monthly to ensure that animals are not lost due to long-range movements beyond the area capable of being detected by telemetry equipment. If a DT has a malfunctioning transmitter it will be replaced before the animal becomes active.

- Transmitters and other equipment will be removed from all tortoises that can be located prior to the end of monitoring timeframes (see Section 5.1). Every effort will be made to locate and remove nonfunctioning transmitters and other equipment from tortoises that are handled under this Project's relocation/translocation program.

This effort will include thorough searches of each affected tortoise's home range and known shelter sites. Efforts to locate tortoises will also be documented within monitoring reports submitted to the involved regulatory agencies, along with an estimate of the number of hours spent or areas covered while searching for tortoises with nonfunctioning transmitters and other equipment (Section 5.0).

Juvenile tortoises found during preconstruction clearance surveys that are too small for transmitter attachment, i.e., less than 4.33 inches may undergo blood sampling results. If determined healthy, juvenile tortoises will be carefully relocated/transported.

2.7 Temperature Considerations

DT will be treated in a manner to verify that they do not overheat or exhibit signs of overheating, which include aggressive struggling by the DT, hot to the touch, frothing at the mouth, excessive salivation, or voiding its bladder. Care will be taken to not place the DT in a situation where they cannot maintain surface and core temperatures necessary to their well-being. DT will be kept shaded until the appropriate temperature is reached to release them. Since ground temperatures are much hotter than air temperatures DT will not be placed on unshaded ground. If needed, the upper layer of hot substrate may be removed to expose the cooler layer below and DT will be placed on this cooler layer.

In general, translocation of DTs in seasons when daily ground temperatures exceed 109.4°F (43ºC) mid-April through early October is not recommended because tortoises must find new refuges in unfamiliar areas, with the added pressure of lethal daily temperatures. Karl (1992) and Zimmerman et al. (1994) observed that 109.4°F (43°C) was the approximate surface temperature at which tortoises must go underground to escape heat. However, if tortoises will be moved to familiar areas within their home ranges, where burrows are well known, tortoises could be moved during periods when lethal temperatures are reached during the day, under certain conditions:

- If a tortoise is found under a shrub in a construction zone or during a clearance survey and the ground temperature is ≥ 109.4°F (43°C), the tortoise will be avoided until temperatures subside in the late afternoon or early evening, at which time the tortoise can be moved or will move of its own accord. As necessary, to increase safety for this tortoise or to hold it during the Project site DT clearance, a temporary pen can be erected around the tortoise and shrub. The pen will be removed later in the day when the tortoise can be safely moved. All penned or avoided tortoises must be monitored to ensure their safety.
- If a tortoise is captured in a burrow at ground temperatures ≥109.4°F (43°C) or if it is either impractical to pen it or it cannot be avoided by construction activities, then it should be held in a climate-controlled location (e.g., an onsite holding facility) and released in the early evening after temperatures fall below 109.4°F (43°C).
- During fence construction, rerouted wash construction, along the utility corridor, or on the Project site next to the exclusion fence, if a tortoise is found under a shrub at temperatures ≥109.4°F (43°C), at the AB's discretion it may be moved to another shrub or known burrow for that tortoise. During any such releases, monitoring will proceed as discussed in Section 7.0, to verify tortoise safety. (Note: Moving a tortoise at this temperature must be approved by USFWS because its protocols state that tortoises shall not be handled when air temperatures at 2 inches above the ground surface exceed 109.4°F (43°C) [http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt]. Adult tortoises held temporarily due to ambient temperatures will be released in the evening, but juvenile tortoises, which are highly subject to depredation by canids, badgers, and ravens, will be released in the early morning to minimize depredation.

2.8 Tortoise Transportation

For relocation/translocation, each tortoise will be transported via an individual, sterilized tub with a taped, sterilized lid. Containers may be reused only after being disinfected with a 10-percent bleach solution and dried. Every effort will be made while handling tortoises to release each animal within

30 minutes of its capture. Except during 1-minute periods when plastron measurements, weighing, and photographs are taken, animals will be kept in an upright position.

When live DTs are transported by vehicle, a means of cushioning the DT will be used to minimize jarring, bumping, and sliding. Tortoises will not be placed in automobile trunks, on floorboards in an unconfined manner, or in the bed of a truck over the exhaust system, or left unattended in vehicles. Transport by vehicle will involve only designated open routes, with speeds limited to 25 miles per hour.

If a tortoise voids its bladder as a result of being handled, the animal will be rehydrated. The process of rehydrating a DT will take place at the location where the animal was captured (or to be released, for translocation of tortoises) and consist of placing an individual tortoise in a tub with a clean plastic disposable liner for a minimum of 10 to 20 minutes. The amount of water placed in the lined tub will not exceed the lower jaw height of the tortoise.

Adult tortoises found healthy and clinically disease-free will also be moved to the selected relocation or translocation site. Tortoises assessed as clinically ill or diseased, as determined from procedures described in Subsection I, will be transported separately from healthy tortoises to the Desert Tortoise Conservation Center (DTCC) in Las Vegas.

DT nests identified during clearance survey burrow excavation will be moved to a microsite (e.g., shrub cover, soil type, substrate cover, etc.) as similar as possible to the locality where found (e.g., same degree of vegetative cover, plant species, soil substrate, aspect) in the selected translocation area, using standard techniques (DTC 1994, rev. 1999). Any desert tortoise nests found between November and April are unlikely to be viable (Karl and Resource Design Technology 2006) and will not be moved during clearance surveys. Desert tortoise nests translocated, if any, will be protected according to the standard techniques cited above for facilitating optimum hatching success and carefully monitored.

2.9 Animal Health Considerations

Several diseases have been documented in wild DT populations. These include an upper respiratory tract disease (URTD) commonly associated with *Mycoplasma agassizii* (Rostal and Lance 2003), as well as a similar disease complex connected to *M. testudinium* and proliferative pneumonia (Jacobson and Berry 2004); a cutaneous dyskeratosis shell disease (Christopher et al. 2003); and a herpes virus (Origgi et al. 2002).

URTD and similar complexes are likely exacerbated by stress, which can be imposed on DTs by drought, habitat degradation, poor nutrition, and/or animal density (Saethre et al. 2003). It is also likely that certain levels of stress predispose DTs to acquiring one or more of these diseases.

It is conceivable that the stress of translocation may either exacerbate existing disease or immunocompromise an animal to contract disease more easily. Other diseased animals must, however, be in the translocation area for healthy translocated tortoises to become infected.

M. agassizii transmission involves direct contact with an infected tortoise (Brown et al. 2003). Desert tortoises are believed to be contagious during periods of acute phases, when they have clinical signs (Brown et al. 2003). Such signs include a mucous nasal discharge, wheezing, conjunctivitis, and lethargy.

According to Schumacher et al. (1997) positive clinical signs statistically correlate with positive serology (i.e., exposure to *M. agassizii*). A mucous nasal discharge was the clinical sign that was the most reliable predictor (93 percent of tortoises with a mucous nasal discharge were seropositive), although it could be caused by other pathogens. Positive serology (i.e., *M. agassizii*-specific antibodies detectable by an enzyme-linked immunosorbent assay [ELISA]) is indicative that a tortoise has been exposed to *M. agassizii* (Schumacher et al. 1993).

While positive serology does not necessarily indicate an active infection by *M. agassizii*, it has generally been observed that seropositive tortoises are infected with *M. agassizii* (Wendland 2001).

As mentioned earlier, DT detected during clearance of the power plant site (or during clearance of the perimeter fence or linear features during the active season) will be subjected to a health assessment. A health assessment will include a physical inspection (i.e., notation of clinical signs of acute disease infection, body mass, and carapace measurements). These assessments will be conducted only during the DT active season.

Health assessments will be performed on all DTs encountered during the surveys at the translocation and control sites. Results from health assessments, including blood work, will be valid for 1 year from the date that the assessment was conducted. Additional health assessments of the recipient and control DTs may be required if DTs are not translocated to the recipient site within 1 year of the original assessment dates. Handling of resident and control DTs in order to perform health assessments will be done in accordance with protocols in the Desert Tortoise Field Manual. Particular attention will be paid to temperature thresholds and eliminating the spread of disease.

When the recipient site will be receiving DTs that will be moved greater than 500 m from the point of collection or there are barriers to impede natural dispersal between the project site and translocation site, health assessments of the resident DTs will be conducted and the assessments must include disease testing via blood samples. Blood samples will be collected during the active season of the DT, when the immune system is more active (April to May). The activity of the immune system generally corresponds to the active season of the DT, but DTs are unlikely to be

above ground when temperatures exceed 40°C (104°F), making them often unavailable for blood sampling during June through August. DT showing clinical signs of disease will be sent to the DTCC in Las Vegas Nevada where they will undergo further assessment, treatment, and/or necropsy. Some DT will be rehabilitated and potentially be eligible for subsequent release (advance coordination with USFWS, CDFG, Nevada Department of Wildlife and the DTCC will be conducted to facilitate prompt transport of DT). PVSI will pay a flat fee of $9,000 for each DT sent to the recovery center commensurate with the cost to provide housing, care, treatment, and other services for 5 years ($3,000 for year 1, $1,500 for 2 to 5 years). No additional funds are anticipated for DT remaining at the center after 5 years.

The AB will remove and quarantine any DT that must be translocated and that show clinical signs of disease. The AB will then contact the USFWS and CDFG within 24 hours to determine the disposition of these individuals. Relocated DTs do not require additional health assessments prior to relocation. Those that are quarantined may undergo blood sampling, and this decision will be based on consultation with agency staff. If blood sampling is done, no more than 2 cc will be collected via standardized techniques of brachial or subcarapacial venipuncture (University of Florida, Department of Pathobiology [no date]) to test for the presence of antibodies to *M. agassizii*. Nasal samples will be taken using standardized flushing techniques (Wendland 2001) to culture for *M. agassizii* and potentially other pathogens (e.g., herpes virus, *M. testudinum*, iridovirus, *Pasturella testudinis*).

Only USFWS ABs (see Section 4.A) with experience collecting blood samples from DTs and who have been previously permitted to conduct this work will be entrusted with collection of blood samples. Whole blood will be centrifuged, and both the plasma and nasal samples will be packaged on ice and sent via overnight express freight to the University of Florida Mycoplasma Research Lab for testing. Following initial blood sampling, tortoises will be fitted with transmitters and will not be moved until ELISA test results have been acquired, as described above. Verified ill tortoises will not be placed in situations where contagion can spread to healthy tortoises. Seropositive tortoises can survive in controlled environments where care is provided (Rostal and Lance 2003) and any such animals identified as part of this Plan will be placed in appropriate adoption or research facilities.

3.0 RELOCATION/TRANSLOCATION SCHEDULING

Engineers and biologists collectively determined the level of construction that is critical in late 2010 and early 2011 and areas to avoid and minimize impacts to biological resources. Resulting from this collaboration, three phases of construction are anticipated as described above. The construction schedule for ground disturbance activities will be submitted to USFWS, BLM, CEC and CDFG prior to each phase. The first phase of the Project (Phase 1a) is scheduled to occur in

fall 2010 through the first half of 2011. The Phase 1a nonlinear construction sequence will occur outside of the USFWS defined active season for DT (late March through May; September through October) to meet the required construction timelines. Construction is anticipated to begin in November, outside of the active season. Phase 1a will occur in areas that are considered of very low direct impact risk to DT, characterized by no detections of live DTs and no recent sign. The total disturbance area for Phase 1a nonlinear features is less than 10 percent of the total Project area. The remaining phases of the Project will be identified as the Project progresses but will generally include development of common facilities first, followed by the remaining power block units. Phase 1b will consist of the remaining portion of Unit 1, Unit 2, and the gen-tie. Phase 2 will be constructing all components (e.g, power block, solar fields) of Unit 3 and Unit 4. These phases will be large enough to promote efficient construction and ease of mitigation administration. Desert tortoise clearance surveys, including relocation/translocation, will closely adhere to the construction phasing and scheduling (Galati and Blek 2010).

Project permits and approvals are currently anticipated to be finalized in late 2010. Because of temperature constraints associated with translocation (optimal time for translocation is when cooler temperatures prevail), the following flexibility has been incorporated into this Plan to accommodate construction as much as possible, while providing protection to tortoises. The schedule assumes that the relevant permits (BO and State ITP coverage through CEC Certification) have been acquired prior to clearance surveys and translocation implementation. Options also assume that tortoise exclusion fencing, both temporary and permanent, will be adequately installed and monitored to verify its function.

The earliest that relocation/translocation of DT could occur is fall (September and October 2010). Otherwise, these actions will have to take place in spring of 2011. Exclusion fences will be constructed to exclude tortoises in those parts of the site that are part of the current construction phase. For linear features where exclusionary fences are not constructed, biological monitors shall be present in the immediate vicinity of construction activities. For fenced areas, a complete survey (two passes) of the fenced area will be completed during periods when tortoises are active (except Phase 1a) and after fencing is installed, to verify that no tortoises were in the area. Telemetry might be used for tortoises on the site, but outside the fencing, to monitor their safety relative to construction activities. Relocation/Translocation will occur when ambient temperatures are sufficiently low to aid in safe relocation/translocation of DT.

Any DT detected in non-linear areas during Phase 1a clearance surveys conducted outside of the active season will be left on site and enclosed inside a 2.47-acres (1-hectare) area delineated with exclusion fencing buried at the ground level and extending 2 feet above the ground surface. The DT and enclosure area will be monitored weekly by a Designated Biologist or BM (see Section 4A) to assess indirect impacts during construction activities. If the DT appears distressed, the

agencies will be consulted and adaptive management measures may be implemented upon agreement between the parties. Any DT that are found and contained will be relocated/translocated in accordance with standard procedures during the following active DT season.

4.0 RECEIVING AND CONTROL SITES

The following sections describe considerations and management actions associated with the receiving sites and control sites for relocated or translocated DT. Specific criteria identified in the *Translocation of Desert Tortoises (Mojave Population) from Project Sites: Plan Development Guidance* (USFWS 2010) has been summarized in this section. Table 3 identifies the criteria based on the number of DTs expected to be translocated and distance to be moved. It is anticipated that the number of DT to be moved for the BSPP would be less than 5.

Table 3 Desert Tortoise Relocation/Translocation Criteria

	DT < 5		**DT ≥ 5**	
	moving < 500m	**moving > 500m**	**moving < 500m**	**moving > 500m**
Translocatees: health assessment without blood test	X		X	
Translocatees: health assessment with blood test		X		X
Recipient site required	X	X	X	X
Recipient site density surveys required	X	X	X	X
Recipient desert tortoises: health assessment without blood test	X		X	
Recipient desert tortoises: health assessment with blood test		X		X
Control site required			X	X
Control desert tortoises: health assessment with blood test			X	X
Monitoring of translocatees	X	X	X	X
Monitoring of residents			X	X
Monitoring of controls			X	X

Source: USFWS 2010

4.1 Disposition Plan

If 10 or more DTs are translocated, one of the forms of quarantine will be implemented pending results of health assessment results, including blood draws. After receiving concurrence with the results of complete health assessments from the USFWS, an authorized biologist will move all DTs found during clearance surveys to pre-selected locations outside the fenced perimeter following USFWS-approved guidance. Tortoises determined to be infectious or unhealthy will not be eligible for translocation and would be removed from the Project site and sent to the DTCC.

Desert tortoises would be relocated or translocated to appropriate locations based on project phase and location where found (see Table 2 and discussions below). Translocations would only be permitted during the active season unless approved by the agencies for other times.

4.2 Considerations and Options for the Relocation Sites

As indicated earlier, DT that need to be relocated from within the Project Disturbance Area will be placed outside the project footprint. DT handling procedures that are applicable during relocation, including: temperature considerations, transportation procedures, DT health considerations, etc, are discussed in Section 2.0.

If practical, DT detected during preconstruction surveys will not be "translocated" in the biological sense of putting an animal in a location outside its home range. Instead, DT will simply be moved to another part of its home range (i.e., relocated). By moving a tortoise found near the Project site's border abutting native vegetation to a suitable location immediately adjacent to its capture site outside the Project Disturbance Area, the Project will be maintaining the tortoise within its home range, not translocating it. DT will be merely excluded from undesirable areas. For the transmission line and fence construction, as well as other linear features, tortoises will be moved a short distance from the construction zone (within 1,000 feet from linear features; within 500 meters from linear features within the plant site or exclusionary fencing associated with the plant site) , and will essentially be relocated. DT moved out of linear disturbances will not be moved more than 1,000 feet. For DT detected in the middle of the Project site or if moving DT entails more than 1,640 feet (500 m) then these individuals will be considered for translocation.

As evident from Figure 2, the majority of the BSRA outside the Project Disturbance Area consists of Sonoran Creosote bush scrub habitat, a suitable habitat to relocate tortoises, and is being considered for potential relocation of DT. The deep drainages along the west have more water because of the precipitation runoff from the McCoy Mountains. The eastern portion of the BSRA, in general, is less suitable than the western portion. However, suitable areas for relocation exist in the northeastern areas of the BSRA, with smaller drainages occurring in this area as well. DT that

must be translocated during clearance surveys will be moved to the McCoy Mountain Area on suitable BLM lands in the western BRSA (Section 4.3; Figure 6).

4.3 Considerations and Options for the Translocation Sites

DT will be translocated to the McCoy Mountains Area (Figure 6). As stated earlier, an alternate recipient site was selected in the upper McCoy Wash area (Figure 7). At this time, specific release locations have not been precisely identified. The McCoy Mountain recipient site is within the BRSA and therefore information is available on the quality of the habitat and DT sign based on transect surveys through the area. Additional surveying of the area will occur prior to implementing relocation activities, to identify potential release sites and quarantine areas within the recipient site (if needed) and to estimate existing tortoise densities and the distribution of resident tortoises. Surveys will be conducted in the fall 2010 using a method approved by the agencies and will include initial health assessments of DT detected during surveys. Subsequent health assessments, including blood draws, would occur in spring 2011 (if required). A technical memorandum will be prepared documenting the findings. The memorandum will also describe the presence or absence of potential DT predators observed during the surveys.

The proposed translocation recipient site meets the criteria from the *Translocation of Desert Tortoises (Mojave Population) from Project Sites: Plan Development Guidance* (USFWS 2010). Recipient sites were selected through site suitability analysis using mapping tools and factoring in several criteria such as:

- High habitat quality for desert (achieved by overlaying of USGS Habitat Model for Desert Tortoise, 2009);
- Presence of highly braided washes;
- Suitable elevation (less than 7000 feet);
- Close to the project site, with no barriers in between;
- Outside of BLM Wilderness lands; and,
- Proximity to open roads

The recipient site and alternative recipient site are both approximately 940 acres and will not be fenced based on the locations. Specific considerations for translocation activities at the translocation site(s) are described below.

- The selected locations of the primary and alternative translocation recipient sites within BLM administered lands was a collaborative effort between USFWS, BLM and CDFG. Health assessments will be performed of resident DT during surveys of the primary and alternative translocation recipient sites. Should resident DT show symptoms of disease at

the primary site and no symptoms at the alternative site, then DT in need of translocation will be moved to the alternative site in the Upper McCoy Wash. Should DT at both sites show symptoms of disease, then the agencies will be consulted on selection of another suitable translocation recipient site.

- Releases will occur when temperatures range from 18-30°C (65-85°F) and are not forecasted to exceed 32°C (90°F) within 3 hours of release or 35° (95°F) within 1 week of release. Additionally, forecasted daily low temperatures will not be cooler than 10° C (50°F) for one week post-release. Temperature thresholds for translocation differ from those for handling resident and control DTs because translocated DTs spend more time aboveground subsequent to release as they habituate to unfamiliar surroundings, increasing their susceptibility to stress factors such as temperature extremes.

- Release points for DTs will be pre-selected during visits to the translocation site (configuration of release points is project-specific) and will be at least 2.5 km from any documented seropositive or clinically ill (showing outward signs of disease) resident DTs.

- DTs will be transported to their release sites in clean, ventilated protective containers. If re-used, these containers must be disinfected using 10 percent household bleach or other solution approved by USFWS and the State wildlife agency before being used for another DT.

- Within 12 hours before release, all DTs to be translocated will be hydrated according to existing protocols.

- DTs will be released at unoccupied shelter sites. Shelters include unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs.

- To minimize potentially adverse genetic effects and to provide suitable habitat for translocated individuals, the translocation site(s) will be located within the same or adjacent hydrologic unit, below 4,200 feet. The translocation site(s) will be composed of DT habitat that resembles the habitat on the Project site. Analysis of the habitat must consider precipitation, soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope.

Typically, access to 100 acres or more may be preferable in providing an optimum home range habitat base for one male tortoise and perhaps a secondary female or male tortoise. A smaller acreage base, however, may provide adequate habitat for a small number of translocated tortoises, especially if these lands contain high-quality habitat and are situated adjacent to other suitable habitat.

4.4 Site Considerations and Options for the Control Site

Potential control sites will be similar in habitat type/quality, DT population size/structure, and disease status as the translocation sites. Control sites will not have been previously used as a recipient site for other projects and will be a minimum distance of 10 km from the project site if the translocation site is unfenced or no substantial anthropogenic or natural barrier exists to prevent the interaction of control, resident, and translocated DTs.

If 5 or more DT must be translocated, a control site will be included in the monitoring program. The control site is proposed to be located in bajada areas on BLM lands within the Upper McCoy Wash (Figure 7). The control site is approximately 940 acres. The control site will be subject to surveys using the same methods applied to the recipient site. The results will be included in a Technical Memorandum. Health assessments of DT on the control site will be conducted in spring 2011, prior to translocation activities.

4.5 Translocation Site Management

Private lands acquired for translocation purposes will be managed over the long term for the explicit purpose of tortoise and other special-status species survival and benefit, per a site-specific management plan to be approved by the applicable agency (BLM and/or CDFG). An appropriate monetary endowment for translocation site management will also be secured to ensure management plan components are implemented. A property title transfer to CDFG may also be required where private lands are acquired for translocation purposes.

Approval of this plan provides approval of the BLM lands proposed for translocation recipient and control sites. Any further requirements for use of BLM lands would be handled independently by the agencies (BLM, USFWS, and CDFG).

Site-specific National Environmental Policy Act documentation will likely be required for any considered translocation action involving public lands. BLM's multiple-use mandate will be applicable and potential translocation site management needs will need to be considered and implemented in this context.

4.6 Translocation and Control Site Preparation

A site characterization should be completed to identify an appropriate translocation site. A survey will identify tortoise presence and distribution on site and in the immediate area; habitat will be mapped and fully described. Fencing needs and other potential anthropogenic impact considerations should also be assessed at this time.

An estimate of DT densities at agency approved recipient and control sites will be determined. Surveys will be conducted according to the most recent USFWS pre-project survey protocol, or a survey protocol approved by the agencies, and include data on carcasses observed during the surveys. Surveys will be conducted during the DT's most active periods (*i.e.*, typically late March through May or September through October when air temperatures are below 40°C [104°F], which will be verified in the field).

Projected density after translocation at the recipient sites (residents plus translocated juvenile, subadult, and adult individuals) will not exceed 130 percent of the mean density detected in the respective DT recovery unit. In some circumstances it may be most appropriate to use site-specific density information, thus close coordination with Federal and State wildlife and land management agencies is necessary. The USFWS will be contacted for the most current data on DT densities within each recovery unit.

At least two artificially created burrows (created using a gas-powered auger) or enhanced burrows of approximately 4 to 6 feet in length should be prepared at the selected translocation site for each DT to be moved, prior to animal relocation. Concurrent with tortoise capture at the Project site, surface soil and scat from each individual tortoise's capture burrow should be placed in the artificial burrow to which a tortoise will be introduced, to assist with acclimation.

Juvenile tortoises are more subject to depredation than are adults and should be provided with extended protection from predators if any are moved as part of the Project. Optimal protection can be facilitated through installation of a predator-proof enclosure.

The size of the enclosure will depend on the number of tortoises found but could start at 20 feet in diameter and be extended to approximately 50 feet if more than three juvenile tortoises are contained. After these juvenile tortoises, if any, have become familiar with the site's odors and landmarks for 2 weeks, escape holes in the lower edge of the enclosure can be constructed (Morafka et al. 1997). Following juvenile tortoise departure, all enclosure material will be removed from the translocation site.

Closely monitoring tortoise movements immediately after translocation may facilitate the identification of potential problems at the selected site. Any management issues identified through this initial monitoring should be addressed in a timely fashion.

5.0 MONITORING AND REPORTING

Monitoring and reporting requirements are identified in the USFWS guidance and summarized in this section. For monitoring purposes, if 5 or more DTs will be translocated, an equal number of DTs within the recipient and control sites will be assigned a unique identifier provided by USFWS and be fitted with a radio transmitter by qualified personnel. If fewer than 5 DT will be translocated less than 500 m, then only the translocated DTs will be monitored. If 5 or more DT are translocated, an equivalent number of DT at the recipient and control sites will also be monitored.

Two options are available for DT monitoring per the 2010 USFWS guidelines, Ex situ or In situ monitoring. The BSPP will implement in situ monitoring where possible, but may use ex situ monitoring where timing does not permit the in situ option.

In situ monitoring consists of monitoring DTs on the project site via telemetry. As protocol clearance surveys are conducted, health assessments, including blood draws, assignment of unique identifiers, and affixing transmitters will be performed on each tortoise as it is located. Telemetry monitoring would then be conducted a minimum of once per month with more frequent monitoring under certain circumstances (Section 5.1). Data to be collected will be standardized for all projects.

Ex situ monitoring requires construction of individual quarantine facilities off-site. Tortoises located during protocol clearance surveys (see Desert Tortoise Field Manual) would be transferred to an off-site quarantine facility. For the BSPP, the quarantine facility would be located within the McCoy Mountains translocation recipient site. The quarantine facility will consist of 20-meter square pens, with one pen per DT that is translocated during the same season. Pens will be constructed with 6-foot fencing to exclude canine predators with DT exclusion fencing along the base. Pens will be separated and will not share common fences. Each pen will include vegetation that provides shade cover and at least one burrow (natural or artificial). Upon receipt of blood test draws, if DT do not test seropositive, the fencing would removed to “release” the DT.

In addition to monitoring the DTs, transects at representative sampling locations within the translocation site will be repeated annually to capture potential changes in habitat characteristics. At a minimum, the annual species component will be monitored to identify changes in forage diversity and availability. The USFWS will provide additional guidance on appropriate methods of vegetation monitoring and sampling during the planning process.

5.1 Frequency of Monitoring

Monitoring will take place over a 5 year period and refers to pinpointing the exact location of the DT and attempting to view it without disturbance unless entrapment or a scheduled body condition assessment requires handling.

Desert tortoises fitted with transmitters and moved out of harm's way during clearance of linear features within the plant site or exclusionary fence clearances associated with the plant site construction should be monitored as follows:

- Once a day during first week,
- A minimum of once a week during the active season (approximately March through early November) for the 5 year monitoring period,
- A minimum of once every other week from November to February for the 5-year monitoring period.

Translocated DT (with transmitters) will be monitored as follows:

- Once within 24 hours of release,
- A minimum of twice weekly for the first 2 weeks,
- A minimum of once a week during the active season (approximately March through early November) for the 5 year monitoring period,
- A minimum of once every other week from November to February for the 5-year monitoring period.

Annual assessments of condition (i.e., measurements of body mass and carapace, health assessment, calculation of body condition) will be conducted both prior to and subsequent to over-wintering. Any health problems observed (e.g., rapid declines in body condition, perceived outbreaks of disease, mortality events) will be reported to USFWS and CDFG. Mortalities will be investigated as thoroughly as possible. Information on health concerns or mortalities, including DT unique identifier, location, and cause of death (if determined), will be provided to USFWS and CDFG, as well as the CEC CPM and BLM upon discovery (verbally within 48 hours or via email within 5 business days). Fresh carcasses will be submitted for necropsy (details to be provided during Project planning and coordination with USFWS) and the cost covered by PVSI. In addition to monitoring the DT, USFWS recommends that vegetation transects at representative sampling locations within the site be repeated annually to capture potential changes in habitat characteristics. At a minimum, monitoring of the annual species component is recommended to identify changes in forage availability. The Project team will consult with USFWS to obtain additional guidance on

appropriate methods of vegetation monitoring and sampling. Upon conclusion of the 5-year monitoring period, health assessments will be performed on all remaining monitored DT and transmitters will remain attached until USFWS and CDFG have determined whether further action is warranted at the site.

Monitoring is especially critical for juvenile tortoises, which are highly subject to depredation. Any tortoise moved will be watched for at least 2 hours to determine if it is behaving safely or if it is likely to try and reenter the construction area (during fence construction or for utility corridors). In addition to the initial monitoring at release, in any instance where a tortoise is relocated outside a tortoise exclusion fence, that release location and surrounding area will be visited for at least the next 2 days during tortoise activity temperatures (i.e., <43ºC ground surface temperature [Karl 1992, Zimmerman et al. 1994]) to verify that the tortoise is not fence-walking. Fence-walking suggests that the release site had been incorrectly chosen and that release outside a different fence should be attempted (for example, outside the opposite side of the fenced utility corridor, should it be fenced during construction).

Tortoises released in the evening due to temperature considerations will be monitored until dark with a resumption of monitoring at dawn. Such tortoises will be watched until they have found and entered an adequate burrow, ensuring that the tortoise was seeking thermal relief appropriately.

Tortoises relocated to certain areas adjacent to the Project site may be subjected to more intensive monitoring, to verify that this area is part of the home range and that tortoises are using burrows and not moving long distances or erratically based on normal tortoise behavior. The latter will suggest that the tortoise has been relocated to an unfamiliar area and will need to be moved outside a different fence. These tortoises will be monitored for at least a full day, or longer as necessary.

5.2 Reporting Requirements

A report presenting the results of the DT clearance surveys will be submitted 30 days after completion of the surveys by the Designated Biologist to BLM, the CPM, USFWS, and CDFG. The clearance survey report will include the DT survey results, capture and release locations of any relocated DTs, and any other information needed to demonstrate compliance with the measures required by the relevant compliance documents.

Subsequent monitoring will include additional documentation. Monthly reports will include an analysis of all pertinent DT health and habitat use observations, data on animal movements recorded from telemetry study, and any issues encountered in translocation property management. Monthly reports will be submitted to USFWS. The Project's final translocation monitoring report

will include recommendations on how to improve techniques and conservation property management to enhance translocation success.

Translocated tortoises are anticipated to contribute to the breeding population of tortoises occurring at the selected translocation site, thus implementing a recovery plan (USFWS 1994) action.

As indicated earlier, tortoises to be translocated per this program will be tested for disease prior to translocation. No clinically ill or seropositive tortoises will be translocated. Therefore, no potential will exist for the introduction of diseased tortoises into the selected translocation site.

Monitoring efforts will be conducted under the supervision of the AB and assisted by the BM and other qualified biologists, as necessary.

Coordination will take place with identified agency representatives on all aspects of translocation, should use of BLM-managed public land, or wildlife reserves managed by CDFG, be approved as recipient sites. Strict adherence to all agency-issued site use stipulations will also be required with use of either of these translocation options.

6.0 CONTINGENCY PLANNING AND PROGRAM CONTACTS

To prepare for unforeseen circumstances, an adaptive management program will be implemented that functions within the constraints of the Project permits and approvals. Adaptive management decisions will be made with the input from pertinent regulatory agency staff in a timely manner so that mid-course corrections can be made to ensure the protection of resident and Project-related displaced DT. Explicit triggers for implementation of adaptive management will be project specific. The adaptive management program may include identifying beneficial changes in the monitoring program, including reductions in monitoring, if data indicates opportunities to make it more efficient or effective.

In the event unforeseen circumstances arise relative to this Plan, or any CEC COC, the CEC's CPM for this Project will be notified by the DB, to resolve the issue or determine a subsequent course of action.

Where these circumstances may involve specific reporting details, clarifications, or questions related to complying with BO Terms and Conditions, the Environmental Protection Agency's San Francisco Office and the applicable USFWS staff, either in the Carlsbad office or the Ventura field office, will be contacted by either the CPM or the Translocation Program's Designated Biologist.

Similarly, where CESA Section 2081 incidental take permit condition issues, clarifications, or reporting may be involved, CDFG Inland Desert Region 6 representatives at the field office in

Blythe and/or staff in CDFG's Regional Office located in Ontario should be contacted by either the CPM or the AB.

In the case of public land use conflicts and/or biological issues, Dr. Larry LaPre, California Desert District Biologist, should be contacted.

A qualified DT biologist will be consulted on an ongoing basis on the technical aspects and review of relocation/translocation data monitoring and reporting.

The following is a list of agency staff that will be contacted, as applicable, on various aspects of translocation site selection and long-term management of the translocation site(s):

Rick York
California Energy Commission
1516 Ninth Street, MS-40
Sacramento, CA 95814-5512
916-654-3945
Ryork@energy.state.ca.us

Holly Roberts, Deputy Field Manager
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North Palm Springs, CA 92258-1260
760-833-7100
Holly_roberts@ca.blm.gov

Mark Massar, Wildlife Biologist
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760-833-7199 (fax)
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Dr. Larry LaPre, District Wildlife Biologist
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llapre@ca.blm.gov

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Magdalena Rodriguez
California Department of Fish and Game
Inland Deserts Region
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909-481-2945 (fax)
mcrodriguez@dfg.ca.gov

Leilani Latonio (mailed SAA application with check)
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562-430-7984

Leslie MacNair
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LMacNair@dfg.ca.gov

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FIGURES

Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 1
Regional Map

Source: ESRI; AECOM 2009

AECOM

Date: September 2010

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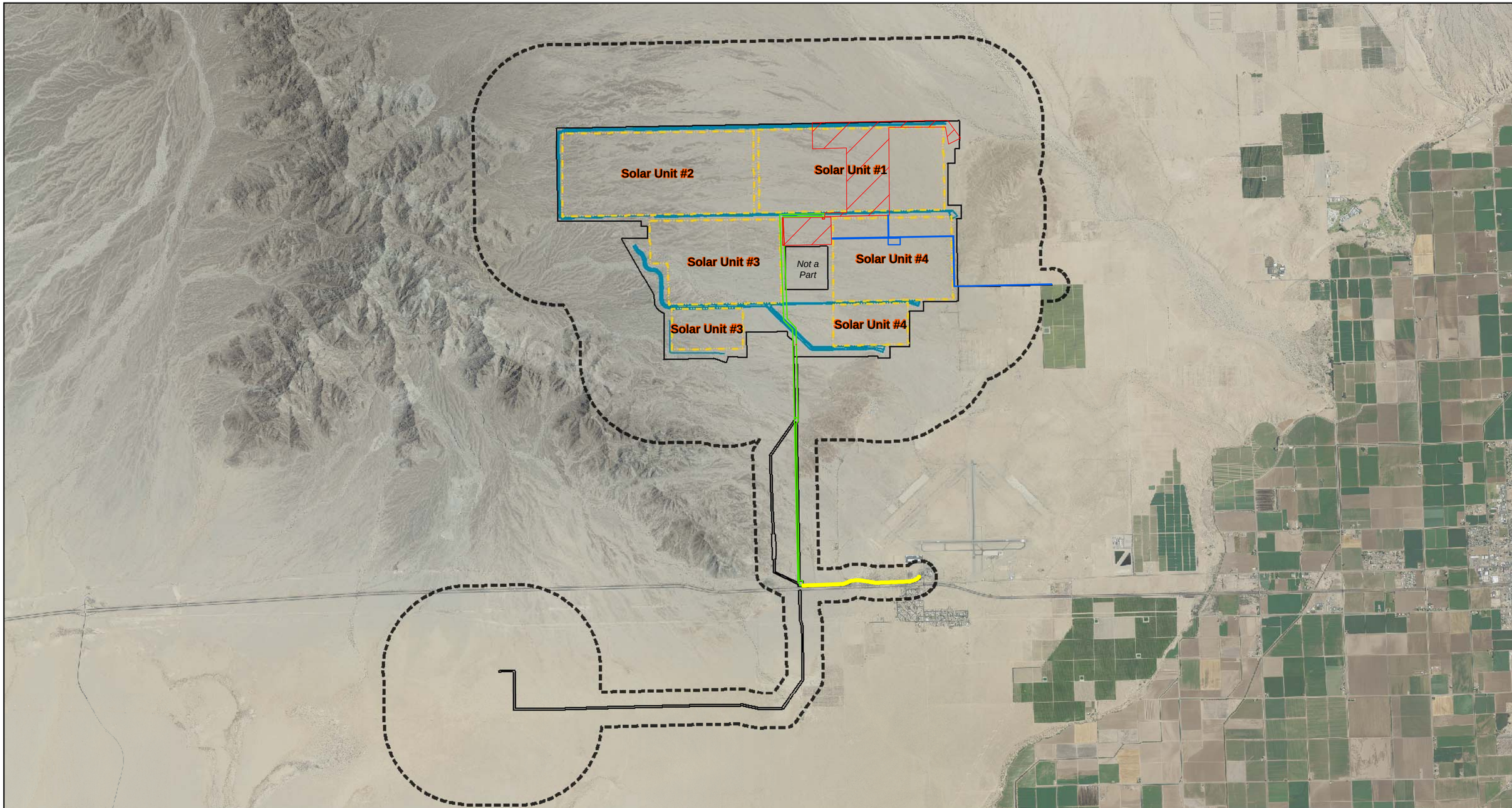

Map Location

Legend

- Biological Resources Survey Area (BRSA)
- Proposed Project Disturbance Area

Phase 1a Disturbance Area

- Black Rock Road Improvements
- Construction Power Line
- Facility Construction
- Utilities Corridor

Proposed Project Elements

- Solar Unit
- Rerouted Drainage

Source: NAIP 2009; ESRI; AECOM 2010; EDAW 2009

N W E S

1 in = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 2
Proposed Project Elements and Action Area

AECOM

Date: September 2010

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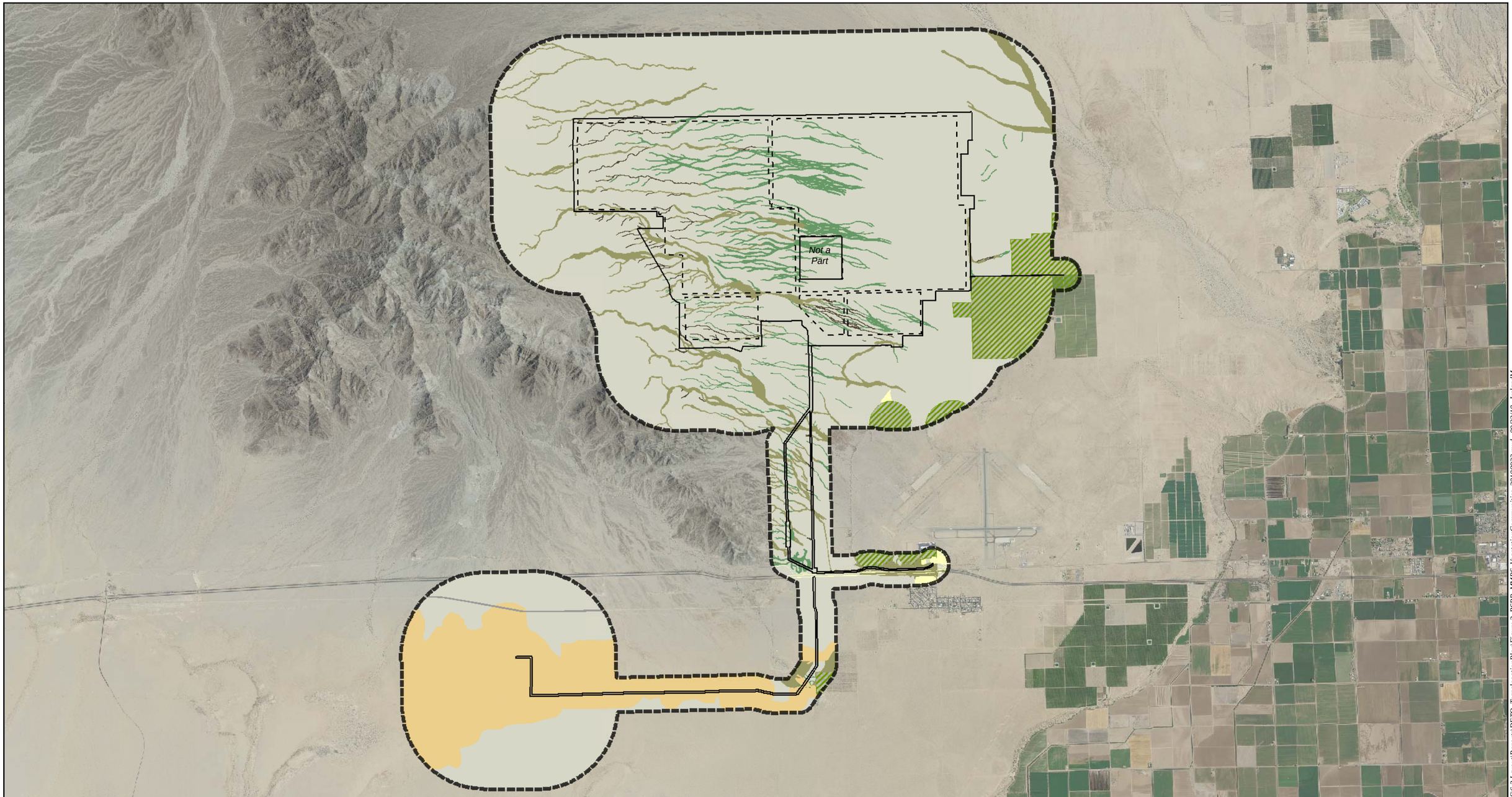

Map Location

Legend

- Proposed Project Disturbance Area
- Facility Footprint
- Proposed Project BRSA

Vegetation Communities

Riparian

- Creosote Bush - Big Galleta Association
- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

Upland

- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

Other

- Agriculture (Active and Fallow)
- Disturbed
- Developed

Source: NAIP 2009; AECOM 2010

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 3
Vegetation Communities Map

AECOM

Date: September 2010

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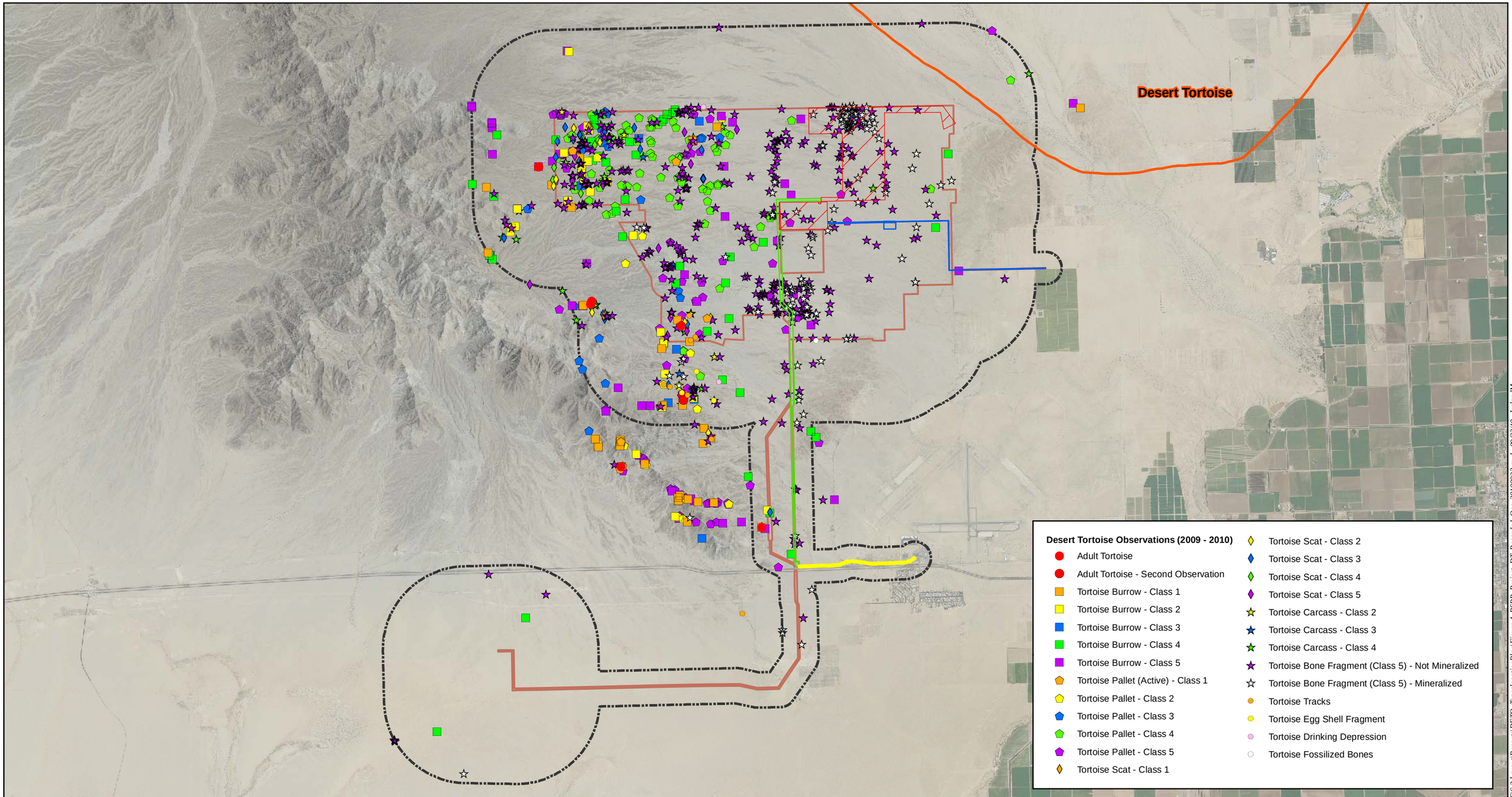

Map Location

Legend

Project Disturbance Area
Action Area

Phase 1a Disturbance Area

Zone

Black Rock Road Improvements
Construction Power Line
Facility Construction
Utilities Corridor

CNDDB Species Inventory

Desert Tortoise (specific bounded area)
Coachella Valley milk-vetch (not present in map area)

Source: NAIP 2009; USGS; AECOM 2009

N
W E
S

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 4
Desert Tortoise Observations Map

AECOM

Date: September 2010

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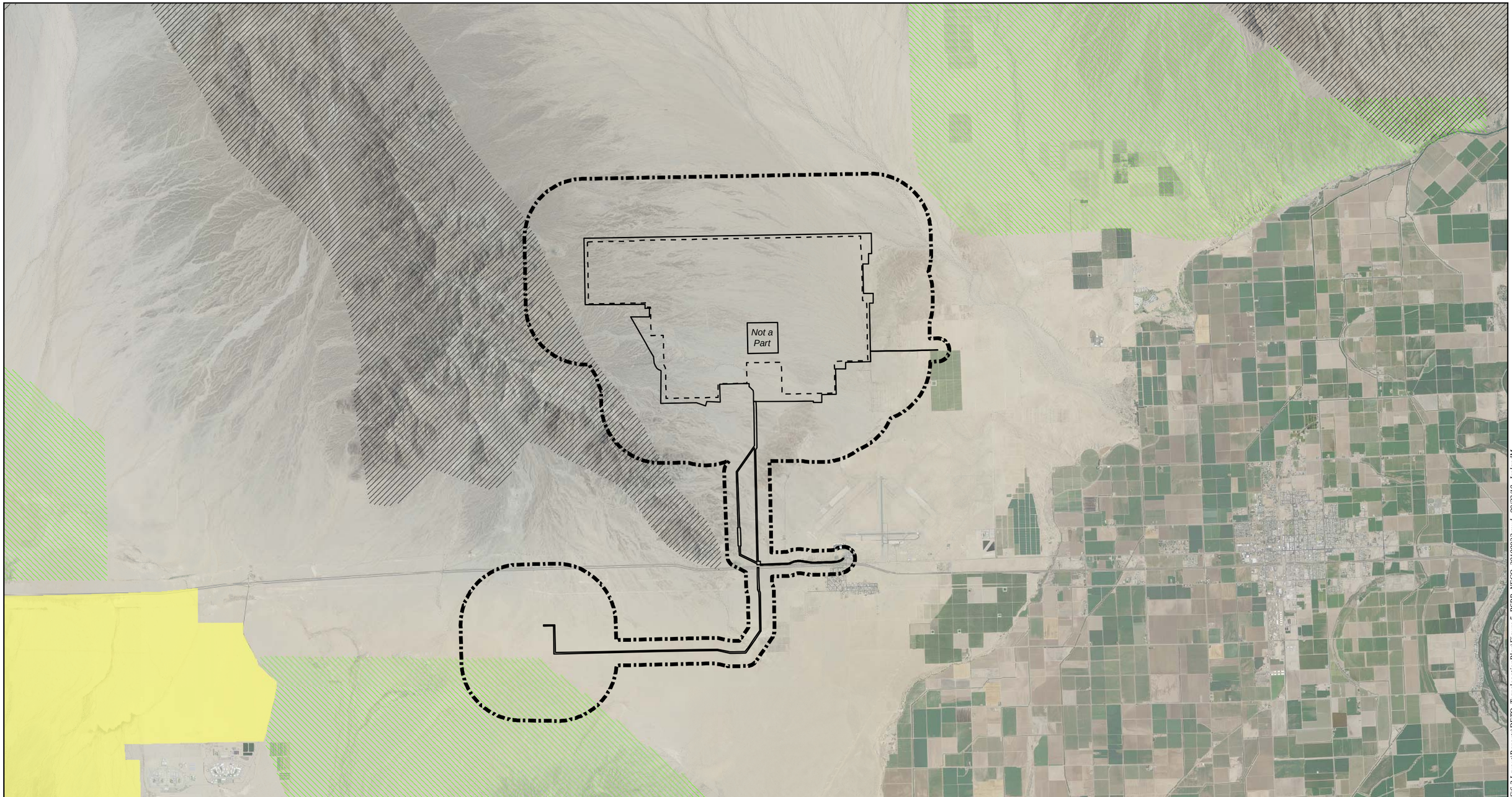

Map Location

Legend

- Proposed Project Disturbance Area
- Facility Footprint
- Biological Resource Survey Area (BRSA)
- Chuckwalla
- Nelson's Bighorn Sheep
- Multiple Species

Source: NAIP 2009; NECO 2009; AECOM 2010;

N W E S

1 inch = 8,333 feet

0 8,333 16,666 Feet

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 5
Proposed Project Relative to the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)

AECOM

Date: August 2010

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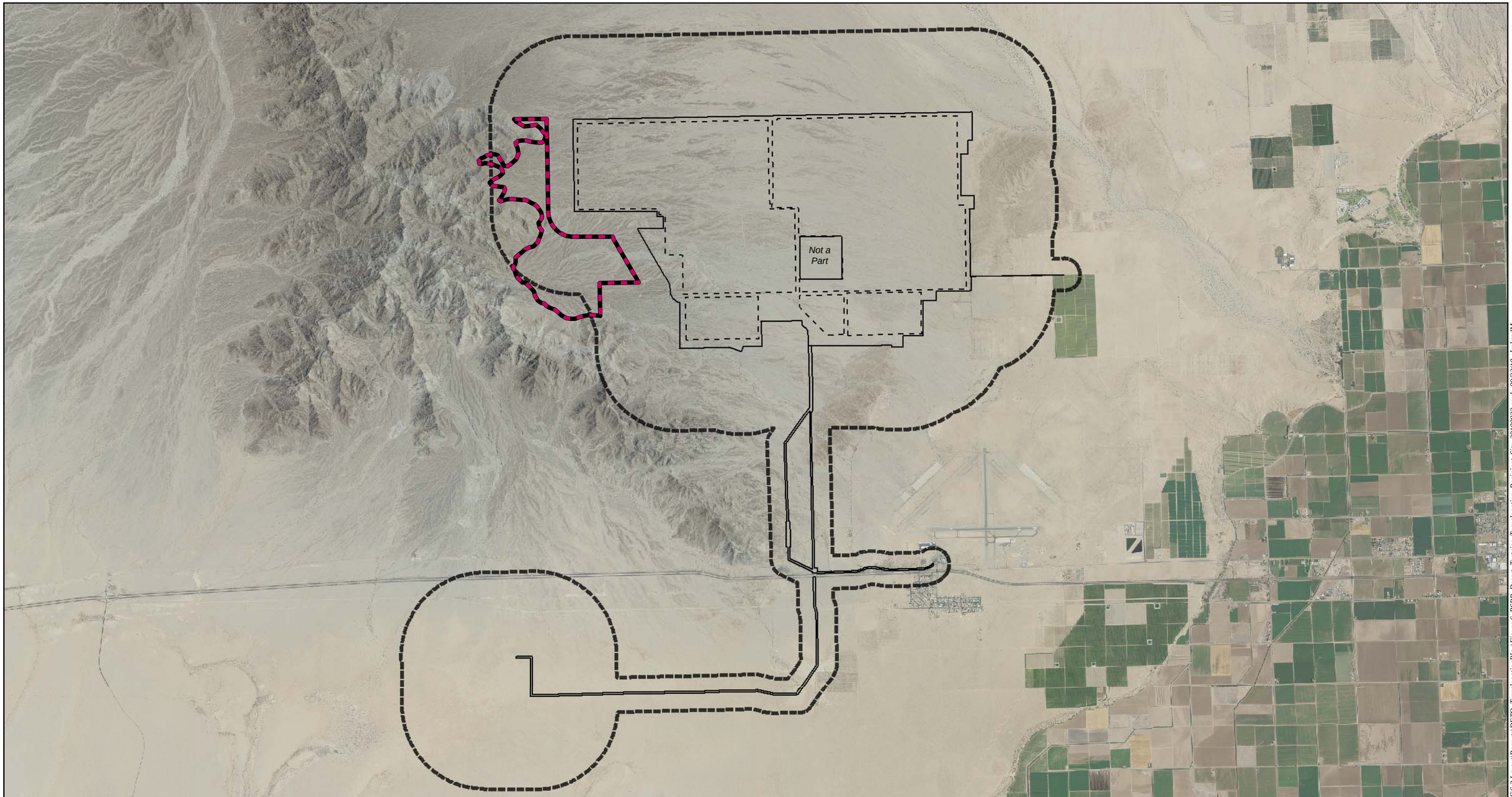

Map Location

Legend

- Desert Tortoise Translocation Recipient Site
- Proposed Project Disturbance Area
- Facility Footprint
- Proposed Project BRSA

Source: NAIP 2009; AECOM 2010

N
W E
S

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
DT Relocation/Translocation Plan

Figure 6
Desert Tortoise Translocation Recipient Site

AECOM

Date: September 2010

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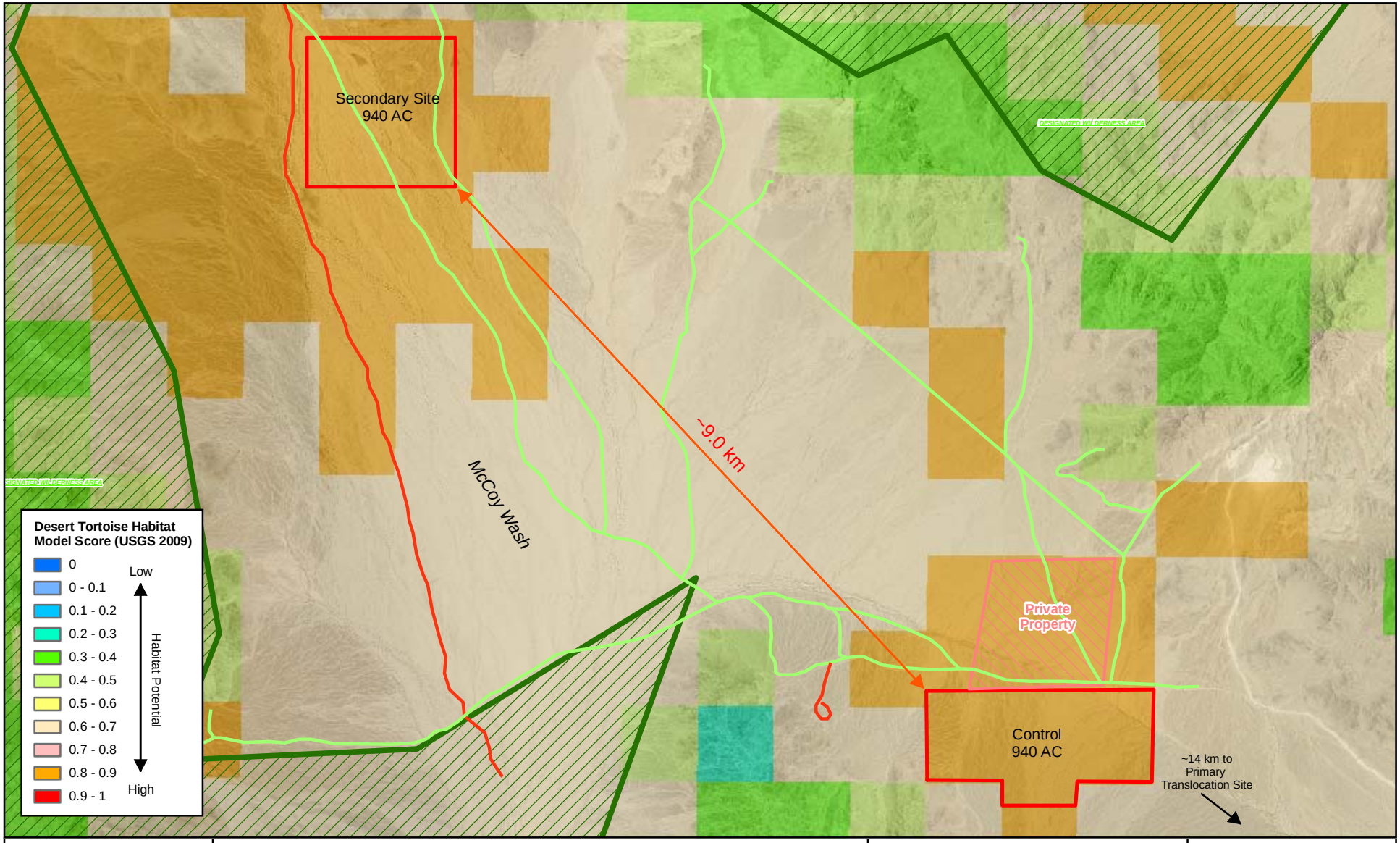

Map Location

Legend

- Open Road
- Closed Road
- Wilderness Area
- Private Property

1 inch = 6,000 feet

0 6,000 12,000 Feet

Blythe Solar Power Project
DT Relocation Translocation Plan

Figure 7
Secondary and Control
Desert Tortoise
Translocation Sites

Palo Verde Solar I, LLC

AECOM

Project: 60157720
Date: September 2010

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ATTACHMENT A

GUIDELINES FOR DESERT TORTOISE TRANSLOCATION (USFWS 1994)

Appendix B: Guidelines for Translocation of Desert Tortoises

(1) Experimental translocations should be done outside experimental management zones. No desert tortoises should be introduced into DWMAs—at least until relocation is much better understood.

(2) All translocations should occur in good habitat where the desert tortoise population is known to be substantially depleted from its former level of abundance. Translocation of reproductively competent adults into depopulated areas can have beneficial effects on population growth. Before population growth can occur, however, individuals must establish home ranges and enter into any existing social structure. Desert tortoises should be periodically evaluated against a defined health profile (proportional weight/size, fecal scans, and blood panels).

(3) Areas into which desert tortoises are to be relocated should be surrounded by a desert tortoise-proof fence or similar barrier. The fence will contain the desert tortoises while they are establishing home ranges and a social structure. If the area is not fenced, past experience suggests that most animals will simply wander away from the introduction site and eventually die. (Fencing is not cheap; estimates range from $2.50 to $5.00 per linear foot). Once animals are established some or all of the fencing can be removed and probably reused.

(4) The best translocations into empty habitat involve desert tortoises in all age classes, in the proportions in which they occur in a stable population. Such translocations may not always be possible, since young desert tortoises are chronically underrepresented in samples, often due to observer sampling error, and may now actually be underrepresented in most populations due to poor recruitment and juvenile survivorship during the last several years. Desert tortoises smaller than the 7-year age-size class are particularly vulnerable to predation and may be a poor investment for translocation, unless predator exclusion (fencing, for example) is incorporated into such endeavors. Mature females would probably be the best sex/age class to introduce into below carrying capacity extant populations because of their high reproductive value (low potential mortality, high potential fecundity for many years).

(5) The number of desert tortoises introduced should not exceed the pre-decline density (if known). If the pre-decline density is not known, introductions should not exceed 100 adults or 200 animals of all age classes per square mile in category 1 habitat (Bureau of Land Management designation for management of desert tortoise habitat) unless there is good reason to believe that the habitat is capable of supporting higher densities. Post-introduction mortalities

might be compensated by subsequent introductions if ecological circumstances warrant this action.

(6) All potential translocatees should be medically evaluated in terms of general health and indications of disease, using the latest available technology, before they are moved. All translocatees should be genotyped unless the desert tortoises are to be moved only very short distances or between populations that are clearly genetically homogeneous. All translocated animals should be permanently marked, and most should be fitted with radio transmitters so that their subsequent movements can be closely tracked.

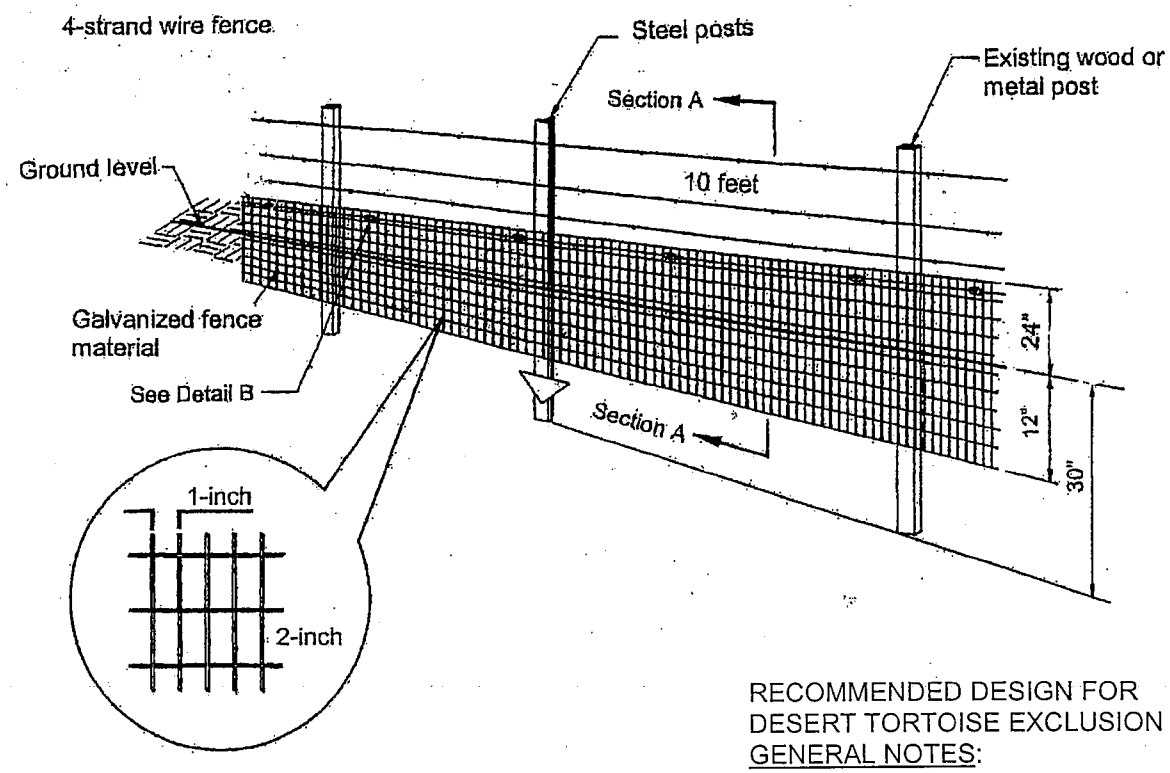
(7) If desert tortoises are to be moved into an area that already supports a population--even one that is well below carrying capacity--the recipient population should be monitored for at least 2 years prior to the introduction. Necessary data include the density and age structure of the recipient population, home ranges of resident desert tortoises, and general ecological conditions of the habitat.

Areas along paved highways can serve as good translocation sites, if properly fenced. Many such areas support good habitats, but vehicle-caused mortalities and/or collecting have substantially reduced or totally extirpated adjacent desert tortoise populations. Any translocation sites should be isolated by a desert tortoise barrier fence or similar barrier next to the highway or road. The purpose of fencing the highway is obvious--to keep translocated animals from being crushed by vehicles on the road. However, fencing the other sides of the translocation area is critical for establishment. If a fenced area or strip of habitat approximately 0.125 to 0.25 mile wide is established along highways, some translocatees should establish home ranges and a social structure within this strip. When the inside fence is removed, the translocated desert tortoises and those from the extant population farther away from the road will eventually expand their home ranges into the remaining low-density areas. A second reason for inside fencing is to prevent any diseased, but asymptomatic, desert tortoises from infecting nearby, healthy populations. In the event that disease is an issue and a resident population is present nearby, double inside fencing should be considered.

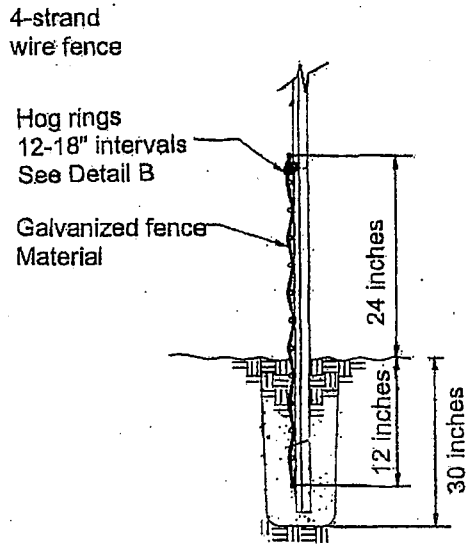
ATTACHMENT B

RECOMMENDED SPECIFICATIONS FOR PERMANENT DESERT TORTOISE EXCLUSION FENCE

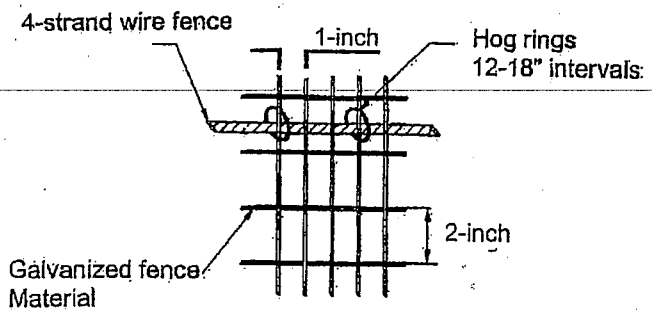
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



SECTION A



DETAIL B

RECOMMENDED DESIGN FOR
DESERT TORTOISE EXCLUSION FENCE
GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

FOR BEDROCK OR CALICHE SUBSTRATE

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.

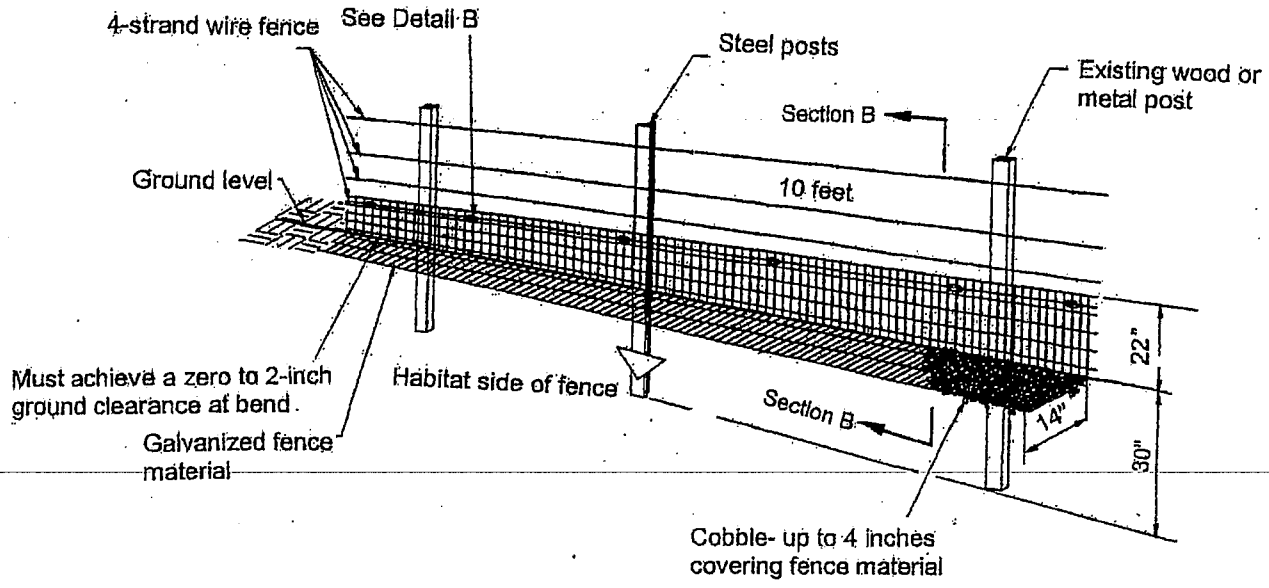
2. Ensure that the fence height above ground level is no less than 22 inches.

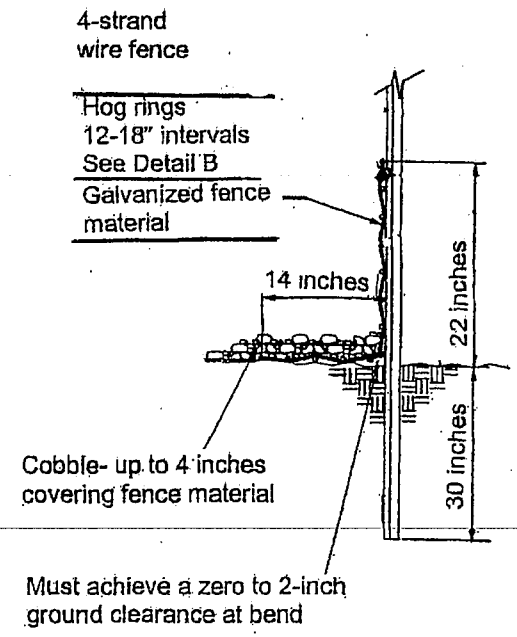
3. Ensure that there is a zero to 2-inch ground clearance at the bend.

4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.

5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).

6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.





SECTION B

ATTACHMENT C-1

USFWS FIELD SURVEY PROTOCOL FOR ANY NON-FEDERAL ACTION THAT MAY OCCUR WITHIN THE RANGE OF THE DESERT TORTOISE (1992)

January 1992

FIELD SURVEY PROTOCOL FOR ANY NON-FEDERAL ACTION THAT MAY OCCUR WITHIN THE RANGE OF THE DESERT TORTOISE

The Mojave population of the desert tortoise was listed as a federally endangered species on August 4, 1989 by emergency rule and as a threatened species by final rule on April 2, 1990. section 9 of the Endangered Species Act prohibits the "taking" of any federally listed threatened or endangered species without first obtaining necessary authority from the Fish and Wildlife Service. "Take" includes "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct" (section 3(19), Endangered Species Act 1973, as amended). Harm includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" (50 CFR 17.3(c)). "Take" also includes modification of habitat that would result in harm to the desert tortoise.

In response to a demand for information and/or guidance on compliance with the Endangered Species Act, the Fish and Wildlife Service has developed a protocol for surveys within the range of the Mojave population of the desert tortoise which is listed as federally threatened. The purpose of this protocol is to provide technical assistance to entities to determine presence or absence of this animal and thus avoid "take" of the desert tortoise. Where avoidance is not possible, this protocol will provide information from which the project proponent can develop a "conservation plan" with guidance from the Fish and Wildlife Service. The conservation plan is the primary component of a section 10(a)(1)(B) permit application intended to obtain the necessary authorization to incidentally "take" a federally listed species as specified in the Endangered Species Act.

Please note that the presence of a desert tortoise within the project boundary is not necessary for the project to result in the take of the desert tortoise. Please see the **Survey Need** section below for more information.

If part or all of the project will be authorized, funded, or carried out by a federal agency or located on federal land, the project proponent, through the federal agency, will need to comply with section 7 of the federal Endangered Species Act rather than section 10. If you believe your project may have such a federal "connection", we urge you to contact the Fish and Wildlife Service for confirmation. Please see the "Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise". If there is no federal "connection" in any part of the proposed project, you must ensure that your project either will not result in "take" of the desert tortoise

or obtain a section 10(a)(1)(B) incidental take permit from the Fish and Service prior to implementing your project.

We also recommend that you obtain a copy of "Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise" before you begin planning your project. This document is available from any of the five Fish and Wildlife Service offices listed below and provides more information on sections 7, 9, and 10 of the Endangered Species Act.

This survey protocol is subject to revision as new information becomes available. Before initiating the survey protocol described below, we recommend checking with the Fish and Wildlife Service to verify that you are implementing up-to-date survey methods.

In Arizona:

Fish and Wildlife Service
Phoenix Field Office
3616 West Thomas, Suite 6
Phoenix, Arizona 85019
(602) 379-4720

In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:

Fish and Wildlife Service
Ventura Office
2140 Eastman, Suite 100
Ventura, California 93003
(805) 644-1766

In California, for Imperial and Riverside Counties:

Fish and Wildlife Service
Laguna Niguel Field Office
Federal Building, 24000 Avila Road
Laguna Niguel, California 92656
(714) 643-4270

After mid-March 1992:

Fish and Wildlife Service
Carlsbad Office
2730 Loker Avenue West
Carlsbad, California 92008
(619) 431-9440

January 1992

In Nevada:

Fish and Wildlife Service
4600 Kietzke Lane, Building C-125
Reno, Nevada 89502
(702) 784-5227

In Utah:

Fish and Wildlife Service
2078 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104-5110
(801) 524-4430

Survey protocol includes six parts: 1) survey need, 2) survey types, 3) survey quality, 4) survey time period, 5) qualifications of the surveyor, and 6) reporting survey results.

Survey Need: The desert tortoise may occupy numerous habitat types within its range in the Mojave and Colorado deserts and below an elevation of 5000 feet. In these areas there is a likelihood of encountering desert tortoises or tortoise sign. Activities such as land clearing are likely to result in "take" of desert tortoises or tortoise habitat, unless site specific information indicates that no take of desert tortoises or tortoise habitat would occur.

The Fish and Wildlife Service recommends that the project proponent conduct a Presence-or-Absence Survey for tortoises and tortoise sign over the entire project area and the Zone of Influence adjacent to the project area. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. The survey information would be part of the requirements of the federal Endangered Species Act section 10(a)(1)(B) permit application. Tortoise sign would include shells, bones, scutes, limbs, burrows, pallets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.

Depending on the type of project, a Clearance Survey immediately prior to construction (see below) in recently occupied tortoise habitat may also be necessary. The Fish and Wildlife Service requests that all survey results, including copies of the completed transect forms, be submitted to the appropriate Fish and Wildlife Service office within 30 days. This information is

vital to the ongoing management for recovery of the desert tortoise. Providing this information to the Fish and Wildlife Service will help ensure that the survey has been correctly completed and the data have been properly assessed. Submittal of survey results also allows the Fish and Wildlife Service to advise you of the appropriate requirements, if any, in accordance with the definition of "take" in the federal Endangered Species Act. This definition includes take of habitat (see page 1).

Please note that all free-roaming desert tortoises located north and west of the Colorado River are protected under the Endangered Species Act. For example, the desert tortoise that on occasion occurs above 5000 feet or in pinyon-juniper woodland would be protected under the Endangered Species Act.

As mentioned above, the presence of a desert tortoise within the project boundary is not necessary for the project to result in the take of the desert tortoise. For example, a desert tortoise may be present in the Zone of Influence and may use the project site for feeding, breeding, or shelter. Destruction of tortoise habitat used for feeding, breeding, or shelter is considered take under the Endangered Species Act.

Also note that planning agencies or other local or state agencies have not been delegated authority to determine if or when a section 10(a)(1)(B) incidental take permit is needed under the federal Endangered Species Act. The Fish and Wildlife Service is available to answer inquiries and make determinations on the need for an incidental take permit based on the submission of survey results.

Before initiating any activity that will result in surface disturbance within the range of the desert tortoise including overland driving for land surveying or other forms of take, the Fish and Wildlife Service recommends that you contact one of the five offices listed above to determine if your action may require a section 10(a)(1)(B) permit.

All requirements of the Endangered Species Act should be completed prior to the initiation of any part of the proposed project. Failure to submit survey forms to and coordinate directly with the Fish and Wildlife Service on the proposed project may result in delay or modification of the proposed project. We strongly suggest coordinating with the Service early in the planning process.

Projects that would not result in take of desert tortoises or tortoise habitat are not subject to the prohibitions of take of the desert tortoise as defined in the federal Endangered Species

Act. **However, in the event that a desert tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pallets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) are found in the project area during construction, all surface disturbance should immediately stop. The Fish and Wildlife Service recommends that the project proponent notify us and the local planning and zoning department in writing within 3 days of the discovery.** This short notification period will help ensure a timely response by the Fish and Wildlife Service to facilitate compliance with the federal Endangered Species Act and avoid unauthorized take.

If tortoise sign is found, a Presence-or-Absence Survey of the project area and a Clearance Survey immediately prior to construction may be necessary. Please see the discussion on Presence-or-Absence and Clearance surveys below.

Fish and Wildlife Service Survey Protocol for Desert Tortoises and Bureau of Land Management Categories of Desert Tortoise Habitat: The Bureau of Land Management has developed category maps for desert tortoises to assist the Bureau in managing public lands for the tortoise within the Bureau's multiple use mandate. Bureau maps were not developed to provide information on how to avoid take of the desert tortoise or comply with the federal Endangered Species Act. The Bureau has assigned three categories to their maps on desert tortoise habitat. These categories reflect the quality of tortoise habitat, quantity of tortoises present, and the Bureau's ability to manage these areas for the desert tortoise while minimizing resource conflicts. For example, Category 1 is considered better for tortoises than category 2. However, category 3 areas may contain high quality tortoise habitat and high density of tortoises, but because of resource conflicts the Bureau has assigned the area to category 3.

If an area is not classified on the Bureau's maps as category 1, 2, or 3, this does not mean that this area does not contain desert tortoises or is not considered desert tortoise habitat. The Bureau did not categorize lands that it does not manage such as military reservations or private lands. Also, the Bureau did not categorize lands in many areas that have densities of desert tortoises less than 20 per square mile. Thus, if a proposed project is not located in an area categorized as category 1, 2, or 3 by the Bureau, the project may still be located in desert tortoise habitat if it is in the desert and below 5000 feet.

Survey Types: Two types of surveys are recommended: 1) Presence-or-Absence and 2) Clearance. Neither survey utilizes the 1.5-mile triangular transect survey method developed by the Bureau of Land Management. The Bureau of Land Management's triangular transect method does not provide reliable information on the number of desert tortoises that would be taken as a result of implementation of the proposed project and thus is not adequate for meeting the requirements of the federal Endangered Species Act. Alternative methods for surveying for desert tortoises and their sign over very large areas may be submitted to the Fish and Wildlife Service for consideration.

Presence-or-Absence Survey: This survey type is recommended for areas below 5000 feet and within the known range of the desert tortoise. The purpose of this survey is to determine impacts of potential land disturbance activities to the local tortoise population. This includes identifying the number and location of all tortoises and tortoise sign that occur within a given project area and if any tortoises occur in adjacent areas (Zone of Influence) whose home range may overlap into the project area and thus be taken or lost by the proposed action.

The project area is defined as any area that will be cleared or partially cleared, with vehicles on or adjacent to it, temporarily or permanently used for equipment or materials storage, loading or unloading, or sites where soils/vegetation is damaged, fragmented, or disturbed (e.g., driving overland).

The entire project area is surveyed using belt transects 10 yards or 30 feet wide (100 percent coverage). In some locations, belt transects less than 30 feet wide may be appropriate (see below). In addition, the Zone of Influence is surveyed. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. As a minimum, the belt transects in the Zone of Influence are located at 100, 300, 600, 1200, and 2400-foot intervals from and parallel to the edge of the project boundaries. (See Figures 1 and 2.) All tortoise sign (live tortoises, shells, bones, scutes, limbs, scats, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) within the project area and sign located on transects within the Zone of Influence should be mapped.

Figure 1. Example of a proposed transmission line including areas with full (100 percent) survey coverage for desert tortoises (construction area) and locations of transects within the Zone of Influence.

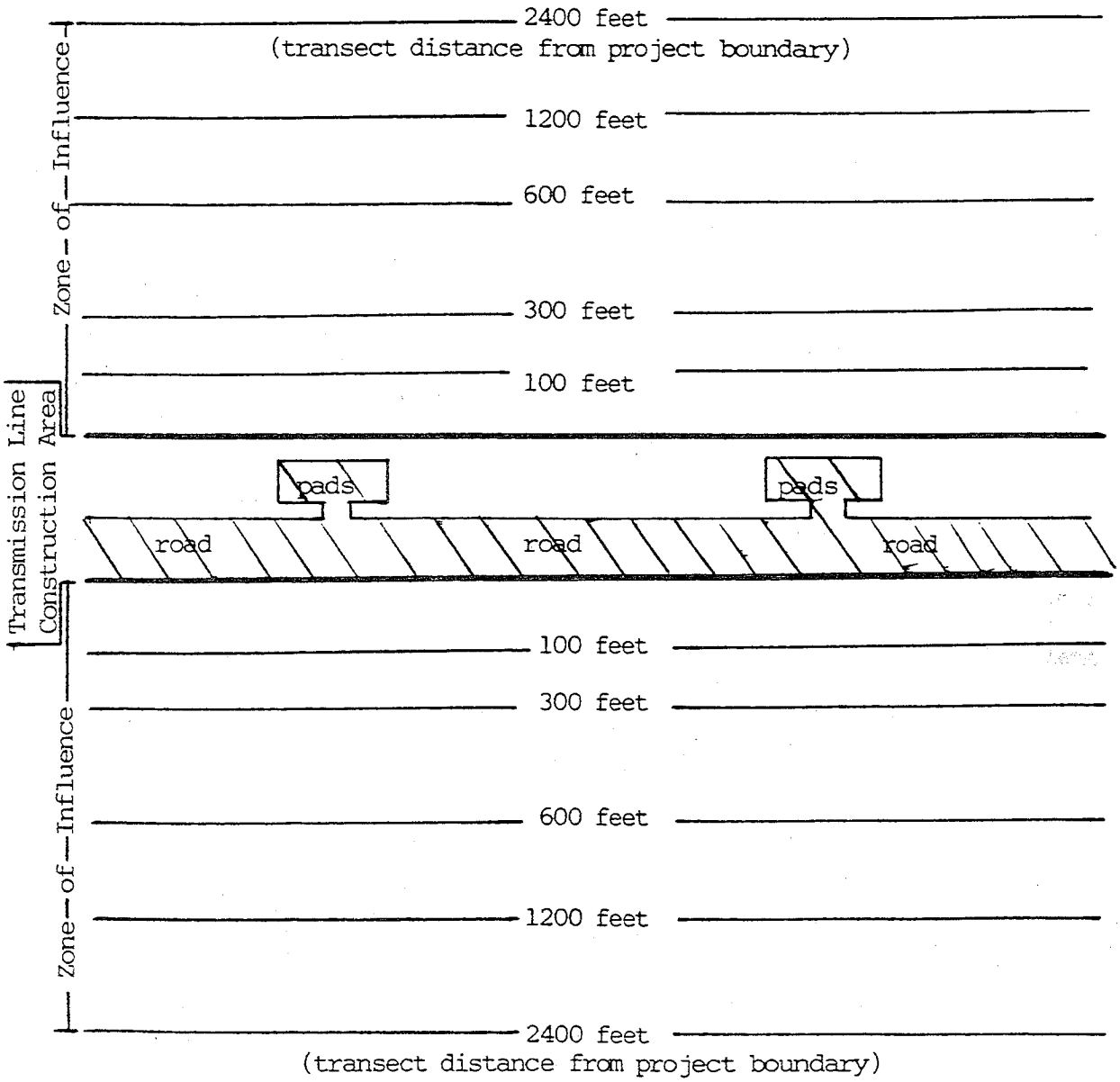
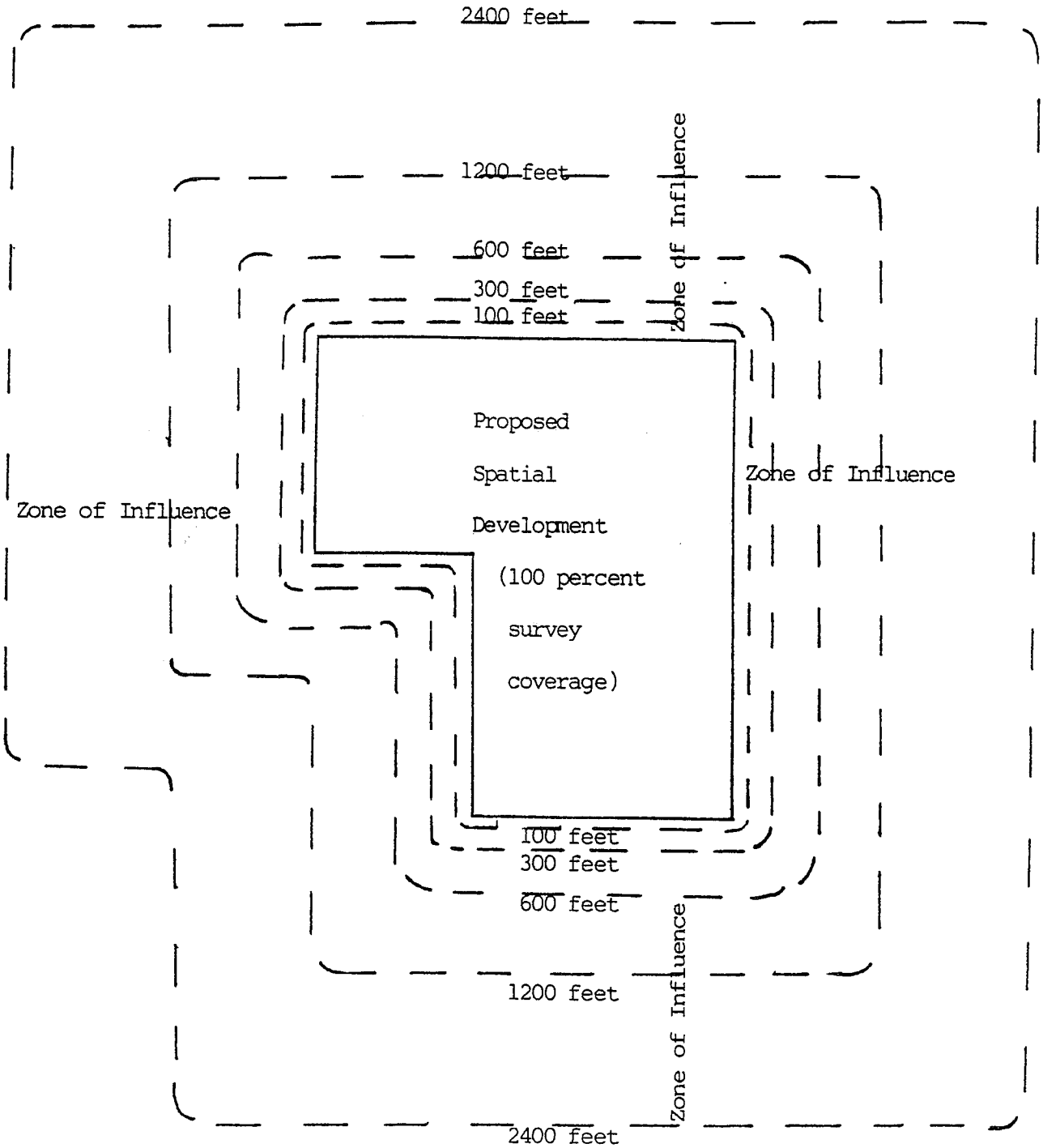


Figure 2. Example of a proposed spatial development (e.g., residential development, commercial development) with full (100 percent) survey coverage for desert tortoises and locations of transects within the Zone of Influence.



The extent of the Zone of Influence is dependent on the type of habitat alteration/development and its proximity to other developments. The extent of the Zone of Influence increases as the probability of increased use by domestic predators, potential human use in the Zone, road use, littering, waste disposal, etc. These uses result in increased take of desert tortoises through predation, collection as pets, vandalism, road kills, and attracting predators such as ravens, coyotes, and feral dogs to the area.

Additional transects may be recommended at 3600- and 4800-foot intervals from the perimeter of the project area for developments 1) located in or within one mile of categories 1 or 2 habitats as defined by the Bureau of Land Management or 2) associated with residential development, new or increased road use, landfills, or projects that would result in increases in human use or litter.

For example, if a project area is 640 acres or one square mile, 176 parallel transects each one mile long and 30 feet wide would be necessary to provide 100 percent coverage of the project area. Additional transects would be necessary to survey the adjacent areas or Zone of Influence.

If the project area contains locations with vegetation or topography that obscures or reduces that surveyor's ability to see tortoise sign at distances of up to 15 feet on the ground, the width of the survey should be reduced to 10 feet, that is, 5 feet on either side of the surveyor. Some examples of situations where a 10-foot wide transect should be conducted instead of a 30-foot wide transect would be: 1) foothills and slopes of mountains which contain rocks, boulders, and/or vegetation that obstruct the surveyor's view of the ground at distances greater than 5 feet, and 2) areas in which the vegetation density is greater than that of typical creosote or creosote/bursage flats or bajadas in the Mojave Desert such as desert wash scrub or woodlands and ecotones between habitat types. In these areas the surveyor's view of the ground and tortoise sign, if present, would be obstructed and a 30-foot wide transect would not be acceptable.

When mapping tortoise sign, the recommended map scale is 1 inch=100 feet for plans involving ground disturbance and 1 inch=1000 feet for preliminary planning (master planning or specific planning). These map scales are based on those frequently required by city or county planning departments. The map should include locations and specific types of all tortoise sign found on the project area and Zone of

Influence including the number live tortoises, reference to the corresponding transect form with additional information on tortoise sign found, significant landmarks, legal description of the project area, survey dates, and the range of elevation within the project boundaries. Please note that a federal Fish and Wildlife License/Permit is required before a surveyor can capture, touch, or "harass" a live desert tortoise even for the purposes of taking measurements or determining its sex. A permit may also be required from the appropriate state wildlife resource agency (e.g., Arizona Game and Fish Department, California Department of Fish and Game, Nevada Department of Wildlife, Utah Division of Wildlife Resources). **The Fish and Wildlife Service emphasizes that the surveyor should only estimate the size of all live desert tortoises encountered.**

If the surveyor wishes to use a fiber-optic scope or video camera that is placed inside a tortoise burrow instead of or in addition to a hand-held mirror to investigate desert tortoise shelter sites, you should contact the Fish and Wildlife Service at one of the offices listed above. We will need information on the type of equipment you will be using and your qualifications to use it. Improper use of such equipment may disturb or injure tortoises, damage shelter sites, and may promote the spread of disease. These actions may be considered as take under the Endangered Species Act. You should refer to the Desert Tortoise Handling Protocols for information on when and how to utilize these scopes to avoid the possible transmission of disease between tortoises.

The following format is recommended for recording transect data. (See Figure 3.) This format has been modified from the Bureau of Land Management's Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. **One form is used for each transect where tortoise sign occurs.** Pages 1, 2, and 3 of the form would be completed for each transect in the project site and the Zone of Influence where tortoise sign occurs. If additional space is needed, more forms may be used for each transect and stapled together.

If no tortoise sign is located during Presence-or-Absence Surveys for a proposed project, we recommend that the surveyor complete and submit a summary form (Figure 4) to the appropriate Fish and Wildlife Service office listed above.

Figure 3. Desert Tortoise Survey Form For Presence-or-Absence and Clearance Surveys (4 pages)

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y

Date _____
Transect No. _____
State _____
County _____
City _____
Recorder _____
Address _____
Project Name _____
Type of Project _____
_____
Quad Name _____
Scale _____
Site Name _____
T_____ R_____ Sec____
¼ Sec_____ ¼¼ Sec_____
UTM Zone _____
Northing _____
Easting _____
Parcel No. _____

DESERT TORTOISE HANDBOOK 1992:
FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | _____ft from Project Site
Transect Length: _____ft Width: 30 ft Other _____ft Time _____
Weather: Airtemp at: 5 cm_____°C Surface_____°C Cloud cover_____%
Rainfall_____in Wind speed_____ Rainfall in last 30 days_____in
Land Form (e.g., mesa, bajada, wash)_____
% Slope: high_____ low_____ Aspect_____ Elevation_____ft
Soils_____
Vegetation: dominant perennials_____
_____
dominant annuals_____
_____
Adjacent Land Use: up to 1 mi_____
Soils_____
Vegetation_____

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive [1]	Scats [2]	Shell Remains [3]
	A= J=	M=	F=	A= J= Unk= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	*Neotoma* Middens w/sign	:w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other

January 1992

M/D/Y
Date_____
Transect No._____
State_____
County_____
City_____
Recorder_____
Project Name_____
_____
Parcel No._____

==========

INFORMATION ON SHELTER SITES
(Please indicate why you believe a shelter site is active or inactive[1])

Sign No.	Type	Location	Width	Estimated Length	Other Sign

Condition of Shelter Site[1]/Comments

==========

CONDITION OF SCATS[2] - COMMENTS (See below)

==========

CONDITION OF SHELL REMAINS[3] - COMMENTS (See below)

==========

SIGNS OF HUMAN DISTURBANCE-COMMENTS

Show locations of types of tortoise sign on transect line below:

Drawing: Scale 1 in = _____ft Drawing or Map Reference No._____ Transect No. _____
Recorder_____ Date_____ Parcel No._____ Location_____

January 1992

INFORMATION INDEX FOR DESERT TORTOISE SIGN
Burrows and Dens, Scats, and Shell Remains

[1]Burrows and Dens:
1. currently active, with tortoise or recent tortoise sign
2. good condition, definitely tortoise; no evidence of recent use
3. deteriorated condition (please describe); definitely tortoise
4. deteriorated condition; possibly tortoise (please describe)
5. good condition; possibly tortoise (please describe)

[2]Scats:
1. wet (not from rain or dew) or freshly dried; obvious odor
2. dried with glaze; some odor; dark brown
3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material
4. dried; light light brown to pale yellow, loose material; scaly appearance
5. bleached, or consisting only of plant fiber

[3]Shell Remains:
1. fresh or putrid
2. normal color; scutes adhere to bone
3. scutes peeling off bone
4. shell bone is falling apart;growth rings on scutes are peeling
5. disarticulated and scattered

Figure 4. Desert Tortoise Summary Form for Presence-or-Absence and Clearance Surveys (3 pages).

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y

Date _____
Transect No. _____
State _____
County _____
City _____
Recorder _____
Address _____
Project Name _____
Type of Project _____

Quad Name _____
Scale _____
Site Name _____
T_____ R_____ Sec____
¼ Sec_____ ¼¼ Sec_____
UTM Zone _____
Northing _____
Easting _____
Parcel No. _____

SUMMARY FORM
FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS
FOR DESERT TORTOISE SIGN

% Slope: high_____ low_____ Aspect_____ Elevation_____ft.
Land Form (e.g., mesa, bajada, wash)_____
Soils_____
Vegetation: dominant perennials_____
other species_____
dominant annuals_____
other species_____
Adjacent Land Use: immediate_____
Within 1 mi._____
Soils_____
Vegetation_____

Weather: Temperature - Air at 5 cm_____°C Surface_____°C Cloud cover_____%
Wind speed_____ Rainfall_____in. Rainfall in last 30 days_____in.

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive [1]	Scats [2]	Shell Remains [3]
	A= J=		M= F= Unk=	A= J= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	*Neotoma* Middens w/sign	:w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other

SUMMARY FORM (continued)
FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS
FOR DESERT TORTOISE SIGN

Comments/Drawings

January 1992

INFORMATION INDEX FOR DESERT TORTOISE SIGN
Burrows and Dens, Scats, and Shell Remains

[1]Burrows and Dens:
1. currently active, with tortoise or recent tortoise sign
2. good condition, definitely tortoise; no evidence of recent use
3. deteriorated condition (please describe); definitely tortoise
4. deteriorated condition; possibly tortoise (please describe)
5. good condition; possibly tortoise (please describe)

[2]Scats:
1. wet (not from rain or dew) or freshly dried; obvious odor
2. dried with glaze; some odor; dark brown
3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material
4. dried; light light brown to pale yellow, loose material; scaly appearance
5. bleached, or consisting only of plant fiber

[3]Shell Remains:
1. fresh or putrid
2. normal color; scutes adhere to bone
3. scutes peeling off bone
4. shell bone is falling apart;growth rings on scutes are peeling
5. disarticulated and scattered

Please do not collect any desert tortoise sign. Tortoise scats may be used by tortoises to mark or identify travel areas and shelter sites. Tortoise shells may be an important source of minerals for reptiles and mammals.

Clearance Survey: For projects located in areas with habitat used by desert tortoises, especially those projects with a linear band of disturbance (e.g. pipelines, roads, transmission lines), a Clearance Survey may be required as part of a section 10(a)(1)(B) permit. The purpose of the survey would be to temporarily relocate or salvage tortoises from the area of construction and any other areas deemed necessary to avoid or minimize the death of desert tortoises that may be caused by the project. A Clearance Survey would require full coverage of the project area and would focus on locating all desert tortoises above and below ground within the project area. The removal of tortoises would be conducted immediately prior to surface disturbance within the project area. The survey period would be stipulated in a section 10(a)(1)(B) permit.

Survey Quality: To determine the accuracy of the surveyor in locating desert tortoise sign during Presence-or-Absence Surveys for each project area, the Fish and Wildlife Service recommends that the surveyor conduct an intensive survey in a portion of the project area following completion of the 100 percent survey. The size of the intensive survey area is 5 percent of the size of the project area. The intensive survey area would also receive 100 percent coverage using transects 10 feet wide rather than 30 feet or 5 feet wide rather than 10 feet wide. The location of the intensive survey would be plotted on the map and a comparison made between the sign recorded in this area during the 100 percent survey effort and the intensive survey effort. The quality or accuracy of the survey for the project area will be determined by comparing these two data sets for this area.

If the surveyor does not meet the minimal qualifications stated below or if there is a major difference in number of sign recorded between the intensive survey effort and the 100 percent survey effort, the survey may not be deemed adequate by the Fish and Wildlife Service.

If the survey results do not include the Zone of Influence, the Fish and Wildlife Service may not concur with the survey results.

Qualifications of Surveyor: The Fish and Wildlife Service does not endorse any individual or company with respect to their abilities to conduct satisfactory surveys. We recommend the following criteria for selecting someone to conduct surveys to determine presence or absence of desert tortoises in a given area or recent use of the area by the desert tortoise.

As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors degree or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. He/she must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises. Field experience may mean a minimum of 60 days field experience searching for desert tortoises and tortoise sign.

The surveyor should have the following qualifications for the survey results to be accepted by the Fish and Wildlife Service: 1) ability to recognize and accurately identify all types of desert tortoise sign listed above, and 2) ability to carefully, legibly, and completely record all sign including size of shelter sites, shells, and estimated size of live tortoises.

Survey Time Period: Survey time for Presence-or-Absence Surveys is limited to the following approximate activity period of the desert tortoise, March 25 to May 31. This survey time may be extended by the Fish and Wildlife Service if tortoises on or near the project area have been observed above ground prior to March 25 or after May 31.

This survey window is based on the activity period for the desert tortoise throughout its range during a typical year and equates to the period of time when a tortoise is not brumating or aestivating. During dry years this activity period may be shorter and in wet years it may be longer. Desert tortoises may also become active during and after summer rains.

Surveys conducted outside this window will be subject to close scrutiny by the Fish and Wildlife Service. The Service may consider the results of these surveys as under-representing the number of tortoises on and use of the project site by desert tortoises.

Presence-or-Absence or Clearance surveys should only be conducted during daylight hours.

The Fish and Wildlife Service will consider the results of a Presence-or-Absence Survey including the Zone of Influence to be valid for no more than one year. We recommend that the Presence-or-Absence Survey be repeated if project construction has not been initiated within a year of conducting the initial Presence-or-Absence Survey.

Reporting Survey Results: As mentioned above, the Fish and Wildlife Service requests that survey results, including copies of the completed transect forms, be submitted to the appropriate Service office within 30 days. These forms are used by the planning and land management agencies and the Fish and Wildlife Service to assess whether the survey was correctly followed and completed, was conducted by a qualified person, and to determine the impact of the proposed project on the desert tortoise. Submission of a final report to the Fish and Wildlife Service discussing survey results may not provide adequate information for the Fish and Wildlife Service to determine if a section 10(a)(1)(B) incidental take permit is needed.

If, for legal reasons, the surveyor is unable to submit copies of the completed transect forms to the Fish and Wildlife Service, we recommend that the surveyor complete and submit the summary form(s) (Figure 4) to the appropriate Fish and Wildlife Service office listed above.

ATTACHMENT C-2

USFWS PREPARING FOR ANY ACTION THAT MAY OCCUR WITHIN THE RANGE OF MOJAVE DESERT TORTOISE (2009)

PREPARING FOR ANY ACTION THAT MAY OCCUR WITHIN THE RANGE OF THE MOJAVE DESERT TORTOISE (*Gopherus agassizii*)

The Mojave population of the desert tortoise (*Gopherus agassizii*) was listed by the U.S. Fish and Wildlife Service (USFWS) as threatened on April 2, 1990 (USFWS 1990) and by the State of California on August 3, 1989. Subsequently, proposed actions within the range of the desert tortoise fall under purview of the Endangered Species Act 1973, as amended (ESA), in addition to State regulations, including the California Endangered Species Act (CESA). For detailed information on the ecology of the Mojave desert tortoise, please see USFWS (2009).

This protocol provides recommendations for survey methodology to determine presence/absence and abundance of desert tortoises for projects occurring within the species range on Federal and non-Federal lands, and to provide a standard method for reporting survey results. Information gathered from these procedures will: 1) help determine the appropriate level of consultation with USFWS and the appropriate state agency; 2) help determine the incidental take of desert tortoises resulting from proposed projects as defined by the ESA and CESA; and 3) help minimize and avoid take.

This guidance includes:

- Site Assessment
- Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats
- USFWS 2009 Desert Tortoise Pre-project Survey Data Sheet

This guidance is subject to revision as new information becomes available. Before initiating the protocols described below, please check with your local USFWS and appropriate state agency offices to verify that you are implementing the most up-to-date methods. To ensure quality and reduce the likelihood of nonconcurrence with survey results, we recommend that the names and qualifications of the surveyors be provided to USFWS and appropriate state agency for review prior to initiating surveys.

In Arizona:

U.S. Fish and Wildlife Service
Arizona Ecological Services
323 N. Leroux St., Suite 201
Flagstaff, AZ 86001
(928) 226-0614

In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:

U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003
(805) 644-1766

In California, for Imperial and Riverside Counties, and Joshua Tree National Park and the San Bernardino National Forest in San Bernardino Co:

U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009
(760) 431-9440

In Nevada:

U.S. Fish and Wildlife Service
Southern Nevada Field Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
(702) 515-5230

In Utah:

U.S. Fish and Wildlife Service
Utah Ecological Services Field Office
2369 West Orton Circle
West Valley City, Utah 84119
(801) 975-3330

State Agencies

Arizona Game & Fish Department
State Headquarters--Nongame Branch
5000 W. Carefree Highway
Phoenix, AZ 85086
623-236-7767

California Department of Fish and Game (CDFG)
For Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, San Benito, San Luis Obispo, Stanislaus, Tulare and Tuolumne Counties:
Central Region Headquarters Office
1234 E. Shaw Avenue
Fresno, CA 93710
(559) 243-4005 ext. 151

For Imperial, Inyo, Mono, Riverside and San Bernardino Counties:
Inland Deserts Regional Office
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
(909) 484-0167

For Los Angeles, Orange, San Diego, Santa Barbara and Ventura Counties:
South Coast Regional Office
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

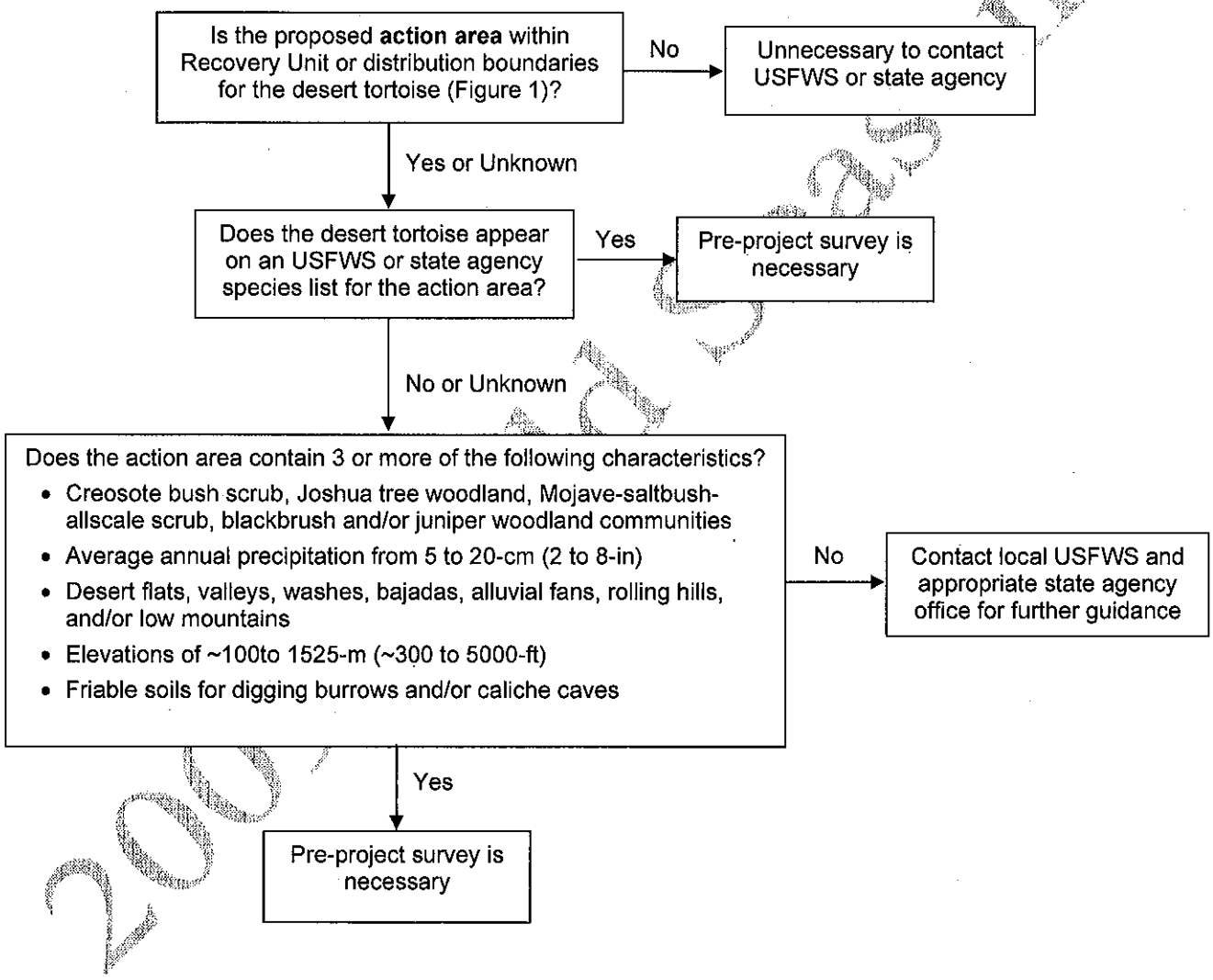
Nevada: Department of Wildlife:
Southern Region
4747 Vegas Dr.
Las Vegas, NV 89108
(702) 486-5127

Utah Division of Wildlife Resources:
Southern Region
1470 N Airport Rd
Cedar City, UT 84720
(435) 865-6100

2009 Field Season

Site Assessment

Use the below key to assess if desert tortoises may be present within or near the action area and determine survey and consultation requirements[1]. The **action area** is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). The extent of the action area is not limited to the "footprint" of the action nor is it limited by the authority of the Federal, state, or local agency or any other entity proposing the project. The environmental baseline, the analysis of the effects of the action, and the amount or extent of incidental take are based upon the action area. If you cannot access the entire action area during your surveys for some reason (e.g. access to private property is unavailable), please note that in your survey report.



[1] If determined that the proposed project is not likely to adversely affect the desert tortoise and a tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pallets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) is found in the action area during implementation of the proposed project, the proposed action should *immediately* stop and then it must be determined whether further or formal consultation is necessary to comply with the ESA or CESA in California. It is recommended that the USFWS and CDFG in California be notified in writing within three days of the discovery. This short notification period will help ensure a prompt response by USFWS and CDFG to facilitate ESA and CESA compliance.

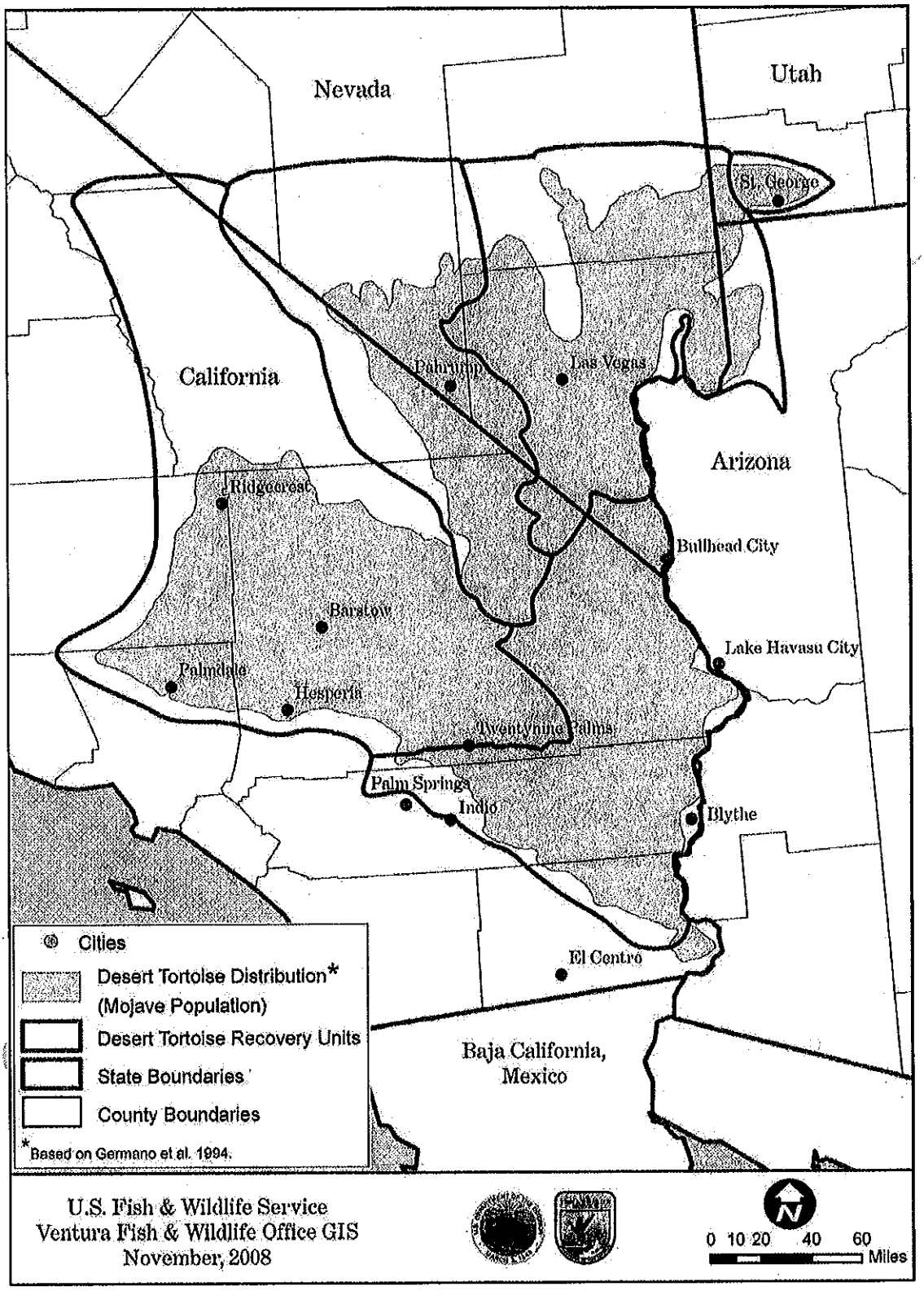


Figure 1: Known Range of the Desert Tortoise (Mojave Population)

Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats

Objectives of survey

- Determine presence or absence of desert tortoises within the action area
- Estimate the number of tortoises (abundance) within the action area
- Assess the distribution of tortoises within the action area to inform take avoidance and minimization

The **action area** is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). The action area is not limited to the "footprint" of the action or jurisdiction. Rather, it is a biological determination of the reach of the proposed action on listed species.

Field Methods

This protocol takes into account the fact that not all tortoises within the action area are seen by the surveyor. Provided is an equation which accounts for tortoises that are below ground at the time of surveys and for above-ground tortoises that are cryptic and may be missed.

$$\begin{pmatrix}\text{Estimated number of tortoises}\\ \text{within action area}\end{pmatrix} = \frac{\begin{pmatrix}\text{Number of tortoises}\\ \text{observed above ground}\end{pmatrix}}{\begin{pmatrix}\text{Probability that}\\ \text{a tortoise is}\\ \text{above ground } (P_a)\end{pmatrix}\begin{pmatrix}\text{Probability of}\\ \text{detecting a tortoise,}\\ \text{if above ground } (P_d)\end{pmatrix}}\left(\frac{\text{Action area}}{\text{Area surveyed}}\right)$$

Surveys of 100% coverage, or probabilistic sampling where appropriate, should utilize this equation to estimate the number of tortoises within the action area (see below; Table 1, P_a and P_d).

- Information to determine presence/absence *and* estimate number of tortoises within the action area is collected during the same survey effort. Surveyed objects include all tortoises that are above ground (both out of burrows and within burrows but still visible), as well as all tortoise sign (burrows, scats, carcasses, etc). Record all locations of tortoises and sign encountered during the survey effort using the USFWS 2009 Desert Tortoise Pre-Project Survey Data Sheet (attached). Please submit a copy of the original datasheets with results of the survey to your local USFWS office.
- Surveys should be conducted during the tortoise's most active periods (April through May or September through October) (Nussear and Tracy 2007; Inman 2008; USFWS 2009). Surveys outside these time periods may be approved by USFWS, and CDFG in California (e.g., warm weather in March or rainfall in August stimulating increased tortoise activity).
- Desert tortoises utilize burrows to avoid daily and annual thermal extremes (Woodbury and Hardy 1948). Therefore, surveys should take place when air temperatures are below 40°C (104°F) (Zimmerman et al. 1994; Walde et al. 2003; Inman 2008). Air temperature is measured ~5-cm from the soil surface in an area of full sun, but in the shade of the observer.
- Ten-meter (~30-ft) wide belt transects should be used during surveys. For all projects, surveys which cover the entire project area with the 10-m belt transects (100% coverage) are always an acceptable option. For very large action areas, probabilistic sampling may also be an option, such that the appropriate proportion of the action area is surveyed (Table 2). If probabilistic sampling is an option for the project site, each transect should be chosen either systematically or randomly ensuring that the entire action area has an equal probability of being included in the sample. Transects should be completed in a random order, oriented in a logistically convenient pattern (e.g., lines, squares, or triangles). Any sampling design other than simple systematic or random sampling must be approved by USFWS (e.g. stratification). See *Frequently Asked Questions* section for a discussion of 100% coverage and probabilistic sampling.
- USFWS considers the results of a pre-project survey to be valid for no more than one year. If survey results are older than one year, please contact the local USFWS office.

Presence or absence of desert tortoises within the project vicinity

- Occurrence of either live tortoises or tortoise sign (burrows, scats, and carcasses) in the action area indicates desert tortoise presence and therefore requires formal consultation with USFWS.
- If neither tortoises nor sign are encountered during the action area surveys and the project, or any portion of project, is ≤ 0.8 km^2 (200 acres) or linear, three additional 10-m (~30-ft) belt transects at 200-m (~655-ft) intervals parallel to and/or encircling the project area perimeter (200-m, 400-m, and 600-m from the perimeter of the project site) should be surveyed. These transects are employed only as part of the presence/absence determination; they are not included in the estimation of tortoise abundance. See *Frequently Asked Questions* section below for an explanation of why additional surveys are needed.
- If neither tortoises nor sign are encountered during the action area surveys, as well as project perimeter surveys where appropriate, please contact your local USFWS office. Informal consultation with the USFWS may be required even though no desert tortoises or sign are found during surveys.

Number of tortoises within the action area

The attached Table 3 spreadsheet will estimate the number of adult tortoises (>160 mm MCL) within the action area using the "Number of tortoises within the action area" equation from above.

Enter the requested information into the Table 3 spreadsheet, as follows:

1. Enter the total project area.
2. Enter the appropriate value from Table 1 for the term "probability that a tortoise is above ground" (P_a).
3. Enter the number of adult tortoises (>160-mm midline carapace length) found during the survey of the action area for the term "number of tortoises observed above ground" (n).

Table 1. Probability that a desert tortoise is above ground (P_a) relative to the previous winter's rainfall (October through March).

Use amount of rainfall from the winter preceding the pre-project survey to determine which value of P_a is appropriate for the project.

To find this amount of rainfall, go to the Western Regional Climate Center site: http://www.wrcc.dri.edu/summary/Climsmsca.html; click on your location and scroll down to "monthly totals"

Previous Winter Rain	Probability (P_a)	Variance(P_a)
<40 mm (~1.5 inches)	0.64	0.08
≥40 mm (~1.5 inches)	0.80	0.05

The estimate for the term "probability of detecting a tortoise if above ground (P_d)" is already included in spreadsheet Table 3 (P_d = 0.63; variance = 0.011). See *Frequently Asked Questions* section below for how P_a and P_d and their associated variances were estimated.

See *Appendix 1* for a detailed description of the method used to estimate desert tortoise abundance.

100% Coverage or Probabilistic Sampling?

100% coverage surveys are always an acceptable option, regardless of the size of the action area. For very large action areas, probabilistic sampling may be an additional option, such that the appropriate proportion of the action area is surveyed as detailed below.

For the 2009 field season, probabilistic sampling is not an option for desert tortoise pre-project surveys in California due to the requirement of CESA to avoid, minimize, and fully mitigate (CDFG code section 2081).

Table 2. Is probabilistic sampling an appropriate option for the proposed action area?

Is your action area smaller than the area given below for the recovery unit in which the project occurs?

Recovery Unit	Threshold Action Area to Allow Sampling
Western Mojave	7.2 km^2 (1777 acres)
Eastern Mojave	10.8 km^2 (2676 acres)
Colorado Desert	6.4 km^2 (1573 acres)
Northeastern Mojave	23.3 km^2 (5764 acres)
Upper Virgin River	2.0 km^2 (490 acres)

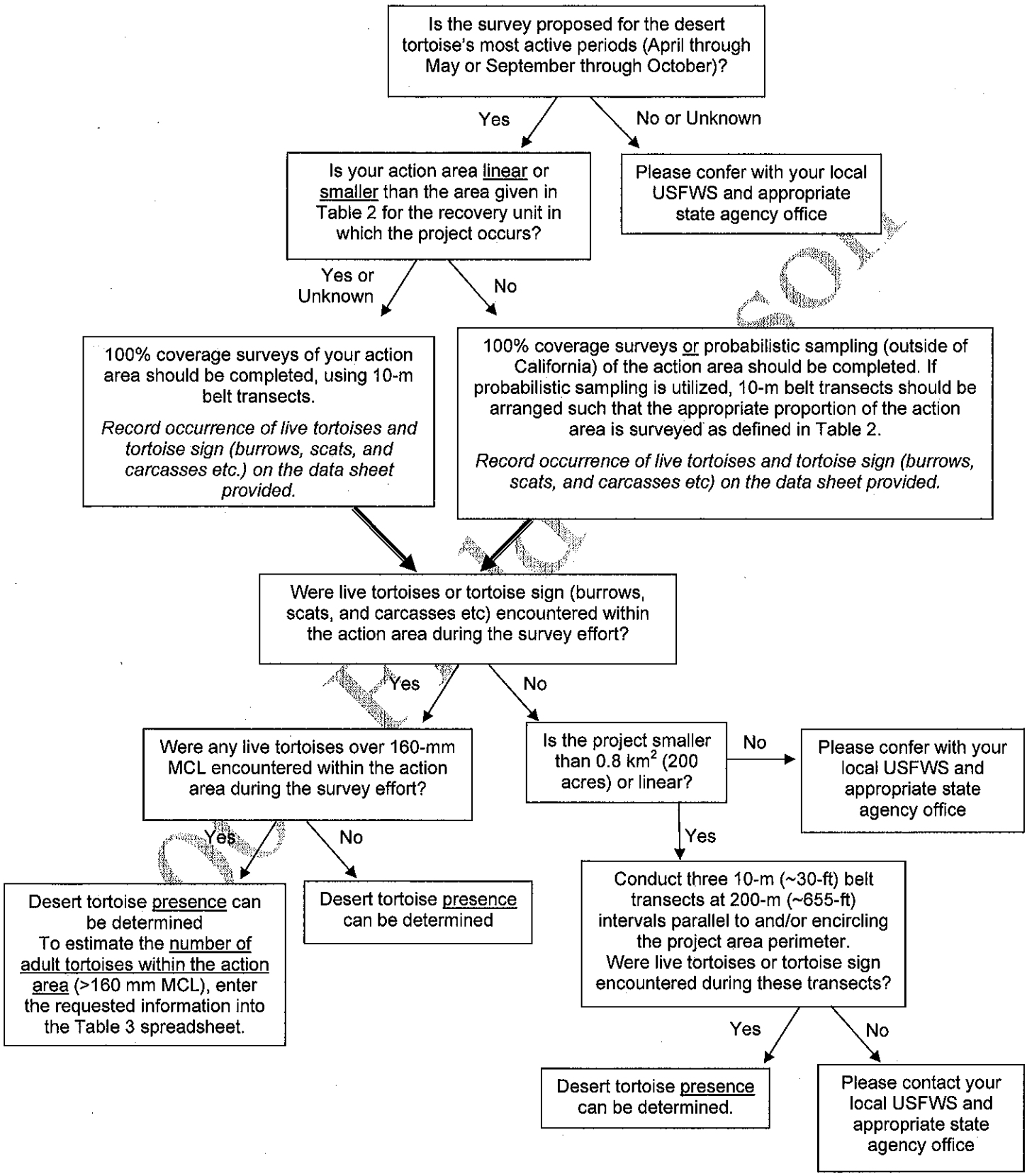
If yes: 100% coverage surveys of your action area must be completed.

If no, total transect lengths that must be surveyed are given below. 100% coverage surveys are also an option, regardless of the size of the project.

Recovery Unit	Total Transect Length (km) to Sample
Western Mojave	719
Eastern Mojave	1083
Colorado Desert	637
Northeastern Mojave	2333
Upper Virgin River	198

2009 Field Season

Decision Tree for Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats



Frequently Asked Questions: Desert Tortoise Pre-project Field Survey Protocol

Why did USFWS revise the 1992 USFWS Desert Tortoise Pre-project Survey Protocol?

Desert tortoises occur at low densities across most of the Mojave Desert (USFWS 2006). They are cryptic and spend much of their time underground in burrows (Burge 1977; Nagy and Medica 1986; Bulova 1994) and therefore not all animals within an area will be seen by even the best trained surveyors. Tortoises underground in burrows, as well as individuals hidden above ground, need to be included in estimates.

The 1992 USFWS Desert Tortoise Pre-project Survey protocol was based on a Bureau of Land Management protocol from the mid-1970s, which utilized the best available information at the time, but did not take into account that some tortoises will be underground and missed during the survey effort. The data collected during the extensive USFWS range-wide monitoring program (currently <7,000-km of transects each year; USFWS 2006) have allowed us to improve pre-project survey methods. Data about the proportion of tortoises underground in burrows, as well as the probability that an above-ground tortoise will be observed by the surveyor are included in the estimate of the number of tortoises within the action area (P_a and P_d).

This protocol also addresses the potential for using probabilistic sampling when the action area is above the size limits given in Table 2. 100% coverage surveys are *always* an acceptable option, regardless of the size of the action area. For very large action areas, sampling may be an additional option, such that the abundance estimates can be calculated when an appropriate proportion of the action area is surveyed. Estimates of tortoise densities within recovery units from the range-wide monitoring program have been used to calculate how many km^2 of a project site must be surveyed to produce a statistically robust abundance estimate (Table 2).

What happened to the zone of influence transects recommended in the 1992 protocol?

This revised protocol requires that the entire action area, rather than just the project footprint, be included in the survey effort. The **action area** is defined by regulation as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR §402.02). The action area is therefore not limited to the "footprint" of the project nor is it limited by the Federal agency's authority. Rather, the action area is a biological determination of the reach of the proposed action on listed species, which must, by definition, encompass the zone of influence of the project.

How did USFWS determine the values for the "probability that a tortoise is above ground"?

The USFWS range-wide monitoring program estimated the proportion of the desert tortoise population that is visible using telemetered animals from focal areas in spring 2001-2005 (USFWS 2006). This probability is related to the previous winter's rainfall, as illustrated in Table 1. The range of fall above-ground activity is similar to spring numbers, but the variability is much higher (Nussear and Tracy 2007; Inman 2008). Until more robust estimates of fall above-ground activity are available, spring estimates based on the previous winter's rainfall (October through March) are used for surveys conducted in either active period.

How did USFWS establish the value for the "probability of detecting a tortoise, if above ground"?

For the past five years, surveyors in the USFWS range-wide monitoring program have undergone training on established transects with artificial tortoises. Trained surveyors detected an average of ~63% of model tortoises that were within 5-m of either side of the transect center-line (USFWS unpublished).

Why are only tortoises over 160-mm MCL used to estimate the number of tortoises within the action area?

The values of P_a and P_d used in the equation to estimate the number of tortoises within the action area are based on USFWS range-wide monitoring data collected for adult tortoises ≥160-mm MCL.

What is the purpose of 100% coverage surveys versus probabilistic sampling?

The purpose of surveying is to determine presence/absence and estimate the abundance of desert tortoises within the action area. For 100% coverage surveys, transects are placed across the entire action area; thus, the entire area for which abundance is estimated is surveyed. A probabilistic sampling approach, on the other hand, uses data from randomly or systematically placed transects to draw inferences about locations where surveys are not conducted. All locations for which abundance will be estimated *must* have an equal probability of being included in the sample.

How were the threshold project sizes calculated for determining whether 100% coverage or probabilistic sampling is appropriate?

The validity of probabilistic sampling requires that all locations for which abundance will be estimated have an equal probability of being included in the sample, as well as the expected sample size. Estimating the number of tortoises within the project area using probabilistic sampling is limited by the number of tortoises encountered during the survey effort. Therefore, whether or not the project area must be surveyed using 100% coverage or can be probabilistically sampled is based on the area expected to yield a survey count of 20 tortoises (Krzysik 2002). Table 2 uses tortoise densities and detection probabilities estimated from 2001-2005 range-wide line-distance sampling efforts for each tortoise Recovery Unit (USFWS 2006) to calculate that area of a project site that must be surveyed to produce a statistically robust estimate. If the project area is large enough to allow the option of probabilistic sampling, Table 2 provides the minimum transect kilometers (10-m wide) that must be surveyed.

What if the minimum length of 10-m wide transect kilometers are completed but 20 tortoises were not found in the action area?

If probabilistic sampling is used and < 20 tortoises are found after surveying the total transect length prescribed by Table 2, number of tortoises within the action area may be estimated using number found.

Do I keep surveying if 20 tortoises are found before the minimum transect kilometers that must be surveyed are completed?

If probabilistic sampling was used and the transects have been completed in a random order, project area surveys may be considered complete when 20 tortoises have been found or the specified number of kilometers have been sampled, whichever happens first. It is okay if more that 20 tortoises are found, this will decrease the width of the 95% confidence interval for the abundance estimate.

Why do small and linear projects where no tortoises were found have to do additional surveys at 200-m (~655-ft) intervals parallel to the project area perimeter?

Even though neither tortoises nor tortoise sign were found within the action area at the time of the survey, the area may be part of an animal's home range. The home range of a female desert tortoise averages around 0.15 to 0.16 km^2 (35 to 40 acres), about one third the size of male home ranges, which are variable and can be > 2 km^2 (O'Conner et al. 1994; Duda et al. 1999; Harless et al. In press). Therefore, projects that are ≤ 0.8 km^2 (200 acres) or linear may overlap only part of a tortoise's home range and the possibility that a resident tortoise was outside the project area at the time surveys were conducted must be addressed. In these cases, USFWS recommends three additional 10-m (~30-ft) belt transects at 200-m (~655-ft) intervals parallel to and/or encircling the project area perimeter (200-m, 400-m, and 600-m from the perimeter of the project site). Record any tortoises or sign encountered during these surveys. These transects are employed only as part of the presence/absence determination; they are not included in the estimation of tortoise abundance within the project area.

What does the 95% confidence interval for the number of tortoises within the action area mean?

Confidence intervals are used to indicate the reliability of an estimate. The interval gives an estimated range of values, calculated from a set of sample data, which is likely to include an unknown population parameter (in this case, the true number of tortoises within the action area). A wider confidence interval indicates that less certainty is associated with the estimate (see Appendix 2). The Table 3 spreadsheet calculates the abundance and associated 95% confidence interval for the estimated number of tortoises within the project area (Buckland et al. 2001).

Acknowledgments

The USFWS Desert Tortoise Recovery Office is grateful to the many individuals and agencies that were instrumental in development and review of this revised protocol. Specifically, we thank Jim Nichols (USGS) and Tony Krzysik (Prescott Audubon Society) for assistance with concept design; Alice Karl (independent tortoise biologist) and Andrew Thompson (USFWS) for development discussion, and Kirk Waln (USFWS) for GIS support.

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2009 Field Seas

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Appendix 1. Detailed description of desert tortoise abundance and CI estimation

The estimated abundance of adult desert tortoises within the action area is given by:

$$\begin{pmatrix}\text{Estimated number of tortoises}\\ \text{within action area}\end{pmatrix} = \frac{\begin{pmatrix}\text{Number of tortoises}\\ \text{observed above ground}\end{pmatrix}}{\begin{pmatrix}\text{Probability that}\\ \text{a tortoise is}\\ \text{above ground}\end{pmatrix}\begin{pmatrix}\text{Probability of}\\ \text{detecting a tortoise,}\\ \text{if above ground}\end{pmatrix}}\begin{pmatrix}\dfrac{\text{Action area}}{\text{Area surveyed}}\end{pmatrix},$$

which is equivalent to:

$$\hat{N} = \left[\frac{(n)}{(Table2)(0.63)}\right]\left[\frac{(A)}{(a)}\right],$$

where $\hat{N}$ = estimated abundance within entire action area, n = number of tortoises observed above ground, A = total action area, and a = actual area surveyed (= total # km surveyed * 0.01). For 100% coverage surveys, A/a = 1.

Table 3 uses the following equations to calculate the 95% confidence interval for the estimate of tortoise abundance within the action area (Buckland et al. 2001), assuming all replicate transect lines are the same length, 10-km.

$$\hat{\text{var}}(n) = L\sum_{i=1}^{k} l_i\left(\frac{n_i}{l_i} - \frac{n}{L}\right)^2 /(k-1)$$

where $\hat{\text{var}}(n)$ = the spatial variation in the number of tortoises detected through the total transect length L, n_i = the number of tortoises seen on transect i, l_i = the length of individual transect i, and k = total number of transects walked.

Putting the sources of variability together, the variance of density is:

$$\text{var}\,\hat{D} = \hat{D}^2\left[\frac{\text{var}(n)}{n^2} + \frac{\text{var}(\hat{P}_a)}{(\hat{P}_a)^2} + \frac{\text{var}(\hat{P}_d)}{(\hat{P}_d)^2}\right]$$

Because the tortoise density sampling distribution is positively skewed, the confidence interval is calculated using a log-distribution for density and built with division and multiplication, rather than addition and subtraction from the mean as with a symmetrical interval (Buckland et al. 2001).

Thus, the 95% confidence interval for $\hat{N}$ is:

$$\left(\hat{N}/C_N, \hat{N}\cdot C_N\right),$$

where $C_N = \exp\left[z_\alpha\sqrt{\text{var}(\log_e \hat{D})}\right]$ and $\text{var}(\log_e \hat{D}) = \log_e\left[1 + \frac{\text{var}(\hat{D})}{\hat{D}^2}\right]$.

Given the simplifying assumptions in this protocol, the 95% confidence interval around the estimated number of tortoises within the action area will be wide (e.g., the estimate of the number of tortoises will be imprecise). While this level of imprecision would not be appropriate for recovery planning and decision making at large scales, this protocol provides estimates at local scales that most efficiently utilize the best information that is available to provide statistically defensible results.

Draft Field Season

Appendix 2. Example

Project location = near Beatty, NV (within the Eastern Mojave RU)

Action area = 12 km^2 (3,000 acres)

According to this protocol's Site Assessment key, the proposed action is within the known range of the desert tortoise. The local USFWS and appropriate state agency offices were contacted and a species list, which includes the desert tortoise, was obtained for the action area. Therefore, pre-project survey and consultation are necessary.

The project footprint is only 10 km^2, but since the project will include blasting, the reach of the proposed action on listed species extends to 12 km^2. Thus, the action area (and therefore the area which needs to be surveyed for desert tortoises) is 12 km^2 (which is more inclusive than the 10 km^2 project footprint).

According to Table 2 of the pre-project survey protocol, the project size of 12 km^2 is above the threshold project area to allow probabilistic sampling in the Western Mojave RU (10.8 km^2 threshold). Therefore, at a minimum, 1,083 km of transects must be walked. For this example, 108 10-km transects (10-m wide) were placed systematically across the project site and were completed in a random order. Surveys of 100% coverage in which 10-m wide transects were placed across the entire 12 km^2 action area would also have been acceptable.

Transects totaling 1,083 km were conducted and 19 adult tortoises (> 160 mm carapace length) were found (as well as tortoise sign, both of which were catalogued using the USFWS 2009 DT pre-project survey protocol data sheet). If 20 adult tortoises had been encountered before the 1,083 km of transects were completed, and transects were conducted in a random order, then surveys could have been considered complete after the 20th tortoise was catalogued.

Data collected from the108 transects (live animals encountered <160-mm MCL)

Number of tortoises (n_i)	Number of transects on which n_i tortoises were seen
0	93
1	11
2	4

Using the Western Regional Climate Center website, it was determined that the Beatty area had received 97-mm (3.8 inches) of rain in the October through March preceding the survey effort, which is above the 40-mm (1.5 inches) in Table 1. Therefore, P_a of 0.80 will be used in this estimation.

Thus, from

$$\hat{N} = \left[\frac{(n)}{(Table2)(0.63)}\right]\left[\frac{(A)}{(a)}\right], \text{ we get } \hat{N} = \left[\frac{(19)}{(0.80)(0.63)}\right]\left[\frac{(12\,km^2)}{(10.8\,km^2)}\right], \text{ or } \hat{N} =\sim 42 \text{ tortoises}$$

$$\text{Density} = \frac{(\hat{N})}{(A)}, \text{ we get } \hat{D} = \frac{(42)}{(12\,km^2)}, \text{ or } \hat{D} =\sim 3.5 \text{ tortoises/km}^2$$

To calculate the 95% confidence interval for our abundance estimate, we use:

$$\hat{\text{var}}(n) = L\sum_{i=1}^{k} l_i\left(\frac{n_i}{l_i} - \frac{n}{L}\right)^2 /(k-1),$$

we get $\hat{\text{var}}(19) = 1080\left[(93)(10)\left(\frac{0}{10} - \frac{19}{1080}\right)^2 + (11)(10)\left(\frac{1}{10} - \frac{19}{1080}\right)^2 + (4)(10)\left(\frac{2}{10} - \frac{19}{1080}\right)^2\right]/(108-1)$, or

$\hat{\text{var}}(19) = 23.88$

And for,

$\text{var}\,\hat{D} = \hat{D}^2\left[\frac{\text{var}(n)}{n^2} + \frac{\text{var}(\hat{P}_a)}{(\hat{P}_a)^2} + \frac{\text{var}(\hat{P}_d)}{(\hat{P}_d)^2}\right]$, we get $\text{var}\,\hat{D} = 3.5^2\left[\frac{23.88}{19^2} + \frac{0.05}{0.80^2} + \frac{0.011}{0.63^2}\right]$, or $\text{var}\,\hat{D} = 2.107$

Using our log-transformation because the tortoise density sampling distribution is positively skewed,

$\text{var}(\log_e \hat{D}) = \log_e\left[1 + \frac{\text{var}(\hat{D})}{\hat{D}^2}\right]$, we get $\text{var}(\log_e \hat{D}) = \log_e\left[1 + \frac{2.107}{3.5^2}\right]$, or $\text{var}(\log_e \hat{D}) = 0.15$

Then,

$C_N = \exp\left[z_\alpha\sqrt{\text{var}(\log_e \hat{D})}\right]$, we get $C_N = \exp\left[(1.96)\sqrt{0.15}\right]$, or $C_N = 2.18$

And,

$\left(\hat{N}/C_N, \hat{N}\cdot C_N\right)$, we get $\left((42/2.18),(42\cdot 2.18)\right)$, or ~$(19, 92)$.

Summary

Using the Site Assessment key, it was determined that survey and consultation were necessary for the proposed action. Thus, the pre-project field survey protocol was implemented. In this case, probabilistic sampling with equal length transects (10-km long) was used and 19 adult tortoises and tortoise sign were found during the sampling of the action area, indicating presence. Using the equations and data presented in Appendix 1 of this protocol, Table 3 estimated the actual number of tortoises within the project was estimated to be ~42, with a 95% confidence interval of ~(19, 92).

2008 Field Season

USFWS 2009 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Date of survey: _____ (day, month, year) Survey biologist(s): _____

Site description: _____ (project name and size; general location)

County: _____ Quad: _____ Location: _____ (UTM coordinates, lat-long, and/or TRS; map datum)

Transect #: ____ Transect length: _____ Type of survey: _____ (project area size to be surveyed; 100% coverage/probabilistic sampling)

GPS Start-point: _____ _____ (easting, northing, elevation in meters) Start time: _____am/pm

GPS End-point: _____ (easting, northing, elevation in meters) End time: _____am/pm

Start Temp: _____°C Weather: _____

End Temp: _____°C

Live Tortoises

Detection number	GPS location Easting	Northing	Time	Tortoise location (*in burrow*: all of tortoise beneath plane of burrow opening, or *not in burrow*)	Approx MCL ≥160-mm? (*Yes, No or Unknown*)	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location Easting	Northing	Type of sign (*burrows, scats, carcass, etc*)	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

Page: _____of_____

Date of survey: _____

Transect number: _____

2009 Field Sheet

ATTACHMENT D

GUIDELINES FOR HANDLING DESERT TORTOISE DURING CONSTRUCTION PROJECTS

GUIDELINES FOR HANDLING DESERT TORTOISES

DURING CONSTRUCTION PROJECTS

July 1994
(Revised July 1999)

prepared by:

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prepared for:

U.S. Fish and Wildlife Service
U.S. Bureau of Land Management
California Department of Fish and Game
Nevada Department of Wildlife
Arizona Game and Fish Department
Utah Division of Wildlife Resources

Warning: These Guidelines do not authorize individuals to handle tortoises. Such authorization should come from Federal and State wildlife resource agencies, including, at least, those listed above.

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GUIDELINES FOR HANDLING DESERT TORTOISES DURING CONSTRUCTION PROJECTS

Developed by the Desert Tortoise Council

Handling of desert tortoises and other forms of "take" (includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) are prohibited by section 9 of the Endangered Species Act of 1973, as amended. Desert tortoise handling can only be authorized through an incidental take statement in a biological opinion, an incidental take permit (section 10(a)(1)(B) permit), or a scientific collecting permit (section 10(a)(1)(A) permit). The regulatory document(s) or permit(s) authorizing handling are the ultimate guides to how desert tortoises should be handled. We expect that these documents will often authorize handling in accordance with the following handling guidelines.

The following Guidelines have been reviewed and are based on information provided to the Desert Tortoise Council (DTC) by the U.S. Fish and Wildlife Service (Reno and Las Vegas, NV; Ventura and Carlsbad, CA; Phoenix, AZ; Salt Lake City, UT), California Department of Fish and Game (Chino and Long Beach, CA), Utah Division of Wildlife Resources (Cedar City, UT), Nevada Department of Wildlife (Las Vegas, NV), Arizona Game and Fish Department (Phoenix, AZ), U.S. Bureau of Land Management (Saint George, UT; Riverside, CA; Phoenix, AZ), several private consultants, and other individuals. Individuals contacted to develop and/or review these Guidelines are listed in Attachment 1.

The Guidelines are intended for use during construction projects monitored by authorized biologists (tortoise monitors) who are working on behalf of a project proponent in the absence of special regulatory requirements, such as a 10(a)(1)(A) scientific collecting permit. The Guidelines will be helpful to tortoise monitors performing clearance surveys and construction monitoring where tortoises need to be moved out of harm's way. They are intended to be used in coordination with U.S. Fish and Wildlife Service (USFWS) Biological Opinions issued to federal action agencies (e.g., U.S. Bureau of Land Management (BLM), U.S. Army Corps of Engineers, etc.), and state agency documents for state-authorized actions. Although useful information is provided, the Guidelines are **not** intended to replace scientific research project methodologies for handling and processing tortoises.

These Guidelines do not authorize tortoise handling. Depending on the project, responsible federal and state agencies review a person's résumé and authorize him/her to handle tortoises. These Guidelines are provided for tortoise monitors already authorized, or who hope to be authorized, by federal and state agencies. The DTC assumes that such monitors are qualified to handle and process tortoises. These Guidelines include methods and alternatives that are effectively used by professional tortoise researchers to safely handle tortoises in the field. The DTC believes that tortoise handling should be an evolving process, continually updated to include the latest, most effective and efficient methods for safe handling. A wealth of information is already available, and these Guidelines provide that information to construction monitors.

A sequential checklist for use in the field is included (section **F.**). When necessary, the checklist should be cross-referenced with the Guidelines for more detailed information. The inexperienced monitor should use the checklist as a reminder of steps to be taken when handling and processing tortoises, and should be completely familiar with the Guidelines **before** handling tortoises. The experienced monitor may also gain useful information from these Guidelines.

You are encouraged to submit comments on these Guidelines to the USFWS and the DTC. In subsequent years, the DTC will work with the USFWS, using your input, to ensure that the Guidelines are revised to incorporate new information and techniques.

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GUIDELINES FOR HANDLING DESERT TORTOISES

A. PRELIMINARY STEPS

A.1. Federal and state authorizations

Once you are selected by a project proponent to monitor construction, your résumé is typically submitted to the nearest field office of the USFWS at least 15 days prior to construction. You may also need to submit your résumé to the federal action agency (i.e., the federal agency with whom the USFWS has consulted under Section 7 of the Act) and state wildlife agencies. Within the State of Utah, any individual (including any qualified biologist) must obtain a section 10(a)(1)(A) permit from the USFWS to be authorized to handle desert tortoises. Within the States of Arizona, California, Nevada, and Utah, individuals must obtain the appropriate permits from the respective State wildlife agency to be authorized to handle tortoises. If your résumé has not been previously accepted by the responsible agency(s), you should not assume that you are approved until you have written or verbal confirmation from them. After you are authorized, you must read and comply with any federal and state regulatory documents for the project.

A.2. Specific requirements for monitors

The USFWS requires that you observe field demonstrations for egg handling or artificial burrow construction before performing either of these activities. Since 1993, the DTC has arranged for USFWS-authorized biologists to demonstrate these procedures at its annual workshop. Those observing the demonstrations were given certificates. Such demonstrations may be available at future DTC workshops, depending on demand.

The USFWS distinguishes between desert tortoise biologists and environmental monitors as follows: Biologists should (a) possess a bachelor's or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields; (b) demonstrate a minimum of 60 days prior field experience using accepted resource agency techniques to survey for desert tortoises; and (c) have the ability to recognize and to accurately identify and record all types of desert tortoise sign. Generally, only qualified biologists, and not environmental monitors, may handle tortoises. Environmental monitors may handle tortoises in emergency situations, but only if they have explicit authorization to do so by the appropriate office of the USFWS.

A.3. Sequential numbering scheme

Prior to beginning the project, you should contact the USFWS and/or other regulatory agency to determine if tortoises are to be marked for your project. In California, the BLM and United States Geological Survey - Biological Resources Division (USGS - BRD) assign tortoise numbers that are used by scientists to mark tortoises on study plots located throughout the Mojave and Colorado Deserts. If your project is near one of these plots, it is important that you contact the appropriate offices of the BLM and USGS - BRD before marking tortoises to ensure that your numbers will not be confused with those used by the federal agencies.

A.4. Examples of numbering schemes

If tortoises are to be marked, they should be identified by project initials and numbers. Examples include: (a) initials of the project followed by a sequential number; (e.g., "MB1" for the first tortoise marked on the Morongo Basin Pipeline project, "MB2" for the second, etc.); (b) initials of the monitoring organization followed by a sequential number; (e.g., "DTC1" for the first tortoise marked by the Desert Tortoise Council on a project, "DTC2" for the second, etc.).

A.5. Getting organized

The materials that you are likely to need for handling tortoises are listed in Attachment 2. Many researchers organize their materials so that they have a "tortoise handling kit for the field," "tortoise handling kit for the truck," "burrow excavation kit," "tortoise marking kit," etc. In any case, it is important that you have all the materials that you need to safely and quickly handle tortoises. It is equally important that you be organized and ready to handle tortoises expeditiously when they are found.

B. IN THE FIELD

While monitoring construction, you will observe tortoises either aboveground or in burrows. When aboveground, tortoises should only be moved if in harm's way. If not, do not handle them, but monitor them to ensure that they are not adversely affected by construction. Depending on the circumstances, tortoises that are beneath machinery, in trenches or pipes, under pallets, or anywhere within the right-of-way may be in danger and need to be moved. If they must be moved, use the appropriate recommendations in these Guidelines to ensure safe handling.

You will also find tortoises in burrows in areas where they will be harmed if not moved. The following sections advise you on how to handle such tortoises.

B.1. Prior to excavating burrows

B.1.a. Determining if burrows should be excavated - According to most agency documents, tortoise burrows are excavated only if they occur within a construction right-of-way, in an area to be cleared of vegetation, or in areas that will not be cleared, but will be negatively impacted by heavy equipment, such as staging areas and turnarounds. The agency document typically requires that such areas be flagged and that construction activities be confined to those areas.

If a tortoise burrow is inside the designated construction area and will be damaged or destroyed, excavate it. Spider webs, litter, and other debris may accumulate in burrow openings overnight, and openings may collapse during winter rains. Do not assume that a burrow is inactive if it looks unused or collapsed. Tortoises may use canid or mustelid digs, and may be found in burrows of other animals, particularly kit foxes. Burrowing owls may use tortoise burrows, but do not assume that burrows occupied by owls are not also occupied by tortoises. Juvenile tortoise burrows may resemble rodent burrows, or juveniles may be inside such burrows. Therefore, excavate **all** burrows that will be lost to construction. If a burrow opening is outside the construction area, but a tortoise at the end of the burrow may be within the area, excavate it. Remember that a burrow may extend 30 feet beyond the opening.

B.1.b. Describing burrows - When possible, we recommend that you take measurements of the burrow before excavating it. The information should be recorded in your field notebook, and, if a tortoise is present, would be transferred to the data sheet (section **E.**). Measure the width and height just inside the opening of the burrow, the length (in many cases you cannot measure the length until you are finished excavating the burrow), determine burrow orientation using a compass, and record its condition using the categories given below. We recommend that you use permanent black ink and high rag content, acid-free paper for recording data. The following categories may be used to describe the conditions of burrows (U.S. Fish and Wildlife Service 1992):

Class:
1. currently active, with tortoise or recent tortoise sign
2. good condition, definitely tortoise; no evidence of recent use
3. deteriorated condition; definitely tortoise (please describe)
4. good condition; possibly tortoise (please describe)
5. deteriorated condition; possibly tortoise (please describe)

B.1.c. Other considerations - Depending on the time of year and other conditions (*B.5.c.ii.*) you may need to construct a burrow **before** you remove a tortoise from its natural burrow. Recommended techniques for burrow construction are discussed in section *B.5.f.*

B.2. Mapping burrows

If a burrow is to be excavated, there are several important reasons for mapping it: (a) resource agencies can determine how many tortoises were encountered on the project compared with the number of burrows excavated; (b) the information will be available for future projects in the same area; (c) burrow locations may be important for organizing monitors and determining tortoise "hot spots" versus areas where few, if any, tortoises are found; and (d) the number and location of burrows found during initial tortoise surveys can be compared with the number and location of burrows found during monitoring; (i.e., the data may provide information to determine appropriate take limits based on the findings of initial surveys). Typically, the USFWS requires that the number of tortoises observed during construction be reported. Mapping the information will show the location of the tortoises. Some monitoring supervisors require that all tortoise sign be mapped. If an artificial burrow is used, we recommend that it be accurately mapped. If the burrow is blocked (section *B.5.f.i.*), it is essential that you map it and mark it in the field so you can find and unblock it later.

B.3. Map types

When you map burrows, we recommend that they be numbered and shown on maps of appropriate scale. If monitoring a linear right-of-way, it often helps to number burrows sequentially within a given section of the alignment (e.g., "B-23-2," for burrow #23 on reach 2). Mapping is important if many monitors are locating, numbering, and mapping burrows simultaneously. United States Geological Survey (USGS) 7.5' topographical maps (scale 1" = 2,000'), or enlargements of them, are useful. Project maps at a scale of 1" = 100' or 1" = 200' are particularly useful when burrows are common and better resolution is necessary. The assigned numbers may be cross-referenced with data sheets, field notes, and photographs.

B.4. Excavating burrows

B.4.a. Looking for eggs - Feel for tortoise eggs by gently probing the soil in front of the burrow opening (i.e., the mound) and along the floor as you excavate the burrow. Eggs have been found up to six feet in front of burrow openings and up to six feet within the entrance of a burrow; they may occur in the mound at the burrow opening. To avoid crushing eggs, do not scrape the shovel across the bottom of the burrow, but continue to probe the area with your fingers as you proceed. Removal of the top ten inches of soil (or until a hard layer of soil is encountered) will typically ensure that you find any tortoise eggs. Be particularly careful between late April and mid-October when eggs are most likely present. If found, follow the USFWS's egg handling protocol (Attachment 3). Although not included in the protocol, we strongly recommend that you wear disposable latex gloves when handling eggs.

B.4.b. Excavating burrows - We recommend that monitors wear leather or cloth gloves during burrow excavation to avoid being bitten or stung by venomous animals. Blunt-nosed shovels or garden trowels are useful. If available, two monitors, each with a shovel, may excavate a burrow. One person may place his/her shovel in the burrow entrance and the other person, using a similar shovel or spade, would slice away the ceiling. Excavate the burrow slowly and carefully and stop often to see if a tortoise is within reach. It may take several minutes or several hours to excavate a tortoise burrow, depending on its length and other characteristics.

If you are the only monitor present, we recommend the following. Depending on the size and depth of the burrow, carefully slide an appropriate-sized plank six inches to two feet into the opening. You could use a 1" x 2" plank for smaller burrows and a 2" x 4" plank for larger burrows. Gradually collapse the burrow onto the plank, and remove the soil from the burrow tunnel as you go. Do not collapse the burrow ahead of the plank. You should feel the shovel contact the plank with each stroke. In this way, you will avoid striking a tortoise with the shovel. Alternatively, you may use a second shovel instead of the plank, which will facilitate removing soil from the burrow as you collapse it.

B.4.c. Finding and removing all tortoises - Regardless of the excavation method, you should always excavate the burrow to its absolute end(s), then excavate an additional foot-or-so of harder soil beyond the suspected end to ensure that a tortoise is not behind a dirt "plug" or mound. Search all side tunnels within the burrow for tortoises, especially in kit fox dens. If a tortoise is found, do not assume that it is alone. After removing the first tortoise encountered, you should return to the burrow and continue to excavate it looking for additional tortoises. After excavating the burrow, leave it collapsed so that no tortoise may reuse it easily.

B.5. Finding tortoises in burrows

B.5.a. Taking temperature readings - When a tortoise is encountered during burrow excavation, we recommend that you stop digging and check and record the air temperature [thermometer shaded at 1.5 m (4.9 ft) above the ground] and ground temperature [thermometer shaded at 1.0 cm (0.4 in) above the ground].

B.5.b. Deciding if tortoises should be processed - Data collected in a consistent manner during construction projects will be useful to resource agencies developing mitigation measures for future projects. However, the health of a tortoise is your number one priority. Only process a tortoise (i.e., weigh, measure, sex, and photograph it; section **B.7.**) if the situation allows you to do so without harming it or neglecting additional tortoises that may enter the construction site. If you are unable to do more than move a tortoise out of harm's way and monitor it to ensure its safety, you have done your job. Skip section **B.7.** if the situation is not right for processing a tortoise. The following sections discuss situations where you should or should not process tortoises.

B.5.c. Specific considerations before processing tortoises

B.5.c.i. Tortoise temperature preferences - The preferred daytime body temperature of desert tortoises is 69 °F to 101 °F (McGinnis and Voigt 1971). The critical maximum body temperature is between 103 °F and 112 °F (Brattstrom 1965, Naegle 1976). Berry and Turner (1984) found that juvenile tortoises preferred air temperatures of 63 °F to 66 °F during March, and 77 °F to 83 °F during June. Consequently, more juvenile tortoises were located in the morning (76.1%) than in the afternoon (23.9%). USFWS (1991) requires that measures be taken to ensure a tortoise does not overheat if it is processed when air temperature exceeds 90 °F at 1.5 m above the ground or if ground temperature exceeds 95 °F. Unless detailed processing (i.e., weighing, measuring, and photographing tortoises) is specifically required by federal or state agencies, we recommend that tortoises **not** be completely processed when air temperature exceeds 90 °F or ground temperature exceeds 95 °F. Under such conditions, the tortoise should be only inspected (section *B.7.d., B.7.e.,B.7.f.*), marked (section *B.7.g.*), and released (section *B.8.*).

B.5.c.ii. Other considerations - Based on the time of year and other conditions, we make the following recommendations to help you decide if tortoises should be processed. In this section, we assume that (1) you are authorized to handle tortoises during the authorized construction project, and (2) the tortoise must be moved out of harm's way regardless of extreme weather conditions or other potentially threatening situations.

B.5.c.ii.(a). During hot temperatures - When air temperature is greater than 90 °F or if the ground temperature is greater than 95 °F at the time you find a tortoise in a burrow that must be excavated, we recommend that you only inspect, mark, and release the tortoise (section *B.5.c.i*); construction of an artificial burrow may be necessary (*B.5.f.*). If possible, only excavate burrows and remove tortoises when temperatures do not exceed these limits. If a tortoise is found aboveground when these upper temperatures are exceeded, and the tortoise must be moved from harm's way, place it in the shade of a shrub, ideally in the vicinity of a nearby burrow of similar size (*B.8.a.*).

B.5.c.ii.(b). During cold temperatures - When tortoises are likely inactive (section *B.5.e.*), prior to removing them from their burrows, construct an artificial burrow and place the tortoise inside after it has been processed. The USFWS requires that you receive written permission from the private land owner if a tortoise is to be placed on private property.

B.5.c.ii.(c). At or near sunset - If a tortoise with a midline carapace length (MCL) (section *B.7.h.*) less than or equal to 180 mm is rescued from the construction site at or near sunset, we recommend that it be held overnight in a clean, unused cardboard box and released the next morning near the capture site. A larger tortoise (i.e., MCL greater than 180 mm), which may be less prone to predation than a juvenile tortoise, does not need to be held overnight, but should be released under a shrub (section **B.8.** for more information on releasing tortoises). We recommend that the tortoise be monitored until it resumes normal behavior, "settles in" for the night, or until you are no longer able to watch it due to darkness. In such a situation, we recommend that you be at the release site at or before sunrise the next morning to look for and continue to monitor the tortoise.

B.5.c.ii.(d). If tortoises are seriously ill - If a tortoise has prevalent signs of Upper Respiratory Tract Disease (section *B.7.d.iv.*) or hyperthermia (section *B.6.a.i.*), or otherwise appears to be seriously ill, we recommend that you construct a burrow, place the tortoise inside, block its entrance (section *B.5.f.i.*), and call the USFWS or the action agency to inform them of the situation. If you are unable to reach the appropriate agency for further instruction, check the tortoise on the next day(s), continue to record observations on its health, and contact the agency as soon as possible.

B.5.c.ii.(e). Other situations - There will be times when you will be required to exercise judgment on the appropriate disposition of a tortoise. For example, if you are the only monitor on a pipeline project in an area of high tortoise density, you would not likely process tortoises because other tortoises may wander, unseen, into harm's way while you were doing so. You may put an "excavated" tortoise in an artificial, plugged burrow until pipe installation has moved out of the area. Use your common sense, and always keep the welfare of the tortoise in mind.

B.5.d. Transporting tortoises

B.5.d.i. Use a box - There are a few situations where a tortoise may be taken from the field, held overnight, and then released the next morning. We recommend that during transport each tortoise remain in a clean, unused cardboard box that is covered or closed. Newspaper placed in the bottom will absorb any urine that is voided. The box should be ventilated in such a way that a tortoise's leg or head will not get stuck. Never put more than one tortoise in a box. Do not allow tortoises to roam freely in the vehicle, nor should they be transported in shopping bags or other containers less sturdy than a new cardboard box. Mark the box or discard it immediately after use to be sure that it is not used for another tortoise.

B.5.d.ii. Precautions - Never place tortoises over the catalytic converter or other area that becomes hot with vehicle operation. Truck beds or floorboards should be padded and travel should be at speeds that minimize vibrations or shifting of the box. A tortoise should never be left unattended in a vehicle. During summer months, desert tortoises may be transported in an air conditioned vehicle as long as they are in a covered cardboard box and the vehicle interior temperature is maintained between approximately 75 °F and 80 °F. If a tortoise is taken during the winter inactivity period, it should be maintained at approximately 55 °F, which will be less stressful to it than much warmer temperatures, and may allow it to remain in a physiological state of hibernation.

B.5.e. Preliminary steps to handling tortoises - When a tortoise is encountered, stop digging. If it is during the tortoise inactivity period (i.e., typically during July and August, and between November and February, when tortoises are less likely found aboveground; in Arizona the inactivity period may begin in late May or June), we recommend that you or another monitor construct an artificial burrow into which the tortoise will be placed after processing. If it is during the activity period (i.e., when tortoises are typically found aboveground between March and June and again between September and October), we recommend that you place the tortoise in the shade of a shrub, or depending on conditions (section *B.5.c.ii*), in an artificial burrow.

In previous federal Biological Opinions, the USFWS has recommended that a tortoise removed from its burrow be placed in a similar-sized burrow found in the area. We do not recommend this for the following two reasons: (a) there is the possibility of exposing a clinically healthy tortoise to URTD or another pathogen in the similar-sized burrow; and, (b) burrows are often too deep to tell if a resident tortoise is already in the burrow, and placing the "excavated" tortoise into an occupied burrow would result in stressing both tortoises. Therefore, if conditions are appropriate (section *5.c.ii.*), we recommend that the tortoise be placed *beside* a burrow of similar size or be placed in an artificial burrow as described below.

B.5.f. Constructing burrows - A reasonable amount of time to create an artificial burrow is from 30 minutes to several hours depending on the substrate. A suitable burrow may be created in several minutes using a gas-powered auger.

B.5.f.i. The "traditional method" - An artificial burrow is intended to provide immediate shelter and protection to a tortoise that was hibernating or aestivating when you removed it from its natural burrow. The following are guidelines to assist artificial burrow construction (after Tortoise Group 1994). The USFWS requires that you observe a field demonstration before constructing a burrow.

Dig a burrow that is (a) roughly the same orientation and size as the burrow from which the tortoise was taken, (b) six feet long, and (c) slanted downward about 15 to 20° below the horizontal line of the ground. Next, slide the plywood top onto the shelf. Avoid knocking dirt into the tortoise crawl space by inserting the plywood onto the three-sided shelf from the front end of the burrow. Do not drop the plywood onto the burrow from above. Once you are sure the plywood fits snugly, remove the plywood, smooth out the bottom of the burrow, and be sure that it will accommodate the tortoise. Loosen the soil along the floor of the crawl space to a depth of six inches to allow a tortoise to dig its way out should the plywood sag and possibly trap or pin it in the burrow. Replace the plywood and shovel dirt on top. Mound the dirt so that rain water will not puddle on top of the finished burrow.

We recommend that you cover the opening of the artificial burrow with rocks or wood for two or three days to ensure that the tortoise remains within the burrow and out of harm's way, or that it resumes hibernation or aestivation. This is particularly important if most of a tortoise's burrows have been lost to construction and it would be unable to find an existing burrow in a reasonable amount of time. After several days, when construction activities have left the area (i.e., as on a pipeline or transmission line), or when you are reasonably sure that the tortoise is safely hibernating or aestivating, **it is absolutely essential that you remove the rocks from the opening of the blocked burrow.**

B.5.f.ii. Another method - EnviroPlus (Goodlett 1992) has found that a safe burrow can be created quickly using a gas-powered auger. They have observed wild tortoises voluntarily enter these burrows shortly after they are made. Different-sized augers are available to create burrows for juvenile or large adult tortoises. With an extension, the burrow can be dug to a depth of about five feet. Using an auger, you can make a burrow that meets the criteria suggested above for a traditional burrow.

B.5.f.iii. Mapping and finding blocked burrows - If you block a tortoise inside a burrow, you must find that burrow in a few days to unblock it. Accurately map the burrow so that you can find it again. Additionally, we recommend that you mark the area. For example, Tierra Madre Consultants (LaRue 1993) marks burrows with lath or ribbon placed a standard distance and direction from each burrow. A cryptic message is written on the lath to show burrow location: "B23-2100FTS," to indicate that "Burrow #23 on Reach 2 is 100 feet south of the lath." The area must be discreetly marked to avoid attracting people or ravens to the burrow.

B.6. Handling tortoises

B.6.a. Precautions while handling tortoises

B.6.a.i. Avoiding hyperthermia - Do not expose a tortoise to direct sunlight. Keep it in the shade of your body, a shrub, a truck, etc. Remember that ground temperatures are much hotter than air temperatures. You should not place a tortoise on the hot ground, but may remove the top several inches of hot sand to expose a cooler layer below. Indications of hyperthermia may include aggressive struggling by the tortoise, a tortoise hot to the touch, frothing at the mouth (i.e., excessive salivation), or voiding of the bladder. The critical maximum body temperature for desert tortoises is between 103 °F and 112 °F (Brattstrom 1965, Naegle 1976).

If an animal begins frothing at the mouth (i.e., salivating excessively) it is probably nearing a lethal body temperature and immediate action is required: (a) if already constructed, place the tortoise in the artificial burrow, or create a pallet burrow in the shade of a bush and place the tortoise inside; (b) pour water on the ground beneath a shrub and place the tortoise in the shade on the water; (c) pour tepid (approximately 68-95 °F) water over the shell and/or wipe the skin and shell with a wet cloth; and, (d) if an air conditioned vehicle is available, place the tortoise into a box and take it into the cool vehicle (section *B.5.d.ii.*). Heat-stressed tortoises should not be released until they resume normal behavior. They should be monitored after release.

B.6.a.ii. Avoiding transmission of Upper Respiratory Tract Disease - At all times, you should handle a tortoise as if it has URTD, and in such a way that you will not transmit the disease from one tortoise to another. Much of the following information was developed by Dr. Kristin Berry (Berry 1993, 1988).

B.6.a.ii.(a). Treating clothing - Do not allow a tortoise to contact your clothing. If it does, change your clothes before handling another tortoise. Contaminated clothes should be washed before you wear them again while handling tortoises. It is advisable to have a change of clothes on-hand. Change your clothes, including your shoes, before leaving the site for another geographical region; (e.g., another valley or mountain range would be considered a separate region). Dipping the bottoms of your shoes into a sterilizing solution [section *B.6.a.ii.(d).*] or wiping them with a rag dipped in the solution may be sufficient for the shoes to be worn at another location. When visiting multiple sites on a single trip, always visit sites with known occurrence of URTD last. This will minimize the probability of spreading disease.

B.6.a.ii.(b). Treating vehicles - The USFWS recommends that you wash vehicle undercarriages and tires prior to traveling from a site where URTD is known or expected to occur to a site where URTD has not been reported. With appropriate planning, you should be able to accomplish this task.

B.6.a.ii.(c). Treating processing implements - The tips of calipers, which contact tortoises during shell measurements (section *B.7.h.*), may be covered with material to avoid direct contact with a tortoise and therefore contamination of the calipers. However, as with all other implements not directly contacting a tortoise, handling a tortoise, then handling the calipers results in contamination, and we believe that the instrument should be sterilized even if the tips are "protected." Alice Karl, who has handled tortoises for many years, only touches a tortoise with one hand, leaving the other one free and uncontaminated to handle the implements and record the data (personal communication, 6 August 1993). In such a case, the covered caliper tips are sufficiently protected. A metal or plastic rule may be used to measure the plastron (section *B.7.h*), but do not use wooden rules, which are too porous and cannot be properly sterilized. Although using a file to notch tortoises is not used for construction monitoring, if a researcher uses this technique (only with prior approval from the USFWS), the file should also be sterilized before use on another tortoise.

B.6.a.ii.(d). Sterilizing solutions - The USFWS requires that you sterilize all materials that contact a tortoise in one of the following solutions: (a) 95% isopropyl alcohol, (b) 95% ethyl alcohol, or (c) 25% solution of chlorine bleach and water. However, given that the organism is now known to be a mycoplasma, Berry (personal communication, 1 March 1994), citing discussions with Dr. Elliot Jacobson, indicated that of these three solutions, only bleach would be effective against the organism. All implements should be soaked in the solution for at least 20 minutes prior to using them on a different tortoise.

B.7. Processing tortoises

Processing a tortoise (i.e., weighing, measuring, sexing, and photographing it) should only be done by experienced monitors. If you have never handled or processed a tortoise, we recommend that you obtain experience before doing so in the field. Careful practice on pet tortoises, or observing more experienced biologists handling tortoises in the field, are recommended. Experts say that with practice you should be able to process a tortoise in 15 - 20 minutes. We do not recommend that you process a tortoise if the temperature is too hot, or if there is a chance that a second tortoise may be endangered while you are processing the first one. If processing a tortoise will endanger it or other tortoises, or if you have little or no experience in processing tortoises, skip this section and continue with section **B.8.**

B.7.a. Maintaining sterile conditions - Before touching a tortoise, the USFWS requires that you put on clean latex disposable gloves, and that you have them on during the entire process. Even if you do not process the tortoise, but only move it out of harm's way, you should wear gloves. We recommend that if a glove is torn while handling the tortoise, which is likely when its toenails scrape the glove, you should put a new glove on over the torn one. Once used, disposable materials such as latex gloves, t-shirt bags, or surveyor's tape (section *B.7.b.*) must be disposed of promptly. We recommend that each monitor have a garbage bag on hand, and that disposable materials be placed in the bag immediately after use. For non-disposable materials, the USFWS requires that each item be sterilized before it is used on a separate tortoise [section *B.6.a.ii.(c).*]. Additional recommendations and USFWS requirements are given in subsections of section *B.6.a.ii.*

B.7.b. Weighing tortoises - If the situation allows, you may weigh a tortoise. Experts recommend weighing a tortoise immediately after it is removed from the burrow. This way you have a true weight should the tortoise void its bladder, and can weigh it afterwards to determine how much fluid has been lost. One reason for weighing a tortoise is to determine if it is underweight, which may be one sign that it has URTD or another disease.

B.7.b.i. Using spring scales - If you are using a spring scale, a plastic grocery bag, cotton string, or surveyor's tape may be used to suspend the tortoise from the scale. If you use string or surveyor's tape as a sling, be sure that the material is strong enough to support the tortoise. The tape may be doubled for use with very heavy tortoises. Smaller tortoises may be placed inside a grocery bag or ziplock bag and weighed. Larger tortoises can be weighed by making a sling with one loop of the bag placed posterior to its forelimbs and the other loop placed anterior to its hindlimbs. Never suspend a tortoise far from the ground; suspend the tortoise over sand rather than large rocks; keep weighing time to a minimum; and take every precaution to prevent the tortoise from falling.

The following scale sizes are recommended: (a) 0 to 100 g scale with a 1.0 g precision for small tortoises, (b) 1 kg scale with a 10 g precision for moderate-sized tortoises, and (c) 5 kg scale with a 50 g precision for large tortoises. *Pesola* brand spring scales have been recommended. It is best to use the smallest scale that will accommodate the weight of a tortoise. Occasionally a tortoise will weigh more than 5 kg; mark that information on the data sheet. Keep scales clean. When weighing a tortoise, hold the ring at the top of the scale to ensure that the scale is suspended vertically and the correct weight is being taken. Record the information on the data sheet. Note: Some researchers use electronic *Mettler* scales or *Chantillon* balances for more accurate weights.

B.7.c. Immobilizing tortoises

B.7.c.i. Using coffee cans - A desert tortoise may be placed on the top of a coffee can or other large can to facilitate observations and measurements as described in the following sections. The can should be large enough to support the tortoise and small enough to prevent any waving appendages from touching the can. (Note that coffee cans come in several sizes and can be "nested" in one another for ease of transport and for handling different-sized tortoises). Freedom to move its appendages may encourage a tortoise to extend its head, which allows you to observe the eyes, nares, chin glands, and beak where most signs of URTD are observed. The can must be sterilized before using it with another tortoise, or you may place waterproof plastic, such as a baggy, on top of the can, the tortoise on top of the plastic, and discard the plastic afterwards.

B.7.c.ii. Using towels - A tortoise may be held on a clean cloth between your knees as you kneel. Use your body to shade the tortoise during processing. You may scrape away the hot, upper surface of the soil down to a cooler level onto which you can place the towel and the tortoise. While holding the tortoise firmly between your knees, carefully press down on its back to immobilize it. The cloth prevents direct tortoise contact with your clothing, but may not prevent urine or nasal exudate from soaking through the towel and contaminating your clothes. If this happens, you should change your clothes before processing another tortoise. In either case, the cloth must be soaked in a disinfecting solution and laundered before it can be used on another tortoise. Disposable baby changing sheets have been suggested in place of cloth towels.

B.7.d. Observing tortoises - If the situation allows, we recommend that you observe a tortoise and record ectoparasites, shell lesions, signs of osteoporosis or osteomalacia, injuries, and evidence of URTD. Much of this information is taken from Berry (1993, 1988).

B.7.d.i. Ectoparasites - Potentially encountered parasites of tortoises include adobe tick (*Ornithodorus turicata*), mites (*Trombicula* sp.), and bot fly larvae (Family: Cuterebridae). In some areas, ticks are the most common parasite observed on wild tortoises. They generally adhere to the growth areas between scutes, particularly on rear marginal scutes. If present, mites will be found on the skin. Bot fly larvae would appear as a large swelling or bulge (1.0 - 1.5 cm long) on the neck, leg, or tail. There will be a small hole through which you may observe the larva. Experts recommend that you do not try to remove parasites. Such unnecessary handling would likely injure and/or stress the tortoise. We recommend that the numbers and locations of each parasite be recorded on the data sheet.

B.7.d.ii. Shell lesions - There are many types of lesions, ranging from injuries caused by predators to diseases of scute and bone. The field worker should look for and record any observations on scute and bone irregularities, discoloration, apparent damage (healed or healing), open wounds, holes, pits, etc. Since we do not know much about shell diseases in the desert tortoise at this time, photographs and written descriptions will be very useful. See section **B.7.h.** for taking photographs of plastrons.

B.7.d.iii. Osteoporosis and Osteomalacia - These diseases can manifest themselves to the observer by depressed scutes and/or thinning scutes with exposed bone beneath. Some scute depression and thinning is part of the normal aging process of the shell, or may result from nutritional deficiencies or pathologies. It is recommended that the field worker photograph such conditions and record the information on the data sheet.

B.7.d.iv. Upper Respiratory Tract Disease - Tortoises may have this disease and not show any obvious sign of it. Therefore, **treat every tortoise as if it has URTD to avoid spreading the disease to healthy tortoises**. Observe all tortoises for the following signs of URTD: (a) wheezy, rattling breath; (b) clear to green mucous coming from the nostrils or dirt caked around the nostrils; (c) dirt caked on forelimbs due to mucous being rubbed there; (d) puffy eyes or eyes sunken and dull; (e) swollen, oozing chin glands; (f) lethargic, with legs or head listlessly distended from shell; etc. Very low body weight, lack of skin luster, or a dry mummified appearance may be evidence of URTD or another disease (Kristin Berry, personal communication, 2 February 1994). We recommend that these signs or abnormal behavior be recorded on the data sheet. Photo-documentation of signs of URTD is strongly recommended.

B.7.e. Recording distinctive features - If the situation allows, we recommend that you record on the data sheet diagram any marks or anomalies (e.g., unique morphological features, damaged limbs, damaged shell, manmade marks on the shell, etc.). Captive tortoises may be marked with paint, have initials carved in their carapaces, have holes drilled in their marginal scutes, or have raised centers on their carapace scutes due to abnormally high growth rates. Some anomalies may include irregular gulars, extra vertebral scutes (normal is five), paired or malformed costal scutes (normal is four on each side), extra marginal scutes (normal is 11 on each side), or missing scutes. There may be too many or too few toes, or malformed toe nails. We recommend that you describe a tortoise in enough detail that another monitor would recognize it from your description. This information may be important to distinguish "problem" tortoises that persistently enter construction sites.

B.7.f. Sexing tortoises - If the situation allows, we recommend determining the sex of a tortoise if its midline carapace length (MCL) is greater than or equal to 180 mm (section *B.7.h.*); the sex of smaller tortoises is not easily, if at all, determinable. If the MCL is less than 180 mm, mark "sex unknown" on the data sheet. Generally, the following **male** characteristics may help differentiate them from females: (a) concave plastron; (b) longer, more curved gulars; (c) larger size; (d) longer, broader, more conical tail; (e) shorter, thicker toenails; and (f) larger, well-developed chin glands. For less experienced monitors, pay particular attention to the gular projection and the shape of the plastron, which are the two best characters for differentiating the sexes. For very large tortoises, you can feel the concave (male) or flattened (female) plastron or see it by holding the tortoise at eye level without turning the tortoise over on its back. When in doubt, record all other information and mark "sex unknown" on the data sheet.

B.7.g. Marking tortoises - If the situation allows and if you are required to mark a tortoise by painting an identification number on a scute, we recommend the following. Use a clean, sterile toothbrush to remove dirt from the left fourth costal scute, where the tortoise will be marked. If this scute is damaged, use the right fourth costal scute. The number is likely to last longer if placed on a rough, off-centered surface where shell-wear is less common, which is one reason only the fourth costal scutes are used for marking. Next, place a small dot (i.e., no larger than 1/4 inch diameter) of "white-out" or acrylic paint on the scute. Once the spot is dry, write the pre-arranged number on the spot using a waterproof, permanent black ink pen. Some biologists recommend using a capillary type technical pen with a point diameter of about 0.25 mm.

Allow the number to dry before applying epoxy. Devcon brand, five-minute epoxy has been recommended by some field-workers. It is advisable to mix the epoxy on a file card or piece of paper, then transfer the mixed epoxy to the number on the shell with something such as a toothpick, wooden coffee stirrer, or tongue depressor. Wait several seconds until the epoxy starts to thicken but is still liquid enough to spread over the numbered spot with ease. Cover the paint spot overlapping its edges just enough to seal the paint. **Never allow the epoxy to spill over onto the growth area, which occurs at the border between two scutes.** Anticipate this when applying the paint so there will be space for the epoxy to overlap the paint without entering the seams. It may be helpful to cover the margins of the scute with 1/2" wide masking tape before applying the epoxy, to ensure that the epoxy does not touch the growth area, especially on smaller tortoises. Record the assigned number on the data sheet.

B.7.h. Measuring tortoises - If the situation allows, while the epoxy is drying (be careful to avoid smearing the epoxy), we recommend that you measure the tortoise and record the following information on the data sheet: (a) carapace length at the midline (MCL), (b) plastron length from the gular notch to the anal notch (PLN), (c) width at the junction of the seventh and eighth marginal scutes (Width M7/M8), and (d) maximum height from the intersection of the abdominal and femoral scutes (i.e., at the junction of the two largest scutes on the plastron and the two immediately posterior) to the corresponding position on the carapace (Max height). The USFWS requires that all measurements be in millimeters. Use calipers for the most accurate measurements, or a plastic/metal rule as an alternative.

While taking measurements, tortoises are to be handled carefully. Do not turn the tortoise over to measure its plastron. This measurement can be made with the tortoise in an upright position. Mishandling may result in pulmonary edema, psychogenic shock, or intestinal torsion. If eggs inside a female are broken while you are handling her, she may die from egg yolk peritonitis.

B.7.i. Photographing tortoises - If the agency requires that you photograph processed tortoises, we recommend that you take the following color, **slide** photographs: (a) dorsal view of the carapace, (b) ventral view of the plastron, (c) the numbered scute, and (d) frontal view of the tortoise's face and forelegs. If the tortoise is too large for you to hold while taking a photograph of the plastron from the underside, do not take this photo. If present, have another monitor hold the tortoise while you take the plastral photograph. It is important that each object fill 80 - 90% of the frame and that the object be clearly focused. Kodachrome film has been suggested because the slides last longer with less discoloration than Ektachrome, for example. We recommend that the following information appear in the photograph: date, biologist's name, project name, and tortoise number. Two types of labels have been recommended:

(a) hold a small card adjacent to the tortoise so that the above information is clearly visible on the photograph without blocking the part of the tortoise being photographed; or,

(b) attach a 1/2" x 1/2", adhesive "Avery label" to the tortoise to allow for closer, more detailed photographs of the subject.

It is suggested that you keep a log of the photographs in your field notes (e.g., "Roll 1, Slide 23, carapace of Tortoise 4.") If you are inexperienced with photography, we recommend that you not photograph tortoises. If you are only somewhat experienced, we recommend that you shoot several test rolls of film prior to photographing tortoises in the field. Use only camera settings that produce the clearest slides. If available, we recommend that a second monitor take the photograph while you, the processor, hold the tortoise. We recommend that processed slides be labeled with the following information: date, biologist's name, project name, tortoise number, township, range, section, county, and state.

B.8. Releasing tortoises

B.8.a. Translocating tortoises - Once a tortoise has been processed, or moved out of harm's way, do not move the tortoise more than 1,000 feet from the collection site unless otherwise directed by the USFWS. You should carefully consider the situation before you release tortoises (section *B.5.c.ii.*). The minimum distance from the edge of the construction zone that a tortoise can be translocated will be determined by its age and sex (different home range sizes), the presence or absence of tortoise-proof fencing around the perimeter of the construction zone, and the duration of the construction activity. The USFWS has required that tortoises removed from construction sites be placed in the shade of a shrub, in a natural unoccupied burrow, or in an artificial burrow (section *B.5.*). We do not recommend that tortoises found aboveground be placed inside an artificial burrow, but rather released as described elsewhere (section *B.8.b.*). Further, the DTC recommends that tortoises **not** be put into existing burrows for reasons given in section *B.5.e.* A tortoise should not be placed on private land without the written permission of the landowner.

B.8.b. Releasing tortoises

B.8.b.i. Temperature considerations - The USFWS requires that tortoises be released at a temperature that is suitable for activity, with reasonable expectation that the temperature will remain within the tortoise's thermal preference long enough for it to adjust to its surroundings. McGinnis and Voigt (1971) found the preferred daytime body temperature of tortoises to be 80.6 °F to 100.4 °F during July, and somewhat lower during May (section *B.5.c.*). Some situations and recommended procedures are given in section *B.5.c.ii.*

B.8.b.ii. Discouraging urination - Many experts state that tortoises are most likely to urinate while being carried, and that the longer you handle them, the more likely they are to urinate. A tortoise may be more prone to void its bladder during drought conditions, which is also when water availability is at its lowest. You may discourage bladder voiding by pressing the tortoise's tail against its vent while you are carrying it. Also, press the tail against its vent if it starts to urinate. If it

does, record on the data sheet the quantity, color, and viscosity of the urine. If the tortoise has already been weighed, weigh it again to estimate the amount of lost fluid.

B.8.b.iii. Monitoring released tortoises - Upon releasing a tortoise, the USFWS requires: (a) that each tortoise be accompanied by an authorized monitor, (b) that each tortoise be monitored at the release site until it is exhibiting normal behavior, and (c) that there be no mass releases of animals.

C. FOLLOW-UP SUGGESTIONS

C.1. Caring for field supplies

Some of the materials you may use are very sensitive to desert conditions. Spring scales will register incorrect weights if they become clogged or rusty; surveyor's tape may become brittle and not support the weight of a tortoise; masking tape will dry up and be useless. It is best if you have well-maintained materials for handling tortoises. Non-disposable materials should be cleaned and sterilized between uses on different tortoises, and may need to be cleaned before using them at the beginning of a project if they have not been used in a long time. Care for field materials is equivalent to the care you can offer a desert tortoise.

C.2. Information sharing

The USFWS typically requires a follow-up report to construction projects authorized by their Biological Opinions. We recommend that each project be considered an opportunity to provide information to the resource agencies on the best ways to accomplish tortoise monitoring. We feel that a consistent approach to handling and processing tortoises and recording the data will ultimately benefit the conservation effort for the species. The DTC is very appreciative of the many individuals, representing many organizations, who have already shared information to develop these Guidelines. Their names are listed in Attachment 1, and they are to be commended for their invaluable input.

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DATA SHEET FOR HANDLING DESERT TORTOISES

Complete both sides of this data sheet when either a tortoise is moved out of harm's way, or a burrow is excavated and a tortoise found.

Project Identification

Date:_____ Project Name:_____ Monitor's Name(s)_____

Location: State:_____ County:_____

USGS quadrangle:_____ T:_____ R:_____ 1/4 of_____ 1/4_____

Comments:_____

Project Description

Slope:_____ Aspect:_____ Elevation:_____

Topography	Soil Type	Vegetation	Location found
_____ Flat	_____ Sandy loam	_____ Creosote bush	_____ Burrow
_____ Small hills	_____ Blow sand	_____ Saltbush scrub	_____ Pallet burrow
_____ Large hills	_____ Gravel	_____ Blackbrush	_____ Other
_____ Small wash	_____ Cobble	_____ Desert wash	_____ Under shrub
_____ Large wash	_____ Caliche	_____ Joshua tree	_____ In open
_____ Bajada	_____ Rocky	_____ Thorn scrub	_____ Caliche cave
_____ Dune	_____ Pavement	_____ Grassland	_____ Rock shelter

Describe:_____

_____

_____

_____

Tortoise Burrow Data

Time of excavation: Start:_____ End:_____ Burrow #: _____

Temperature during excavation (1.5m/1.0cm): Start:_____ End:_____

Burrow: Width:_____ Height:_____ Length:_____

Orientation:_____ Condition:_____

Burrow description/contents:_____

_____

_____

_____

TORTOISE MEASUREMENTS AND OBSERVATIONS

Tortoise #:_____ Numbered Scute:_____ Tortoise Weight (g):_____ Sex:_____

Measurements (mm): MCL:_____ PLN:_____ Width M7/M8:_____ Max Height:_____

Photos Taken: Carapace:_____ Plastron:_____ Frontal:_____ Numbered Scute:_____

Comments:_____

_____

Tortoise Health Profile (indicate the best description with an "x" in the appropriate space).

Nasal Description	**Breathing**	**URTD Determination**
_____ Nostrils dry	_____ Clear	_____ Sufficient sign present
_____ Nostrils damp	_____ Wheezing	_____ Insufficient sign present
_____ Nostrils wet	_____ Rasping	_____
_____ Nasal exudate present	_____ Bubbly	_____
_____ Bubbles from nostrils	_____ Normal	_____

Describe:_____

_____

Posture and Behavior	**Shell Disease***	**Trauma***
_____ Alert, responsive	_____ Lesions present	_____ Head
_____ Lethargic	_____ Sunken scutes	_____ Forelimbs
_____ Appendages limp	_____ Thinning scutes	_____ Hindlimbs
_____ Head hanging	_____ None observed	_____ Shell, gular horn

Describe:_____

_____

* Sketch all features mentioned above, including the epoxied number, gular horn, anomalies, and other identifying features.

F. CHECKLIST FOR HANDLING DESERT TORTOISES

The following sequence is recommended for handling and processing tortoises. If this differs from an established sequence that you, as an experienced monitor, have developed, the DTC does not require that you abandon your approach, but that you consider the information. For the inexperienced monitor, we **do** recommend that you follow this sequence. Each step is cross-referenced with sections in the Guidelines. See the Table of Contents for page numbers. The bold word, "**data**," follows a given instruction where we recommend information be recorded on your data sheet, maps, or personal journal.

Before going to the field, be authorized (A.1.) and trained (A.2.), determine if tortoises are to be marked (A.3.), if so, develop a numbering scheme (A.4.), and have your materials organized (A.5.).

Upon finding a burrow, determine if it will be excavated (B.1.a.). If so, describe it beforehand (B.1.b. **data**) and decide if an artificial burrow is needed (B.1.c.). Map (B.2. **data**) and number (B.3. **data**) excavated and artificial burrows.

Before excavating a burrow, check for eggs (B.4.a.) and, if found, follow USFWS protocol for handling them (Attachment 3). Then, excavate the burrow (B.4.b.) and be absolutely sure that it is empty or that you have removed all tortoises (B.4.c.).

When you find a tortoise in a burrow, take the temperature (B.5.a. **data**) and decide if the tortoise should be processed (B.5.b. and B.5.c.).

Before you handle a tortoise, determine if it will be processed and how it will be disposed during hot temperatures [B.5.c.ii.(a).], during cold temperatures [B.5.c.ii.(b).], at or near sunset [B.5.c.ii.(c).], if the tortoise is seriously ill [B.5.c.ii.(d).], or during other situations [5.c.ii.(e).]. If the tortoise must be transported in a vehicle, use a new cardboard box (B.5.d.i.) and take precautions (B.5.d.ii.).

If an artificial burrow needs to be constructed (B.5.e.), use either the traditional method (B.5.f.i.) or another acceptable method (B.5.f.ii.). Take every precaution to ensure that the tortoise, if blocked in its burrow, is unblocked after several days (B.5.f.iii.).

When removing a tortoise from its burrow, avoid hyperthermia (B.6.a.i.), and take precautions to prevent the transmission of URTD (B.6.a.ii.) with proper treatment of clothing [B.6.a.ii.(a).], vehicles [B.6.a.ii.(b).], and processing implements [B.6.a.ii.(c).], using appropriate sterilizing materials [B.6.a.ii.(d).].

If the tortoise is to be processed, put on disposable gloves and maintain sterile conditions (B.7.a.), weigh the tortoise (B.7.b.i. **data**), immobilize it using a can (B.7.c.i.) or a towel (B.7.c.ii.), observe it for ectoparasites (B.7.d.i. **data**), shell lesions (B.7.d.ii. **data**), osteoporosis and osteomalacia (B.7.d.iii. **data**), and URTD (B.7.d.iv. **data**). Record distinctive features (B.7.e. **data**), sex the tortoise (B.7.f. **data**), mark it (B.7.g. **data**), measure it (B.7.f. **data**), and photograph it (B.7.i. **data**).

After the tortoise has been processed, release it into the adjacent area or place it in the artificial burrow (B.8.a.). Be careful of temperature extremes (B.8.b.i.), discourage tortoise urination (B.8.b.ii.), and monitor the tortoise (B.8.b.iii.).

After you leave the field, maintain your field materials in good working order (C.1.), and share your experiences with the USFWS (C.2.).

ATTACHMENT 1: PERSONS CONTACTED

Edward L. LaRue, Jr. assembled the information and drafted the Guidelines in 1994, and, with input from USFWS field offices in California, Arizona, Nevada, and Utah, revised them in April 1996 and again in July 1999. The following individuals were contacted to develop and/or review preliminary drafts. Not all of them responded to the initial or subsequent requests for information. For those who did, thank you very much for your invaluable assistance. When known, contributors' July 1999 affiliations are given rather than their 1994 affiliations. Tierra Madre Consultants, Inc. is given special thanks for its commitment to this project, and for much of the funding to complete it.

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ATTACHMENT 2: HANDLING SUPPLIES

Burrow excavation and construction
Thermometer (to measure air and ground temperatures)
Watch or clock (to record start and finish processing times)
Measuring tape (for burrow dimensions)
Compass (for burrow orientation)
Hand held mirror (for viewing inside burrow)
Leather or cloth gloves (to avoid animal stings and/or bites)
Blunt-nosed shovel(s) (for excavating burrow)
Garden trowel (for excavating burrow)
1" x 2" plank (to insert in small burrows)
2" x 4" plank (to insert in larger burrows)
4' x 8' x 1/4" thick plywood (for artificial burrow construction)
Hand saw (to cut plywood into appropriate size and shape)
Surveyor's tape (for marking a burrow or making a weighing harness/sling)

Tortoise handling and marking
Disposable latex gloves (for handling tortoise)
Different sizes of coffee cans/sterilized towel (for immobilizing tortoise)
Toothbrush, sterilized (for cleaning dirt from scute to be numbered)
Acrylic paint or typewriter correction fluid (for making dot to number tortoise)
Waterproof, capillary pen (for numbering the tortoise and keeping notes)
1/2" masking tape (to cover growth areas prior to applying epoxy)
Epoxy, toothpicks, wooden coffee stirrer, tongue depressors (to cover the number on the scute and to apply the epoxy)
Plastic, ziplock bags (for holding used latex gloves and weighing juvenile tortoises)
Hand lens (for observing parasites)
95% ethyl or isopropyl alcohol, or 25% chlorine solution (for sterilizing equipment)
Rubber/plastic container and lid (for soaking instruments)
New, disposable cardboard boxes (for holding and/or transporting tortoises)
Garbage bags (for disposing of used gloves, t-shirt bags, etc.)

Tortoise measurements and photography
Grocery, t-shirt bags, surveyor's tape, cotton string (to weigh the tortoise)
Calipers (for measuring carapace length, width, and height)
Metal or plastic rule (to measure plastron length)
100 g, 1.0 kg, and 5.0 kg tubular spring scale (to weigh small and large tortoises)
3" x 5" file cards (for mixing epoxy and identifying photographic slides)
Avery labels or other stickers (to attach to tortoise to identify photograph)
35 mm camera (for taking photographs)
Slide film (for taking photographs)

Egg handling
Felt-tipped pen (for marking eggs)
Bucket (for transporting eggs)

Miscellaneous
Agency document(s) regulating the specific project (e.g., USFWS Biological Opinion, State Memorandum of Understanding, BLM Stipulations, etc.)
Handling Guidelines and checklist
Agency approved, sequential numbering scheme for marking tortoises
Project maps for mapping tortoise burrows
Clipboard
Data sheets
Pads or blanket for truck bed to cushion transported tortoise and reduce heat
Phone number and contact person of local USFWS field office, State fish and game departments, BLM field office, etc.
Phone number of nearest qualified veterinarian to treat injured tortoise
Extra change of clothing, including extra shoes

(Much of this list is taken from McCullough et al. 1993)

ATTACHMENT 3: EGG HANDLING PROTOCOL

This Egg Handling Protocol is taken verbatim from U.S. Fish and Wildlife Service File No. 1-5-93-TA-390. Wording concerning placing eggs on private lands was added to be consistent with USFWS recommendations for the Tortoise Handling Guidelines.

Tortoise eggs shall be moved to artificial nests either in the wild or at an approved facility. Biologists must receive special training in the procedures outlined below, but such training can be obtained after a nest is actually found. If this is done, the nest shall be carefully covered with soil so as not to move the eggs and protected until on-site training is provided. The responsible federal agency shall ensure that this training is made available.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature six inches above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, large tool use shall be discontinued and the nest excavated by the biologist using his or her hands. [DTC recommends that the monitor put on disposable latex gloves before marking and handling eggs]. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because these eggs are very fragile, some may break during handling. This will be lethal to egg contents. Such an accident can be expected to occur until techniques are developed to avoid this type of incident. Broken eggs shall be buried nearby and left in the field, or the contents preserved and provided to qualified researchers.

The biologist shall measure and record the depth of the nest below the soil surface, the location of the nest in relation to any adjacent shrub (i.e, whether on the north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately 1 inch of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that of the original nest.

If good tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet from outer boundary of the project site, unless directed differently by USFWS. [Eggs should only be placed on lands administered by a federal agency, or on private lands when a written authorization to bury the eggs there has been obtained]. Prepare a nest with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. Carefully transfer the eggs, maintaining their original orientation, to the new nest. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be monitored by a qualified biologist. The monitoring program shall be developed in consultation with the Fish and Wildlife Service.

If a suitable site for a nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. Place a small amount of soil in a bucket and transfer the eggs to the bucket using the technique specified above, making sure that the eggs are touching one another. Carefully fill the bucket to the depth of the original nest, but leave the top of the soil layer three inches below the rim of the bucket so that future hatchlings cannot escape. Bury the bucket in soil in a safe location at an approved holding facility.

The biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

APPENDIX E

RAVEN MANAGEMENT PLAN

October 1, 2010

Compliance Log # 2010-050

Ms. Mary Dyas
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California Energy Commission
1516 Ninth Street, (MS-2000)
Sacramento, CA 95814

Ms. Tannika Engelhard
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Ontario, CA 91764

RE: **Blythe Solar Power Project (09-AFC-06)**
Palo Verde Solar I
Condition of Certification BIO-13
Raven Management Plan

In compliance with the provisions of Condition of Certification BIO-13 as set forth in the California Energy Commission's Final Decision for the Blythe Solar Power Project, enclosed is a copy of the final Raven Management Plan.

Evidence of Solar Millennium's deposit of the one-time fee for the USFWS Regional Raven Management Program will be provided under separate cover no less than 10 days prior to the start of Phase 1a ground disturbance activities.

If you have any questions regarding this submittal, please feel free to contact me at (510) 463-6506.

Sincerely,

Nicole Tenenbaum
Compliance Program Manager

cc: Mr. Naim Triki, EPC Management Director, Solar Millennium, LLC

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BLYTHE SOLAR POWER PROJECT
COMMON RAVEN MONITORING AND CONTROL PLAN
RIVERSIDE COUNTY, CALIFORNIA

09-AFC-6C

Prepared for:
Palo Verde Solar I, LLC
1111 Broadway, Fifth Floor
Oakland, California 94607

Prepared by:
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September 2010

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Figure 1 Site Location and Raven Monitoring Areas

1.0 INTRODUCTION

This Raven Monitoring and Control Plan (Plan) includes measures to fulfill the Conditions of Certification (COCs) included in the Final Decision issued by the California Energy Commission (CEC) on September 15, 2010 for the Blythe Solar Power Project (Project) proposed by Palo Verde Solar I, LLC (PVSI). The Final Decision includes COC BIO-13, a requirement for the development and implementation a Raven Monitoring and Control Plan that is consistent with the most current USFWS-approved raven management guidelines and shall includea 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.

1.1 Purpose and Objectives

This section introduces the Project background, purpose, objectives, and conditions of concern related to raven monitoring and control in the vicinity of the Blythe Solar Power Project (BSPP, or Project).

The purpose of the Plan is to ensure that the construction, operation, maintenance, and decommissioning of the BSPP does not attract ravens to the Project area by creating food or water subsidies, perch sites, roost sites, or nest sites, and to identify the conditions of concern specific to the BSPP that may attract ravens to the Project area. As required by Condition of Certification (COC) Bio 13, the Plan includes monitoring, management, and control measures that will 1) monitor raven activity, including presence in the Project vicinity and 2) specify control measures, as needed, based on the monitoring. The monitoring effort is intended to provide qualitative data that can be interpreted by the Designated Biologist (DB) (see Section 3.2) to determine if Project Design Features (PDFs) are effective or if additional management and control measures are needed to meet the objectives. Specific Plan objectives include:

1. Identify how the Project will utilize PDFs and other measures to manage the conditions of concern specific to the BSPP that may attract ravens to the area.
2. Document the effectiveness of PDFs and other measures in addition to raven management and control measures implemented at the BSPP.
3. Specify how, when, and what other measures will be selected and implemented if the monitoring suggests the need for additional controls.
4. Define triggers for modification of management and control measures using adaptive management principles.

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate10 (I-10) in Riverside County, California (Figure

1). The Project will be located on a 7,541-acre right-of-way (ROW) owned by the federal government and managed by the U.S. Bureau of Land Management (BLM), pursuant to an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by CEC.

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust

deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates.

Baseline surveys identified one desert tortoise within the disturbance footprint and five desert tortoises within the biological resources survey area. The Project has the potential to directly impact populations of the desert tortoise, Mojave population (*Gopherus agassizii* [DT]), listed as threatened under the Federal Endangered Species Act and California Endangered Species Act, by increasing the attraction of common ravens (*Corvus corax* [raven]) into the area and thereby increasing potential DT depredation by raven unless monitoring, mitigation, and control measures are implemented. The Project Disturbance Area is a nearly even split between low-quality and moderate-quality DT habitat, though none of this habitat is in a DT conservation area or considered DT critical habitat (USFWS 1994). The movement of raven throughout the area and over DT critical habitat adjacent to and in the vicinity of the Project Disturbance Area could increase the chances of a raven encountering and depredating a DT.

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1A	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Well and Initial Portion of Unit 1	772.68
Phase 1B	Remainder of Unit 1, Unit 2 and Gen-tie	3,024

Phase 2	Unit 3 and Unit 4	3,227.82
Total		**7,024.5**

1.4 Definitions

The following terms will be used throughout this report:

- Project Biological Resources Survey Area (BRSA): The Project BRSA includes the Project Disturbance Area and all associated buffers.
- Project Disturbance Area: Includes the area of anticipated ground disturbance associated with implementation of the Project. This includes the entire Project footprint (area within solar plant site perimeter security fence [i.e., chain-link] including solar fields, power block, on-site transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields) and area outside the perimeter security fence (i.e., chain-link) including transmission and utility corridors, rerouted drainage channels, and additional areas requiring disturbance during construction.
- Spring and Fall 2009 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area, and associated buffers that were surveyed during Spring and Fall 2009.
- Spring 2010 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area and associated buffers that was surveyed during Spring 2010.

1.5 Conditions of Concern

The conditions of concern are those Project features or activities that, when not properly managed, provide new subsidies that may result in changes in raven population or behavior that could potentially adversely affect the DT population in the Project area. Five basic conditions of concern have been identified for the BSPP and have been considered in developing this Plan:

1. Availability of water from evaporation ponds;
2. Potential creation of new perching/roosting/nesting sites for ravens;
3. Water ponding potential from dust suppression;
4. Raven food sources from soil disturbance (e.g., rodents, insects, etc.); and
5. Human food and waste management.

The study design for raven monitoring, as well as measures for raven management and control, is dependent upon the accuracy of defining these conditions. Each of these conditions of concern is defined in more detail below.

Evaporation Ponds

The Project includes eight 4-acre evaporation ponds, two for each plant unit's power block, which will collect blowdown water from the cooling towers. The addition of a new water source to an area where surface water sources are generally sparse may result in the attraction of ravens to the Project. Ravens will travel up to 40.4 miles from their roosts for subsidies, including water (Boarman 2003). However, much shorter distances to point subsidies are more common, and Kristan and Boarman (2003) observed that raven densities declined with increasing distance from point subsidies.

Raven Perching, Roosting, and Nesting Sites

The majority of raven predation on DT is thought to take place during the spring, most likely by breeding birds that have been shown to spend most of their time foraging within 1,300 feet of their nests (Kristan and Boarman 2003). Therefore, structures that facilitate nesting in areas ravens could not otherwise nest in may pose a danger to nearby DT populations. Project components, such as tower structures, transmission poles and lines, and support structures provide new elevated perching sites that have the potential to increase raven use of the Project area.

Ponding Water

During construction, water will be applied to graded areas, construction ROWs, dirt roads, trenches, spoil piles, and other areas of ground disturbance to minimize dust emissions and topsoil erosion. Ponding water resulting from these dust suppression activities has the potential to attract ravens, thereby potentially resulting in increased DT predation by ravens. During operations, deionized water will be used to wash mirrors; however, the amount of water used will be minimal and is not anticipated to result in ponded water on site.

Raven Food Sources from Soil Disturbance

During construction, decommissioning, and restoration, disturbance of the soil will occur from heavy equipment operation. This disturbance will result in the "unearthing" and exposure of natural food sources for ravens such as rodents and insects. Ravens will be attracted to the soil disturbance areas to prey on unearthed, injured, and dead animals.

Human Food and Waste Management

Ravens are considered scavengers that obtain a high percentage of their diet from human subsidies such as food sources brought on site by employees, landfills, dumpsters behind restaurants and grocery stores, open garbage drums and plastic bags placed on the curb for garbage pickup, and roadkill. In addition, construction waste piles also attract small mammals (e.g., rodents) that become an additional food source for ravens. The construction, operation,

decommissioning, and restoration phases of the BSPP will result in increased food and waste generation in the Project area; improper waste management could attract ravens.

1.6 Roles and Responsibilities

The sections below define the key positions responsible for implementation of the Plan. The responsibilities for specific measures are defined as applicable in Sections 3.0, 4.0, and 5.0 below.

1.6.1 Environmental Compliance Manager

PVSI will assign an Environmental Compliance Manager (ECM) to the Project. The ECM is responsible for facilitating implementation of the environmental conditions of the Project. Typical ECM duties involve managing, supervising, and/or providing advice on work affecting air quality, water/streambed permits, and biological resources environmental compliance programs. The contact information for the ECM who will oversee the Project will be incorporated into the Final Biological Resources Mitigation, Implementation, and Monitoring Plan.

The ECM will have experience in the implementation of general environmental compliance measures and must have specific training by the DB to conduct biological monitoring activities specified in this Plan.

1.6.2 Designated Biologist

PVSI will assign a DB to the Project. A resume of the proposed DB, along with the required three references and contact information, will be submitted to the CEC Compliance Project Manager (CPM) for approval in consultation with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS).

The DB will have the following background and training:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and 3 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; and
- At least 1 year of field experience with biological resources found in or near the Project area.

In lieu of the above requirements, the resume will demonstrate to the satisfaction of the CPM, in consultation with CDFG and USFWS, that the proposed DB has the appropriate training and background to effectively implement the Plan. PVSI will ensure that the DB performs the activities specified in the Plan.

PVSI will also designate an alternate biologist with the same qualifications as the DB, outlined above.

2.0 REGIONWIDE RAVEN MANAGEMENT AND MONITORING PROGRAM

PVSI will participate in a Regional Raven Management Program. As specified by CEC COC Bio-13, the Project owner shall submit payment to the project sub-account of the California Renewable Energy Action Team account held by the National Fish and Wildlife Foundation to support the USFWS Regional Raven Management Program. The one-time fee will be as described in the cost allocation methodology (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.

3.0 MANAGEMENT PRACTICES

This section specifies management practices or PDFs that will be implemented to accomplish the purpose of this Plan as identified in Section 1.1 The PDFs are designed to avoid creation of new subsidies and thus prevent the increased use of the Project area by ravens. The five basic conditions of concern identified in Section 1.5 have been grouped into construction and operational phase conditions. Construction-phase conditions are considered temporary and are anticipated to be avoided or minimized primarily by the implementation of management measures as defined in Section 4.1 below. Operational conditions include management measures to minimize potential impacts and may require additional control measures based on the results of the monitoring program (Section 4.2). If these PDFS or management practices are not effective in accomplishing the goal of this Plan, modifications to these practices and/or additional measures will be implemented and monitored under adaptive management to ensure the Plan's objectives are satisfied.

3.1 Construction

Construction-phase impacts are considered more temporary in nature than operational impacts and therefore require temporary management practices to avoid or minimize the potential to attract ravens to the Project area. Construction-phase impacts will also occur during the decommissioning and restoration phases of the BSPP at the end of the plant's expected 30-year service life.

3.1.1 Evaporation Ponds

Evaporation ponds may collect rainwater, while they are being constructed, that could attract ravens. Monitoring will evaluate the presence of ravens during construction of the ponds. If ravens are identified in or next to the evaporation ponds, hazing (described in Section 5.4) will

be employed to avoid use. If unsuccessful, additional or alternative methods will be implemented as discussed in Section 5.0, "Adaptive Management." Once constructed, the ponds will be netted.

3.1.2 Raven Perching, Roosting, and Nesting Sites

Construction activities may create temporary perch, roost, or nest sites for ravens by introducing equipment or materials to the landscape that provide height for ravens.

Weekly monitoring will evaluate the presence of ravens during construction. If ravens are identified perching, roosting, or nesting on building materials, equipment, waste piles, or other construction debris, hazing (described in Section 5.4) will be employed to discourage use.

3.1.3 Ponding Water

To minimize the occurrence of ponding water, the application rates of water for dust suppression activities will be predetermined to minimize excessive application. The application rate will consider soil infiltration and evaporation rates. The ECM and/or the ECM's designee will patrol areas to verify water does not puddle for long periods (more than 1 hour) and make recommendations for reduced water application rates where necessary as discussed in Section 5.0, "Adaptive Management." The fill station will be designed to adequately drain water to prevent ponding.

3.1.4 Raven Food Sources from Soil Disturbance

During construction activities, specifically grading, there is a potential for animals to be unearthed, providing a food subsidy for scavengers and thereby resulting in increased attraction of ravens to the Project Disturbance Area. Daily observations of the construction site and of access roads will expedite proper disposal of food subsidies to the extent feasible.

3.1.5 Human Food and Waste Management

A trash abatement program will be established during the construction phase of the BSPP. Trash and food items will be contained in closed, secured containers on the Project site and removed daily to reduce the attractiveness to opportunistic predators such as ravens. Daily observations of the construction site and access roads will expedite proper disposal of roadkill. In addition, the Worker Environmental Awareness Program (WEAP) will assist in reinforcing with workers that no trash or roadkill, that might attract DT predators, will be left for Ravens.

3.2 Operations

Operational impacts are considered ongoing and require PDFs and ongoing management practices to avoid or minimize the potential to attract ravens to the BSPP. No soil disturbance is anticipated during operations or maintenance that will result in raven food sources from soil; therefore, this condition of concern is not addressed.

3.2.1 Evaporation Ponds

PDFs that have been incorporated into the BSPP facility design to deter use of the evaporation ponds by ravens by making the pond water less available to ravens (include provision of steep pond sides, ample freeboard, and perimeter protection. Reducing other potential site attractants (see below) will also assist in reducing the overall attractiveness of the Project area to ravens. In addition, the evaporation ponds will be netted to avoid access to the ponds by birds. The DB will be responsible for making observations on the success of the netting and other design features at each pond.

3.2.2 Raven Perching, Roosting, and Nesting Sites

PDFs will be implemented to avoid introducing new subsidies by minimizing the attractiveness of Project components. Potential PDFs that will be considered to reduce impacts from these Project components primarily include the use of physical bird deterrents such as, but not limited to, bird spikes, Bird-B-Gones, and WhirlyBirds (or other similar devices). In addition, nest removal will occur in conjunction with monitoring, as discussed below in Section 4.5.

3.2.3 Ponding Water

To minimize the occurrence of ponding water, the application rates of water for dust suppression activities will be predetermined to minimize excessive application. The application rate will consider soil infiltration and evaporation rates. The ECM or the ECM's designee will patrol areas to ensure water does not puddle for long periods and make recommendations for reduced water application rates where necessary. During operations, deionized water will be used to wash mirrors; however, the amount of water used will be minimal and is not anticipated to result in ponded water on site. If water should become a concern, changes will be made through adaptive management.

3.2.4 Human Food and Waste Management

The trash abatement program developed for the construction phase will be carried forward for the life of the Project. Trash and food items will be contained in closed, secured containers and removed daily to reduce the attractiveness to opportunistic predators such as ravens. The ECM will continue to verify that these practices are enforced and make recommendations for improvements where applicable as discussed in Section 5.0.

4.0 MONITORING PRACTICES

Monitoring will be implemented to assess the efficacy of PDFs and management measures, and to determine the need for implementing additional control measures. These monitoring practices are intended to evaluate the potential impacts that construction and operation may have on raven activity and populations, which could result in potential impacts to DT. Raven monitoring will be implemented in the construction and operation phases of the BSPP. The monitoring program is

designed as an observational reconnaissance-level study aimed at monitoring the effectiveness of the PDFs and management measures implemented with the goal of avoiding new subsidies for ravens in the Project area and evaluating the overall effects of the Project and specific Project components (i.e., evaporation ponds, solar array) on raven activities (e.g., presence or type of activity).

4.1 Construction Phase

To identify potential increases in raven activity, the ECM will conduct at least weekly reconnaissance-level surveys in the Project area. Surveys will focus on all potential subsidies, including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or where recent surface disturbances have occurred

Data will be recorded for each raven observed, including activity, categorized as flying, perched, or on the ground (likely scavenging); type of perch (if applicable); and the general location of the bird within the Project area. In addition, any nesting locations will be recorded and unoccupied nests will be removed (see Section 4.5 for a discussion on nest removal). Data sheets to be used to record survey information will be developed and submitted to the agencies prior to implementation of this Plan, after final Project design is complete.

4.2 Operation Phase

To identify potential increases in raven activity during operation of the BSPP, the ECM, in coordination with the DB as appropriate, will conduct biweekly (i.e., every other week) reconnaissance-level monitoring at the Project site for the life of the Project in addition to annual breeding season raven monitoring at the Project site and all associated aboveground linear components (Figure 1) as discussed below.

4.3 Ongoing Biweekly Raven Monitoring

The ECM, following training by the DB, will conduct biweekly surveys (every 2 weeks) for raven activity at predesignated locations throughout the Project area for the first 5 years of Project operation, commencing when the initial plant becomes operational. The ECM duties for this Plan may be conducted by the DB. After the first 5 years of Project operation, surveys will be conducted biweekly for 1 year, unless results, reviewed in consultation with USFWS, indicate more frequent or less frequent monitoring is necessary following completion of the first 5 years of Project operation. The ECM will be accompanied by the DB during the first four surveys to facilitate appropriate data collection. Survey locations will focus on Project components that may influence raven abundance, activity, and behavior by potentially allowing perching, roosting, and nesting opportunities or by providing supplemental resources such as food and water. These Project components include tower structures, transmission poles and lines, and support structures, as well as evaporation ponds and waste disposal facilities.

Surveying will occur every other week. Up to five permanent sampling locations in addition to a stationary sampling point will be identified by the DB based on areas that have the greatest likelihood of attracting ravens (e.g., tower structures, transmission poles and lines, evaporation ponds, and waste facilities).

A 5-minute sampling session observing and listening for ravens will occur at each survey location. The surveyor will record raven detections and will document the behavior of the raven (e.g., perched, flying, on the ground, nesting), perch type (if applicable), and distance and direction from the survey location. Additional data collected will include the survey start/stop time, and weather (including temperature, average wind speed, and percent cloud cover). In addition, the location of any nests detected during a survey will be noted and Universal Transverse Mercator (UTM) coordinates recorded immediately following the conclusion of the survey session. To aid the survey and ensure consistency throughout the duration of the Project's life, a data sheet will be prepared in advance outlining the required data to be collected. Surveys will be conducted unless wind or rain interferes with audible or visual detection of ravens.

4.4 Breeding Season Raven Surveys

Breeding season surveys will be conducted by the ECM biweekly (every 2 weeks) starting at the beginning of the typical breeding season (mid-February) and continue to the end of June to identify nests and evidence of DT predation at nests (Boarman 2002, 2003). These surveys will be conducted by the ECM, following training by the DB, for the life of the Project on BSPP controlled lands and along the new transmission line and switchyard. Each survey will consist of systematically searching a survey area, which will include the Project site and the aboveground linear features associated with the Project (Figure 1).

Surveys will be conducted by vehicle when possible and on foot when necessary. Native trees, landscape trees, utility poles, transmission towers, and other structures within the survey area will be searched for nests. If nests are identified, the DB will be contacted to verify the nest conditions. UTM coordinates, as well as nesting substrate and current breeding status (if detectable), will be recorded for each nest located. Once data have been collected, the DB will determine if the nest is unoccupied (i.e., no eggs in the nest or nestlings have fledged), in which case the nest will be removed by the DB or the ECM (see description of nest removal in Section 4.5). The DB will search a 98 foot (30-meter) radius surrounding each nest or perch site for evidence of DT predation. All DT depredated will be photographed, a UTM coordinate collected, and the length measured (or estimated). In addition, each DT will be marked to avoid duplication of data recording on subsequent surveys. If occupied nests are detected during surveys, the PVSI will notify the Raven Management Workgroup for assistance with control measures.

Descriptions of nesting behavior and DT predation will be semi-quantitative and qualitative and will produce data valuable for assessing raven behavior and documenting potential problem individuals for management actions. In addition, an increase in the number of raven nests in the

Project area may suggest the potential need for revisions to PDFs or additional control measures (as described in Section 5.0).

4.5 Nest Removal

The majority of raven predation on DT most likely occurs in the spring, from April through May, when DT are most active and ravens are feeding young (Boarman and Heinrich 1999). The removal of unoccupied raven nests will be used to control DT predation. Nests will be removed by the DB only from within the project ROW. If nests are observed on adjacent lands, the resource agencies will be notified. The removal of unoccupied nests will occur simultaneously with the breeding season raven surveys that will take place from mid-February to the end of June. Removing raven nests outside of the breeding season may have a smaller effect on the raven population since they may readily rebuild the following season. However, evidence suggests that birds with no nests in their territory at the beginning of the breeding season are less likely to commence nesting than those who already have intact nests (Kristan and Boarman 2003). If an unoccupied raven nest is detected outside of the breeding window during biweekly surveys, it will also be removed by the DB.

4.6 Decommissioning Phase

To identify potential increases in raven activity, a biweekly reconnaissance-level survey will be conducted in the Project area during ground disturbance activities associated with decommissioning. Surveys will focus on all potential subsidies including waste disposal areas, erected structures, staging areas where large equipment or material may be stored, evaporation ponds, and any area where water is applied to control dust and erosion or areas where there are recent surface disturbances.

Data will be recorded for each raven observed, including activity, categorized as flying, perched, or on the ground (likely scavenging); type of perch (if applicable); and the general location of the bird within the Project area. In addition, any nesting locations will be recorded and unoccupied nests will be removed (see Section 4.5 for a discussion on nest removal).

5.0 ADAPTIVE MANAGEMENT

This section defines how adaptive management principles will be applied to this Plan, specifically in reference to PDF and control/mitigation measure implementation. This section defines potential changes to the mitigation and conditions that may trigger them.

5.1 Definition

Adaptive management is typically used in environmental management efforts to facilitate more effective management of resources to achieve desired objectives. Adaptive management can be defined as an iterative and structured optimal decision-making process intended to reduce

uncertainty through system monitoring. The decision-making process simultaneously maximizes one or more resource objectives and accrues information needed to improve future management, either actively or passively. Using current knowledge, passive adaptive management involves the use of conceptual modeling to guide management actions. The model is adjusted as new knowledge is obtained and management decisions are subsequently modified. Active adaptive management involves testing alternative hypotheses through system manipulation employing management strategies. Thus, passive adaptive management is based on information gained from observational studies, whereas active adaptive management is based on information gained from experimental manipulation (Holling 1978). This Plan will focus on passive adaptive management but may ultimately apply both passive and active adaptive management.

5.2 Adaptive Management Triggers

To facilitate meeting Plan objectives, it may be necessary to make changes to the PDFs or initiate the implementation of additional control measures. Implementation of adaptive management measures (described in Section 5.3) will occur if both of the following conditions are met:

a. The results of annual breeding season raven monitoring and/or Project area monitoring during the operational phase suggest that current PDFs provide evidence that the number of raven occurrences in the Project area is increasing, thereby increasing the potential for DT predation.

b. PVSI has made an attempt to adjust PDFs to control raven occurrences and avoid the need for additional control measures, and has contacted and worked with the DB and the resource agencies to identify other sources of ravens and/or management measures. However, increased raven occurrences continue.

5.3 Adaptive Management Measures

Adaptive management measures will be identified during implementation of the monitoring program and will be discussed by PVSI, CEC, USFWS, BLM, and CDFG before any decisions are made. Adaptive management measures may include modifications to PDFs, monitoring strategies, or implementation of additional control measures. Key examples will be 1) modifications to the monitoring program survey frequency, including increase or reduction of the monitoring frequency and survey points, should results of surveys deem it warranted; 2) eliminating or refining a PDF or management measure if it is not working; or 3) incorporating a defined control measure, if impacts are observed, that will not otherwise be implemented (triggered). Potential control measures are discussed in more detail below.

5.4 Control Practices

If the results of the monitoring efforts suggest a substantial and sustained (e.g., consecutive years) increase in raven activity that may result in DT predation, even with the implementation of PDFs

as defined in Section 4.0, then PVSI may need to implement additional measures to further control ravens in the Project area. This section defines the types of control practices that may be implemented if additional measures are determined to be necessary based on the adaptive management triggers described above.

As stated above, prior to the implementation of any control measure, the DB and PVSI will coordinate the discussion and approval of control measures with CEC, USFWS, BLM, and CDFG. Control measures proposed to be implemented must be agreed to by these resource agency representatives and PVSI. If no identified control measures accomplish appropriate raven management objectives, additional control measures will be assessed for potential implementation.

Roadkill Removal

Ravens are well known for eating animals that have been killed along roads and highways, a source of food that is often abundant in the desert region (Boarman and Heinrich 1999). Roadkill provides a food source for ravens, which facilitates increased raven nesting near roads and highways in areas that might otherwise offer little food (Kristan et al. 2004). Due to the unlikely presence of roadkill in the Project area, roadkill removal is considered unlikely; however, the ECM will document the occurrence of roadkill on the Project site during the biweekly raven monitoring events. Operations staff will also report roadkill on a daily basis if found. Monitoring of roadkill will focus on the Project Site, with associated paved and dirt roads, and the staging area, but also will include any other Project area facilities that may support vehicular traffic, including construction equipment. If roadkill occurs frequently in the Project area, and if ravens are commonly noted feeding on roadkill, it may be appropriate for PVSI to implement a roadkill removal program. Details of a roadkill removal program will be designed by the ECM in coordination with the DB and CEC. During the worker training associated with the WEAP, the construction workforce will be advised of the need to report any observed roadkills to the ECM and DB.

Hazing

Hazing may use any number of visual and/or auditory devices designed to scare birds, including air or gas cannons, human flushing, bioaccoustic deterrents, and/or flags and streamers to create an integrated system of negative stimuli. Because many birds will become accustomed to methods quickly, many of these techniques are used in combination. If deemed appropriate, a hazing program will be designed by the DB in coordination with the ECM and resource agencies. Permission may also be required from the local police or municipality, as local ordinances may prohibit the creation of loud noises.

Methyl Anthranilate

Methyl anthranilate (MA) is a naturally occurring GRAS-listed compound used as a food flavoring and fragrance additive (GRAS means "generally recognized as safe"). Chemical formulations containing MA have been found to be effective bird aversion agents as MA acts as chemosensory repellent, irritating pain receptors associated with taste and smell (Umeda and Sullivan 2001). When applied as a formulated spray, MA has been found to be effective in repelling birds from feeding on crops such as cherries, blueberries, and table grapes. In addition, MA is used as a repellent for Canadian geese on lawns and in small pools of water. To date, MA is thought to have limitations for topical application as it is considered highly volatile and breaks down readily under exposure to ultraviolet light. The most appropriate application of MA on the BSPP will be to small areas of ponding water or perhaps where known nesting has previously occurred. Repeat topical application will be necessary due to the breakdown of the chemical with exposure but may still prove useful as a short-term deterrent. After removing a current season unoccupied nest, MA could be applied to deter nest rebuilding in that location. Prior to the use of MA at the BSPP, research into the most current application of MA to deter raven activity will be conducted by the DB and methods could be designed in coordination with the ECM and resource agencies.

Lethal Removal (Depredation)

If ravens are still attracted to the BSPP even after the implementation of PDFs, modification to PDFs, and implementation of control measures, lethal removal may be considered. No evidence exists that lethal removal will have a long-lasting effect on raven population levels, raven foraging behavior, or survival of juvenile DT. In addition, identifying, targeting, and successfully removing individuals is also considered time consuming. However, this method is often used in management plans when specific raven pairs are determined to be responsible for taking relatively large numbers of DT (Boarman 2002). These individuals can often be identified by the presence of juvenile DT shells beneath their nests, which are often used for consecutive years by the same pair of breeding ravens (Boarman and Heinrich 1999). By removing those birds known to prey on DT, survival of juvenile DT in that vicinity may increase. However, it is very difficult to identify the target bird(s) with absolute certainty, much less locate and lethally remove both members of a pair.

Under this control method, targeted ravens will be shot by rifle or shotgun. This control method will require preparation of a Depredation Permit that defines firearm safety and use training, storage of firearms, and settings and situations where ravens may be taken. If shooting is not possible (e.g., directed towards mirrors or on power lines) or has been unsuccessful, ravens could be trapped and humanely euthanized. Young ravens found in nests of removed adults need to be euthanized humanely if they can be captured safely.

6.0 REPORTING

The ECM will prepare monthly monitoring reports during construction and the first year of operation summarizing the results of the biweekly and breeding season monitoring events as well as observations reported by operations staff and describing any noted raven activity in the Project area. Monthly monitoring reports will be summarized for inclusion in the annual compliance report during the construction phase. Following the first year of operation, a summary of monitoring data will be provided monthly and a report will be submitted annually. These reports will summarize the survey results, discuss the success or failure of PDFs, and make recommendations for modification of PDFs or implementation of control measures as necessary. These monitoring reports will be submitted to PVSI and the DB for review. PVSI will forward the reports to CEC, USFWS, BLM and CDFG.

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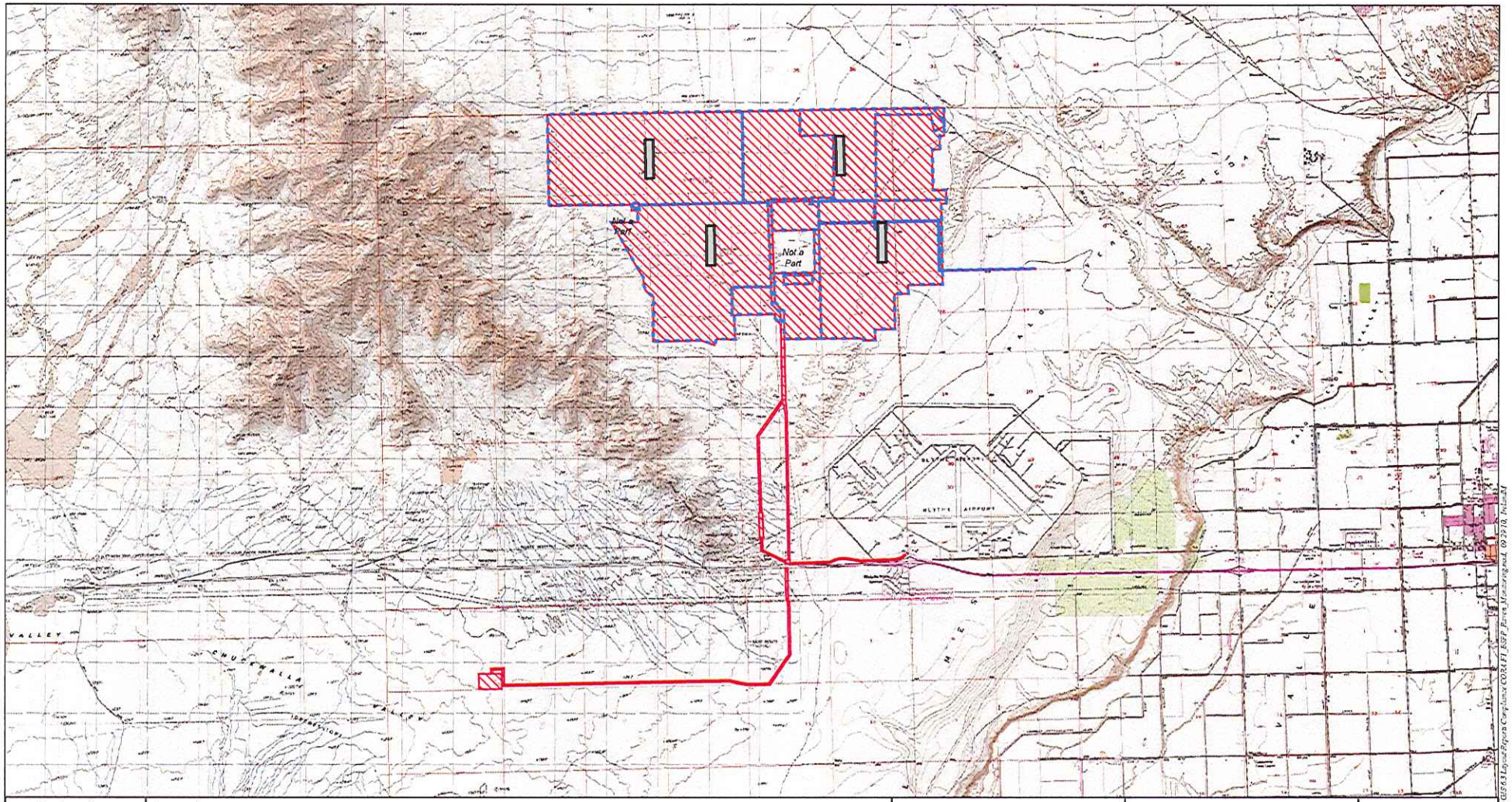
FIGURE



Map Location

Legend

- Breeding Season Survey Area
- Project Disturbance Area
- Power Block

Source: AECOM 2010; USGS 7.5' Topographic Quadrangle McCoy Spring 1983, Hopkins Well 1983, McCoy Peak 1983, Roosevelt Mine 1983, McCoy Wash 1975, Ripley 1975, Blythe NE 1970, Blythe 1975

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

BSPP Common Raven Monitoring, Management, and Control Plan

Figure 1
Site Location and Raven Monitoring Areas

AECOM

Date: September2010

APPENDIX F

WEED MANAGEMENT PLAN

BLYTHE SOLAR POWER PROJECT
WEED MANAGEMENT PLAN
RIVERSIDE COUNTY, CALIFORNIA

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October 2010

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LIST OF ACRONYMS

BLM	Bureau of Land Management
BRSA	Biological Resources Survey Area
Cal-IPC	California Invasive Plant Council
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CPM	Compliance Project Manager
COC	Condition of Certification
DB	Designated Biologist
ECM	Environmental Compliance Manager
EPA	U.S. Environmental Protection Agency
gen-tie	generation tie
GIS	geographic information system
GPS	Global Positioning System
HTF	heat transfer fluid
kV	kilovolt
LTU	Land Treatment Unit
mph	miles per hour
PAR	Pesticide Application Record
PMPD	Presiding Member's Proposed Decision
PUP	Pesticide Use Proposal
Project	Blythe Solar Power Project
PVSI	Palo Verde Solar I, LLC
ROW	right-of-way
SCE	Southern California Edison
USFWS	U.S. Fish and Wildlife Service

WCA	Weed Control Area
WMA	Weed Management Area
WMP	Weed Management Plan

1.0 INTRODUCTION

This Weed Management Plan (WMP) includes measures to fulfill the Conditions of Certification (COCs) included in the Final Decision issued by the California Energy Commission (CEC) for the Blythe Solar Power Project (BSPP or Project) proposed by Palo Verde Solar I, LLC (PVSI). The Final Decision includes BIO-14, a requirement for the development and implementation of an invasive weed control plan to provide 1) monitoring, preventive, and management strategies for weed control during construction and operation of the Project; 2) control and management of invasive weeds in areas temporarily disturbed during construction; 3) a long-term strategy for invasive weed control and management during the operational phase of the Project; and 4), an invasive weed control program for the Project's closure/decommissioning phase. This WMP applies to the BSPP area and all associated linear facilities.

1.1 Plan Purpose

The overall objective of the WMP is to prevent introduction of new weeds and spread of existing weeds as a result of Project construction, operation, and decommissioning. BIO-14 requires that the WMP 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
- Measures to prevent introduction and spread of weeds
- Monitoring and surveying methods
- Reporting requirements

This WMP provides guidance on the implementation of early detection protocols, defines containment strategies, and describes control methods to prevent the introduction and minimize the spread of invasive weeds during construction and operation activities. Invasive weeds are opportunistic plants that readily colonize disturbed areas and adversely affect the habitats they invade. Their introduction and spread often results in adverse effects to the environment and may also result in economic impacts. These plant species are able to exclude or outcompete desired native species and their introduction and spread may result in a decrease in overall species diversity. Objectives need to be consistent with existing and future Project site

conditions, the specific biology of the identified weed species, and environmental context of the Project.

Weed management will be within temporary impact areas and any portions of the site not graded, developed, or otherwise rendered unsuitable for weed growth. Within areas subject to weed growth, PVSI will approach the overall objective through eradication of existing populations and prevention of new weed introductions, and monitoring for early detection. Temporary impact areas will be revegetated and monitored for weed control under the Revegetation Plan (AECOM 2010b), using methods specified in that plan.

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre right-of-way (ROW) owned by the federal government and managed by the U.S. Bureau of Land Management (BLM), pursuant to an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by CEC.

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates.

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1 below.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1A	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Wells and Initial Portion of Unit #1	772.68
Phase 1B	Remainder of Unit #1, Unit #2 and Gen-tie	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
	Total	**7,024.5**

1.4 Definitions

Various regulatory agencies maintain definitions of "noxious" and "invasive" weeds and how they affect the environment. The California Department of Food and Agriculture (CDFA) Code Section 5004 maintains the most relevant definition to this WMP and defines noxious or invasive weeds as "any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate" (CDFA 2009). Invasive weeds are typically characterized as nonnative plants that aggressively colonize new areas and can grow to dominate native plant communities if uncontrolled. Invasive weeds could outcompete native vegetation, alter physical or chemical soil conditions, and dominate the landscape to the detriment of native plants and wildlife. Invasive weeds are often quick to colonize disturbed areas, including construction sites; roadsides; irrigated sites; or any other area with altered hydrology, soil structure, or soil chemistry.

The following additional terms will be used throughout this report:

The following terms will be used throughout this report:

- Project Biological Resources Survey Area (BRSA): The Project BRSA includes the Project Disturbance Area and all associated buffers.
- Project Disturbance Area: Includes the area of anticipated ground disturbance associated with implementation of the Project. This includes the entire Project footprint (area within solar plant site perimeter security fence [i.e., chain-link] including solar fields, power block, on-site transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields) and area outside the perimeter security fence (i.e., chain-link) including transmission and utility corridors, rerouted drainage channels, and additional areas requiring disturbance during construction.

- Spring and Fall 2009 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area, and associated buffers that were surveyed during Spring and Fall 2009.
- Spring 2010 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area and associated buffers that was surveyed during Spring 2010.

1.5 Roles and Responsibilities

PVSI is ultimately responsible for implementing this WMP. It is anticipated that PVSI contractors and other parties responsible for implementing components of this WMP will include the following:

Contractor(s): Contractual language will be included in construction documents and ongoing maintenance contracts to verify that all contractors, subcontractors, vendors, maintenance personnel, and other parties performing either construction or ongoing maintenance or repairs at the site abide by and implement the provisions of this WMP as it relates to their work. Implementing the construction provisions of this WMP will be a part of construction contracts. Landscape contractors and other specialists will implement specific provisions of this WMP either as subcontractors to the general construction contractor or through independent contracts with PVSI.

Construction Manager: The Construction Manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this WMP.

Environmental Compliance Manager (ECM): PVSI will designate an ECM to provide oversight of construction practices and verify compliance with the provisions of this WMP. The ECM and any support staff will coordinate with the construction manager to verify contractor compliance with environmental requirements for construction.

California Energy Commission (CEC): The CEC has provided guidelines and conditions of certification for BSPP. The CEC, acting through the CPM, will determine whether the WMP and activities performed under the WMP have been satisfied.

Bureau of Land Management (BLM): As the administering land management agency, BLM will provide ultimate approval of the contents of this WMP and compliance oversight of its provisions. BLM will provide timely review of work products including this WMP, modifications or amendments to this WMP, and subsequent reports as required by this WMP.

Designated Biologist (DB): PVSI will assign a DB to the Project. A resume of the proposed DB, along with the required three references and contact information, will be submitted to the CEC CPM for approval in consultation with the California Department of Fish and Game

(CDFG) and U.S. Fish and Wildlife Service (USFWS). The DB will have the following background and training:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and 3 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; and
- At least 1 year of field experience with biological resources found in or near the Project area.

In lieu of the above requirements, the resume will demonstrate to the satisfaction of the CPM, in consultation with CDFG, USFWS, and BLM, that the proposed DB has the appropriate training and background to effectively implement the Plan. PVSI will ensure that the DB performs the activities specified in the Plan.

PVSI will also designate an alternate biologist with the same qualifications as the DB, outlined above.

Biological Monitor: PVSI will designate a Biological Monitor(s) to provide oversight of weed detection and control to and verify compliance with the provisions of this WMP. The Biological Monitor will be responsible for detecting weed invasion on revegetated and other areas that remain subject to potential weed invasion. The Biological Monitor will be contracted by PVSI and must be knowledgeable about the Project, weed management obligations, and the weeds and native vegetation naturally found in the Project area.

2.0 INVASIVE WEED INVENTORY AND BASELINE CONDITIONS

A list of invasive weeds of concern within the Project site and associated linear features was compiled for consideration in this WMP. The list was based on a review of a list of invasive weeds ranked by CDFA (CDFA 2007), the California Invasive Plant Council (Cal-IPC) (Cal-IPC 2009), the U.S. Department of Agriculture (USDA) California list (USDA 2009), or those weeds of special concern identified by BLM (see Appendix A). In addition, the BLM Natural Resources Specialist in the Palm Springs Field Office, who is responsible for invasive weed control to discuss weeds of particular concern in the Project area (Harris, Glenn, 2010, pers. comm.), was contacted.

2.1 Field Surveys

Weeds currently present at the Project site were determined based on a floristic inventory of the BRSA conducted in spring 2009 and 2010 (AECOM 2009a), during special-status plant surveys, as detailed in the 2009 Botanical Survey Report (AECOM 2009b). Weed species observed and their ratings are provided in Table 2.

Table 2 Weed Species Observed within Project Boundaries

Scientific Name	Common Name	CDFA Rank*	Cal-IPC Rating*	USDA CA Rating*
Brassica tournefortii	Sahara mustard	-	High	-
Bromus madritensis spp. *rubens*	red brome	-	High	-
Cynodon dactylon	Bermuda grass	-	Moderate	CW
Festuca sp.	fescue	-	Moderate	-
Lactuca serriola	prickly lettuce	-	Eval-No list	-
Salsola tragus	Russian thistle	C	Limited	CW
Schismus arabicus	Mediterranean grass	-	Limited	-
Sisymbrium irio	London rocket	-	Moderate	-
Tamarix sp.	tamarisk	B	High	-
Vulpia bromoides	European foxtail fescue	-	Eval-No list	-

*** Ranks/Ratings**

CDFA

B – More wide spread. Eradication, containment, control or other holding action at the discretion of the commissioner. State endorsed holding action and eradication only when found in a nursery.

C – Generally widespread throughout the state. Action to retard spread outside of nurseries at the discretion of the commissioner. Reject only when found in a crop seed for planting or at the discretion of the commissioner.

Cal-IPC

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent—but generally not severe—ecologieal impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbanee. Ecologieal amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Eval-No list – Some plants were eategorized as Evaluated But Not Listed because either we lack sufficient information to assign a rating or the available information indicates that the species does not have significant impacts at the present time.

USDA CA

CW – C list (invasive weeds)

Source: AECOM 2009b. Blythe Solar Power Project Botanieal Survey Report, Riverside County, California. Prepared for Palo Verde Solar I, LLC. August.

AECOM 2010. Blythe Solar Power Projeet Botanical Survey Report, Riverside County, California. Prepared for Palo Verde Solar I, LLC. May.

Invasive species on the Cal-IPC List: High, Moderate, and Limited (Cal-IPC 2009) were to be noted when occurring in locally high concentrations and nearly monotypic stands (AECOM 2009b). However, no invasive species were noted in high concentrations during 2009 surveys. The initial status of the proposed Project site ROW is healthy Sonoran Creosote bush scrub with low densities of the weed species known to be present.

Saharan mustard (*Brassica tournefortii*) occurs throughout the entire Project site in low density. It is most abundant within the "agricultural" and "stabilized and partially stabilized desert dunes" vegetation communities. The presence of mustard in the agricultural and stabilized and partially stabilized desert dunes vegetation communities was described in the 2010 botanical survey report (AECOM 2010). The management objective for Saharan mustard will be its suppression or eradication from revegetated areas and eradication from operations areas if it should appear.

Exotic grasses, including red brome (*Bromus madritensis* spp. *rubens*), are less dense at the site than over many other parts of the California desert. Some of the grasses are localized within washes. The management objective for the exotic grasses will be to suppress populations within the revegetation areas to low density. All exotics will be prevented or eradicated within the operations areas.

Tamarisk (*Tamarix* sp.) is found very infrequently in washes. Tamarisk is unlikely to appear on upland portions of the ROW but if it should appear the management objective will be eradication.

The remaining species in Table 2 will be suppressed to low densities within the revegetation areas and prevented or eradicated in operations areas.

3.0 CLASSIFICATION OF WEED MANAGEMENT/WEED CONTROL AREAS

The WMP will be implemented on all Project facilities within the ROW. The Weed Management Area will consist of the Project ROW, the transmission line corridor, including a 100-foot buffer on both sides and all access roads, including a 25-foot buffer on both sides. Within the Weed Management Area, specific Weed Control Areas (WCAs) will be designated on an as-needed basis. WCAs will require specific management considerations depending on a range of factors. Figure 2 shows the WMAs and its subdivisions into WCAs.

3.1 Temporary Disturbance Areas

Temporary disturbance WCAs will be associated with construction and upgrades in the transmission line ROW, construction staging areas, and temporary access roads. Transmission

line construction will involve temporary disturbance associated with permanent tower placement and development of an access road for maintenance.

Soil disturbance during construction and temporary use will create habitat for disturbance-adapted, invasive species; measures will be required to minimize potential weed introduction by personnel and equipment. Temporarily disturbed areas will continue to be subject to weed invasion, and ongoing monitoring and management will be required. Potential temporary WCAs are described in this section.

3.1.1 Water Supply

Well water will supply Project domestic and industrial water needs. Up to 10 wells onsite (two per power block and two in the shared facilities area) will supply water to all four solar units (AECOM 2009a). Wells and associated pipelines will lie within the existing disturbance area; thus, it is not expected that additional weed control measures will be needed. All well sites are included within the project footprint overall WMA on Figure 2.

3.1.2 Transmission Lines and Upgrades

The Project facility will be connected to the SCE transmission system by constructing a double-circuit, 230-kV transmission line that will interconnect at the new Colorado River Substation planned by SCE approximately 5 miles southwest of the Project. Regular weed monitoring and management during construction will be required. Some areas temporarily disturbed during construction will require weed management. In addition, ongoing vehicle access for tower maintenance will be necessary along the new transmission line. Soil disturbance and equipment movement for construction and maintenance activities create the potential for ongoing introduction of weedy species, making ongoing weed management a requirement. Figure 2 includes these areas in the Utility Corridor WCA.

3.1.3 Staging and Laydown Area

Portions of the main Project site will serve for storing pipe and other construction materials. Although most portions of the site will be permanently developed, any remaining portions will be subject to the same weed monitoring and management requirements of other temporary disturbance areas.

3.2 Permanently Developed Areas

The areas described in this section will be permanently developed, but could support weedy species along peripheral disturbed areas and function as seed reservoirs to adjacent natural habitats if not properly managed.

Project facilities include the following:

- Solar Field Unit #1 (northeast);
- Solar Field Unit #2 (northwest);
- Solar Field Unit #3 (southwest);
- Solar Field Unit #4 (southeast);
- Power blocks within the solar fields associated with each of the four units;
- Access road from I-10 frontage road to onsite fence;
- Office and parking;
- LTU for bioremediation/land farming of HTF-contaminated soil;
- Warehouse/maintenance building and laydown area;
- Onsite transmission facilities, including central internal switchyard;
- Newly constructed drainage channels; and
- Groundwater wells used for water supply
- Natural gas pipeline;
- Telecommunications lines

Construction, maintenance, and operation activities will create disturbed ground that will be potential habitat for weeds. Within permanently developed areas the management objective will be prevention and eradication.

3.2.1 Solar Units

Soil disturbance during construction will create weed-prone areas, as will foot and vehicle traffic. The area will require ongoing weed monitoring and maintenance during construction. Following construction, equipment and personnel will continue to access the area for operations and maintenance. Some weed growth could be supported by wash water below mirrors if washing takes place at night and during the cool season when evaporation is slow. The ground between and around mirrors constitutes a category of WCA that will require weed monitoring and periodic weed control. The management objective within the solar units will be prevention and eradication.

3.2.2 Landscaped Areas

Landscaped areas may be established at the administrative building, entrance gate, and at a limited number of other visually prominent locations. Irrigated landscaped areas can be susceptible to weed invasion. Weed invasion resulting from irrigation can be minimized by

limiting landscaping to cactus or other succulents. If irrigated, landscaped areas will be monitored and adequate weed control will be implemented. The management objective in landscaped areas is the suppression of weeds.

3.2.3 Roads

Roadsides and the medians of unpaved service roads are vulnerable to weed invasion. Roads often alter local hydrology and are subject to disturbance during construction, maintenance, and use. Vehicle traffic may distribute weed seeds along roads, which will be subject to monitoring and periodic weed control during Project operations. The management objective for roads will be suppression of weeds to a very low density. Figure 2 includes Black Rock Road WCA in this category.

3.2.4 Other Permanent Facilities

Peripheral areas throughout the facility are anticipated where conditions are suitable for weed establishment. This may include soils that have been cleared, compacted, or otherwise disturbed; areas where hydrology is altered, such as from increased drainage from developed areas; or areas where continued vehicle or foot traffic persists. Ongoing weed monitoring will occur to target these areas for management to avoid creation of weed seed reservoir areas that could affect adjacent undisturbed habitats. The management objective for other permanent facilities will be suppression of weeds. Figure 2 includes the Gen-Tie Line WCA and Temporary Construction Power WCA in this category.

4.0 WEED RISK ASSESSMENT

Consistent with BLM guidelines for weed management, a weed risk assessment for each component of the Project, including construction, operation and closure that will involve soil-disturbing activities or altering vegetation, will be conducted. BLM's risk assessment process is available online at http://blm.gov/ca/st/en/prog/weeds/9015.html and is summarized in this section.

4.1 Risk Assessment Process

Each ground-disturbing or site-altering project authorized, funded, or conducted on BLM lands is subject to a risk assessment. The risk assessment process must be accomplished by, or closely supervised by, a person who has a good understanding of invasive weed ecology.

The required risk assessment is to be filed on a specialized form, but the information to complete the form is provided in this WMP. The risk assessment information presented here is based on conditions at the site before construction, as determined during the 2009 and 2010 botanical surveys. This risk assessment assumes grading of future operations areas and that those

operations areas will not be returned to native vegetation. This risk assessment further assumes that two lengthy and very thorough botanical surveys over the entire ROW and a wide buffer area have identified all exotic plant species that currently threaten the ROW, or are likely to threaten the ROW within the foreseeable future.

4.1.1 Pre-Field Review

Review existing information for the subject area.

1. Check local BLM, State/County weed board, and Natural Heritage or Data Conservation Center records to determine if invasive weed species have been sighted in or adjacent to the area. Develop a list of species considered for possible occurrence.
2. Compare the habitat requirements of invasive weed species with habitat known to occur in the area to determine if potential habitat for invasive weed species exists.
3. Determine if a field reconnaissance is needed using the following:
    a. If no invasive weeds are likely to occur within the area, document the results and proceed with the project as planned.
    b. If the presence of invasive weed species or their habitats within or adjacent to the area is indicated by the pre-field review, conduct a field reconnaissance.
4. Summarize the results, including a list of species considered and any sources of area habitat information. File in the risk assessment report and appropriate National Environmental Policy Act document.

Note: Steps 1 through 3 were completed during preparation of this WMP. Weeds were detected at low densities over most of the project. Localized portions of former agricultural fields and partially stabilized dunes had a higher density of Saharan mustard.

4.1.2 Field Reconnaissance

The field reconnaissance has been completed during botanical surveys of the proposed ROW. Those surveys used a sampling design able to reliably show invasive weed occurrence. The surveys were carried out in early to mid-Spring, the proper time of year for identification of invasive weed species. Field reconnaissance included inspection of roads and transmission line ROWs leading to the project; these are the primary potential routes by which weed species which could be transported onto the ROW.

The BLM risk assessment protocol defines three classes of weeds:

A. Weeds unrecorded or of limited distribution in the State or area that pose a serious threat to agricultural crops and rangelands in the State.

B. Weeds that are unrecorded or of limited distribution in the State or area and are potentially harmful.

C. Other weeds or undesirable plants.

None of the weeds listed in Table 2-1 could be considered unrecorded or of limited distribution in the State or area. Thus the listed species fit in BLM class C.

The following actions are as necessary as a result of the reconnaissance.

Presence of Class A or B Weeds: If class A or B weeds are present:

- Develop and implement management measures to control weeds.
- Install a monitoring system for a minimum of 5 years.
- Determine the risk of introducing invasive weeds.

Presence of Class C Weeds: If class C weeds are present:

- Develop and implement management measures to prevent spread of invasive weeds.
- Install a monitoring system for a minimum of 3 years.
- Determine the risk of introducing invasive weeds.

Presence of No Weeds: If no weeds are present or likely to occur:

- Document the results.
- Proceed with the project as planned.

The botanical surveys show class C weeds within the ROW. The finding of class C weeds requires the development of management measures, a requirement met by this WMP.

4.1.3 Risk Determination

The risk assessment report is used to determine the risk rating of introducing invasive weeds in the area. The results, including planned preventative, management, control, and monitoring measures, are documented in this WMP. The results are summarized in this document.

4.1.4 Risk Rating

A risk rating is used to describe the risk of the potential for invasive weed establishment in the Project area and to serve to guide further action regarding Project modification or implementation. The risk rating is calculated as follows:

- Risk rating = Likelihood x Consequence

- Likelihood = the likelihood that noxious weed species will become established in the Project area.
- Consequence = the consequence of noxious weed species become established in the Project area.

- Factors. Use the factors in developing the risk rating. The factors are:
  - Factor 1: Likelihood of invasive weed species spreading to Project area.
  - Factor 2: Consequence of invasive weed establishment in Project area.

The risk or likelihood and consequence of invasive weed establishment range from a value of 0 (none) to 100 (high). The value ratings and procedural steps in the next section determine the risk rating and monitoring requirements.

4.2 Risk Assessment Factors

Factor 1: Likelihood of Invasive Weed Species Spreading to the Project Area.

- None (0): Invasive weed species are not located within or adjacent to the Project area. Project activity is not likely to result in the establishment of noxious weed species in the Project area.
- Low (1): Invasive weed species are present in areas adjacent to but not within the Project area. Project activities can be implemented to prevent the spread of noxious weeds into the Project area.
- Moderate (5): Invasive weed species are located immediately adjacent to or within the Project area. Project activities are likely to result in some areas becoming infested with invasive weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of invasive weeds within the Project area.
- High (10): Heavy infestations of invasive weeds are located within or immediately adjacent to the Project area. Project activities, even with preventative management actions, are likely to result in the establishment and spread of invasive weeds on disturbed sites throughout much of the Project area.

Factor 2: Consequence of Invasive Weed Establishment in Project Area.

- Low to Nonexistent (1): None. No cumulative effects are expected.
- Moderate (5): Possible adverse effects on site and possible expansion of infestation within Project area may occur. Cumulative effects on native plant community are likely but limited.

- High (10): Obvious adverse effects within the Project area and probable expansion of invasive weed infestations to areas outside the Project area will occur. Adverse cumulative effects on native plant community are probable.

The botanical surveys have shown that class C weeds are present within the project area and are likely to reinvade temporary impact areas and other portions of the Project during and after construction. The level of likelihood score is moderate to high (7).

4.3 Risk Rating

Factor 1: Identify level of likelihood and consequence of adverse effects and assign values according to the following:

- None – 0
- Low – 1
- Moderate – 5
- High – 10

Factor 2: Multiply level of likelihood by consequence.

Factor 1x Factor 2: Use the value resulting in Step 2 to determine risk rating and action as follows:

- None (0): Proceed as planned.
- Low (1-10): Proceed as planned. Initiate control treatment on invasive weed populations that become established in the area.
- Moderate (25): Develop preventative management measures for the Project to reduce the risk of introduction or spread of invasive weeds in the area. Preventative management measures should include modifying the Project to include seeding the area to occupy disturbed sites with desirable species. Monitor the area for at least 3 consecutive years, and provide for control of newly established populations of invasive weeds and follow-up treatment for previously treated infestations.
- High (50–100): Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed sites and controlling existing infestations of invasive weeds prior to Project activity. Project must provide at least 5 consecutive years of monitoring. Project must also provide for control of newly established populations of invasive weeds and follow-up treatment for previously treated infestations.

The consequences of weed invasion vary with land use of the invaded areas. Weed control is more difficult in revegetation areas, where there is a danger of harming native vegetation, than it is in operations areas, where eradication methods may be used freely. The intended land uses suggest that the consequence of invasion is moderate (5).

The risk rating score is 7 x 5 = 35, a moderate risk. The moderate risk requires development of preventative management measures to reduce the risk of introduction and spread of invasive weeds. This WMP provides the required management measures. The risk assessment per BLM standards provides for a 3-year monitoring program.

5.0 Monitoring and Survey Methodology

5.1 Weed Identification

Monitoring will be carried out by the Biological Monitor, who will inspect all vulnerable areas of the ROW where construction activity has occurred early in the winter and summer rainy seasons. The Designated Botanist will train the Designated Biologist and Biological Monitor to identify weeds that may occur on the site and instruct them on the most effective surveying strategies. In coordination with the Designated Botanist, the Biological Monitor will determine weed control needs in accordance with this WMP and will reinspect mid and late rainy season to ensure that weeds in eradication areas are not allowed to set seed. The Biological Monitor will provide notice of potential weed invasions and will provide control recommendations to PVSI.

PVSI may designate qualified staff to assist with weed monitoring during execution of other routine duties. Designated staff must become familiar with the weeds known to occur on the site and adjacent to the site and must be able to distinguish them from native plants that are not targeted for eradication. Any designated staff may draw upon the Biological Monitor for instruction and may additionally make use of public resources for sharpening weed recognition skills. Some available resources include:

- The University of California digital library at http://www.calflora.org/ contains species information and an extensive photo collection.
- The Cal-IPC website is at http://www.cal-ipc.org. This website contains an invasive plant database, plant profiles, and extensive other information on invasive plants and control.
- The USDA National Invasive Species Information Center is at http://www.invasivespeciesinfo.gov/. This website has information on invasive species and links to the extensive USDA PLANTS database (http://plants.usda.gov/), with species profiles and photographs.

- The California Native Plant Society maintains information including a database on California vegetation including rare, threatened, and endangered plants (http://www.cnps.org/).
- BLM also maintains a website with useful information on invasive weeds, including management strategies for weeds in California (http://www.blm.gov/weeds/).
- The Center for Invasive Plant Management maintains a website with useful information and resources, including plant profiles, and can be accessed at http://www.weedcenter.org/.
- *Weeds of the West* by Tom D. Whitson is a valuable resource that is available at many online book suppliers.
- The Nature Conservancy's Wildland Invasives Species Team has produced a *Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas,* which is available online at http://www.invasive.org/gist/handbook.html.

5.2 Surveys and Monitoring Methodology

Surveys and monitoring will verify timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management. Thorough preconstruction surveys already referenced in this WMP have established the information necessary for the risk assessment. The methods outlined below refer to monitoring during construction and operation.

5.2.1 Construction Areas

The Biological Monitors will be present during site clearing and construction activities. Biological Monitors will be responsible for inspecting all construction areas, identifying the presence of invasive weeds, and inspecting equipment-cleaning facilities for weed seed removal. The ECM will be responsible for prescribing management activities consistent with this plan when weeds become established. Monitoring of active construction areas will include access routes and will consist of walking or driving slowly over construction areas and searching for seedlings of exotic species. Monitoring will be done with sufficient frequency that the entire construction area is inspected during both early and in later phases of construction, within the summer and winter rainy seasons, and until ground-disturbing construction activities are completed. Monitoring thereafter will be of sufficient frequency to cover the entire disturbed area at least once during early to mid portions of both summer and winter rainy seasons. Staff trained to recognize common weeds will alert the Biological Monitor and ECM to the presence of any potential weed invasions that the Biological Monitor may have overlooked.

5.2.2 General Operations and Monitoring

General site monitoring of the operating facility will be conducted by grounds personnel on an ongoing basis. Weed control will be conducted as needed by Project personnel whenever notified by the Biological Monitor or ECM of the presence of weeds but need not be conducted more often than every other week during the growing season (March through August) and once a month otherwise.

5.2.3 Known Infestation Areas

Where weed infestation occurs and treatment is implemented, the area will be targeted for ongoing monitoring to verify that treatments are effective and that complete eradication has been achieved. Visits to known infestation areas will continue until invasive weeds in the area are controlled.

5.3 Database and Mapping

If initial grading and weed control prevent the reinvasion of weeds into the ROW, the weed status of the Project will be readily maintained with regular monitoring and control measures. However, weed proliferation that cannot be controlled with monitoring and periodic treatment may require more elaborate documentation of locations, weed species, and rate of spread. Weed mapping is most often used over large areas and it is not clear that the BSPP will require this intensity of management. However, the Biological Monitor will initiate mapping and regular inventories if more modest procedures cannot adequately prevent spread of weeds. If needed, the information may also be used to set priorities for which weed species to treat first and what specific infestations to target.

An invasive weeds database may be used to track species, detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status. Record keeping may be by other means than a database but the Biological Monitor will provide this information for periodic reports, regardless of the format in which records are kept. A geographic information system (GIS) or written records of Global Positioning System (GPS) readings will be used to map and track weed location data.

The priority for treatment of infestation areas will be established on the basis of species, vulnerability of the site to invasion, growth stage, and effectiveness of treatment. Vulnerability to weed invasion will be assessed based on availability of weed propagule sources; areas disturbed, such as through land clearing and earthwork; or areas near known prior or treated weed infestations. GIS data will be submitted to the BLM Resource Specialist and CEC CPM for record keeping purposes.

Prior to the start of the detailed GIS-based weed mapping, the California Department of Food and Agriculture Weed Information Project will be consulted about current mapping and data standards to ensure compatibility with state and federal datasets. Every 5 years, the Annual Report shall include the mapping and results of the detailed 5-year inventory and GIS mapping described above. The 5-year report shall include a table that compares acres infested and population sizes to the baseline inventory.

6.0 WEED MANAGEMENT METHODS

6.1 Preventive Measures

A variety of techniques have proven effective for weed management, including prevention, mechanical, biological, and chemical methods. The most appropriate management action should be chosen based on the weed species, the physical characteristics of the Project, and economic and social considerations. The use of herbicides will also take into account the chemical nature of the active compounds to avoid chemical drift or residual toxicity to special-status plants adjacent to the treatment areas. Monitoring and rapid implementation of control measures should be performed to verify early detection and eradication for weed invasions.

Because most of the ROW will be graded early in construction, no additional control measures will be required until weeds begin to reinvade. Control measures can be aggressive because no danger of harming native vegetation exists except on temporarily disturbed areas during revegetation efforts.

When weeds reinvade the construction and operations areas, the following general measures may be implemented to prevent their spread and inhibit their establishment:

- Limit ingress and egress to designated routes.
- Monitor materials brought onto the Project site to minimize the potential for weed introduction.
- Educate workers about invasive weeds that are potentially problematic at the Project and enlist their help in preventing invasive weed introduction and spread.
- Reestablish vegetation as quickly as practicable on temporarily disturbed sites as the most effective long-term strategy to avoid weed invasions.

Some guidelines for preventing weeds from entering public lands and spreading to new uninfested areas are listed below (BLM 2009b).

- Preventing introduction through contaminated seed, feed, mulch, gravel or fill,

- Preventing introduction through movement of animals, people, or machinery through erection of fencing and/or gates to restrict access,
- Clean equipment before entering BLM lands
- Preventing introduction through proper planning, and

All of these methods have been considered during preparation of this WMP and will be implemented during construction, operation and decommissioning of the project.

6.1.1 Construction

6.1.1.1 Worker Environmental Training

A Worker Environmental Awareness Program (WEAP) is to be devised for this project. Invasive weed recognition and management will be incorporated into the WEAP, with color photos of these invasive weeds. Invasive weed recognition and management will be incorporated as a part of mandatory environmental training for all contractors or related personnel entering the Project site during construction. This will include all contractors, subcontractors, inspection personnel, construction managers, construction personnel, and individuals bringing vehicles or equipment onto the site. Impacts of invasive weeds on native vegetation, wildlife, and fire activity will be discussed including an explanation of how invasive grasses provide a fine fuel understory that can spread fire from shrub to shrub. The measures to prevent the spread of invasive weeds, and controls on their proliferation when already present, will also be explained.

6.1.2 Weed-Free Products

Construction contractors will verify that straw or hay bales used for sediment barrier installations are obtained from certified sources that are free of primary invasive weeds. Where feasible, mulch will be generated from native vegetation cleared from the Project itself.

6.1.3 Weed-Free Seed

If seed is purchased from commercial vendors for Project revegetation activities, it will be labeled in compliance with the relevant provisions of the CDFA Code. In addition to having the correct label, the seed should be free of invasive weeds, and the label should so state. Preferably, seed should be collected from adjacent areas; this provides the additional benefit of ensuring local genetic stock.

6.1.4 Operations

6.1.4.1 Infestation Containment and Control

During operations, areas of concern will be identified and flagged in the field by maintenance personnel. The flagging will alert personnel that weeds are present and will signal that access

into these areas is prohibited until invasive weed management control measures have been implemented. Control measures will be implemented as described below.

6.1.4.2 Early Detection and Rapid Response

The best time to eradicate invasive weeds is before they become established. Early detection programs should include weed identification and training for grounds staff, weed mapping for documentation of infestations and treatments, and determination of high-priority areas for most effective use of personnel and resources.

6.2 Eradication and Control Methods

Management strategies must encompass not only eradication but must also identify the management goals for high-priority species. This is because, in general, large amounts of resources are required for this level of control. Weed infestations are typically targeted to a level of control located between eradication and elimination of seed production (Gershman and Lane, 2000). Summary of proposed control techniques is described in Table 3.

Best management practices approved by BLM will be incorporated prior to implementation of eradication and control methods.

Table 3 Summary of Proposed Control Techniques

Technique	Notes
Cut Stump (Chemical)	Effective on all plants over 3/8-inch diameter; reserved for tamarisk and other weedy trees
Foliar Spray (Chemical)	For dense stands of small plants and regrowth on salt cedar
Wipe Method (Chemical)	For dense stands of small plants and regrowth on perennial plants; similar to foliar spray, but more selective, as only target plants receive the chemical treatment
Mowing	Mowing can be conducted with string trimmers or tractor-mounted mower. .

6.2.1 Unacceptable Weed Removal Methods

6.2.1.1 Tilling

Tilling, or the turning over of soil, is a weed-control practice that may be appropriate for agriculture; however, this method is ineffective and inappropriate in desert landscapes and will not be attempted for weed control on this Project.

6.2.1.2 Physical Removal of Weeds

Hoeing and physical removal by hand pulling are not suitable control methods within revegetation areas because they result in soil disturbance and may set back soil development of soil biology by weeks or months. These methods may be used elsewhere on the ROW.

6.2.2 Chemical Methods for Weed Removal

Herbicide applications are a widely used, effective control method for removing infestations of invasive weed species; however, inadvertent application of herbicide to adjacent native plants must be avoided within temporary disturbance or revegetation areas.

6.2.2.1 Permitting and Regulatory Requirements

Before application of herbicide, contractors will be required to obtain any required permits from State and local authorities. Permits may contain additional terms and conditions that go beyond the scope of this plan. All herbicides will be applied in accordance with applicable laws, regulations, and permit stipulations. Only herbicides and adjuvants approved by the State of California and Federal agency for use on public lands will be used within or adjacent to the Project.

The use of chemical control techniques requires the acquisition of a number of permits and certifications. Current requirements call for County applicator permits and a BLM Pesticide Use Permit. The contractor implementing weed control must have a certified applicator present when pesticides are applied on public land. BLM requires individuals responsible for controlling weeds on their property to be currently certified as an Integrated Pest Management and Pesticide Applicator. This training is provided by BLM in course #9000-1 (Certification Integrated Pest Management and Pesticide Application Certification). This certification is good for 3 years. In addition, tailgate training in pesticide handling will be provided to crews.

The Final Environmental Impact Statement on Vegetation Treatment on BLM Lands in Seventeen Western States lists 10 herbicides acceptable for use on BLM lands (USDI 2007). Guidelines for the use of chemical control of vegetation on BLM lands are presented in the Chemical Pest Control Manual (BLM 2009a.). These guidelines require submittal of a pesticide use proposal (PUP) and pesticide application records (PAR) for the use of herbicides on BLM lands. A sample BLM form required for the submittal of a PUP is included in Appendix B.

PVSI will submit PARs to the BLM for each use of herbicides on BLM lands within 24 hours of application. The occurrence of invasive weeds within the Project footprint, or where the weeds occur, will be reported to the BLM. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with BLM personnel. PVSI will be responsible for providing the necessary trained personnel or hiring a

contractor to implement the required weed control procedures. A sample BLM Pesticide Application Records Form is included in Appendix C.

If during the performance of any weed control effort covered under this document, any archaeological or cultural values are discovered, the control effort will be immediately suspended until a cultural clearance can be obtained from a qualified archaeologist. If target species are located on a cultural resource site, then control at that site will be deferred until the significance can be determined and appropriate mitigation instituted. As an example, trees planted around an old mining cabin might be left as part of a site.

6.2.2.2 Types of Herbicides

Herbicides may be characterized as preemergent, postemergent, selective, and nonselective. A preemergent herbicide is one that generally controls ungerminated seeds by inhibiting germination. Postemergent herbicides are generally lethal to emerged plants. A few herbicides have both pre- and postemergent activity. Herbicides can be selective or nonselective. If an herbicide is selective, it will have activity on some species of plants and not others, often distinguishing between monocots (grasses) and dicots (broadleaf plants). A nonselective herbicide is one that is lethal to any plant species to which it is applied.

Herbicides kill plants through either contact or systemic action. Contact herbicides are most effective against annual weeds and kill only the plant parts on which the chemical is deposited. Systemic herbicides are absorbed either by roots or foliar parts of a plant and are then translocated within the plant system to tissues that might be remote from the point of application. Although systemic herbicides can be effective against annual and perennial weeds, they are particularly effective against established perennial weeds.

Preemergent herbicides inhibit germination of annuals from seed but generally do not control perennial plants that germinate from bulbs, corms, rhizomes, stolons, or other vegetative structures.

Generally, it is anticipated that few areas occur on the Project site where preemergent vegetation control would be required. Preemergent herbicides work only on vegetation reproducing from seed and are not effective on other types of propagules, such as re-sprouts from root crowns that have been cut, rhizomes, or other material. The following situations may require use of preemergent herbicides:

- Areas that have repeated weed problems with annual plants, with evidence of a robust weed seed crop in the seed bank, will be sprayed with preemergent herbicides during appropriate pregermination periods.

- Areas beneath the arrays, because they will receive drips from mirror washing, can be vulnerable to weed infestations.

Generally, preemergent herbicides would not be appropriate for revegetation areas because they are likely to inhibit the germination and growth of desirable native plant seed.

The most commonly used postemergent, nonselective herbicides contain a family of chemicals called glyphosates (N-[phosphonomethyl] glycine). Glyphosate (Rodeo™, Roundup™, and Accord™) is a nonselective, systemic herbicide that is effective on many annual and perennial plants. It works by blocking an enzyme pathway that is important for plant protein synthesis, which is most effective if full coverage over the plant's leaf is accomplished. However, because of systemic action, even partial coverage can result in plant mortality.

The U.S. Environmental Protection Agency (EPA) has deemed glyphosate to have a relatively low degree of oral and dermal acute toxicity. It is considered immobile in soil and readily degraded by soil microbes. The EPA states that it is minimally toxic to birds, fish, aquatic invertebrates, and honeybees (EPA 1993).

The herbicides proposed for use at the BSPP site do not require certification for application. However, BLM policy requires the direct supervision by a certified pesticide applicator during application of all herbicides on public lands. All treatments would be supervised or overseen by a BLM certified pesticide applicator knowledgeable in plant identification and familiar with proper herbicide application techniques. Spray application of herbicides would not occur when winds are likely to cause drift onto sensitive species or water. In addition, herbicides would not be applied when rain is anticipated.

It is the responsibility of the pesticide user to observe all directions, restrictions, and precautions on pesticide labels. The following general precautions will be implemented for pesticide application:

- Store all pesticides in original containers with labels intact and behind locked doors. Keep pesticides out of the reach of children.
- Use pesticides at correct label dosage and intervals to avoid illegal residues or injury to plants and animals.
- Use pesticides carefully to avoid drift or contamination of nontarget areas. Surplus pesticides and containers should be disposed of in accordance with label instructions to prevent contamination of water and other hazards.
- Follow directions on the pesticide label regarding restrictions as required by State or Federal laws and regulations.

- Avoid any action that may threaten a rare, threatened, or endangered species or its habitat.
- Visual observation will be made prior to any herbicide application to verify the site does not contain any sensitive wildlife species and the target plants do not contain active avian nests.
- The method and rate of application are determined by the label directions. Each treatment effort will be documented on BLM forms (Appendices B and C).

6.2.2.3 Cut Stump Technique

This technique involves cutting the trunk of the target plant (e.g., tamarisk) about 3 to 6 inches from the soil surface using hand or motorized tools. The debris would be stacked to provide wildlife cover. Immediately following cutting (within 2 minutes), the remaining stem or trunk is painted or hand sprayed with the herbicide following label directions. The herbicide is applied at low pressure and is allowed to cover the top of the cut stump and dribble down the sides of the stump. With this technique, only the target plants are hit with the herbicide. Where the target plant occurs as large numbers of small (greater than 3/8-inch diameter), dense stands where a clearing saw is used, a more general spray is used to wet the tops of the cut stems. To avoid potential impacts to insects, amphibians, and fish species, small surface area spray application equipment will be used with the smallest possible amount of herbicide at any one time. In addition, herbicides will be applied with nozzle tips that produce large droplets (not mist) and spray pressures no greater than are required to obtain adequate coverage. Spray application of herbicides will not be applied when winds are likely to cause drift onto sensitive species or water. Herbicide application to target species would occur from early spring, when target plants are at high moisture content, through late fall, when the target plants are translocating their nutrients to the roots for winter storage. A strong sap flow enhances the absorption of herbicides and translocation of the herbicide to the root system.

Triclopyr, sold under the trade name of Pathfinder™, and "Garlon 4," or Glyphosate, sold under the trade names of "Rodeo™" and "Aquamaster™" (Rodeo is the old name for Aquamaster) are proposed to be used. Garlon 4 and/or Pathfinder herbicides would be used to treat terrestrial tamarisk found in the upland areas. Emergent tamarisk adjacent to open water (within 10 feet) will be treated with Aquamaster (Rodeo). The rate of application would be determined by the label directions. Method of application would conform to label directions. A 100-percent solution would be applied to freshly cut stumps or to the basal bark, as prescribed under the Cut Stump or Basal Bark methods. An agriculturally approved marking dye would be added to the herbicide solution to prevent double application and missing any target plants.

6.2.2.4 Foliar Spray Technique

Foliar spraying would be used to control weeds in several situations, including treatment of resprouting and treating plants that are too small to treat with cut stump methods. The method of treatment for resprouts and pioneer plants is foliar application of herbicide to plants less than 6 feet tall. In controlling resprouts, several years may pass before the resprout has enough surface area to absorb sufficient herbicide to kill the root system.

With this technique, an herbicide would be applied with hand equipment such as backpack sprayers, small tank sprayers (2- to 3-gallon) or small hand sprayers. To avoid potential impacts to insects, amphibians, and fish species, small surface area spray application equipment will be used with the smallest possible amount of herbicide at any one time. In addition, herbicides will be applied with nozzle tips that produce large droplets (not mist) and spray pressures no greater than are required to obtain adequate coverage. Spray application of herbicides will not be applied when winds are likely to cause drift onto sensitive or nontarget species or water. Herbicide application to woody target species would occur from early spring, when target plants are at high moisture content, through late fall, when the target plants are translocating their nutrients to the roots for winter storage, as a strong sap flow enhances the absorption of herbicides and translocation of the herbicide to the root system. Herbaceous weeds would be treated in the spring and early summer.

6.2.2.5 Wipe Method

This technique uses a carpet-like fabric pad or roller to apply the herbicide to the target foliage. The herbicide is allowed to flow onto the pad/roller and is applied to the target foliage by brushing. Application sites, target species, herbicides, season of use, and most safety precautions are the same as for the foliar spray technique.

6.2.2.6 Monitoring and Evaluation

Once treatments are initiated, monitoring will be initiated to collect data on percent kill, survival, damage to nontarget species, reinvasion of weed species, reintroduction of native species, and the need for retreatments. Monitoring will be conducted yearly until the weeds are eradicated. Treatments over or adjacent to water would include monitoring for water quality as specified in the State guidelines and BLM guidance.

6.2.2.7 Limitations

Herbicide applications must follow EPA label instructions. Application of herbicides will be suspended when any one of the following conditions exists:

- Wind velocity exceeds 6 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides.

- Precipitation is occurring or is imminent.
- Air temperatures exceed 90 degrees Fahrenheit.

6.2.2.8 Transport and Mixing

During the construction phase, herbicides will be transported to the Project daily with the following provisions:

- Only the quantity needed for that day's work will be transported.
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a location that is isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- Mixing will be done off site over a drip-catching device and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources. No herbicides will be applied at these areas unless authorized by appropriate regulatory agencies.
- Herbicide equipment and containers will be inspected for leaks daily. Disposal of spent containers will be in accordance with the herbicide label.

During the operations phase of the Project, herbicides will be stored only in cabinets of approved design and will be under lock and key.

6.2.2.9 Spray Methods. Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically throughout treatment to verify that proper application rates are achieved.

6.2.2.10 Herbicide Spills and Cleanup. Reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, immediate cleanup will be implemented. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. The following items are to be included in the spill kit:

- Protective clothing and gloves
- Absorptive clay, "kitty litter," or other commercial adsorbent
- Plastic bags and bucket
- Shovel
- Fiber brush and screw-in handle

- Dust pan
- Caution tape
- Highway flares (use on established roads only)
- Detergent

Response to herbicide spills will vary with the size and location of the spill, but general procedures include the following:

- BLM notification
- Traffic control
- Dressing the cleanup team in protective clothing
- Stopping the leaks
- Containing the spilled material
- Cleaning up and removing the spilled herbicide or contaminated adsorptive material and soil
- Transporting the spilled pesticide and contaminated material to an authorized disposal site

6.3 Implementation Schedules

Implementation schedules will be sufficiently flexible to take advantage of the low and variable precipitation regime of the Colorado Desert. Optimal conditions for imprinting often follow rare winter rains; a flexible schedule allows resources to be used most efficiently.

6.4 Employee Education and Training

All Project construction and operation personnel will be trained on weed prevention and management as part of the WEAP training. It is important that all levels of management be aware of potential weed issues.

7.0 REPORTING REQUIREMENTS

Implementation of the WMP will include the following data collection and reporting elements:

7.1 Construction Monitoring Reports

During the construction phase, weed management activities will be documented as part of the Monthly Compliance Report. Construction weed monitoring reports will include the following information:

- Findings on location, type, extent, and density of invasive weeds observed at the site.
- Management efforts, including date, location, type of treatment implemented, and results. Ongoing evaluation of success of treatment will be included.
- Information on implementation and success of preventative measures, including summary data of use and data on the worker environmental training program, including participants.

7.2 Post-construction Report

Upon completion of construction activities for Units # 1 and 2, a post-construction report will be prepared describing the overall results of invasive weed management and current weed status of the Project. The post-construction report will contain a section summarizing the overall results of invasive weed management, and weed status at the Project.

7.3 Long-Term Weed Control Progress Reports

Annual long-term weed control progress reports will be produced during the operational phase of the Project. The progress reports should include information on invasive weed surveys and management activities for the year, discuss whether the weed management goals for the year were met, and recommend weed management activities for the upcoming year. The Project surveys conducted to support this are described as follows:

- Semiannual site visits will be conducted, summarized, and reported in a progress report through the completion of the Project.
- At the end of the Project (decommissioning), a final progress report will be produced to describe the current status of invasive weed management onsite.

Progress reports will be focused on success of eradication of invasive weeds on the Project site. Invasive weed management measures will be included in these reports and will include the following relevant information:

- Observations on location, type, extent, and density of invasive weeds; and management actions, including date of efforts, location, types of treatment implemented, and results. Ongoing evaluation of success of treatment will be included.

- Any new weed species detected will be added to these annual reports, noting the location on the baseline Weed Management Area map
- Future maintenance and monitoring actions.

8.0 REFERENCES

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Map Location

1 inch = 40 miles

0 40 80 Miles

Weed Management Plan
Blythe Solar Power Project

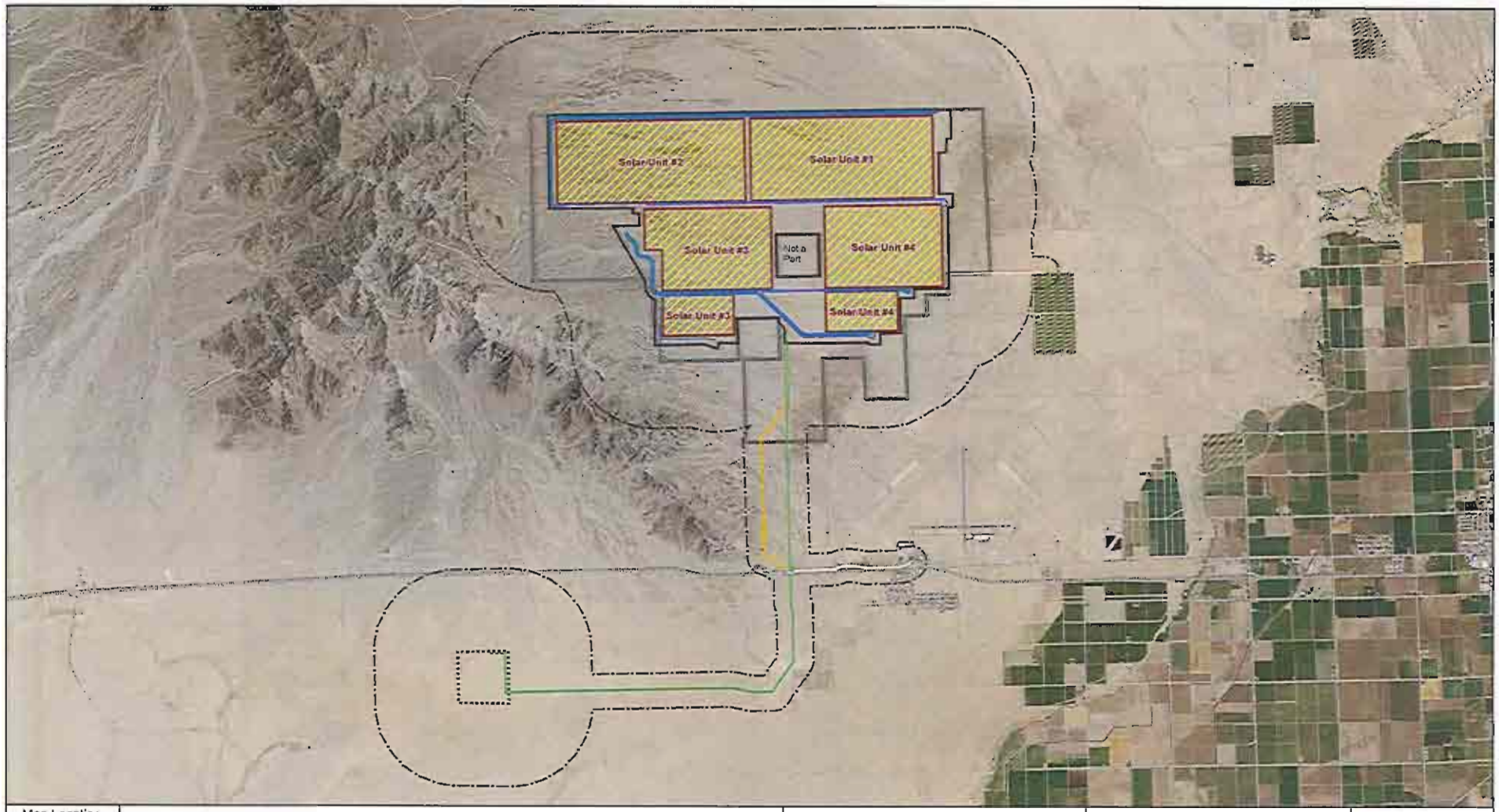
Figure 1
Regional Map

Source: ESRI; AECOM 2009

Solar Millennium

AECOM

Date: August 2010



Map Location

Legend

- Solar Unit/Weed Management Area (WMA)
- Substation Survey Area
- ROW
- Rerouted Drainage
- Biological Resource Survey Area (BRSA)
- Facility Footprint
- Utilities Corridor WMA
- Gen-Tie Line WMA
- Temporary Construction Power WMA
- Black Rock Road WMA

0 3,000 6,000 12,000 Feet

1 inch = 6,000 feet

Source: NAIP 2005; AECOM 2010

Blythe Solar Power Project
Weed Management Plan

Figure 2
Weed Management Areas (WMA)

Solar Millennium

AECOM

Date: August 2010

APPENDIX A

LIST OF INVASIVE WEEDS POTENTIALLY OCCURRING ONSITE

Scientific Name	Common Name	CDFA Rating	USDA CA Rating	Cal-IPC Rating
Acacia dealbata	silver wattle			Moderate
Acacia melanoxylon	black acacia			Limited
Acacia paradoxa	kangaroothorn		BW	Eval-No List
Acaena novae-zelandica	biddy biddy		AW	
Acaena pallida	pale biddy-biddy		AW	
Achnatherum brachychaetum	punagrass	A	AW	
Acroptilon repens	Russian knapweed		BW	Moderate
Aegilops cylindrica	jointed goatgrass		BW	
Aegilops ovata	ovate goatgrass		BW	
Aegilops triuncialis	barb goatgrass		BW	
Aeginetia			Q	
Aeschynomene rudis	rough jointvetch		BW	
Ageratina adenophora	crofton weed		Q	Moderate
Agrostis avenacea	Pacific bentgrass			Limited
Agrostis stolonifera	creeping bentgrass			Limited
Ailanthus altissima	tree-of-heaven			Moderate
Aira caryophyllea	silver hairgrass			Eval-No List
Albizia lopantha	plume acacia			Eval-No List
Alectra Thunb.			Q	
Alhagi maurorum	camelthorn	A	AW, PN	Moderate
Allium paniculatum	panicled onion		BW	
Allium vineale	wild garlic		BW	
Alternanthera philoxeroides	alligatorweed		AW	High
Alternanthera sessilis	sessile joyweed		Q	
Ambrosia trifida	giant ragweed		BW	
Ammophila arenaria	European beachgrass			High
Antehmis cotula	mayweed			Eval-No List
Araujia sericifera	bladderflower		BW	
Arctotheca calendula	capeweed	A	AW	Moderate
Arundo donax	giant reed			High
Asparagus asparagoides	bridal creeper			Moderate
Asphodelus fistulosus	onionweed		Q	Moderate
Atriplex semibaccata	Australian saltbush			Moderate
Avena sterilis	animated oat		Q	
Azolla pinnata	mosquito fern		Q	
Bassia hysopifolia	fivehook bassia			Limited
Bellis perennis	English daisy			Eval-No List
Brachypodium sylvaticum	slender false brome	A		
Brassica nigra	black mustard			Moderate
Brassica rapa	field mustard			Limited
Brassica tournefortii	Saharan mustard			High
Briza maxima	big quackinggrass			Limited
Bromus diandrus	ripgut brome			Moderate
Bromus hordeaceus	soft brome			Limited
Bromus japonicus	Japanese brome			Limited
Bromus madritensis ssp. rubens	red brome			High
Bromus tectorum	downy brome			High
Cabomba caroliniana	Carolina fanwort		QW	
Cakile maritima	European sea-rocket			Limited
Cardaria chalapensis	lens podded hoarycress		BW	Moderate
Cardaria draba	lens podded hoarycress		BW	
Carduus acanthoides	plumeless thistle	A	AW	
Carduus nutans	musk thistle	A	AW	
Cardaria pubescens	lens podded hoarycress		BW	Limited
Carduus pycnocephalus	Italian thistle		CW	Moderate
Carduus tenuiflorus	slenderflowered thistle		CW	Limited
Carpobrotus chilensis	sea-fig			Moderate
Carpobrotus edulis	iceplant			High
Carthamus baeticus	smooth distaff thistle		BW	
Carthamus lanatus	woolly distaff thistle		BW	
Carthamus leucocaulos	whitestem distaff thistle		AW	
Carthamus oxyacantha	wild safflower		Q	
Caucus carota	wild carrot			Eval-No List
Centaurea calcitrapa	purple starthistle		BW	Moderate
Centaurea diffusa	diffuse knapweed	A	AW	Moderate
Centaurea iberica	Iberian starthistle	A	AW	
Centaurea maculosa	spotted knapweed	A	AW	High
Centaurea monktoni	meadow knapweed	A		
Centaurea solstitialis	yellow starthistle		CW	High

Centaurea squarrosa	squarrose knapweed	A	AW	
Centaurea sulphurea	Sicilian starthistle		BW	
Cenchrus echinatus	southern sandbur		CW	
Cenchrus incertus	coast sandbur		CW	
Cenchrus longispinus	mat sandbur		CW	
Chondrilla juncea	skeletonweed	A	AW	
Chorispora tenella	purple mustard		BW	Eval-No List
Chrysanthemum coronarium	crown daisy			Moderate
Chrysopogon aciculatus	pilipiliula		Q	
Cirsium arvense	Canada thistle		BW	Moderate
Cirsium japonicum	Japanese thistle		QW	
Cirsium ochrocentrum	yellowspine thistle	A	AW	
Cirsium undulatum	wavyleaf thistle		AW	
Cirsium vulgare	bull thistle			Moderate
Cistus ladanifer	gum rockrose			Eval-No List
Crupina vulgaris	crupina	A		Moderate
Commelina benghalensis	Benghal dayflowe		Q	
Conium maculatum	poison-hemlock			Moderate
Convolvulus arvensis	field bindweed		CW	Eval-No List
Coronopus squamatus	swinecress		BW	
Cortaderia jubata	jubatagrass			High
Cortaderia selloana	pampasgrass			High
Cotoneaster lacteus	Parney's cotoneaste			Moderate
Cotoneaster pannosus	silverleaf			Moderate
Cotula coroonopifolia	brassbuttons			Limited
Crocosmia x crocosmiiflora	montretia			Limited
Crupina vulgaris	bearded creeper, common		AW, Q	
Cucumis melo var. dudaim	dudaim melor		AW	
Cucumis myriocarpus	paddy melor		BW	
Cuscuta	dodder		CW, Q	
Cuscuta reflexa	giant dodder		AW	
Cynara cardunculus	artichoke thistle		BW	Moderate
Cynodon dactylon	bermudagrass		CW	Moderate
Cynosorus echinatus	hedgehog			Moderate
Cyperus esculentus	yellow nutsedge		BW	
Cyperus rotundus	purple nutsedge		BW	
Cytisus scoparius	Scotch broom		CW	High
Cytisus striatus	Portugese broom			Moderate
Dactylis glomerata	orchardgrass			Limited
Delairea odorata	cape-ivy			High
Descurainia sophia	flixweed			Limited
Digitalis purpurea	foxglove			Limited
Digitaria scalarum	African couch grass		Q	
Digitaria velutina	velvet fingergrass		Q	
Dimorphotheca sinuata	African daisy			Eval-No List
Dipsacus fullonum	common tease			Moderate
Dipsacus sativus	fuller's tease			Moderate
Dittricia graveolens	stinkwort			Moderate
Drymaria arenarioides	alfombrilla		Q	
Echium candicans	pride-of-Madeira			Limited
Egeria densa	Brazilian egeria			High
Eichhornia azurea	anchored waterhyacintl		Q	
Eichhornia crassipes	waterhyacinth		CW	
Elytrigia repens	quackgrass		BW	
Emex australis	three-cornered jack		Q	
Emex spinosa	devil's thorn		Q	
Ehrharta erecta	erect veldtgrass			Moderate
Ehrharta longiflora	long-flowered veldtgrass			Moderate
Eichornia crassipes	water hyacinth			High
Elaegnus angustifolia	Russian-olive			Moderate
Emex spinosa	spiny emex			Moderate
Erechtites glomerata	Australian fireweed			Moderate
Erodium brachycarpum	short-fruited filaree			Eval-No List
Erodium botrys	broadleaf filaree			Eval-No List
Erodium cicutarium	redstem filaree			Limited
Erodium moschatum	whitestem filaree			Eval-No List
Eucalyptus camaldulensis	red gum			Limited
Eucalyptus globulus	Tasmanian blue gum			Moderate
Euphorbia esula	leafy spurge	A	AW	High
Euphorbia lathyris	caper spurge			Eval-No List
Euphorbia oblongata	oblong spurge		BW	

Euphorbia serrata	serrate spurge		AW	
Euphorbia terracina	Geraldton carnation spurge		QW	Moderate
Festuca arundinacea	tall fescue			Moderate
Ficus carica	edible fig			Moderate
Foeniculum vulgare	fennel			High
Fumaria officinalis	fumitory			Eval-No List
Galega officinalis	goatsrue		Q	
Gaura coccinea	scarlet gaura		BW	
Gaura drummondii	Drummond's gaura		BW	
Gaura sinuata	wavy-leaved gaura		BW	
Genista monspessulana	French broom		CW	High
Geranium dissectum	cutleaf geranium			Moderate
Geranium molle	dovefoot geranium			Eval-No List
Geranium retrorsum	New Zealand geranium			Eval-No List
Glyceria declinata	waxy mannagrass			Moderate
Gypsophila paniculata	baby's breath		BW	
Halimodendron halodendron	Russian salt tree		AW	
Halogeton glomeratus	halogeton	A	AW	Moderate
Hedera helix	English ivy			High
Helianthus ciliaris	blueweed		AW	
Helichrysum petiolare	licoriceplant			Limited
Heracleum mantegazzianum	giant hogweed		Q	
Heteropogon contortus	tanglehead		AW	
Hirschfeldia incana	shortpod mustard			Moderate
Holcus lanatus	common velvet grass			Moderate
Homeria	Cape tulip		Q	
Hordeum marinum	Mediterranean barley			Moderate
Hydrilla verticillata	hydrilla		AW, NAW, Q	High
Hydrocharis morsus-ranae	frogbit		AW	
Hygrophila polysperma	Miramar weed		Q	
Hyoscyamus niger	black henbane		CW	
Hypericum canariense	Canary Island hypericum			Moderate
Hypericum perforatum	klamathweed		CW	Moderate
Hypochaeris glabra	smooth catsear			Limited
Hypochaeris radicata	rough catsear			Moderate
Imperata brasiliensis	Brazilian satintail		Q	
Imperata brevifolia	satintail		BW	
Imperata cylindrica	cogongrass		Q	
Ipomoea aquatica	Chinese waterspinach		Q	
Iris douglasiana	Douglas iris		CW	
Iris missouriensis	western blue flag		CW	
Iris pseudacorus	yellowflag iris			Limited
Isatis tinctoria	dyer's woad		BW	
Ischaemum rugosum	murain-grass		Q	
Iva axillaris	povertyweed		CW	
Kochia scoparia	kochia			Moderate
Lactuca serriola	prickly lettuce			Eval-No List
Lagarosiphon major	oxygen weed		Q	
Lepidium latifolium	perennial peppercress		BW	High
Leptochloa chinensis	Asian sprangletop		Q	
Leucanthemum vulgare	ox-eye daisy			Moderate
Limnobium spongia	spongeplant		QW	
Limnophila indica	ambulia		QW	
Limnophila sessiliflora	ambulia		Q	
Linaria genistifolia ssp. dalmatica	Dalmatian toadflax	A	AW	Moderate
Linaria vulgaris	yellow toadflax			Moderate
Lobularia maritima	sweet alyssum			Limited
Lolium multiflorum	Italian ryegrass			Moderate
Lotus corniculatus	birdsfoot trefoil			Eval-No List
Ludwigia hexapetala	Uruguay water-primrose			High
Ludwigia peploides ssp. montevidensis	creeping water-primrose			High
Lycium ferrocissimum	African boxthorn		Q	
Lythrum hyssopifolium	hyssop loosestrife			Limited
Lythrum salicaria	purple loosestrife		BW	High
Malephora crocea	coppery mesembryanthemum			Eval-No List
Malvella leprosa	alkali mallow		CW	
Marrubium vulgare				Limited
Medico polymorpha	California burclove			Limited
Melaleuca quinquenervia	melaleuca		Q	
Melastoma malabathricum			Q	
Melilotus officinalis	yellow sweetclove			Eval-No List

Mentha pulegium	pennyroya			Moderate
Messembryanthemum crystallinum	crstalline iceplan			Moderate
Mikania cordata	mile-a-minute		Q	
Mikania micrantha	mile-a-minute		Q	
Mimosa invisa	giant sensitive plan		Q	
Mimosa pigra	catclaw mimosa		Q	
Monochoria hastata	monochoria		Q	
Monochoria vaginalis	pickerel weec		Q	
Muhlenbergia schreberi	nimblewill		BW	
Myoporum laetum	myoporum			Moderate
Myostis latifolia	common forget-me-no			Limited
Myriophyllum aquaticum	parrotfeather			High
Nassella trichotoma	serrated tussock		Q	
Nicotiana glauca	tree tobacco			Moderate
Nothoscordum gracile	false garlic			Eval-No List
Nothoscordum inodorum	false garlic		BW	
Nymphaea mexicana	banana waterlily		BW	Eval-No List
Olea europaea	olive			Limited
Ononis alopecuroides	foxtail restharrow		QW	
Onopordum acanthium	Scotch thistle	A	AW	
Onorpordum illyricum	Illyrian thistle	A	AW	
Onopordum tauricum	Taurian thistle	A	AW	
Opuntia aurantiaca	jointed prickly pea		Q	
Orobanche	broomrape		Q	
Orobanche cooperi	Cooper's broomrape		AW	
Orobanche ramosa	branched broomrape		AW	
Oryza longistaminata	red rice		Q	
Oryza punctata	red rice		Q	
Oryza rufipogon	perennial wild red rice, red rice		BW, Q	
Ottelia alismoides	duck-lettuce		Q	
Oxalis corniculata	creeping woodsorre			Eval-No List
Oxalis pes-caprae	Bermuda buttercup			Moderate
Panicum antidotale	blue panicgrass		BW	
Parentucellia viscosa	yellow glandweed			Limited
Parkinsonia aculeata	Mexican Palo Verde			Eval-No List
Paspalum scrobiculatum	Kodo-millet		Q	
Peganum harmala	harmel	A	AW	
Pennisetum clandestinum	kikuyugrass		CW, Q	Limited
Pennisetum macrourum	African feathergrass		Q	
Pennisetum pedicellatum	kyasuma-grass		Q	
Pennisetum polystachyon	missiongrass		Q	
Pennisetum setaceum	crimson fountaingrass			Moderate
Phalaris aquatica	hardinggrass			Moderate
Phoenix canariensis	Canary Island date palm			Limited
Phragmites australis	common reed			Native
Physalis longifolia	long-leaf groundcherry		AW	
Physalis viscosa	grape groundcherry		BW	
Phytolacca americana	common pokeweed			Limited
Picris echioides	bristly oxtongue			Limited
Piptatherum miliaceum	smilograss			Limited
Pistia stratiotes	water lettuce		BW	
Plantago coronopus	cutleaf plantain			Eval-No List
Plantago lanceolata	buckhorn plantain			Limited
Poa pratensis	Kentucky bluegrass			Limited
Polygonum amphibium var. emersum	kelp		CW	
Polygonum cuspidatum	Japanese knotweed		BW	
Polygonum polystachyum	Himalayan knotweed		BW	
Polygonum sachalinense	giant knotweed		BW	
Polypogon monspeliensis	annual beardgrass			Limited
Potamogeton crispus	curlyleaf pondweed			Moderate
Prosopis alpataco	mesquite		Q	
Prosopis argentina	mesquite		Q	
Prosopis burkartii	mesquite		Q	
Prosopis caldenia	mesquite		Q	
Prosopis calingastana	mesquite		Q	
Prosopis campestris	mesquite		Q	
Prosopis castellanosii	mesquite		Q	
Prosopis denudans	mesquite		Q	
Prosopis elata	mesquite		Q	
Prosopis farcta	Syrian mesquite		Q	
Prosopis ferox	mesquite		Q	

Prosopis fiebrigi	mesquite		Q	
Prosopis hasslen	mesquite		Q	
Prosopis humilis	mesquite		Q	
Prosopis kuntzei Harms ex Hassler	mesquite		Q	
Prosopis pallida (Humb. & Bonpl. ex Wil	kiawe		Q	
Prosopis palmeri S. Watson	mesquite		Q	
Prosopis reptans Benth.	tornillo		Q	
Prosopis rojasiana Burkart	mesquite		Q	
Prosopis ruizlealii Burkart	mesquite		Q	
Prosopis ruscifolia Griseb	mesquite		Q	
Prosopis sericantha	mesquite		Q	
Prosopis strombulifera	Argentine screwbean		AW, Q	
Prosopis torquata	mesquite		Q	
Prosopis articulata	velvet mesquite		Q	
Prunus cerasifera	cherry plum			Limited
Pyracantha angustifolia	firethorn			Limited
Ranunculus repens	creeping buttercup			Limited
Raphanus sativus	radish			Limited
Retama monosperma	bridal broom			Moderate
Ricinus communis	castorbean			Limited
Robinia pseudoacacia	black locust			Limited
Rorippa austriaca	Austrian field cress		BW	
Rorippa sylvestris	creeping yellow field cress		QW	
Rottboellia cochinchinensis	itchgrass		Q	
Rubus armeniacus	Himalaya blackberry			High
Rubus fruticosus	wild blackberry complex		Q	
Rubus moluccanus	wild blackberry		Q	
Rumex acetosella	red sheep sorrel			Moderate
Rumex crispus	curly dock			Limited
Saccharum spontaneum	wild sugarcane		Q	
Sagittaria sagittifolia	arrowhead		Q	
Salsola collina	spineless Russianthistle		QW	
Salsola paulsenii	barbwire Russianthistle		CW	Limited
Salsola tragus	common Russianthistle		CW	Limited
Salsola vermiculata	wormleaf salsola, wormleaf	A	AW, Q	
Salvia aethiopis	Mediterranean sage		BW	
Salvia virgata	southern meadow sage		AW	
Salvinia auriculata	giant salvinia, salvinia		Q, QW	
Salvinia bilobata	giant salvinia		Q	
Salvinia herzogi	giant salvinia		Q	
Salvinia molesta	giant salvinia		Q	
Saponaria officinalis	bouncingbet			Limited
Schinus molle	Peruvian peppertree			Limited
Schinus terebinthifolius	Brazilian peppertree			Limited
Schismus arabicus	Mediterranean grass			Limited
Scolymus hispanicus	golden thistle	A	AW	
Senecio jacobaea	tansy ragwort		BW	Limited
Senecio squalidus	Oxford ragwort		BW	
Sesbania punicea	scarlet wisteria			High
Setaria faberi	giant foxtail		BW	
Setaria pallidifusca	cattail grass		Q	
Silybum marianum	blessed milkthistle			Limited
Sinapis arvensis	wild mustard			Limited
Sisymbrium irio	London rocket			Moderate
Solanum cardiophyllum	heartleaf nightshade		AW	
Solanum carolinense	Carolina horsenettle		BW	
Solanum dimidiatum	Torrey's nightshade		AW	
Solanum elaeagnifolium	white horsenettle		BW	Eval-No List
Solanum lanceolatum	lanceleaf nightshade		BW	
Solanum marginatum	white-margined nightshade		BW	
Solanum tampicense	wetland nightshade		Q	
Solanum torvum	turkeyberry		Q	
Solanum viarum	tropical soda apple		Q	
Sonchus arvensis	perennial sowthistle	A	AW	
Sonchus asper	spiny sowthistle			Eval-No List
Sorghum halepense	johnsongrass		CW	
Sparganium erectum	exotic bur-reed		Q	
Spartium junceum	Spanish broom			High
Spermacoce alata	borreria		Q	
Sphaerophysa salsula	Austrian peaweed		AW	
Striga	witchweed		Q	

Striga asiatica	witchweed		AW	
Symphytum asperum	rough comfrey		BW	
Taeniatherum caput-medusae	medusaheac		CW	High
Tagetes minuta	wild marigolc		AW	
Tamarix aphylla	Athel tamarisk			Limited
Tamarix parviflora	smallflower tamarisl			High
Tamarix ramosissima	salt cedar			High
Taraxacum officinale	common dandelior			Eval-No Lisl
Torilis arvensis	hedge parsel\			Moderate
Tragopogon dubius	yellow salsify			Eval-No Lisl
Tribulus terrestris	puncturevine		CW	
Tridax procumbens	coat buttons		Q	
Trifolium hirtum	rose clover			Moderate
Ulex europaeus	gorse		BW	
Undaria pinnatifida	wakame			Limited
Urochloa panicoides	liverseed grass		Q	
Verbascum thapsus	common mulleir			Limited
Vicia villosa	hairy vetch			Eval-No Lisl
Vinca major	big periwinkle			Moderate
Viscum album	European mistletoe		BW	
Vulpia bromoides	squirretail fescue			Eval-No Lisl
Vulpia myuros	rattail fescue			Moderate
Washingtonia robusta	Mexican fan palm			Moderate
Zantedeschia aethiopica	calla lily			Limited
Zygophyllum fabago	Syrian beancape		AW	

Definitions:

†Code	Weed Status
AW	A list (noxious weeds)
BW	B list (noxious weeds)
CW	C list (noxious weeds)
NAW	Noxious aquatic weed
PN	Public nuisance
Q	Quarantine
QW	Q list (temporary "A" list noxious weed, pending final determinatio

High-These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed.

Moderate-These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited-These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasivenoss. Ecological amplitude and distribu are generally limited, but these species may be locally persistent and problematic.

APPENDIX B

EXAMPLE BLM PESTICIDE USE PROPOSAL

Example California BLM Pesticide Use Proposal

Proposal Number:_____

Reference Number:_____

FIELD OFFICE:_____**COUNTY:**_____

LOCATION:_____**DURATION OF PROPOSAL:**_____

I. PESTICIDE APPLICATION (including mixtures and surfactants):

	Trade Names	Common Names	EPA Registration No.	Manufacturer	Formulations (Liquid or Granular)	Method of Application
1						
2						
3						

MAXIMUM RATE OF APPLICATION:	
USE UNIT ON LABEL:	POUNDS ACID EQUIVALENT/ACRE:
1.	1.
2.	2.

INTENDED RATE OF APPLICATION:_____

_____

APPLICATION DATES:_____

_____

NUMBER OF APPLICATIONS:_____

_____

II. PEST (List specific pest(s) and reason(s) for application):

_____

_____

III. MAJOR DESIRED PLANT SPECIES PRESENT:_____

_____

_____

IV. TREATMENT SITE: (Describe land type or use, size, stage of growth of target species, slope and soil type).

_____

_____

ESTIMATED ACRES:_____

V. SENSITIVE ASPECTS AND PRECAUTIONS: (Describe sensitive areas [e.g., marsh, endangered, threatened, candidate and sensitive species habitat] and distance to treatment site. List measures taken to avoid impact to sensitive areas).

_____

_____

VI. NON-TARGET VEGETATION: (Describe the impacts, cumulative impacts, and mitigations to non-target vegetation that will be lost as a result of this chemical application).

_____

_____

VII. INTEGRATED PEST MANAGEMENT: (Describe how this chemical application fits into your overall integrated pest management program for the treatment area.)

_____

_____

Originator: _____ **Date:**_____

Company Name:_____ **Phone:**_____

Certified Pesticide Applicator:_____ **Date:**_____
(Signature)

Field Office Pesticide/
Noxious Weed Coordinator:_____ **Date:**_____
(Signature)

APPROVALS:

BLM Assistant
Field Manager
Renewable Resources:_____ **Date:**_____
(Signature)

APPROVALS (State Office Use Only):

BLM State Pesticide Coordinator:_____ **Date:**_____
(Signature)

Deputy State Director
Natural Resources,
Lands and Planning:_____ **Date:**_____
(Signature)

_____CONCUR OR APPROVED

_____NOT CONCUR OR DISAPPROVED

_____CONCUR OR APPROVED WITH MODIFICATIONS

APPENDIX C

EXAMPLE BLM PESTICIDE APPLICATION RECORDS FORM

Example California BLM Pesticide Application Records Form

1. **General Information**
   a. Project Name:_____
   b. Operator:_____
   c. Pesticide Use Proposal Number:_____
   d. Reference Number:_____

2. **Name of Applicator or Employee(s) Applying the Pesticide:**_____

_____

3. **Date(s) of Application:**_____ _____ _____
   MONTH DAY YEAR

4. **Time Frame of Application:**_____

5. **Location of Application:**_____ _____ _____ _____
   Township Range Section County

6. **Type of Equipment Used:**_____

_____

7. **Pesticide(s) Used:**

Company or Manufacturer's Name:_____

Trade Name:_____

Type of Formulation: Liquid ____ Granular ____

8. **Rate of Application Used:**
   a. Active Ingredient per Acre:_____
   b. Volume of Formulation per Acre:_____

9. **Treatment Area**

a. Actual Area Treated:_____

b. Total Project Area:_____

10. **Primary Pest(s) Involved:**_____

11. **Stage of Pest Development:**_____

12. **Site Treated:** Native Vegetation_____Seeded Vegetation_____Other_____

13. **Weather Conditions:** Wind velocity: _____Wind direction_____ Temperature_____

14. **Monitoring Record** (IF INSUFFICIENT SPACE-CONTINUE ON BACK)

This record is required and must be completed, except for monitoring within 24 hours after completion of application of pesticides. This record must be maintained for minimum of 10 years.

APPENDIX G

BURROWING OWL MITIGATION PLAN

BLYTHE SOLAR POWER PROJECT
BURROWING OWL MITIGATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

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Appendix A Burrowing Owl Survey Protocol and Mitigation Guidelines

1.0 INTRODUCTION

1.1 Purpose of the Plan

This Burrowing Owl Mitigation Plan describes the actions to be taken to protect resident and /or nesting western burrowing owls (WBO) (*Athene cunicularia*) known to occur within and in the vicinity of the proposed Blythe Solar Power Project (BSPP, or Project). The Plan specifies a passive relocation approach that, when implemented, will facilitate avoidance, minimization, and the offset of impacts to WBO relocated from the Project Disturbance Area. The primary purpose of this Plan is to provide a strategy that will facilitate the protection of WBO, a California Species of Special Concern, during BSPP construction. This Plan fulfills the Project mitigation measures identified in the Project Application for Certification (AFC) (AECOM 2009a) and Condition of Certification (COC) BIO-18 in the Final Commission Decision (CEC 2010), requiring passive relocation and/or non-disturbance buffers (area in which no activity will occur) of WBO.

Specific objectives for WBO protection addressed by this Plan include:

- Detecting the locations of WBO-occupied and WBO-suitable burrows prior to each nesting season (February 1 through August 31) for Project Disturbance Areas in which construction will occur during that year plus a 500 foot construction buffer of that area;
- Identifying suitable artificial burrow location sites, in coordination with California Department of Fish and Game (CDFG), U.S. Bureau of Land Management (BLM), and the CEC Compliance Project Manager (CPM), within 1 mile, but beyond 500 feet, of the overall Project Disturbance Area;
- Passively relocating WBO from identified WBO burrows during the nonnesting season (September 1 through January 31);
- Within 30 days days prior to initiation of construction activities for a specific phase of the Project, conducting preconstruction surveys to ensure no newly established burrows are occupied by WBO and take appropriate action based on the season;
- Monitoring all areas cleared of WBO during preconstruction surveys for the period prior to ground disturbance; and
- Monitoring all WBO-occupied burrows in the 500 foot construction buffer and any burrows occupied and surrounded with nondisturbance fencing during nesting season.

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre right-of-way (ROW) owned by the federal government and managed by the U.S. Bureau of Land Management (BLM), pursuant to

an ROW grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by CEC.

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates.

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

The first phase of the Project (Phase 1a) will occur in an area that is characterized by WBO-suitable habitat. In this area, an individual WBO was observed passing through the utilities corridor north of I-10, one burrow with WBO sign was observed in the utilities corridor, and nine burrows with WBO sign were observed in the facilities construction zone.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. In this area, One WBO was observed in the gen-tie line corridor and 36 burrows with WBO sign were observed in the combined facilities construction zone. Phase 2 will include all of Units #3 and #4. In this area, an individual WBO was observed in the Solar Unit #3 construction zone and 26 burrows with WBO sign were observed in the combined facilities construction zone.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1A	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Wells and Initial Portion of Unit #1	772.68
Phase 1B	Remainder of Unit #1, Unit #2 and Gen-tie	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
	Total	**7,024.5**

1.4 Definitions

The following terms will be used throughout this report:

- Project Biological Resources Survey Area (BRSA): The Project BRSA includes the Project Disturbance Area and all associated buffers.
- Project Disturbance Area: Includes the area of anticipated ground disturbance associated with implementation of the Project. This includes the entire Project footprint (area within solar plant site perimeter security fence [i.e., chain-link] including solar fields, power block, on-site transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields) and area outside the perimeter security fence (i.e., chain-link) including transmission and utility corridors, rerouted drainage channels, and additional areas requiring disturbance during construction.
- Spring and Fall 2009 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area, and associated buffers that were surveyed during Spring and Fall 2009.
- Spring 2010 survey area: The BRSA within either the Project or Reconfigured Alternative Disturbance Area and associated buffers that was surveyed during Spring 2010.

1.5 Roles and Responsibilities

PVSI is ultimately responsible for implementing this WBO plan. It is anticipated that PVSI contractors and other parties responsible for implementing components of this WBO plan will include the following:

Contractor(s): Contractual language will be included in construction documents and ongoing maintenance contracts to verify that all contractors, subcontractors, vendors, maintenance personnel, and other parties performing either construction or ongoing maintenance or repairs at the site abide by and implement the provisions of this WBO plan as it relates to their work. Implementing the construction provisions of this WBO plan will be a part of construction contracts. Landscape contractors and other specialists will implement specific provisions of this WBO plan either as subcontractors to the general construction contractor or through independent contracts with PVSI.

EPC Contractor Construction Manager: The Engineering, Procurement, and Construction (EPC) Contractor Construction Manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this WBO plan.

Environmental Compliance Manager: PVSI will designate an Environmental Compliance Manager (ECM) to provide oversight of construction practices and verify compliance with the provisions of this WBO plan. The ECM and any support staff will be either direct employees or contracted by PVSI, and will coordinate with the EPC Contractor Construction Manager to verify contractor compliance with environmental requirements for construction.

California Energy Commission: The CEC has provided guidelines and COCs for the Project. The CEC, acting through the Compliance Project Manager (CPM), will determine whether the WBO plan and activities performed under the WBO plan have been satisfied.

Designated Biologist: PVSI will assign a Designated Biologist (DB) to the Project. A resume of the proposed DB, along with the required three references and contact information, will be submitted to the CEC CPM for approval in consultation with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). The DB will have the following background and training:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and 3 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; and
- At least 1 year of field experience with biological resources found in or near the Project area.

In lieu of the above requirements, the resume will demonstrate to the satisfaction of the CPM, in consultation with CDFG and USFWS, that the proposed DB has the appropriate training and background to effectively implement the WBO plan. PVSI will ensure that the DB performs the activities specified in the WBO plan.

PVSI will also designate an alternate biologist with the same qualifications as the DB, outlined above.

Biological Monitor: PVSI will designate a Biological Monitor(s) to provide oversight of WBO surveys, relocation, and protection measures, and to ensure compliance with the provisions of this WBO plan. The Biological Monitor will be responsible for detecting WBO within and adjacent to construction areas areas and reinforcing worker education regarding protective measures. The Biological Monitor will be contracted by PVSI and must be knowledgeable about the Project, WBO avoidance and protection obligations, and the habitat use of WBO in the vicinity of the Project area.

1.6 2009–2010 Survey Results

Surveys for WBO were conducted in the spring of 2009 per the CBOC protocol and were focused to determine the presence or absence, distribution, abundance, and breeding status of the species. Surveys were conducted within the Project Disturbance Area and the approximate 500-foot CBOC protocol buffer (see Figure 2). Two additional CEC-recommended transects within the 1-mile buffer around the Project site were also conducted. Transects located at 0.75-mile and 1-mile intervals from and parallel to the disturbance boundary were surveyed. The limits of the survey extend to this 1-mile CEC buffer.

In the spring of 2010, additional surveys were conducted per the 1993 CBOC protocol within the proposed SCE Colorado River Substation and along the BSPP transmission line to the east of the substation. Information collected on WBO was included in the biological resources analysis in the Project AFC (AECOM 2009a) and the 2010 Biological Resources Technical Report (AECOM 2010a). Figure 2 displays the locations of WBO observed, active burrows (i.e., occupied by WBO), and other burrows where sign or potential sign were observed during 2009 and 2010 surveys. A detailed description of the survey methodology and results can be found in the BSPP Western Burrowing Owl Technical Reports (AECOM 2009b and 2010b). WBO occurrences and active burrows observed during the 2009 and 2010 CBOC protocol surveys and other WBO observed in the Project area are summarized in Table 2 below.

Table 2 2009-2010 WBO Protocol Survey Results and Other WBO Occurrences

Distinct Observation(s)	Year	Protocol Phase	Observation Type	Area/Proximity of BSPP	Observation Details
1	2009	Phase II*	individual WBO with active burrow	western-central area of the Project Disturbance Area	Several burrows with sign observed in the vicinity
		Phase III*	recently active WBO burrow	western-central area of the Project Disturbance Area	No WBO observed at previously documented location during Phase III* surveys
2	2009	Non-WBO survey	individual WBO	within 1-mile CEC buffer in western edge of BRSA, north of I-10	Individual WBO observed outside CBOC Phase II and III* survey area. No active burrow observed.
3	2009	Non-WBO survey	individual WBO with active burrow	flushed from burrow along the transmission line route south of I-10	Fall 2009
4	2009	Phase II/ Phase III*	89 burrows with potential WBO sign	2009 Protocol Survey Study Area- Project disturbance area + ~500 foot buffer	Mostly weathered sign observed. No occupied burrows observed during CBOC Phase III surveys
1	2010	Phase II*	individual WBO with active burrow	buffer area along the gen-tie route north of I-10	Several burrows with sign observed in the vicinity
2	2010	Non-WBO survey	individual WBO	flying across access road and utilities corridor north of I-10	NA
3	2010	Phase II/ Phase III*	5 burrows with potential WBO sign	2010 Protocol Survey Study Area- Project disturbance area + ~500 foot buffer	Few suitable burrows at the base of McCoy Mountains

* See Appendix A for a description of protocol survey phases.

All of the Project Disturbance Area and buffer not in active agricultural production or developed is considered suitable WBO foraging and nesting habitat, although the sandier habitat south of I-10 is of lower value. The Project Disturbance Area and approximate 500-foot buffer are composed of Sonoran creosote bush scrub, desert dry wash woodland, or unvegetated ephemeral

dry wash habitat, with desert pavement and cobble terraces in between (Figure 3). Vegetation within the desert dry wash woodland is composed primarily of creosote (*Larrea tridentata*), ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), and native annual grasses, while the desert scrub is predominantly vegetated with creosote. Suitable WBO habitat consists of annual and perennial grasslands, deserts, and scrublands, characterized by low-growing vegetation (Zarn 1974; CBOC 1993; Haug et al. 1993).

Within the entire study area, burrows with signs of previous use by WBO are present at a relatively low density but are regularly distributed across the site except for the far western portion. The far western portion of the Project Disturbance Area, at the base of the McCoy Mountains, is characterized by steep, rocky canyons; desert wash; and hard desert pavement and cobble terrace substrate, and contains few burrows suitable for nesting WBO. This is probably due to the relative difficulty of fossorial mammals to excavate burrows in such a hard substrate. Despite the sparseness of suitable burrows in the western portion of the Project Disturbance Area, three suitable burrows in the southwestern portion of the approximate 500-foot buffer, located within 100 feet of each other on the side of a steep, rocky canyon, had signs of heavy use by WBO prior to the 2009 breeding season. A total of 90 burrows with WBO sign were observed during 2009 surveys and five burrows with WBO sign were observed during 2010 surveys. Site conditions, dry weather, and hard soils may preserve small amounts of whitewash and pellets for several years. Many of the suitable burrows appeared to have sign that was severely degraded and left in previous seasons, implying that the burrows with potential sign represent multiple years of WBO use across the BSPP site.

2.0 PASSIVE RELOCATION METHODS

This section discusses the specific procedures and methods to be used to achieve the purposes and objectives of this Plan, including preconstruction detection surveys and passive relocation protocols.

2.1 Nonnesting Season Preactivity Survey (Optional)

Nonnesting season preactivity surveys as described in this section are not required. However they are a proactive survey option that may be implemented to manage the potential risk of WBO nest establishment within key project areas that will not begin construction until after the allowable relocation window. During the nonnesting season (September 1 through January 31) prior to planned activity in all Project Disturbance Areas scheduled for the following nesting season, a burrow survey (CBOC Phase II) will be conducted to update the protocol surveys conducted in 2009 and 2010 and identify the locations of any newly established WBO-occupied or WBO-suitable burrows. This survey will be conducted in the areas where construction will occur during that year plus a 500-foot construction buffer of that area. The survey will be led by the DB and staffed by qualified wildlife biologists. Specific requirements of this protocol stipulate that

walking survey transects will be spaced to allow 100 percent visual coverage of the ground surface; distance between transect center lines will be no more than 98 feet and will be reduced to account for differences in terrain, vegetation density, and ground surface visibility. This survey will be conducted by walking through suitable habitat over the Project Disturbance Area for the year and in areas within 500 feet of the Project Disturbance Area. This 500-foot buffer zone is included to account for adjacent burrows and foraging habitat outside the Project Disturbance Area and impacts from factors such as noise and vibration due to heavy equipment, which could impact resources outside the Project Disturbance Area (CBOC 1993). The results of each nonnesting season preactivity survey will be included in the monthly report on the implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS for the duration of construction (during each month in which a preactivity survey is conducted). This information will also be included in the Annual Compliance Report.

This survey serves three purposes:

1. This survey identifies all burrows from which WBO will need to be passively relocated or excluded from future use during the allowable relocation window prior to start of the breeding season. Passive relocation of WBO is discussed in Section 2.2.

2. Determining the number of WBO occupying the Project Disturbance Areas scheduled for activity during the next breeding season determines the number of artificial burrows needed per CBOC guidelines. Artificial burrow installation and site selection are discussed in Section 2.3.

3. If Project disturbance is scheduled to start within 30 days of this preactivity survey, this survey serves as the preconstruction survey. Preconstruction survey protocols and scheduling considerations are discussed in Section 2.4.

2.2 Passive Relocation

WBO must be excluded from WBO-occupied and WBO-suitable burrows identified during the nonnesting preactivity survey prior to the following nesting season (February 1 through August 31) and any project disturbance. WBO passive relocation efforts will be led by the DB and staffed by qualified wildlife biologists. Owls will be excluded from identified burrows by installing one-way doors (e.g., 4-inch corrugated irrigation pipe with gravity-closing see-through door), in each burrow entrance.

The sequence of events to exclude WBO from the Project Disturbance Area is described below.

1. Install one-way doors in all suitably sized burrows (greater than or equal to 4 inches in diameter) in the Project Disturbance Area and 500-foot buffer area. Suitable burrows without recent WBO sign will be addressed first. One-way doors will be installed in

burrows actively used by WBO after installation occurs on all other suitable burrows to avoid multiple evictions.

2. One-way doors should be installed during the afternoon with care taken not to flush any WBO from the Project Disturbance Area during one-way door installation. If any WBO are detected leaving the Project Disturbance Area in response to one-way door installation, installation activity will cease until the activity no longer poses a potential harassment threat (all detected WBO have voluntarily left the vicinity). In the event a burrow is larger than the diameter of the one-way door, that burrow should be remotely investigated with a fiber-optic scope camera to ensure an animal larger than the one-way door is not occupying the burrow. If not inspected, berms used to hold the one-way door in place may trap larger wildlife.

3. For known occupied burrows, observe the WBO at dusk (i.e., beginning 1 hour before evening civil twilight and ending at twilight) to document their departure from the Project Disturbance Area. This may require more than one observer to account for the location of all WBO. All observers should remain 250 feet from the one-way doors under surveillance so their presence does not alter the WBO behavior.

4. Install one-way doors in the burrows that the WBO have been recently using after the WBO have departed the area at dusk. One-way doors installed in known occupied burrows will be installed at not greater than a 45-degree angle from the ground to ensure WBO are able to depart.

5. On the 2 days following one-way door installation, observe the exclusion area beginning at dawn (i.e., no later than morning civil twilight) until at least 1 hour after sunrise the following morning and record WBO presence or absence in the exclusion area and document their reaction to the presence of one-way doors.

6. On the third morning following one-way door installation, using a fiber-optic scope camera, scope the recently used burrows identified in steps 2 and 4 above. Suitable burrows without recent WBO sign (step 2) will be scoped to ensure that no other sensitive species are currently occupying burrows. Burrows known to be recently occupied by WBO (step 4) will be scoped to ensure all WBO have vacated the burrow. Upon confirmation that the burrow is unoccupied, the burrows will be excavated with hand tools using flexible pipe to allow wildlife to escape, and refilled to prevent reoccupation by WBO or other sensitive species.

7. Monitor the Project Disturbance Area and 500-foot buffer area for WBO presence, including sign, for 7 mornings (beginning at morning civil twilight) after the passive relocation effort is complete to ensure that other resident wildlife do not reexcavate burrows and WBO do not reoccupy those burrows.

The results of the passive relocation effort will be included in the monthly report on implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS for the duration of construction. This information will also be included in the Project's Annual Compliance Report.

2.3 Burrow Enhancement/Artificial Burrow and Relocation Location Sites

Burrow will be enhanced and/or artificial WBO burrows will be installed at a ratio of 2:1 to replace occupied burrows from which WBO are excluded during passive relocation. These burrows will be installed/enhanced on WBO suitable habitat, with natural burrows where available, located on BLM lands greater than 500 feet from, but within 1 mile of, the combined Project Disturbance Areas of all phases of the Project (Figure 4). The specific location of each burrow enhancement site or artificial burrow will be determined in consultation with BLM, CDFG, USFWS, and the CPM. A 250-foot buffer will be enclosed with fencing surrounding the enhanced/artificial burrow and relocation areas and signs will be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer. Both natural and artificial burrows provide protection, shelter, and nests for WBO (Henry and Bliss 1981). Enhancements and/or artificial burrows will be designed to maximize their suitability and effectiveness. If improperly designed, an artificial burrow may attract predators; fill with rainwater, dirt, or debris; or fail to provide adequate cover. Figure 5 depicts an example of a design layout for the construction of an artificial burrow. These enhanced/artificial burrows may also provide additional nest sites for WBO native to the enhancement or artificial burrow installation area including burrows for dispersing young and adults and temporary burrows for winter migrants.

Prior to ground disturbance at an enhancement/artificial burrow installation site, surveys for other sensitive species (e.g., desert tortoise, sensitive plants) may be required to verify that the construction of artificial burrows at the relocation site will not adversely impact those species. Enhnancment/artificial burrow installation will be led by the DB and staffed by qualified wildlife biologists. Summaries of the identified areas will be submitted to and approved by CDFG, BLM, USFWS, and the CEC CPM prior to the initiation of passive relocation efforts. A description of activity at each active enhancement/artificial burrow and relocation site will be included in the next monthly report on the implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS for the duration of construction.

In addition, arrangements will be made for repairs to be completed for any damage to the perimeter fence, signage, or any unoccupied artificial burrows observed during monthly visits. Monthly visits will occur for a total of 24 months (for each enhancement/artificial burrow and relocation area) after the enhancnement and/or construction of the artificial burrows, at which point the fence surrounding the area will be removed and the artificial burrows will be left in place. Monitoring information will also be included in the Project's Annual Compliance Report.

2.4 Preconstruction Surveys

Preactivity surveys and associated passive relocation activities meet the requirements of a preconstruction survey for any ground-disturbing activities occurring within 30 days following completion of passive relocation activities. Otherwise, a preconstruction WBO survey is required per BIO -18 in the Project Disturbance Area of any phase of the Project that starts after the 30 days have elapsed. This is necessary because it is possible for fossorial mammals to enter the Project Disturbance Area and establish burrows in the areas cleared during the preactivity survey if it is left idle. In this event, WBO may occupy those newly established burrows. Any necessary preconstruction surveys will follow CBOC Phase II burrow survey protocols (see Section 2.1 for specific protocol requirements). If passive relocation has already occurred, this survey will serve to document that burrows excavated during passive relocation continue to be unoccupied by WBO and no newly established WBO-occupied or WBO-suitable burrows are available for WBO occupation in the Project Disturbance Area. This survey will be led by the DB and staffed by qualified wildlife biologists. In the event any WBO-occupied burrows are observed during the preconstruction survey, efforts will be made to avoid disturbance to the burrow by modifying either the placement or the timing of work activity during the breeding season. During the nonbreeding season, WBO can be passively relocated as described in Section 2.2 above.

If WBO are found occupying a burrow within 500 feet of the Project Disturbance Area during the breeding season (February 1 through August 31), a 250-foot buffer will be flagged surrounding the occupied burrow per CBOC guidelines. Exclusion fencing will be installed and work activity shall remain outside of the fenced area until a DB determines the burrow is no longer occupied (e.g., juveniles are foraging independently and are capable of independent survival). Signs will be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer. In addition, at least 10 days prior to the start of any activities in the Project Disturbance Area, the DB will provide to the CPM documentation indicating that nondisturbance buffer fencing has been installed. This documentation will include a description of the burrow, summary of the occupants of the burrow, account of the surrounding habitat conditions, a photograph of the burrow, and latitude/longitude coordinates for the burrow.

In the event any WBO-suitable burrows with no sign of occupation are found (e.g., no wash, pellets, feathers, etc.) during the preconstruction survey, such burrows will be remotely investigated to ensure WBO and other wildlife do not occupy the burrow (e.g., with a fiber-optic scope camera), excavated with hand tools using flexible pipe to allow wildlife to escape, and refilled to prevent occupation by WBO. The results of each preconstruction survey will be included in the next monthly report on the implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS. This information will also be included in the Project's Annual Compliance Report.

3.0 MONITORING

3.1 Monitoring Passive Relocation Areas Left Idle for More Than 30 Days

If work in the Project Disturbance Area is scheduled to commence more than 30 days after passive relocation activities are complete, monitoring of that area will occur until disturbance commences. The frequency of the monitoring will depend on the abundance of fossorial mammal activity and the friability of soils in the passive relocation area. This monitoring will reduce the likelihood that other resident wildlife species are able to reexcavate burrows allowing WBO to reoccupy those burrows. Results of this monitoring will be included in the Project's Annual Compliance Report.

3.2 Nesting Season Occupied Burrow Monitoring

If construction activities in the Project Disturbance Area occur within 500 feet of an occupied burrow during the nesting season (February 1 through August 31) the DB or a Biological Monitor will monitor to determine whether these activities have potential to adversely affect nesting efforts, and as necessary will make recommendations for adaptive management measures to minimize or avoid such disturbance. Additional monitoring and adaptive management measures to prevent disturbance to nesting birds from construction-related activities will be employed as determined necessary by the DB or a Biological Monitor and CPM. Any adaptive management measures will be determined in consultation with the CPM, CDFG, and USFWS. Triggers for adaptive management will be evidence of Project-related disturbance to nesting owls such as agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at burrow sites; changes in foraging and feeding behavior; or nest site abandonment.

Monitoring will occur each month and findings will be included in the monthly report on the implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS for the duration of construction. This information will also be included in the Project's Annual Compliance Report.

3.3 Artificial Burrow and Relocation Area Monitoring

During monthly visits to the WBO artificial burrow and relocation sites to occur for a duration of 2 years, the DB or a Biological Monitor will record observations of relocated WBO and/or occurrences of migrating or other local WBO using the artificial burrows and relocation site, evidence of known predators or humans visiting or disturbing the site, any damage to the fence or signage, and any other pertinent data gathered through the monitoring. Each month's findings will be included in the next monthly report on the implementation of WBO avoidance and minimization measures to the CPM, CDFG, and USFWS for the duration of construction. This information will also be included in the Project's Annual Compliance Report.

4.0 REPORTING

As required by COC BIO-18 for the BSPP, relevant information specified in Section 2 above will be included in each of these reports.

1. PVSI will report monthly to the CPM, CDFG, and USFWS for the duration of construction on the implementation of WBO avoidance and minimization measures.

2. Within 30 days after completion of construction, PVSI will provide to CDFG and the CPM a report identifying how mitigation measures described in the passive relocation plan have been completed.

3. As part of the Annual Compliance Report, each year following construction for a period of 2 years, the DB will provide a report to the CPM, USFWS, and CDFG that describes the results of monitoring and management of the WBO relocation area.

5.0 REFERENCES

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FIGURES

Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project
Burrowing Owl
Management Plan

Figure 1
Regional Map

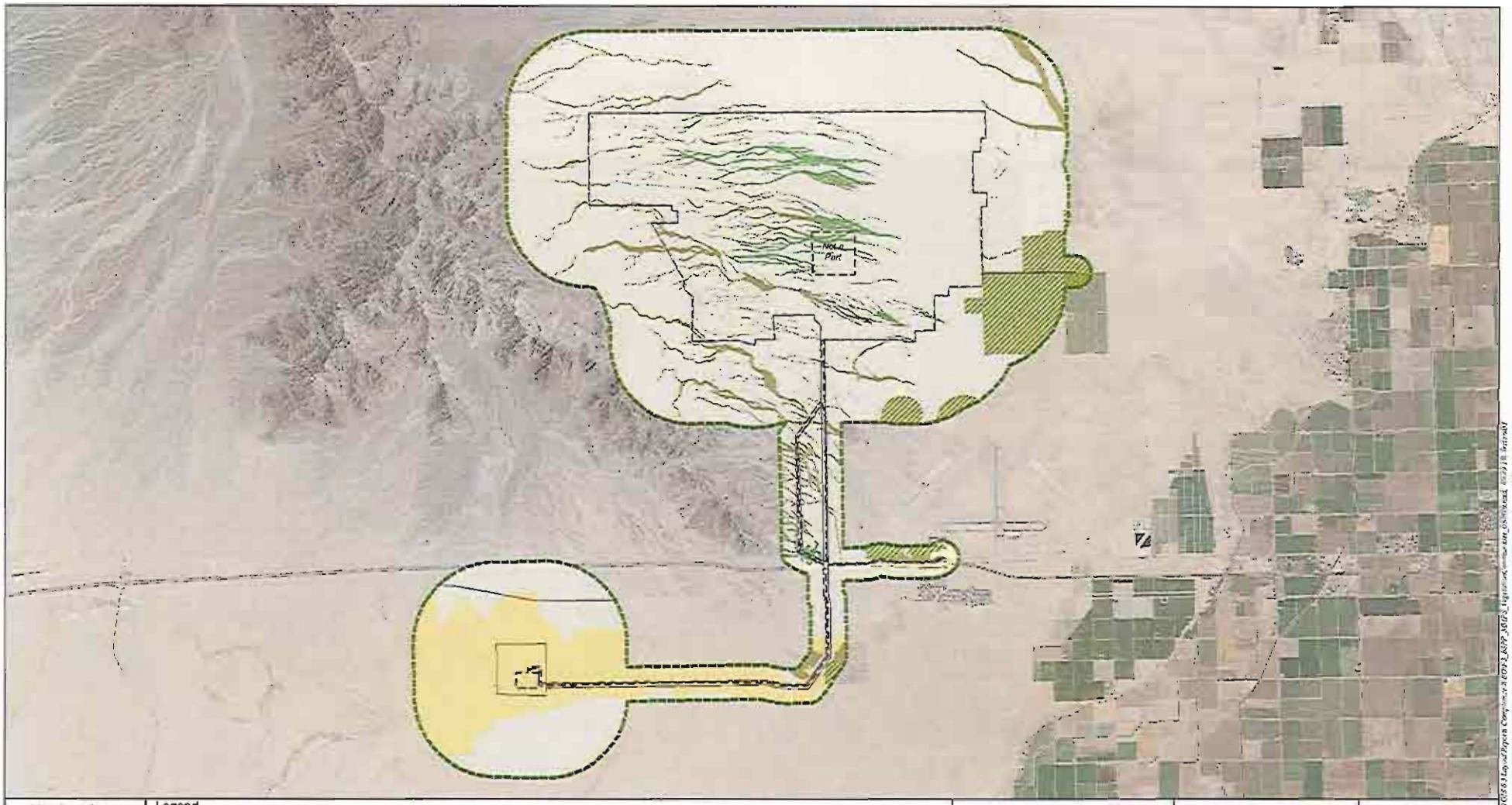
Source: ESRI; AECOM 2010

Solar Millennium

AECOM

Date: September 2010

Path: P:\2009\09038082 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\Compliance\WBOF1_BSPP_BUOW_RegionalLocation_080410.mxd, 09/29/10, IrelandM



Map Location

Legend

- Project Study Area
- Project Disturbance Area
- Project BRSA

Source: NAIP 2009; AECOM 2010

Vegetation Communities

Riparian

- Creosote Bush - Big Galleta Association
- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

Upland

- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

Other

- Agriculture (Active and Fallow)
- Disturbed
- Developed

N W E S

1 in = 6,000 feet

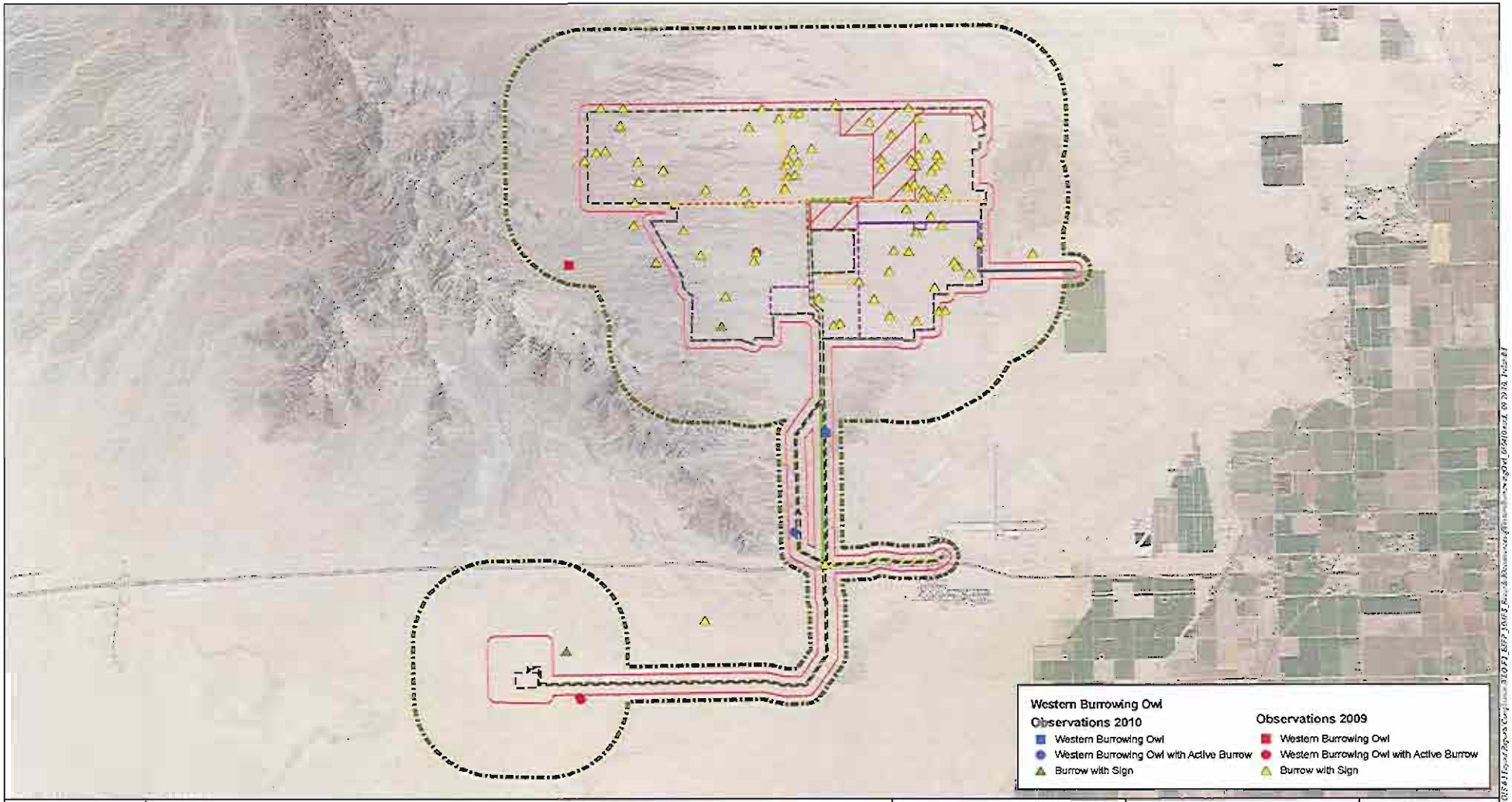
0 6,000 12,000 Feet

Blythe Solar Power Project
Burrowing Owl
Management Plan

Figure 3
Vegetation Communities

AECOM

Date: September 2010



Map Location

Legend

- Project BRSA
- Project Disturbance Area
- Burrowing Owl Survey Buffer - 492-foot

Phase 1a Disturbance Area

- Black Rock Road Improvements
- Construction Power Line
- Facility Construction
- Utilities Corridor

Phase 1B and Phase 2

- Phase 1B Disturbance Area
- Phase 2 Disturbance Area

Source: NAIP 2009; AECOM 2010

N W E S

1 inch = 6,000 feet

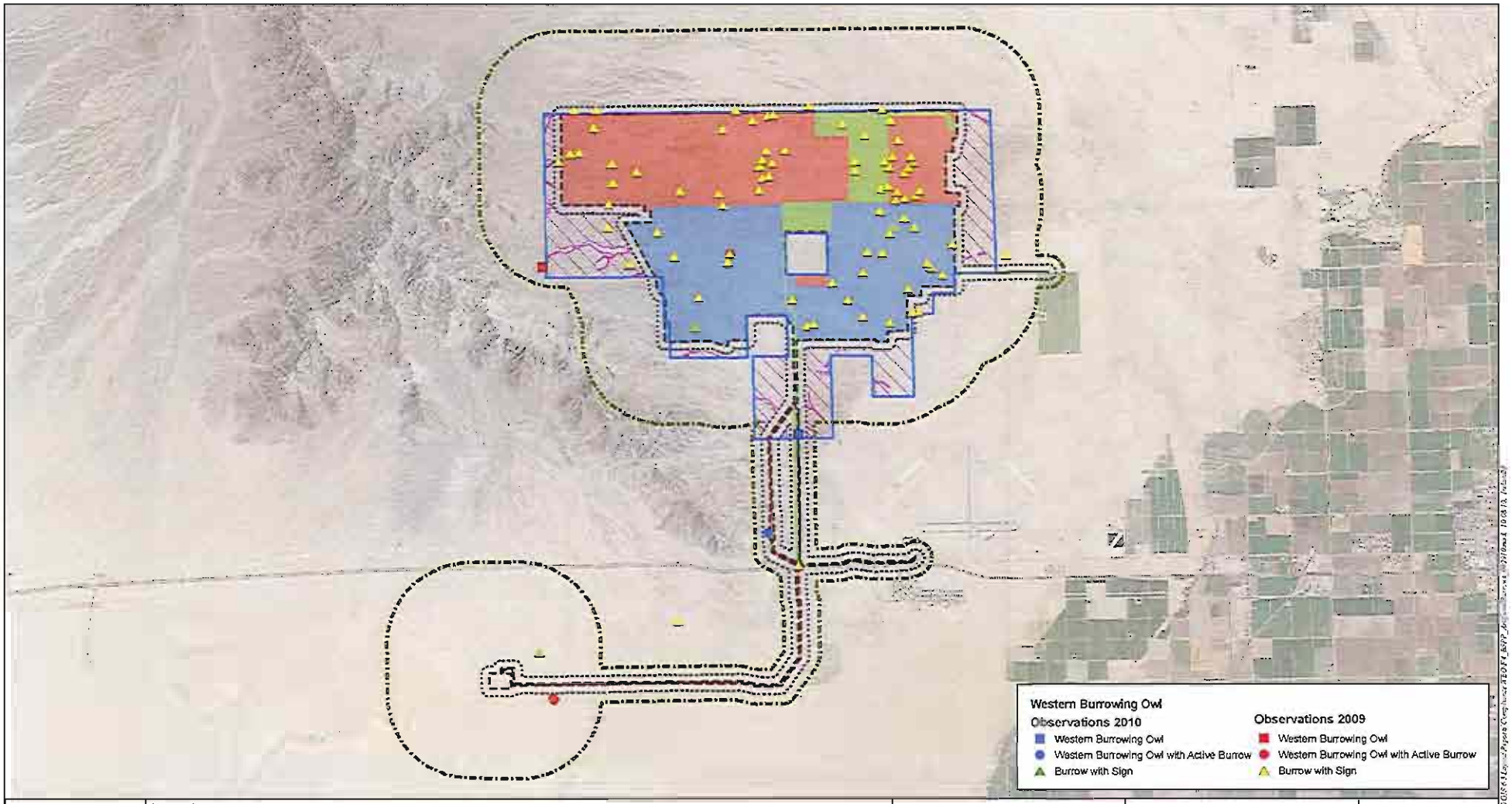
0 6,000 12,000 Feet

Blythe Solar Power Project
Burrowing Owl
Management Plan

Figure 2
Burrowing Owl Observations

AECOM

Date: September 2010



Map Location

Legend

- Suitable for WBO Artificial Burrow Enhancement, Construction & WBO Relocation*
- 492-foot Buffer of Disturbance Area
- Project Disturbance Area
- Proposed Project BRSA
- AFC Application BSPP Right-of-Way
- Phase 1A
- Phase 1B
- Phase 2

Source: NAIP 2009; AECOM 2009, 2010

*These areas are within the original BSPP ROW evaluated, at least 500 feet from the Phase 1a disturbance area, and within vegetation communities suitable for WBO occupation. The final BSPP ROW has been reduced to 7,541 acres.

N W E S

1 inch = 6,000 feet

0 6,000 12,000 Feet

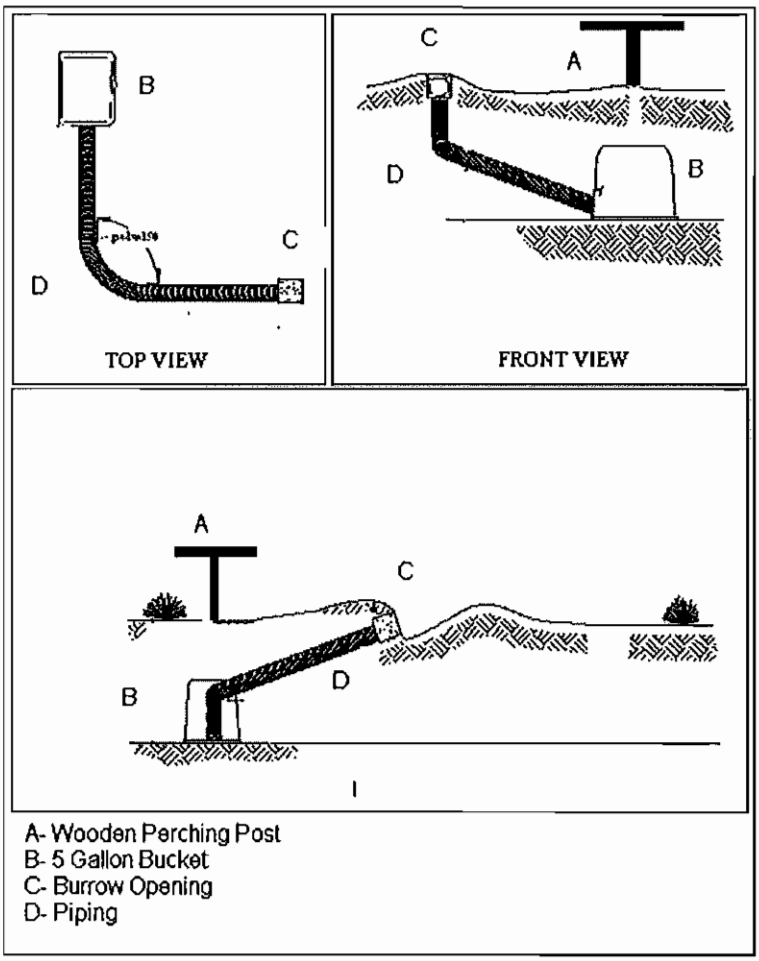
Blythe Solar Power Project
Burrowing Owl
Management Plan

Figure 4
Burrowing Owl
Burrow Enhancement Opportunities

AECOM

Date: September 2010

Figure 5 Example of a design layout for the construction of an artificial burrow.



APPENDIX A

BURROWING OWL SURVEY PROTOCOL AND MITIGATION GUIDELINES

BURROWING OWL SURVEY PROTOCOL AND MITIGATION GUIDELINES

Prepared by:

The California Burrowing Owl Consortium

April 1993

INTRODUCTION

The California Burrowing Owl Consortium developed the following Survey Protocol and Mitigation Guidelines to meet the need for uniform standards when surveying burrowing owl *(Speotyto cunicularia)* populations and evaluating impacts from development projects. The California Burrowing Owl Consortium is a group of biologists in the San Francisco Bay area who are interested in burrowing owl conservation. The following survey protocol and mitigation guidelines were prepared by the Consortium's Mitigation Committee. These procedures offer a decision-making process aimed at preserving burrowing owls in place with adequate habitat.

California's burrowing owl population is clearly in peril and if declines continue unchecked the species may qualify for listing. Because of the intense pressure for development of open, flat grasslands in California, resource managers frequently face conflicts between owls and development projects. Owls can be affected by disturbance and habitat loss, even though there may be no direct impacts to the birds themselves or their burrows. There is often inadequate information about the presence of owls on a project site until ground disturbance is imminent. When this occurs there is usually insufficient time to evaluate impacts to owls and their habitat. The absence of standardized field survey methods impairs adequate and consistent impact assessment during regulatory review processes, which in turn reduces the possibility of effective mitigation.

These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or the resources that support them. The process begins with a four-step survey protocol to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Each project and situation is different and these procedures may not be applicable in some circumstances. Finally, these are not strict rules or requirements that must be applied in all situations. They are guidelines to consider when evaluating burrowing owls and their habitat, and they suggest options for burrowing owl conservation when land use decisions are made.

Section 1 describes the four phase Burrowing Owl Survey Protocol. Section 2 contains the Mitigation Guidelines. Section 3 contains a discussion of various laws and regulations that protect burrowing owls and a list of references cited in the text.

We have submitted these documents to the California Department of Fish and Game (CDFG) for review and comment. These are untested procedures and we ask for your comments on improving their usefulness.

SECTION 1 BURROWING OWL SURVEY PROTOCOL

PHASE I: HABITAT ASSESSMENT

The first step in the survey process is to assess the presence of burrowing owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat: both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by an observation of at least one burrowing owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if burrowing owl habitat occurs on the site. If burrowing owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not burrowing owl habitat.

PHASE II: BURROW SURVEY

1. A survey for-burrows and owls should be conducted by walking through suitable habitat over the entire project site and in areas within 150 meters (approx 500 ft.) of the project impact zone. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project area and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project area.

2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (approx. 160 ft.) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.

3. If burrows or burrowing owls are recorded on the site, a map should be prepared of the burrow concentration areas. A breeding season survey and census (Phase III) of burrowing owls is the next step required.

4. Prepare a report (Phase IV) of the burrow survey stating whether or not burrows are present.

5. A preconstruction survey may be required by project-specific mitigations no more than 30 days prior to ground disturbing activity.

PHASE III: BURROWING OWL SURVEYS, CENSUS AND MAPPING

If the project site contains burrows that could be used by burrowing owls, then survey efforts should be directed towards determining owl presence on the site. Surveys in the breeding season are required to describe if, when, and how the site is used by burrowing owls. If no owls are observed using the site during the breeding season, a winter survey is required.

Survey Methodology

A complete burrowing owl survey consists of four site visits. During the initial site visit examine burrows for owl sign and map the locations of occupied burrows. Subsequent observations should be conducted from as many fixed points as necessary to provide visual coverage of the site using spotting scopes or binoculars. It is important to minimize disturbance near occupied burrows during all seasons. Site visits must be repeated on four separate days. Conduct these visits from two hours before sunset to one hour after or from one hour before to two hours after sunrise. Surveys should be conducted during weather that is conducive to observing owls outside their burrows. Avoid surveys during heavy rain, high winds (> 20 mph), or dense fog.

Nesting Season Survey. The burrowing owl nesting season begins as early as February 1 and continues through August 31 (Thomsen 1971, Zam 1974). The timing of nesting activities may vary with latitude and climatic conditions. If possible, the nesting season survey should be conducted during the peak of the breeding season, between April 15 and July 15. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record numbers of pairs and juveniles, and behavior such as courtship and copulation. Map the approximate territory boundaries and foraging areas if known.

Survey for Winter Residents (non-breeding owls). Winter surveys should be conducted between December 1 and January 31, during the period when wintering owls are most likely to be present. Count and map all owl sightings, occupied burrows, and burrows with owl sign.

Surveys Outside the Winter and Nesting Seasons. Positive results, (i.e., owl sightings)- outside of the above survey periods would be adequate to determine presence of owls on site. However, results of these surveys may be inadequate for mitigation planning because the numbers of owls and their pattern of distribution may change during winter and nesting seasons. Negative results during surveys outside the above periods are not conclusive proof that owls do not use the site.

Preconstruction Survey. A preconstruction survey may be required by project-specific mitigations and should be conducted no more than 30 days prior to ground disturbing activity.

PHASE IV: RESOURCE SUMMARY, WRITTEN REPORT

A report should be prepared for CDFG that gives the results of each Phase of the survey protocol, as outlined below.

Phase I: Habitat Assessment

1. Date and time of visit(s) including weather and visibility conditions; methods of survey.

2. Site description including the following information: location, size, topography, vegetation communities, and animals observed during visit(s).

3. An assessment of habitat suitability for burrowing owls and explanation.

4. A map of the site.

Phase II: Burrow Survey

1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. A more detailed site description should be made during this phase of the survey protocol including a partial plant list of primary vegetation, location of nearest freshwater (on or within one mile of site), animals observed during transects.

3. Results of survey transects including a map showing the location of concentrations of burrow(s) (natural or artificial) and owl(s), if present.

Phase III: Burrowing Owl Surveys, Census and Mapping

1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. Report and map the location of all burrowing owls and owl sign. Burrows occupied by owl(s) should be mapped indicating the number of owls at each burrow. Tracks, feathers, pellets, or other items (prey remains, animal scat) at burrows should also be reported.

3. Behavior of owls during the surveys should be carefully recorded (from a distance) and reported. Describe and map areas used by owls during the surveys. Although not required, all behavior is valuable to document including feeding, resting, courtship, alarm, territorial, parental, or juvenile behavior.

4. Both winter and nesting season surveys should be summarized. If possible include information regarding productivity of pairs, seasonal pattern of use, and include a map of the colony showing territorial boundaries and home ranges.

5. The historical presence of burrowing owls on site should be documented, as well as the source of such information (local bird club, Audubon society, other biologists, etc.).

Burrowing: Owl Survey Protocol

April 1993

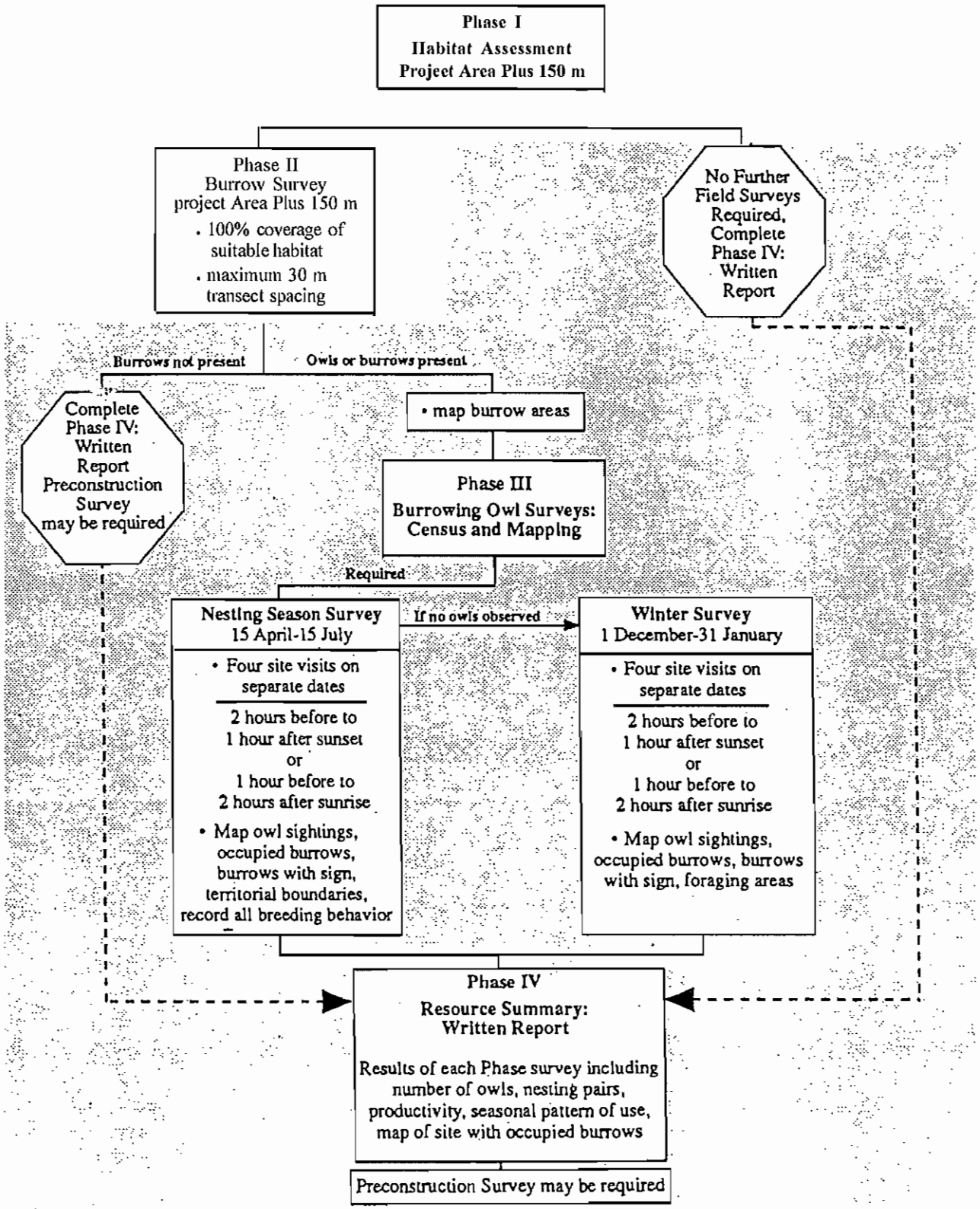


Figure 1.

SECTION 2 BURROWING OWL MITIGATION GUIDELINES

The objective of these mitigation guidelines is to minimize impacts to burrowing owls and the resources that support viable owl populations. These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or their resources. The process begins with a four-step survey protocol (see *Burrowing Owl Survey Protocol)* to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures described below are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Mitigation actions should be carried out prior to the burrowing owl breeding season, generally from February 1 through August 31 (Thomsen 1971, Zarn 1974). The timing of nesting activity may vary with latitude and climatic conditions. Project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied them in the interim period between the initial surveys and ground disturbing activity. Repeat surveys should be conducted not more than 30 days prior to initial ground disturbing activity.

DEFINITION OF IMPACTS

1. Disturbance or harassment within 50 meters (approx. 160 ft.) of occupied burrows.

2. Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.

3. Degradation of foraging habitat adjacent to occupied burrows.

GENERAL CONSIDERATIONS

1. Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and incubation or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date.

2. A minimum of 6.5 acres of foraging habitat, calculated on a 100-m (approx. 300 ft.) foraging radius around the natal burrow, should be maintained per pair (or unpaired resident single bird) contiguous with burrows occupied within the last three years (Rich 1984, Feeney 1992). Ideally, foraging habitat should be retained in a long-term conservation easement.

3. When destruction of occupied burrows is unavoidable, burrows should be enhanced (enlarged or cleared of debris) or created (by installing artificial burrows) in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.

4. If owls must be moved away from the disturbance area, passive relocation (see below) is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows.

5. The mitigation committee recommends monitoring the success of mitigation programs as required in Assembly Bill 3180. A monitoring plan should include mitigation success criteria and an annual report should be submitted to the California Department of Fish and Game.

AVOIDANCE

Avoid Occupied Burrows

No disturbance should occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding Season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding Season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird (Figure 2).

MITIGATION FOR UNAVOIDABLE IMPACTS

On-site Mitigation

On-site passive relocation should be implemented if the above avoidance requirements cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 m from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls (Figure 3). Relocation of owls should only be implemented during the non-breeding season. On-site habitat should be preserved in a conservation easement and managed to promote burrowing owl use of the site.

Owls should be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances: One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One alternate natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels

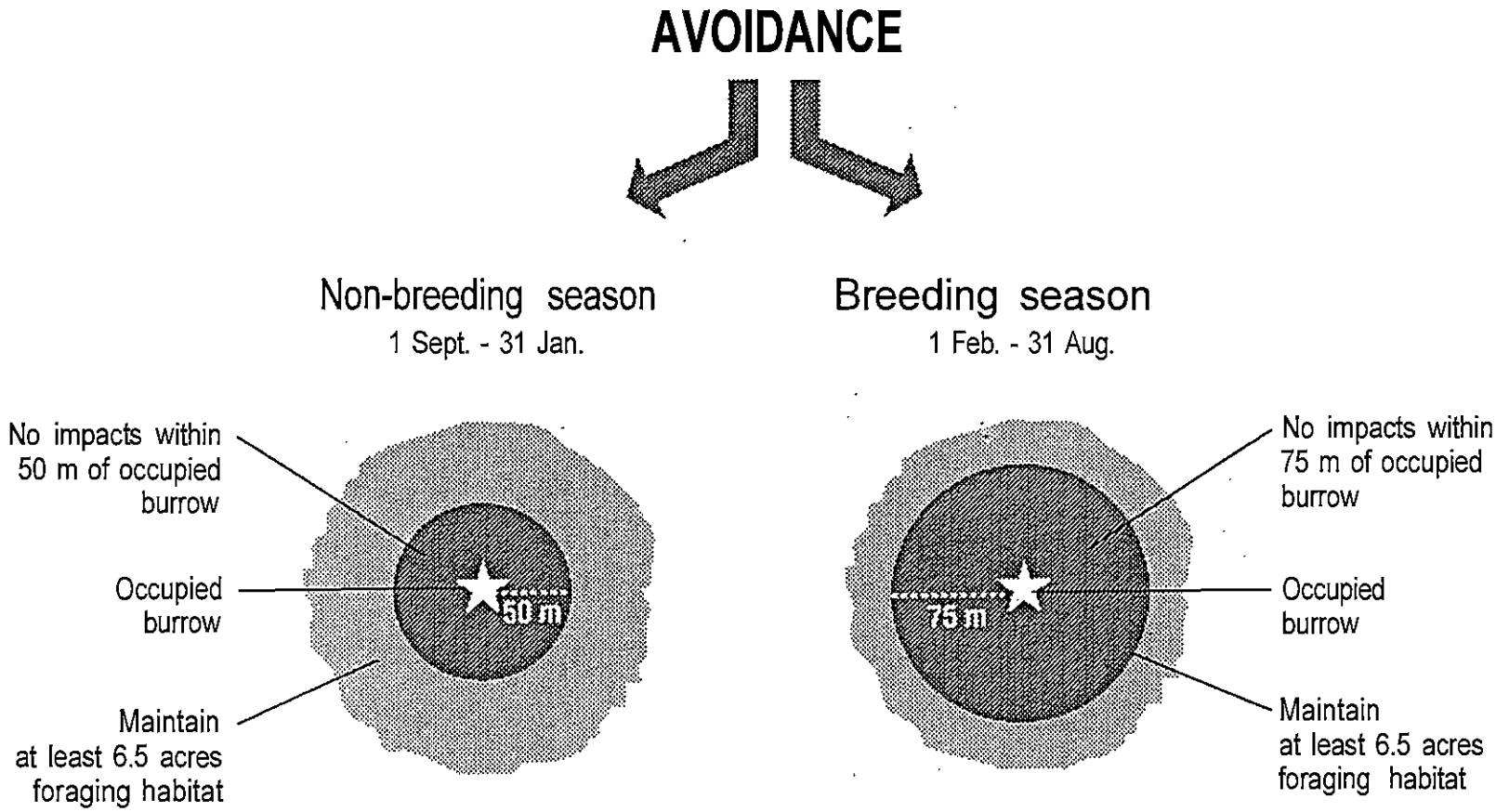


Figure 2. Burrowing owl mitigation guidelines.

ON-SITE MITIGATION IF AVOIDANCE NOT MET

(More than 6.5 acres suitable habitat available)

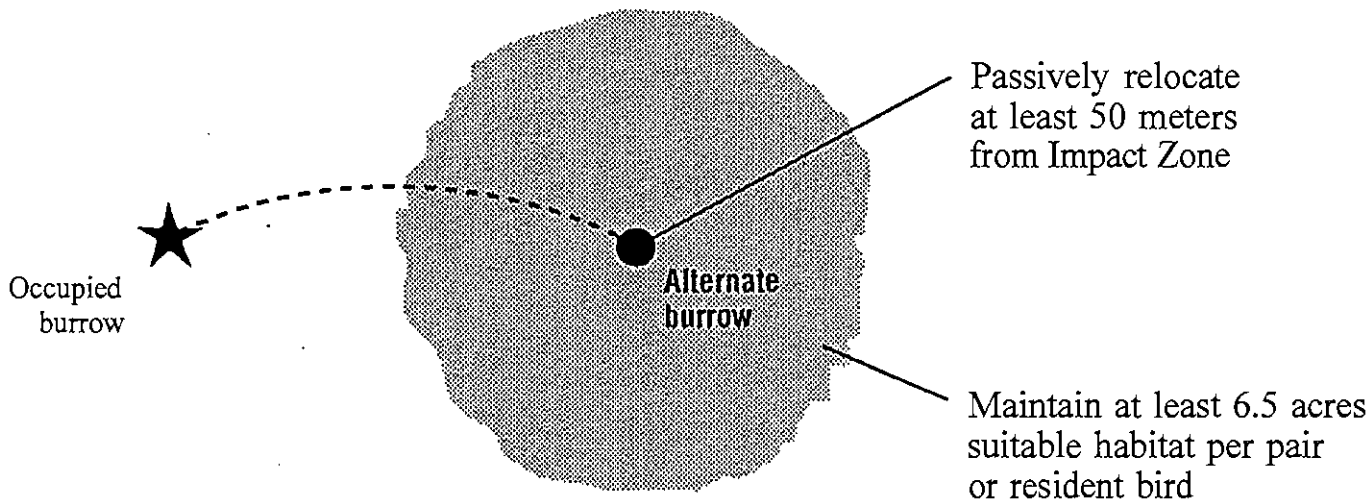


Figure 3. Burrowing owl mitigation guidelines.

during excavation to maintain an escape route for any animals inside the burrow.

Off-site Mitigation

If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the *Burrowing Owl Survey Protocol,* and the site approved by CDFG. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

1. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

2. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

3. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

SECTION 3 LEGAL STATUS

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter, any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001(c), 21083. Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impacts to less than significant levels.

CEQA AND SUBDIVISION MAP ACT

CEQA Guidelines Section 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of, or restrict the range of a threatened or endangered species. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIR's for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002, subd. (a)(3), 15021, subd. (a)(2), 15091, subd. (a).).

To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15.370).

Section 66474 (e) of the Subdivision Map Act states "a legislative body of a city or county shall deny approval of a tentative map or parcel map for which a tentative map was not required, if

it makes any of the following findings:... (e) that the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish and wildlife or their habitat". In recent court cases, the court upheld that Section 66474(e) provides for environmental impact review separate from and independent of the requirements of CEQA (Topanga Assn. for a Scenic Community v. County of Los Angeles, 263 Cal. Rptr. 214 (1989).). The finding in Section 66174 is in addition to the requirements for the preparation of an EIR or Negative Declaration.

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APPENDIX H

DECOMMISSIONING PLAN (PHASE 1A)

BLYTHE SOLAR POWER PROJECT
PHASE 1A DECOMMISSIONING PLAN
RIVERSIDE COUNTY, CALIFORNIA
09-AFC-6C

Prepared for:
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Prepared by:
AECOM
2101 Webster Street, Suite 1900
Oakland, California 94612

September 2010

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List of Acronyms

bgs	Below Ground Surface
BLM	Bureau of Land Management
CCR	California Code of Regulations
CEC	California Energy Commission
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
HTF	heat transfer fluid
I-10	Interstate Highway 10
LORS	laws, ordinances, regulations, or standards
MW	megawatt
NEPA	National Environmental Protection Act
NTP	Notice to Proceed
Project	Blythe Solar Power Project
PVSI	Palo Verde Solar I, LLC
RCE	reclamation cost estimate
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
SCE	Southern California Edison
SWPPP	Stormwater Pollution Prevention Plan

1.0 INTRODUCTION

Project construction for the Blythe Solar Power Project (the Project) will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011. Phase 2 will include all of Units #3 and #4. See Table 1 on the following pages and Figure 2 for construction phasing plan.

As such, Palo Verde Solar I, LLC (PVSI) will prepare a decommissioning plan to cover removal of each phase should the site be permanently closed prior to the end of that phase of construction and/or, in the case of Phase 1b and Phase 2, at the end of operation of those units of the Project. Prior to Notice to Proceed (NTP) for each subsequent phase (e.g., Phase 1b and Phase 2), PVSI will submit an updated decommissioning plan to cover the additional construction and operation of that phase of the Project along with prior phases.

PVSI has prepared this Phase 1a Decommissioning Plan (Plan), which describes how the Blythe Project and its component structures from the initial phase of construction will be properly removed, if necessary, at the end of the Project's useful lifespan, and the Project site reclaimed in accordance with the requirements of the Bureau of Land Management (BLM), Federal administrator of these public lands. BLM currently is developing reclamation requirements for utility-scale solar projects.

This Plan addresses the requirements identified in the Conditions of Certification BIO-23 and SOIL&WATER-10 in the California Energy Commission's (CEC) Final Decision issued September 15, 2010 and preliminary decommissioning guidance provided from BLM. The Plan addresses the initial 773-acre phase of site development to be initiated in November 2010 and provides the approach to reclamation that has been developed for Phase 1a. This Plan will be updated to ensure compliance with future reclamation requirements for utility-scale solar projects once BLM adopts them, and will be followed by additional phase-specific decommissioning plans for subsequent stages of development beyond Phase 1a. In addition, this Plan describes how financial resources will be available to undertake decommissioning of Phase 1a improvements in conformance with BLM requirements.

1.1 Closure, Decommissioning, and Reclamation Components

The closure, decommissioning and reclamation components that are the subject of this Plan for Phase 1a of construction of the Project include the site access road, site communications lines and other improvements in the Project's utility corridor, temporary construction power line, development of water wells to supply initial construction water requirements, development of shared facilities including office trailer areas, equipment laydown areas, portions of the power block and solar collector field for Unit #1, as well as a portion of the northern drainage channel and diffuser. These Project components are more fully described in subsequent sections of this Plan.

1.2 Temporary Closure

Temporary closure can be defined as stopping operations longer than would normally be required for routine maintenance, overhaul, or replacement of major plant equipment. Temporary closure could result from facility damage following a natural occurrence (e.g., earthquake), fire, or for short-term economic reasons.

1.3 Permanent Closure

Permanent closure is defined as stopping operations with no intention of restarting, and can result from expiration of the Project's site lease, or a combination of facility age and economic considerations, from damage considered beyond repair, or for other reasons.

1.4 Facility Description

The Project site is located in the Southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate Highway 10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre right-of-way (ROW) managed by BLM, pursuant to an ROW grant issued to PVSI from BLM.

The Project is a nominal 1,000-megwatt (MW) commercial solar thermal power-generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will consist of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on the first unit; that unit will come on line in mid-2013 and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system, emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). There will be two Land Treatment Units (12-acre and 4-acre units) to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on-site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system.

Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation that will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 28-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled access gates.

1.5 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas: (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities, including a staging/laydown area, water well development, assembly hall, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1a	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Wells and initial portion of Unit #1	772.68
Phase 1b	Remainder of Unit #1, Unit #2 and Gen-tie line	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
Total		**7,024.5**

1.6 Regulatory Criteria

PVSI is responsible for implementing aspects of decommissioning in accordance with applicable Federal, State, and local permits. The CEC licenses thermal power plants of more than 50 MW in California. Because the Project is proposed on Federally-controlled public land, compliance with the National Environmental Policy Act (NEPA) is required. CEC and BLM are conducting parallel environmental reviews consistent with California Environmental Quality Act and NEPA processes. State and Federal biological resources agencies (e.g., U.S. Fish and Wildlife Service and the California Department of Fish and Game) have been active participants in the State and Federal reviews of the Project and have assisted in development of mitigation measures related to the protection of environmentally sensitive species and habitats during construction, operations, and decommissioning.

PVSI understands that BLM is in the process of developing reclamation requirements for utility-scale solar projects. The decommissioning steps described is this Plan for Phase 1a are intended to comply with the reclamation standards set forth in Title 43 Code of Federal Regulations (CFR) Subpart 3809. Although Title 43 CFR Subpart 3809 was written for mine operations, the reclamation provisions are assumed to apply here until specific future agreements between BLM and PVSI. .

2.0 CONTINGENCY PLAN FOR TEMPORARY CLOSURE

2.1 Introduction

This section describes the actions that PVSI would take in the event of a temporary closure due to the circumstances identified in Section 1.2. These include stopping operations as a result of facility damage following a natural occurrence (e.g., earthquake), fire, or for short-term economic reasons.

2.2 Emergencies

In the case of an emergency at the Project site, PVSI's on-site management team will provide notification to the appropriate Federal, State, and county authorities including but not limited to the BLM Field Office in Palm Springs, the CEC's Compliance Project Manager, the Riverside County Fire Department and County Health Services, and the County Sheriff's Department.

2.3 Removal of Hazardous Materials/Hazardous Waste

If there is no actual or threatened release of hazardous materials associated with construction of Phase 1a, a contingency plan will be implemented for the temporary halting of construction operations. The purpose of this contingency plan will be to ensure compliance with all applicable laws, ordinances, regulations, and standards (LORS) and appropriate protection of public health, safety, and the environment. Depending on the expected duration of the temporary suspension, the contingency plan may include the draining and proper disposal of any hazardous liquids that may be stored on this site, such as equipment refueling tanks, the safe shutdown of all Project equipment, and various other measures to protect Project workers, the public, and the environment.

If the temporary closure involves an actual or threatened release of hazardous materials to the environment, procedures will be implemented as provided in a Risk Management Plan and a Hazardous Materials Business Plan that will be developed for the Project. Procedures will include measures to control the release of hazardous materials, notifications of the appropriate agencies and the public, emergency response, and training for Project personnel in hazardous materials release response and control. Once the hazardous materials release has been resolved, temporary closure will proceed as described above for temporary closure without hazardous materials release.

2.4 Site Security

During a period of temporary closure at the site, security for the Project will be maintained on a 24-hour basis and the CEC and other responsible agencies will be notified. The course of action that will be followed will depend on whether or not the temporary closure involves a release of hazardous materials.

3.0 PERMANENT PLANT CLOSURE

The following discussion of decommissioning pertains specifically to Phase 1a of the Project site in the event that construction of Phase 1a improvements were to be permanently suspended for any reason. The full build out of this Project will encompass approximately 7,025 acres of desert land. However, BLM has agreed to the principal of phased construction and "phased financial guarantee" as permitted under Title 43 CFR 3809.553. As such, the Project is proposed to be built in phases, the first of which is Phase 1a which will involve construction activity extending

over approximately 773 acres and occurring in the period from mid-November, 2010 to mid to end of second quarter of 2011.

3.1 Decommissioning Plan

In compliance with BLM regulations, when submitting a new Notice or Plan of Operations, the owner/operator must provide the BLM district/field office with a decommissioning plan and a reclamation cost estimate (RCE). In the case of approved phasing, the decommissioning plan and RCE should reflect the activities and costs associated with the reclamation of the site should the owner/operator abruptly cease operation.

In discussions with BLM staff, the decommissioning will not require that the Project site be returned to preconstruction topographic grade. The decommissioning of Phase 1a would involve the removal of facilities, structures and appurtenances placed on the Project site during the first 7 months of site development. It is PVSI's understanding from these discussions with BLM that, as part of decommissioning, the site would need to be cleared of surface improvements and re-seeded with native plant seeds. The decommissioning will explicitly exclude demolition and removal of any improvements and facilities that have been approved, in writing, by BLM for post-reclamation BLM use. These items could include the access road, natural gas and telecom lines, or any other structure from Phase 1a activities that the BLM requests to remain.

3.2 Pre-Decommissioning Activities

Prior to the actual removal of the man-made site improvements of Phase 1a, the Project site will be assessed for the general level of effort required to clear and reclaim the site. These activities would include:

- Preparation of maps and plans to show the extent of required reclamation;
- Surveys of topsoil and growth medium stockpiles to determine the amounts available;
- Sample and analyze waste materials, heap material, surface and groundwater for special handling, treatment and disposal actions;
- Evaluate the structures to determine the requirements for demolition and removal;
- Evaluate storm water facilities or water impoundments to determine if treatment is necessary (if applicable); and,
- Prepare environmental analysis or site studies prior to reclamation.
- Obtain BLM authorization for decommissioning activities and other agency permits that may be required.

Once this has been completed the actual work of demolition and removal can proceed. All such work shall be in compliance with applicable Federal, State, and local regulations.

3.3 Dismantling of Equipment and Demolition of Above-Ground Structures

For the purposes of the Plan activities, aboveground structures and facilities will include any man-made improvements to the Project site from the ground surface up. The Phase 1a improvements that may be included in this category would be access road pavement, the temporary construction power lines (including poles), the paved laydown area and the large assembly hall. A small portion of the Unit #1 solar field will also be completed during Phase 1a; therefore some steel racking for the solar panels will have been assembled. No power block equipment (generators, turbines, tanks, etc.) will have been installed during this initial phase of Project construction.

Decommissioning of these preliminary structures will entail the removal of pavement, structural steel, steel framing, steel racking systems, and large and small bore aboveground piping. Aboveground concrete structures will be broken up and crushed to extract the steel rebar. Any cable and conduit that may have been installed during Phase 1a will also be disassembled and temporary poles will be removed. All the reclaimed materials will be separated and stockpiled for eventual transport.

3.4 Belowground Facilities and Utilities

For the purposes of this Phase 1a Decommissioning Plan, belowground structures and facilities will include any man-made improvements to the site from the ground surface level down to approximately 3 feet below ground surface (bgs). The Phase 1a improvements that may be included in this category would be the access road culverts (both galvanized corrugated pipe and precast concrete) and underground utility lines (gas and telecom). The large majority of the materials to be removed from the Phase 1a site will consist of foundation materials, concrete and rebar. Since the work to be conducted during Phase 1a is preliminary site work, the foundation work for the assembly hall, ductbanks in the Unit #1 power block area and a portion of the Unit #1 solar field will have been installed. These will be decommissioned at the end of Phase 1a if the Project does not proceed. The on-site wells installed during Phase 1a will also be decommissioned and plugged in accordance with all applicable Federal and State requirements.

Decommissioning belowground structures from Phase 1a construction will consist of excavating and removing any underground piping or conduit that may have been installed in the power block area and removing building foundations shallower than 3 feet bgs. The vast majority of this decommissioning work will involve breaking up the subsurface concrete foundations and any installed solar field caissons to 3 feet bgs. This reinforced concrete will also be crushed to extract the steel rebar. All the reclaimed materials will be separated and stockpiled for eventual transport.

Once the aboveground and belowground structures have been removed, the site surface will be leveled to cover all the pits formed by the foundation removal activities. Where necessary to

promote revegetation success, portions of the site surface within the Phase 1a footprint will be decompacted by ripping and harrowing and then will be seeded with a mix of native plant seeds.

4.0 HAZARDOUS MATERIALS/HAZARDOUS WASTE CLOSURE PLAN REQUIREMENTS

This section of the Plan describes the general approach and procedures that will be followed to evaluate the potential for hazardous materials and hazardous waste presence within the area of Phase 1a improvements at the time of decommissioning. Hazardous waste management procedures that would be implemented in the event site contamination is identified are also discussed.

5.0 FACILITY IDENTIFICATION

As previously indicated in this Plan, the Project facilities to be constructed as part of the Phase 1a site improvements include the site access road, site communications lines and other improvements in the Project's utility corridor, temporary construction power line, development of water wells to supply initial construction water requirements, development of shared facilities including office trailer areas, equipment laydown areas, the Project's solar collector assembly hall, and portions of the solar collector field for Unit #1.

5.1 Schedule

Pending receipt of necessary permits and approvals, construction of Phase 1a improvements is scheduled to begin in mid-November 2010 and extend through mid to end of second quarter 2011. Construction of Phases 1b and 2 are expected to extend to the middle of 2016. Phase 1a improvements to be decommissioned at the end of the construction period if the Project were permanently suspended include, the water wells, the shared facilities, and the portion of the Unit #1 solar collector field that would be constructed at the time of work suspension. The temporary construction power line, office trailer, laydown areas and solar collector assembly hall would also be dismantled at this time.

Commercial operation of the first completed unit is expected to begin in mid-2013, with subsequent units coming online in 6- to 12-month intervals. The designed lifespan of the Project is 35 years, with potential to extend the operating lifespan up to 50 years. The site access road and the improvements made to Black Rock Road will remain after the operational life of the Project is completed. However, the access road pavement from Black Rock Road north to the site will be removed. Decommissioning of the full project facility, including Units #1 and #2, at the end of its service life will be covered by a comprehensive updated Decommissioning Plan that will be submitted separately at a future date.

5.2 Closure Site Assessment

The Phase 1a areas to be closed in the event of a permanent work suspension during or at the end of Phase 1a construction will be visually assessed by one or more personnel who are experienced in site assessments in accordance with the prevailing industry standard, American Society for Testing and Materials E1527-05 for Phase I Site Assessment, or who are experienced in closure assessments under closure guidance from the United States Environmental Protection Agency (EPA) for hazardous waste facilities and/or for hazardous material storage facility closures under Chapter 27 of the California Fire Code or applicable Riverside County Fire Code or other local standard.

The locations of the subject facilities shall be physically inspected to document where hazardous materials were used or stored and whether there are any surface indications of spills or releases of hazardous materials (such as soil staining or distressed vegetation).

5.3 Facility Closure/Decontamination Activities

A diesel and gasoline refueling area may be established on site during Phase 1a. Any such hazardous material handling operations will be closed or decommissioned in a manner that:

- Minimizes the need for further maintenance;
- Controls to the extent that a threat to public health or safety or to the environment from residual hazardous materials in the facility is minimized or eliminated; and
- Demonstrates that hazardous materials that were stored in the facility and/or contaminated soils or groundwater caused by any unauthorized discharge, will be removed, disposed of, neutralized, or reused in an appropriate manner.

To accomplish this:

- Coordination will occur with the CEC, BLM, and the County of Riverside Department of Environmental Health Environmental Protection and Oversight program personnel to determine any local standards or notifications that may be required.
- Hazardous materials will be removed from the areas to be decommissioned, except for those which remain in equipment that are integral to the operation of the Project (e.g, transformers).
- Portable containment berms will be constructed for cleaning any small parts.
- Where possible, all non-metal materials (e.g., spill pallets or small containers) will be cleaned to a reusable standard. When this is not possible, the items will be discarded in accordance with applicable LORS as closure debris (see Section 5.4). All metallic components will be managed as scrap metal unless they do not meet the definition of

scrap metal in Title 22 California Code of Regulations (CCR) Section 26626.10 (i.e., contaminated with oil or other hazardous waste).

5.4 Management of Decontamination Wastes

Decontamination wastes must be classified as hazardous or nonhazardous prior to disposal. The general methodology will be to first determine if the waste is a Federal Resource Conservation and Recovery Act (RCRA) hazardous waste or if it is a California-only (non-RCRA) hazardous waste. This procedure is consistent with Title 22 CCR Section 66262.11. If the waste is not hazardous under either Federal or State laws and regulations, the decontamination wastes may be disposed of as nonhazardous industrial trash.

Wastes that are determined to be hazardous from this testing will be manifested and transported to an off-site permitted facility for recycling or disposal as hazardous waste. The Commission Decision issued on September 15, 2010 contains the acceptable disposal practices (CEC 2010).

Reasonable efforts will be made to divert all wastes from landfills within LORS governing the Project.

5.5 Field Records

Records of decontamination activities will be retained and included in the final decontamination and decommissioning report. Photos will be taken as warranted. Records may include:

- Decontamination procedures,
- Field observation reports,
- Description of any sampling locations,
- Laboratory results of samples analyzed,
- Manifests or Bills of Lading showing disposition of waste inventory, and/or
- Miscellaneous documentation (e.g., photographs).

5.6 Verification Sampling

Based on the professional judgment of the assessment specialist (see Section 5.2 above), sampling may be required for components to verify their cleanliness or level of contamination to determine their suitability for reuse or for proper disposal. Standard sampling techniques such as those described in EPA Publication SW-846 are to be used. These can include wipe sampling for assessment of surficial contamination on non-porous surfaces. All sampling procedures and analytical methods used are to be described in the Field Records (See Section 5.5).

When each sample is collected, that sample will be noted in the log and labeled. Each sample will be labeled with the following information:

- Facility name;
- Sample number;
- Sample location;
- Sample type;
- Date of sample;
- Time of sample; and
- Name of sampler.

Chain-of custody protocols shall be followed. Under no circumstances will sealed sample containers be opened by anyone other than the laboratory personnel who will perform the requested analyses. If it is necessary for samples or sample chests to leave the immediate control of the sampler prior to delivery to the laboratory, for example during shipment by an overnight shipper, a custody seal will be placed on each sample container and/or sample chest to ensure that the samples have not been tampered with during transportation. The custody seal is initialed by the sampler, and includes the date and time that the seal was placed. Seals will be applied to each container immediately after collection to prevent tampering with the samples.

5.7 Subsurface Sampling

Based on the professional judgment of the assessment specialist (see Section 5.2 above), subsurface sampling may be required to asses if any residual contamination remains in the soils on site.

The minimum volume of sample to be collected will be determined by the analytical laboratory. At least 48 hours prior to drilling, the site boundaries will be marked with white paint, and Underground Service Alert will be notified as required by law. In addition, a drilling permit will be obtained from the local Water District, if required. A professional utility locating service may also be hired to identify the location of underground utilities in the near vicinity of proposed boring locations. The borings will be advanced using truck-mounted direct push equipment or hand-auger techniques. All subsurface sampling will be performed under the direction of a field geologist. The borings will be advanced to at least 3 feet bgs. Soil samples will be collected at 6 inches to 1 foot bgs and also at about 3 feet bgs. Based on the assessment specialist's or field geologist's expertise, samples may be collected at a deeper location such as 6 feet bgs. Soil samples will be collected in plastic (acetate), stainless steel, or brass liners.

If soil samples are to be collected for metals analysis, it will be necessary to compare them to background samples from areas known not to have been impacted.

After the samples are collected, each boring will be backfilled with grout. The collected samples will be transferred under formal chain-of-custody documentation to a State-certified laboratory to be analyzed individually as directed by the assessment specialist.

Sample custody procedures described above in Section 5.6 shall be followed.

5.8 Hazardous Material/Hazardous Waste Post Closure Report

A closure report will be prepared to document decontamination procedures used and the sampling and analytical results of all confirmation samples. The report will include copies of the applicable permits, field observations, boring logs, certified laboratory analytical results, risk assessment evaluation, conclusions and recommendations. The report will be prepared under the supervision of and signed by a California Professional Geologist if any subsurface samples were collected. Records of the disposition of all hazardous wastes and hazardous materials will be included in the closure report.

The closure report will be prepared within about 45 days of completion of closure or decontamination activities.

6.0 DEMOLITION DEBRIS MANAGEMENT, DISPOSAL, AND RECYCLING

The decommissioning of Phase 1a improvements will result in the generation of large quantities of materials. The Plan will address the ultimate disposal of these materials and make every effort to recycle as much of the material as possible. This will reduce the overall disposal costs, reduce the quantity of material sent to a landfill and allow for the material to be reused.

The materials will be segregated and stockpiled on site until such time as the stockpiled material analyses are complete and the materials are deemed safe for shipment. In addition, appropriate receiving facilities must be identified for each of the materials and appropriate truck transportation must be arranged. The materials will then be transported by licensed haulers to permitted facilities.

The make-up of the Phase 1a decommissioning waste stream will be primarily concrete and steel. The reinforced concrete will be trucked to a recycling facility where it will be crushed to extract the steel rebar. The remaining concrete will be crushed into various sizes to be used as future road base or foundation base material. The extracted rebar, structural steel, piping, steel framing and steel racking will be transported to a suitable recycling facility where the owner/operator will be credited for the market value of the recoverable materials since the price fluctuates as demand fluctuates. The recovered asphaltic material from the paved road and assembly area can also be recycled as can any cable installed during Phase 1a.

There is the real potential to be able to dramatically maximize the amount of recoverable/ recyclable material resulting from decommissioning of Phase 1a while minimizing the material sent to a landfill for disposal. This practice can help to offset the cost of the actual decommissioning work. Some of the decommissioning material may be resold to offset some of the cost to decommissioning. Examples include crushed concrete, scrap metal, and wood framing.

7.0 EXISTING SITE CONDITIONS

7.1 Biological Resources

The vegetation communities present on the Project site in the vicinity of Phase 1a improvements 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). The washes support a wash scrub of creosote bush and big galleta grass, with only widely scattered riparian trees. Vegetation communities on the site and plant and biological resources either identified on the site or thought to occur in the vicinity are more fully discussed in PVSI's Application for Certification (AFC) submitted in August 2009 and in the Revised Staff Assessment published in June 2010.

7.2 Water Resources

Surface hydrology within and contiguous to the Project site including Phase 1a work areas is from stormwater runoff originating in unnamed ephemeral washes on 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. The closest major watercourse to the Project areas is the McCoy Wash, a large ephemeral wash that drains to the Colorado River. The McCoy Wash is located outside the Project disturbance area. The emphereral washes that flow eastward from the McCoy Mountains abate into the landscape prior to any surface hydrological connection with the McCoy Wash.

PVSI's AFC submittal and subsequent filings concluded that the ephemeral desert washes within the Project disturbance area, including the Phase 1a portion of the site, are isolated waters, and therefore not waters of the United States under jurisdiction of the US Army Corps of Engineers (USACE). This conclusion was based in part of the observations that the ephemeral washes abate into the landscape with no direct connections to the McCoy Wash or any traditional navigable water bodies. The USACE has concurred with this determination.

The drainages on and adjacent to the site are more fully discussed in PVSI's AFC submitted in August 2009, and as updated in October and November 2009.

8.0 SURFACE MANAGEMENT PLAN

8.1 Erosion and Sediment Control

As part of decommissioning of Phase 1a, areas where Phase 1a improvements are constructed will be provided erosion and sediment controls that reflect Best Management Practices appropriate for the nature of the soils and the erosive forces to which they will be subjected. These practices may include straw bales, silt fences, and placement of gravel and detention structures to control sediment loss, and localized placement of soil cement to protect the banks and side slopes of improved channels. These improvements will be described in detail in the Project's Stormwater Pollution Prevention Plan (SWPPP) and Drainage, Erosion and Sediment Control Plan.

8.2 Post-Demolition Site Stabilization

Upon decommissioning of Phase 1a improvements, areas susceptible to erosion will be stabilized to ensure that surface materials remain in place. These post-demolition actions will be identified in the updated SWPPPs to be provided for CEC and BLM review and approval prior to implementation.

9.0 RECLAMATION PLAN

9.1 Site Conditions

The Project's service life is expected to span at least 30 years. At the end of its useful lifespan, the Project will either be repowered or decommissioned. Repowering may involve replacing the existing parabolic troughs with components that are more efficient, thereby extending the useful lifespan of the Project. Some of the steps involved in decommissioning may also be part of repowering to the extent that the existing structures and foundations are not sufficiently engineered to accommodate the replacement of the solar fields.

The portion of the Facility that has been completed at the end of Phase 1a by mid to late second quarter 2011 represents individual components of Unit #1 and will not be in an operational condition. This Phase 1a Plan only applies to these initial site improvements. The completed Facility will be covered by subsequent Decommissioning Plans.

9.2 Roles and Responsibilities

Decommissioning of Phase 1a improvements will adhere to the requirements of appropriate governing authorities and will be in accordance with applicable Federal, State, and local permits. BLM regulations have the purpose of preventing unnecessary or undue degradation. BLM has not specifically adopted reclamation requirements for utility-scale solar projects. The decommissioning steps described herein are intended to comply with the reclamation standards set forth in Title 43 CFR Subpart 3809. Although Title 43 CFR Subpart 3809 was written for mine

operations, the reclamation provisions are assumed to apply here except for specific future agreements between BLM and PVSI.

Mine closure requirements include these provisions:

(i) Drill-hole plugging (applies only to mine sites);

(ii) Regrading and reshaping;

(iii) Mine reclamation, including information on the feasibility of pit backfilling that details economic, environmental, and safety factors (does not apply to PVSI except as specifically addressed under other items);

(iv) Riparian mitigation (will not apply at closure because channelized drainages will be left in place);

(v) Wildlife habitat rehabilitation (basis and extent to be determined based on future use of the site as determined by BLM upon the end of the Project's lifespan);

(vi) Topsoil handling;

(vii) Revegetation;

(viii) Isolation and control of acid-forming, toxic, or deleterious materials (may apply to certain construction materials);

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

(x) Post-closure management.

9.3 Restoration

Prevention of unnecessary or undue degradation: PVSI will provide agency-approved environmental monitors to oversee decommissioning activities and verify that no additional impacts to sensitive resources ensue.

Regrading and reshaping: The decommissioning process will stabilize soil and drainages and regrade and reshape features as necessary to address conditions that might otherwise represent hazards for future use by others. Any excavations will be backfilled with clean sub-grade material in a manner that precludes hazards and facilitates subsequent use of the Project site.

Title 43 CFR Subpart 3809 requires areas within the Project footprint (except the engineered channels) to be regraded and reshaped to conform to adjacent landforms in a manner that controls drainage, minimizes erosion, and stabilizes the soil.

In light of the expectation BLM has expressed that there will be similar future uses of the Project site when PVSI's lease for the BSPP has expired, PVSI's plans for decommissioning Phase 1a improvements allow for portions of engineered channels that are to be constructed during this period to remain in place and the portion of the Unit #1 solar field and road embankment to

remain at their improved grades. If the site is devoted to a subsequent use, ongoing maintenance of these channels will become the responsibility of the new lessee or ROW holder. The extent of regrading to be undertaken to satisfy 43 CFR Subpart 3809 requirements will be determined in coordination with BLM.

Topsoil handling: Since desert soils have little profile development, the term "topsoil" is defined as the top 2 inches of soil under native vegetation. This layer conserves most of the seeds and beneficial microorganisms. Collecting a deeper layer is not beneficial since it dilutes the seeds and other soil resources with inert material (Scoles-Sciulla and DeFalco 2009). It is important that the topsoil include only material removed from areas of healthy native vegetation. Soil from areas dominated by exotic plants must not be reapplied at the soil surface.

Topsoil from areas planned for revegetation must be salvaged before the initiation of temporary disturbance and stored until revegetation begins. For the purposes of construction activities within the footprint of Phase 1a, revegetation will be limited to areas of temporary disturbance (e.g., the construction power line corridor temporary access roads). The revegetation of these areas will be performed in conformance with the overall Revegetation Plan submitted separately in response to COC BIO-8.

Where practicable, topsoil collection will take place when seeds and microorganisms are in a dormant state. This can be any time that the upper layer is thoroughly dry, typically in May through early July or late September through mid-November. Soil may be collected with equipment that is capable of removing a thin upper layer, such as a bulldozer, front loader, or scraper. The topsoil will be stockpiled in berms to be no more than 4 feet in depth unless the soil is at least 80 percent sand. Sandy soils may be piled in berms up to 6 feet in depth (Abdul-Kareen and McRae 1984; Miller et al. 1985). Material collected with topsoil, including small rocks and organic matter, is desirable and should be reapplied to the site when the soil is returned.

Stockpiles will be protected from compaction. Equipment delivering soil may not repeatedly traverse the lower layers while dropping an upper layer, nor may the berms be used as roads. Stockpiles that are compacted to bulk density greater than 1.6 grams per cubic centimeter will be considered unsuitable for reapplication to the site.

Since a long period of topsoil storage is anticipated, the berms should be planted with native vegetation including annual or short-lived perennial native species from the families *Poaceae* and *Asteraceae*. In addition to the two families mentioned above, the common desert annual *Plantago ovata* (desert Indian wheat) will be planted liberally over the surface of berms. Other species may be inter-planted with those listed in this Plan, and the berms with growing plants may provide seeds for future use in revegetation. Seeds and plants grown on the berms must originate within the immediate vicinity of the Project except as otherwise approved by BLM.

Topsoil taken from areas designated for revegetation will be reapplied to the land surface just prior to imprinting and seeding for revegetation. Topsoil may be carried from the berms to the planting sites by equipment capable of transporting soil without overheating or compacting it. The topsoil should be spread evenly by machinery or hand labor and left on the surface along with any small rocks, sticks, roots, or other organic material.

Revegetation: Seeding of any Phase 1a areas designated for revegetation will take place between November 1 and January 1 of the year in which the activity is to occur (e.g., following temporary disturbance or in the year of decommissioning). If planting cannot be done by January 1, seeding will be delayed until the following year.

The revegetation plant material will consist entirely of seeds. The seed mix is based on Sonoran creosote bush scrub. Washes and stream channels are being directed elsewhere within the Project boundaries, so no attempt will be made to plant desert wash vegetation.

Seeds will be applied to large areas with a land imprinter, a heavy tractor-drawn roller with steel teeth that make a series of depressions in the soil while pressing seeds and mycorrhizal inoculum into firm capillary contact with the soil. This method is effective and economical, and gives particularly good results in areas subject to low rainfall. Native seeds to be imprinted are listed in Table 2.

Table 2 Plant and Seed Rates

Scientific Name	Common Name	Bulk Pounds per Acre
Ambrosia dumosa	burroweed, white bursage	0.5
Bebbia juncea var. *aspera*	sweetbush	0.2
Calycoseris wrightii	white tackstem	0.1
Camissonia boothii ssp. *desertorum*	desert suncup	0.2
Camissonia brevipes ssp. *brevipes*	golden suncup	0.2
Cryptantha angustifolia	narrow leaved cryptantha	0.1
Encelia farinosa	brittlebush, incienso	2
Ephedra sp.	ephedra	0.5
Eriogonum inflatum	desert trumpet	0.2
Eriogonum thomasii	Thomas eriogonum	0.1
Eschscholzia glyptosperma	desert poppy	0.5
Eschscholzia minutiflora	pygmy poppy, Coville's poppy	0.1
Geraea canescens	desert-sunflower	0.5

Scientific Name	Common Name	Bulk Pounds per Acre
Hymenoclea salsola	cheesebush	0.5
Larrea tridentate	creosote bush	1
Lupinus cf. *arizonicus*	Arizona lupine	0.5
Malacothrix glabrata	desert dandelion	0.5
Phacelia crenulata var. *minutiflora*	cleftleaf wild heliotrope	0.2
Plantago ovate	desert Indian wheat, woolly plantain	3
Rafinesquia neomexicana	desert chicory	0.3
Senecio mohavensis	Mojave ragwort, Mohave groundsel	0.5
Senna armata	spiny senna, desert senna	0.5
Sphaeralcea ambigua	desert globemallow, apricot mallow	0.5

Removal or stabilization of buildings, structures, and support facilities: The decommissioning process for improvements installed during Phase 1a will dismantle and remove the aboveground components of equipment and structures, including:

- Equipment;
- Buildings and foundations, including disposal of solid waste off site;
- Road pavement;
- Plugging of wells;
- Fences.

Temporary roads and necessary improvement will be made to mobilize equipment for removing surface improvements associated with the Project in Phase 1a. It is anticipated that this may include removing structures so that nothing is left in the ground above about 3 feet bgs. Removed materials will be resold, recycled, or disposed of at a preapproved landfill site.

10.0 FINANCING OF DECOMMISSIONING AND RESTORATION ACTIVITIES

If required, a mutually agreed upon level and type of security will be established as part of the ROW lease with BLM. PVSI anticipates that both will consider the uncertainty of future uses, while providing a means of ensuring that BLM is satisfied with the decommissioning that may occur during Phase 1a.

10.1 Cost Estimate

PVSI will provide BLM a preliminary estimate of costs to decommission the Phase 1a improvements for which a published cost basis exists. These are the common construction items, such as removal of pavement, removal and break-up of concrete from shallow surface foundations, removal of underground and aboveground piping, removal of electrical conduit, removal of rebar from solar fields, removal of assembly building foundation and framing, and removal of structural and miscellaneous steel framing from the power block. These estimates for decommissioning of Phase 1a improvements will be developed from the RS Means Building Construction Cost Data Book. As the NTP for each phase of the Project is issued, PVSI will update the Plan.

10.2 Financial Assurance

PVSI is committed to providing required adequate security for project decommissioning and reclamation and would like the opportunity to discuss with BLM the most appropriate form and amount of such security.

11.0 REFERENCES

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Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project

Decommissioning Plan

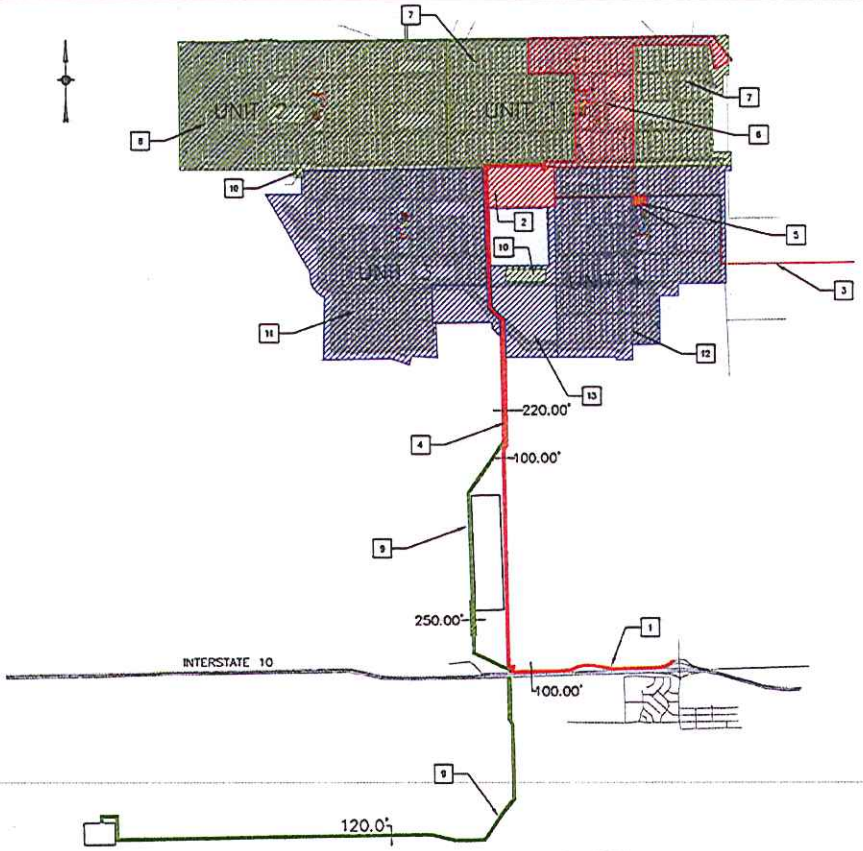
Figure 1
Regional Map

Source: ESRI; AECOM 2010

AECOM

Date: August 2010

Path: P:\2009\09080082 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\BRMDMP\Fig1_BSPP_RegionalLocation.mxd, 08/12/10, SteinB



LEGEND

- PHASE 1A DISTURBANCE
- PHASE 1B DISTURBANCE
- PHASE 2 DISTURBANCE

ITEM	DESCRIPTION	AREA (ACRES)	DURATION (MONTHS)
DISTURBED AREA PHASE 1A			
1	BLACK ROCK ROAD	17.3	APPROXIMATELY 7 MONTHS
2	SHARED FACILITIES	123	
3	CONSTRUCTION POWER	11.7	
4	UTILITIES CORRIDOR	102.4	
5	WATER WELL	3.28	
6	UNIT 1	515	
	SUB TOTAL	772.68 ACRES	
DISTURBED AREA PHASE 1B			
7	REMAINDER OF U. 1	1185	APPROXIMATELY 30 MONTHS
8	UNIT 2	1708	
9	GEN-TIE	115	
10	LAND TREATMENT UNIT	16	
	SUB TOTAL	3024 ACRES	
DISTURBED AREA PHASE 2			
11	UNIT 3	1495	APPROXIMATELY 32 MONTHS
12	UNIT 4	1342.14	
13	CONSTRUCTION AREA	390.68	
	SUB TOTAL	3227.82 ACRES	
TOTAL		7024.5 ACRES	

PLAN VIEW

SCALE: NTS

AECOM

Solar Millennium LLC

JOB NO.

DWG NO. DSPP-200-201

R-4

APPENDIX I

COUCH'S SPADEFOOT TOAD PROTECTION AND MITIGATION PLAN

BLYTHE SOLAR POWER PROJECT
COUCH'S SPADEFOOT TOAD PROTECTION AND MITIGATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

Prepared for:
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October 2010

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1.0 INTRODUCTION

1.1 Purpose of the Plan

The Couch's Spadefoot Toad Mitigation Plan (Plan) describes the actions to be taken to protect resident and/or breeding Couch's spadefoot toad (CST) (*Scaphiopus couchii*), a California Species of Special Concern, which have potential to occur within and in the vicinity of the Blythe Solar Power Project (BSPP, or Project). The purpose of the Plan is to specify an approach that, when implemented, will facilitate avoidance, minimization, and the offset of impacts to CST that may occur within and/or adjacent to the Project Disturbance Area. In addition, the Plan includes the results of recent habitat surveys and includes an assessment of Project impacts. This Plan fulfills the requirements identified in the Condition of Certification (COC) BIO-26 in the BSPP Final Decision issued by the CEC on September 15, 2010. BIO-26 requires additional habitat surveys and impact analyses, avoidance strategies, designation of Management Areas around potential breeding ponds, and protective measures to prevent use of evaporative ponds by CST.

Specific activities for CST protection addressed by this Plan include:

- Habitat surveys focusing on areas that are susceptible to ponding disturbed and/or artificially compacted areas to identify potential CST breeding habitat in relation to Project features.
- Assessment of potential CST impacts resulting from construction activities, changes in breeding habitat due to changes in flow levels and flow patterns to breeding ponds, risk of exposure to elevated selenium and salinity levels in evaporative ponds; and increased risk of predation.
- Avoidance and minimization measures designed to avoid impacts to potential breeding ponds, via protective fencing or other barriers, worker's education, minimizing construction traffic within the vicinity of potential breeding ponds, and biological monitoring.
- Designation of a Management Area around potential breeding ponds that includes an appropriate upland buffer, and a description of measures used to minimize impacts within this buffer.
- Design and operation measures to prevent CST from entering evaporative ponds.

1.2 Project Background

The Project site is located in the southern California inland desert, approximately 8 miles west of the city of Blythe and 2 miles north of Interstate10 (I-10) in Riverside County, California (Figure 1). The Project will be located on a 7,541-acre right-of-way (ROW) owned by the federal government and managed by the U.S. Bureau of Land Management (BLM), pursuant to an ROW

grant issued to PVSI from BLM and the parallel thermal electric power plan certification to be issued by CEC.

The Project is a commercial solar thermal power generating facility. The total Project Disturbance Area (the Project facilities footprint plus additional areas that will be disturbed by construction and operation) will be 7,025 acres. The Project will have a nominal output of 1,000 megawatts (MW) consisting of four independent 250-MW power plants (Units #1, #2, #3, and #4). The units will be developed in phases, with construction scheduled to begin in late 2010 on Unit #1; that unit will come on line in mid-2013, and subsequent units will come on line in each of the following 3 years.

Each of the four units will have its own solar field using parabolic trough technology that involves rows of parabolic mirrors with piping containing a heat transfer fluid (HTF) at the focal point of the parabola. Each unit will have its own power block, centrally located within the solar field. Each power block will have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, air-cooled condenser (dry cooling tower), and ancillary equipment (e.g., water treatment system and emergency generators). Each power block will have two 4-acre evaporation ponds to manage the cooling tower blowdown stream (a portion of the continuously circulated cooling water discarded to prevent the excessive buildup of salts). Two Land Treatment Units (one 12-acre and one 4-acre) will be used to bioremediate or land farm soil contaminated by release of HTF. Each unit will have a natural gas-fired auxiliary boiler; natural gas will be supplied by a new 10-mile (2 miles off site) pipeline connecting to an existing Southern California Gas main located south of I-10. Water for the Project will be supplied from on site wells.

The Project will require a new double-circuit 230-kilovolt transmission line to interconnect Project electrical output with the Southern California Edison (SCE) regional system. Transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) will be located along an 8-mile transmission line corridor that extends south from the Project site to a point south of I-10 and then turns west. The transmission line will be connected to the planned Colorado River Substation, which will be developed by SCE as part of upgrading its transmission network to support integration of renewable energy projects. Development of the substation will be the responsibility of SCE.

Access to the Project site will be via a new road heading north from the existing frontage road that parallels I-10. Only a small portion of the overall facility footprint will be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields will be compacted earth but will remain unpaved and without a gravel surface to prevent mirror damage. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. The perimeter of the Project site will be secured with chain-link metal-fabric security fencing and controlled-access gates.

1.3 Project Phasing

Project construction will occur in phases that follow development of the solar units, beginning with Unit #1 in the northeast quadrant of the Project site. Construction of Unit #1 will be further subdivided into Phases 1a and 1b to facilitate development beginning in Fall of 2010 through the first half of 2011.

Phase 1a will consist of two types of construction areas, which are (1) linear facilities, including the access road, gas line, and communication lines and (2) nonlinear facilities to include a staging/laydown area, the Unit #1 power block, and a portion of the Unit #1 solar field. The total disturbance area proposed for Phase 1a is less than 10 percent of the total area for the Project and constitutes those critical Project areas that need to be constructed in 2010 and early 2011.

Phase 1b will include remaining portions of Unit #1 as well as Unit #2 and the gen-tie line. Phase 2 will include all of Units #3 and #4.

Descriptions of the facilities to be constructed during the remaining phases of the Project, as well as the related acreages for each phase are summarized in Table 1.

Table 1 Forecasted Construction Phasing Summary

Phase	Area of Site	Total Area (acres)
Phase 1A	Black Rock Road, Shared Facilities, Construction Power, Utilities Corridor including the main access road, Water Wells and initial portion of Unit #1	772.68
Phase 1B	Remainder of Unit #1, Unit #2 and Gen-tie line	3,024
Phase 2	Unit #3 and Unit #4	3,227.82
	Total	**7,024.5**

1.4 Definitions

The following terms will be used throughout this report:

- Project Biological Resources Survey Area (BRSA): The Project BRSA includes the Project Disturbance Area and all associated buffers.
- Project Disturbance Area: Includes the area of anticipated ground disturbance associated with implementation of the Project. This includes the entire Project footprint (area within solar plant site perimeter security fence [i.e., chain-link] including solar fields, power

block, on-site transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields) and area outside the perimeter security fence (i.e., chain-link) including transmission and utility corridors, rerouted drainage channels, and additional areas requiring disturbance during construction.

1.5 Roles and Responsibilities

PVSI is ultimately responsible for implementing this CST plan. It is anticipated that PVSI contractors and other parties responsible for implementing components of this CST plan will include the following:

Contractor(s): Contractual language will be included in construction documents and ongoing maintenance contracts to verify that all contractors, subcontractors, vendors, maintenance personnel, and other parties performing either construction or ongoing maintenance or repairs at the site abide by and implement the provisions of this CST plan as it relates to their work. Implementing the construction provisions of this CST plan will be a part of construction contracts. Landscape contractors and other specialists will implement specific provisions of this CST plan either as subcontractors to the general construction contractor or through independent contracts with PVSI.

EPC Contractor Construction Manager: The Engineering, Procurement, and Construction (EPC) Contractor Construction Manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this CST plan.

Environmental Compliance Manager: PVSI will designate an Environmental Compliance Manager (ECM) to provide oversight of construction practices and verify compliance with the provisions of this CST plan. The ECM and any support staff will be either direct employees or contracted by PVSI, and will coordinate with the EPC Contractor Construction Manager to verify contractor compliance with environmental requirements for construction.

California Energy Commission: The CEC has provided guidelines and COCs for the Project. The CEC, acting through the Compliance Project Manager (CPM), will determine whether the CST plan and activities performed under the CST plan have been satisfied.

Designated Biologist: PVSI will assign a Designated Biologist (DB) to the Project. A resume of the proposed DB, along with the required three references and contact information, will be submitted to the CEC CPM for approval in consultation with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). The DB will have the following background and training:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and 3 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; and

- At least 1 year of field experience with biological resources found in or near the Project area.

In lieu of the above requirements, the resume will demonstrate to the satisfaction of the CPM, in consultation with CDFG and USFWS, that the proposed DB has the appropriate training and background to effectively implement the WMP. PVSI will ensure that the DB performs the activities specified in the CST plan.

PVSI will also designate an alternate biologist with the same qualifications as the DB, outlined above.

Biological Monitor: PVSI will designate a Biological Monitor(s) to provide oversight of CST Management Area monitoring and to ensure compliance with the provisions of this CST plan. The Biological Monitor will be contracted by PVSI and must be knowledgeable about the Project, CST plan obligations, and the ecology of CST.

1.6 Habitat Survey Methods

Surveys for potential CST breeding habitat were conducted concurrently with 2010 desert tortoise surveys March and April, followed by two additional surveys in July 2010 (Table 2). Surveys focused on identification and mapping of potentially ponded areas that may provide breeding habitat for the species. Particular attention was given to man-made features and disturbed areas (i.e., roads and roadsides) that were more likely to be characterized by depressions with compacted soils. Surveys were conducted within the Project Disturbance Area plus a 300-foot buffer (Figure 2). Ponded areas, or areas with evidence of ponding, and with potential to support CST breeding were mapped using a handheld Global Positioning System (GPS) unit. Potential for ponding, in areas that were dry at the time of the survey, was determined by looking for evidence of the past presence of water via cracked soil, driftlines, or rings in the soil. These potential ponding areas were examined for width and depth, soil type, and relationship to surrounding hydrology. CST breeding requires temporary pools holding water a minimum of 9 days, to allow for hatching and metamorphosis of young. Potential ponds mapped and reported herein were assumed to have the ability to hold water for a minimum of 9 days during the breeding season (May–September) which coincides with warm monsoonal rain events.

1.7 Survey Results

The Project Disturbance Area and 300-foot buffer are composed of Sonoran creosote bush scrub, desert dry wash woodland, or unvegetated ephemeral dry wash habitat, with desert pavement and cobble terraces in between. Disturbed/developed areas where natural vegetation has been removed, such as Black Hawk Road, are also present within the Project Disturbance Area.

Vegetation within the desert dry wash woodland is composed primarily of creosote (*Larrea tridentata*), ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), and native annual grasses, while the desert scrub is predominantly vegetated with creosote. Suitable CST habitat typically consists of grassland, prairie, creosote bush, and thorn forests characterized by substrates suitable for burrowing below ground during dry periods and by temporary pools and desert washes that pond water for suitable amounts of time during warm summer rains (monsoons) (Stebbins 2003). CST have expanded their range into agricultural areas in drier parts of the southwest such as California, taking advantage of artificial impoundments for breeding. The majority of the CST breeding records in southeast California are from agricultural areas and artificial impoundments.

The locations of potential ponded areas within the survey area are shown in Figure 2. Detailed survey results are provided in Table 2. Approximately 10 temporary pools, or potentially ponded areas, were identified on site or within 300 feet of the site with potential to support CST breeding. One pool within a drainage channel was ruled out due to lack of evidence of sustained ponding and is not included below. A few potential pools were found within existing desert washes. The largest potential ponded areas were found alongside roads and in soils that had been disturbed and compacted by human activities. Areas along the gravel frontage road parallel to I-10 represent the largest acreage of potential ponds (Table 2). The area of potential ponds found within the study area totals approximately 1.33 acres.

Table 2 2010 CST Potential Breeding Habitat Survey Results

Pool	Survey Date	Sq. Ft.	Acres	Related Project Feature
Pool 1	July 8, 2010	30	0.001	Solar Unit #2
Pool 2	July 9, 2010	121	0.003	Solar Unit #1
Pool 3	July 9, 2010	126	0.003	Solar Unit #3
Pool 4	April 22, 2010	524	0.012	Utilities Corridor
Pool 5	April 22, 2010	207	0.005	Utilities Corridor
Pool 6	April 12, 2010	529	0.012	Gen-Tie
Pool 7	April 7, 2010	28,591	0.656	Black Rock Road Improvements
Pool 8	April 7, 2010	27,264	0.626	Black Rock Road Improvements
Pool 9	April 7, 2010	600	0.014	Black Rock Road Improvements
Pool 10	April 7, 2010	50	0.001	Black Rock Road Improvements

2.0 PROJECT IMPACTS AND AVOIDANCE AND MINIMIZATION MEASURES

This section discusses the specific ponds within the Project Disturbance Area that will be permanently impacted by the Project and those within 300 feet that can be avoided with implementation of minimization measures. Avoidance and minimization measures designed to protect these ponds are also described.

2.1 Impact Assessment

2.1.1 Impacted Pools – 1.3 acres

The location of each pool in relation to Project features and phases is shown in Figure 2 (see insets). Three pools (pools 1, 2, and 3) will be directly and permanently impacted with grading and construction of the plant site (Solar Units 1, 2, and 3). Improvements to Black Rock Road will directly and permanently impact one pool (pool 10) in its entirety and portions of three additional pools (7 through 9). The adjacent portions of these pools may be indirectly affected temporarily or permanently by construction activities and/or the improved road, which may truncate the pool and alter drainage and/or ponding patterns. Impacts to the area of direct and indirectly affected pools will be mitigated via compensatory habitat mitigation options as described in Section 3.0

2.1.2 Avoided/Potentially Avoided Pools – 0.03 acre

Three pools located adjacent or within the transmission line corridors may be avoided by construction activities and permanent Project features. One pool lies on the margin just outside the limits of disturbance identified for the gen-tie south of I-10 (pool 6) while the other two (pools 4 and 5) are located within the Phase 1a utility corridor disturbance limits north of I-10. Although these pools are located within the utility corridor, they may not lie within the final disturbance area needed for utility and maintenance road installation and avoidance may be possible. Adequate upland refugia and dispersal habitat will be maintained around these pools with Project implementation as the gen-tie and utility corridors require only a small footprint and are not impermeable barriers to dispersal. Natural vegetation will remain on either side of the 150-foot-wide corridors, which will consist of intermittent transmission pole pads and associated maintenance roads that can be traversed by toads.

Avoidance measures outlined below will be implemented to protect these pools during installation of transmission lines. If avoidance of these pools becomes infeasible during construction or they are inadvertently impacted, compensatory mitigation requirements will be applied to these impacts as described in Section 3.0.

Construction noise, increased vehicle traffic and human presence during construction and operation that may attract predators has potential to disturb CST if they occur underground or disperse through upland habitats adjacent to avoided pools or indirectly affected pools. Minimization measures to reduce these potential impacts during construction and operation are outlined below. It is expected that desert tortoise fencing installed around construction areas and

the permanent plant site will deter CST from accessing active construction areas and evaporative ponds postconstruction. If DT fencing does not entirely exclude CST, evaporative ponds are a potential attractive nuisance to breeding as selenium levels may be too high for survival of eggs and larvae. However, CST are not expected to access evaporative ponds with implementation of several design measures. Evaporative ponds will be constructed within the power blocks a minimum of ¼ mile from the nearest potential CST upland habitat adjacent to the site. As part of construction, all vegetation and rodent burrows will be removed during clearing, grubbing, and grading. Solar fields will be unpaved but the soil within the entire plant site will be densely compacted. Soil and water stabilizers will be used to reduce dust deposition on the collectors and minimize soil erosion. Therefore, conditions will not be hospitable to small burrowing mammals, and the creation of potential burrows that could be used by CST between the site boundary and evaporative ponds is extremely unlikley. A three foot tall compacted berm will be constructed around the evaporative ponds, serving as a visual barrier. Netting will be placed over evaporative ponds in compliance with COC BIO-25 to deter wildlife access, including CST. Minimization measures outlined below will maintain these conditions and reduce the potential for CST to access evaporative ponds during operation.

2.2 Avoidance and Minimization Measures

Avoidance measures that will be implemented to minimize the potential for construction and operational impacts on the pools within 300 feet of the Project Disturbance Area and CST that may occur on adjacent lands are outlined below. These measures are consistent with BIO-6, BIO-8, and BIO-26 of the BSPP CEC Settled Conditions.

2.2.1 Preconstruction Phase:

- Establish CST Management Area. Highly visible exclusion fencing and signage will be installed around potential breeding pools to be avoided (pool 6 and possibly pools 4 and 5; Figure 2) and will include a minimum 10-foot buffer of surrounding vegetation. This will be considered a CST Management Area and protective fencing will be inspected and maintained as necessary by the ECM or DB to exclude construction traffic and personnel. Construction personnel will be instructed to stay out of the CST Management Area.

- Worker Environmental Awareness Program (WEAP). Worker education training will be conducted for all onsite personnel prior to the onset of construction. Training will include CST identification, habitat description, limits of construction activities in the Project area, and guidance regarding general measures being implemented to conserve CST as they relate to the Project. The potential CST pools to be avoided will be discussed and a map of these areas provided. Photos of CST will also be provided as part of the WEAP.

- Limit Disturbance Areas. The boundaries of areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) will be delineated with

stakes and flagging prior to construction activities in consultation with the DB. Spoils and topsoil will be stockpiled in disturbed areas lacking native vegetation and that do not provide habitat for special-status species. Parking areas, staging, and disposal site locations will similarly be located in areas without native vegetation or special-status species habitat. All disturbances, and Project vehicles and equipment will be confined to the flagged areas.

- Monitor Ground-Disturbing Activities Prior to Preconstruction Site Mobilization. If preconstruction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a DB or Biological Monitor will be present to monitor any actions that could disturb soil, vegetation, or wildlife.

2.2.2 Construction Phase

- Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements will not extend beyond the flagged impact area as described above. 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 will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

- Minimize Traffic Impacts. Vehicular traffic during Project construction will be confined to existing routes of travel to and from the Project site, and cross-country vehicle and equipment use outside designated work areas will be prohibited. The speed limit will not exceed 25 miles per hour within the Project area, on maintenance roads for linear facilities, or on access roads to the Project site.

- Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing and cleared, the DB will be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife. The DB or Biological Monitor will walk immediately ahead of equipment during brushing and grading activities.

- Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the plant site will 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 will be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources such as the CST Management Area.

- Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces will be nontoxic to wildlife and plants.

- Minimize Lighting Impacts. Facility lighting will be designed, installed, and maintained to prevent side casting of light toward wildlife habitat.

- Minimize Noise Impacts A continuous low-pressure technique will be used for steam blows, to the extent possible, to reduce noise levels in sensitive habitat proximate to the BSPP.

- Avoid Vehicle Impacts to CST. Parking and storage will occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area will be moved prior to an inspection of the ground beneath the vehicle for the presence of CST. If a CST is observed, it would be left to move on its own. If it does not move within 15 minutes, a DB or Biological Monitor under the DB's direct supervision may remove and relocate the animal to a safe location.

- Avoid Wildlife Pitfalls --

  Backfill Trenches. At the end of each workday, the DB will 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 will 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 will be inspected periodically throughout the day, at the end of each workday, and at the beginning of each workday by the DB or a Biological Monitor. Should wildlife become trapped, the DB or Biological Monitor will remove and relocate the individual as appropriate. Any wildlife encountered during the course of construction will be allowed to leave the construction area unharmed.

- Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement will use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract CST and common ravens to construction sites. A Biological Monitor will patrol these areas to ensure water does not puddle and will take appropriate action to reduce water application where necessary.

- Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on roads near the Project area will be picked up immediately and delivered to the Biological

Monitor. For special-status species roadkill, the Biological Monitor will contact CDFG and USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor will report the special-status species record as described in BIO-11.

- Minimize Spills of Hazardous Materials. All vehicles and equipment will 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 DB will be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills will be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment will take place only at a designated area. Service/maintenance vehicles will carry a bucket and pads to absorb leaks or spills.

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

- Implement Erosion Control Measures. Standard erosion control measures will be implemented for all phases of construction where sediment runoff from exposed slopes threatens to enter a CST Management Area. Sediment and other flow-restricting materials will be moved to a location where they will not be washed back into the pool. All disturbed soils and roads within the Project site will be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage will be stabilized to reduce erosion potential.

- Implement Revegetation Plan for Temporarily Disturbed Areas. PVSI will 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 locations for linear facilities, temporary access roads, berms, areas surrounding the drainage diffusers, construction work temporary laydown areas, and construction equipment staging areas.

2.2.3 Operations Phase

- Minimize Traffic Impacts. Vehicular traffic during Project operation will be confined to existing routes of travel to and from the Project site, and cross-country vehicle and

equipment use outside designated work areas will be prohibited. The speed limit will not exceed 25 miles per hour within the Project area, on maintenance roads for linear facilities, or on access roads to the Project site.

- Implement Erosion Control Measures. Standard erosion control measures will be implemented for all phases of operation where sediment runoff from exposed slopes threatens to enter a CST Management Area. Sediment and other flow-restricting materials will be moved to a location where they will not be washed back into the pool. All disturbed soils and roads within the Project site will be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage will be stabilized to reduce erosion potential.

- Prevent Establishment of Potential Upland Habitat. Regular removal of any weeds or other vegetation will occur as a normal maintenance practice within the entire plant site to prevent establishment of potential upland habitat for CST in the vicinity of evaporative ponds. The DB will evaluate and confirm the absence of rodent activity and burrow creation during the pond monitoring described below. If burrowing rodent activity develops within the plant site it will be reported to the CPM to evaluate measures to eliminate and prevent creation of burrows on the site.

- Maintain and Monitor Evaporative Ponds and Netting . Pond netting will be maintained and repaired as needed during operations. Evaporative ponds and the integrity of netting will be monitored by the DB as required and described in COC BIO-25. Monitoring surveys will be conducted monthly for 1 year, quarterly for the following 3 years, and then twice per year if performance standards are met. Surveys will include documentation of any wildlife use, including CST. If CST are found using the ponds the CPM and CDFG will be notified and additional measures to prevent access developed. Other adaptive management measures will be implemented as needed.

3.0 COMPENSATORY MITIGATION

For unavoidable direct and indirect impacts to approximately 1.3 acres of potential CST breeding habitat, a comprehensive habitat mitigation plan will be prepared as a separate document and will specify details regarding habitats to be preserved and/or created to compensate for Project impacts. Compensatory mitigation will be achieved via one of two options: creation of additional breeding habitats (ephemeral pond) at least equal in area to the acreage of ponds being impacted; or the purchase of mitigation land that has the potential for ponding that is equal to or greater than the ponds identified as potential CST breeding ponds within the Project Disturbance Area. The criteria are outlined below for both options.

3.1 Pond Creation Criteria and Monitoring

If ponds are to be created, the created ponds will be capable of holding water for at least 9 days during the CST breeding season. The created ponds will be monitored and managed to verify fulfillment of this performance standard by site visits at the pond following summer rainfall events as described below. If the created ponds fail to achieve this standard, remedial action will be implemented (for example, by compacting the soil in the pond to increase water-holding capacity). Surveys and monitoring may be terminated upon satisfactory demonstration of this performance standard, and with approval of the CPM.

During the breeding season (May through September), surveys for CST will be conducted within created ponds following rain events. These surveys will be conducted within 3 to 5 days of the rain event to maximize the potential for observations of breeding CST within the ponds. Surveys will consist of an evaluation of the condition of the pond area, including size and water depth, and should be scanned for the presence of eggs, or larval CST. As CST is primarily a nocturnal species, and is only found above ground for a limited amount of time during the monsoon season, nighttime surveys for CST adults should be conducted at all potential breeding ponds to assess use.

3.2 Mitigation Land Criteria

If PVSI chooses to mitigate in whole or in part by purchasing habitat:

i. The applicant will purchase habitats in fee title or easement within the known range of the Couch's spadefoot toad. The habitat will 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 9 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 PVSI for other mitigation (e.g., desert tortoise habitat within Northern and Eastern Colorado Desert Coordinated Management) and will:

    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.

4.0 REPORTING

If compensatory mitigation will occur through the creation of ponds, no less than 90 days prior to operation of the Project, the Project owner will provide to the Compliance Project Manager (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 31 of every year following initiation of operation of the Project, the Project owner will submit reports to the CPM documenting the capacity of the created ponds to hold water for at least 9 days during the CST breeding season. If ponds fail to hold water as described above, the Project owner will 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 will provide the CPM and CDFG with an approved form of security and the calculation of such security in accordance with BIO-26 and BIO-12 no later than 30 days prior to beginning Project ground-disturbing activities. Actual security will 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, will 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 will submit a formal acquisition proposal to the CPM, CDFG, and USFWS describing the parcels intended for purchase.

The Project owner, or an approved third party, will provide the CPM, CDFG 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 will review and approve the management plan, in consultation with CDFG.

The Project owner will provide written verification to the CPM and CDFG 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.

5.0 REFERENCES

California Energy Commission (CEC). 2010. *Blythe Solar Power Project Presiding Member's Proposed Decision.* August.

Stebbins, R. 2003. A Field Guide to Western Reptiles and Amphibians. 3rd Edition.

FIGURES

Map Location

1 inch = 40 miles

0 40 80 Miles

Blythe Solar Power Project
Couch's Spadefoot Toad Protection and Mitigation Plan

Figure 1
Regional Map

Source: ESRI; AECOM 2010

Solar Millennium

AECOM

Date: August 2010

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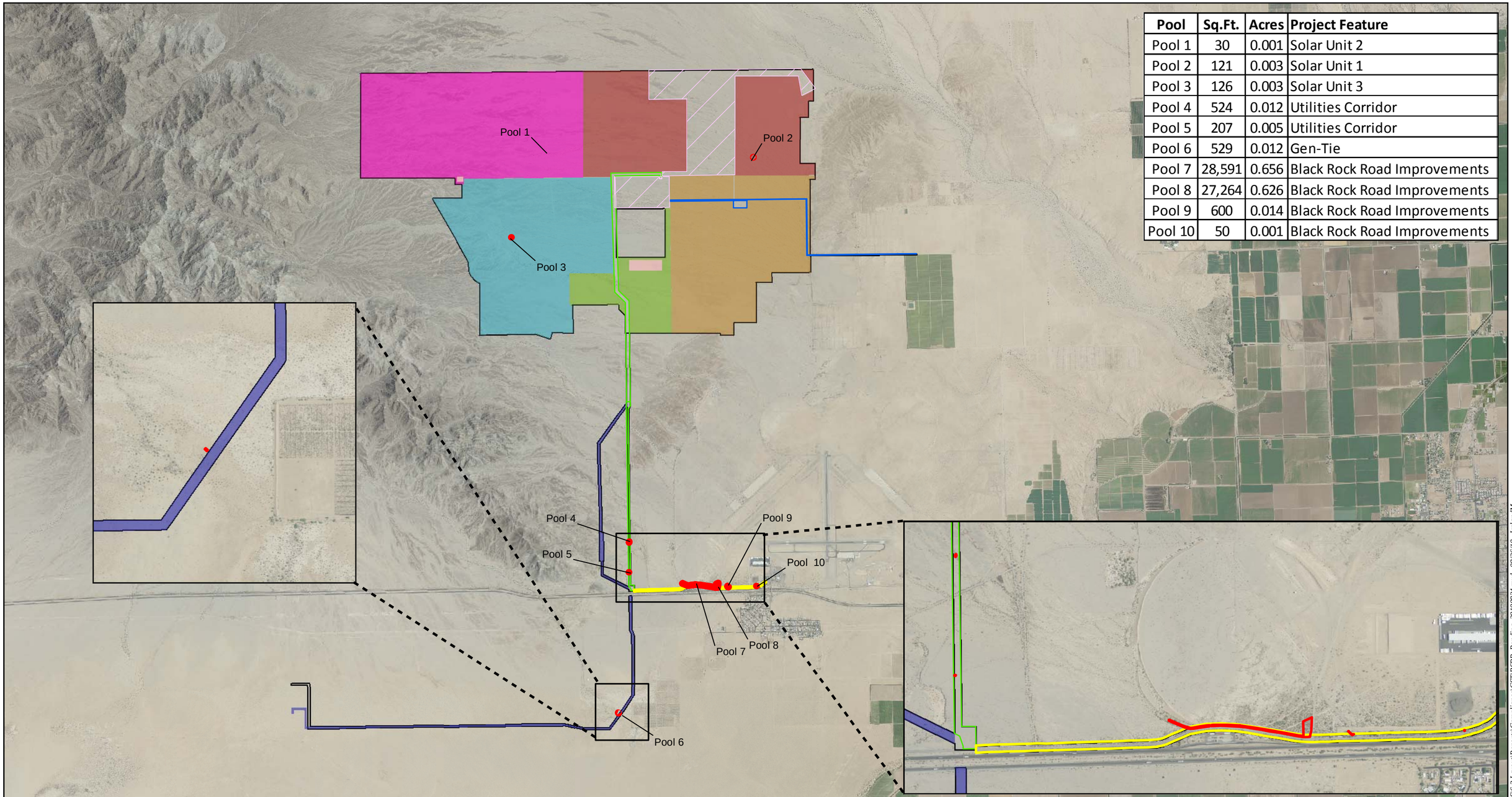
Pool	Sq.Ft.	Acres	Project Feature
Pool 1	30	0.001	Solar Unit 2
Pool 2	121	0.003	Solar Unit 1
Pool 3	126	0.003	Solar Unit 3
Pool 4	524	0.012	Utilities Corridor
Pool 5	207	0.005	Utilities Corridor
Pool 6	529	0.012	Gen-Tie
Pool 7	28,591	0.656	Black Rock Road Improvements
Pool 8	27,264	0.626	Black Rock Road Improvements
Pool 9	600	0.014	Black Rock Road Improvements
Pool 10	50	0.001	Black Rock Road Improvements



Map Location

Legend

- Project Disturbance Area
- Potential Ponding Areas (1.3 acres)

Phase 1a Disturbance Area
- Black Rock Road Improvements
- Construction Power Line
- Facility Construction
- Utilities Corridor

Phase 1b Disturbance Area
- Gen-Tie
- Land Treatment Unit
- Solar Unit 1
- Solar Unit 2

Phase 2 Disturbance Area
- Construction Area
- Solar Unit 3
- Solar Unit 4

Source: NAIP 2009; AECOM 2010

N W E S

1 in = 1 mile

0 1 2 Miles

Blythe Solar Power Project
Couch's Spadefoot Toad Protection and Mitigation Plan

Figure 2
Potential Ponding Areas

AECOM

Date: August 2010

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APPENDIX J

USFWS BIOLOGICAL OPINION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-ERIV-09B0186-10F0880

OCT 0 8 2010

MEMORANDUM

To: Field Manager, Bureau of Land Management, Palm Springs South Coast Field Office, Palm Springs, California

From: Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

Subject: Section 7 Biological Opinion on the Blythe Solar Power Plant, Riverside County, California

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the construction, operation, and maintenance of the proposed Blythe Solar Power Plant project (project or BSPP), located in Riverside County, California, and its effects on the threatened desert tortoise (*Gopherus agassizii*, "tortoise") in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). Your request for formal consultation, dated July 16, 2010, was received on July 27, 2010. Because the proposed project is not in designated critical habitat for the tortoise, critical habitat will not be adversely affected.

This biological opinion is based on information provided in the following documents and communications: (1) the Bureau of Land Management/California Energy Commission's (BLM/CEC) joint *Staff Assessment and Draft Environmental Impact Statement, Blythe Solar Power Project* (BLM and CEC 2010), (2) the BLM's *Plan Amendment/Final Environmental Impact Statement for the Blythe Solar Power Project* (BLM 2010), (3) the CEC's *Blythe Solar Power Project Revised Staff Assessment* (CEC 2010a); (4) the *Blythe Solar Power Project Revised Draft Biological Assessment* (AECOM 2010a); (5) the CEC's Blythe Solar Power Project Commission Decision (CEC 2010b), (6) pre-project desert tortoise survey reports (AECOM 2010b, 2010c), (7) final and draft revised desert tortoise recovery plans (Service 1994a, 2008), (8) supplemental materials provided during the consultation process, (9) electronic transmissions from BLM and Palo Verde Solar (applicant, formerly Solar Millennium), and (10) pertinent literature contained in our files. The project file for this consultation is located at the Carlsbad Fish and Wildlife Office (CFWO).

CONSULTATION HISTORY

The Service received an updated Plan of Development for the project from the applicant on December 24, 2008, and began early consultation on this project by participating in a conference call with the applicant, BLM, CEC, and California Department of Fish and Game (CDFG) in

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February 2009. Between February 2009 and August 2010, the Service, BLM, CEC, CDFG, and/or the applicant participated in numerous meetings and conference calls regarding this project, including participating in CEC public workshops and the CEC evidentiary hearing on July 15, 2010. The Service coordinated early with BLM, CEC, and CDFG on the development of measures in the CEC/BLM/draft Environmental Impact Statement (EIS) to avoid, minimize, and offset impacts to the desert tortoise, and we conducted several visits to the project site with these agencies.

In preparing this biological opinion, we provided a draft project description to the BLM and applicant on August 19, 2010, and September 28, 2010, and a draft biological opinion was provided to the BLM on September 29, 2010. All comments received from the BLM and applicant were incorporated into this biological opinion, as appropriate.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the BLM's issuance of a right-of-way (ROW) grant that would authorize construction, operation, maintenance, and decommission of a commercial solar power-generating facility on approximately 3,804 hectares (ha) [9,400 acres (ac)] of BLM-managed lands. The proposed project is located in Riverside County, California, approximately 13 kilometers (km) [8 miles (mi)] northwest of Blythe and approximately 3 km (2 mi) north of the Interstate 10 (I-10) corridor (Figure 1). Project components generally include construction, operation, and maintenance of the solar power plant site and support facilities, an access road/utility corridor, and a gen-tie transmission line. The proposed project will disturb an estimated total of 2,843 ha (7,025 ac) of which approximately 2,816 ha (6,958 ac) is desert tortoise habitat (Table 1). Any non-emergency expansion of construction, operation, or maintenance activities into areas outside of the areas considered in this biological opinion will require BLM approval and tortoise clearance surveys, and may require reinitiation of consultation with the Service.

Construction

The project includes construction of a 1,000-megawatt (MW) commercial solar thermal power-generating facility that will use solar parabolic trough technology to generate electricity. Arrays of parabolic mirrors will collect heat from the sun to then warm the heat transfer fluid (HTF) in the solar field piping. Through a series of heat exchangers, heat will be released to generate high pressure steam that will then be fed to a steam turbine generator to generate electricity. See CEC (2010a) and AECOM (2010a) for a detailed project description.

<u>Solar Power Plant and Support Facilities</u>

The solar power plant site (plant site) will consist of four independent 250-MW power units (Units 1 to 4; Figure 2). Each unit will have its own solar field, composed of piping loops arranged in parallel groups, and its own power block, centrally located within the solar field.

Each unit will also have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, an air-cooled condenser for cooling, transmission lines and related electrical system, support equipment, including water treatment system, emergency generators, and two 2-ha (4-ac) evaporation ponds. The plant site will also include office and warehouse/maintenance buildings, concrete batch plant, enclosed water storage tanks, fuel depot, assembly hall, parking areas, and equipment/materials laydown areas. Only a portion of the plant site will be paved, including the service roads to the power units and 2 ha (6 ac) of each of the 7-ha (18-ac) power units. The remainder will remain unpaved and without a gravel surface to prevent rock damage to mirrors from vehicle traffic.

Up to 10 groundwater wells will be drilled within the plant site to supply water for facility construction, operation, and maintenance. Total water consumption for the facility is estimated at approximately 74 ha-m (600 ac-feet) per year. Because the BSPP project will use dry cooling, the primary water uses will be solar mirror washing, feed water makeup, fire water supply, onsite domestic use, and cooling water for auxiliary equipment heat rejection (auxiliary cooling tower and auxiliary boiler). Sanitary wastewater will be collected for treatment in septic tanks and disposed of via leach fields.

The entire plant site, including support facilities, will be secured with a combination of chain link and wind fencing. Chain-link metal fabric security fencing will consist of 2-meter (m) [8-foot (ft)] tall fencing with 0.3 m (1 ft) barbed wire or razor wire on top. Desert tortoise exclusion fencing will also be installed along the outside of the entire perimeter security fence. Controlled access gates will be located at the site entrance. Wind fencing, consisting of 9-m (30-ft) tall A-frames and wire mesh, will be installed along the east and/or west sides of each solar field.

Construction power will be provided by a temporary power line constructed from the Southern California Edison's (SCE) 12.47-kilovolt (kV) distribution line one mile east of the plant site, near Blythe, to the plant site (Figure 2). The power line will either be a buried or overhead line (on monopoles) and will require construction of a new dirt access road along the power line alignment.

The development of the plant site will also include channelizing and rerouting storm flows along the project perimeter into five 46-m (150-ft) wide channels along the north, southeast, south, and west boundaries, and through the center of the site (Figure 2). Flows will be returned to their sheet flow regime east and southeast of the project footprint. These rerouted channels will intercept flows prior to their entry to the site and convey them in realigned channels to approximately the same locations where they exit the site under existing conditions. Outlets for each channel will end in fan diffusers that will return the water to existing down-gradient locations over a wider area by converting concentrated flows to overland flow. Fan diffusers use soil cement weirs to spread the drainage water over an ever-increasing flow surface as water moves downstream from the throat of the diffuser to the face of the diffuser. The intent of the diffusers is to modify the height of water as it moves downstream, so that when the drainage water leaves the diffuser it is closely representative of the predevelopment condition. Scour protection will consist of soil cement made with native material and native soils to the extent

practicable, and will be placed on the channel sides and bottoms in stress areas such as curves and slope transitions. No scour protection is proposed for the channel bottom in the straight sections of the channels. This is to allow the low flows to meander across the bottom, replicating as nearly as possible the flow regimes under current conditions. Channels would also collect onsite storm water flows and direct them offsite to the east and southeast. All of the rerouted drainage channels, except the central channels, will be located along the outer side of the perimeter security fence. Because of the installation of the perimeter security fence, the inlets and outlets of the central drainage channels traversing the plant site will not be fenced. Instead, a tortoise-proof fence, or similar structure sufficient to exclude desert tortoises, will be installed across the central channels at the location of the security fence to prevent tortoises from entering the plant site.

Access Roads/Utility Corridor

Access to the plant site will be on a new, 8-km (5-mi) paved road heading north from the existing Black Rock Road (Figure 2). A portion of Black Rock Road will be paved from Airport/Mesa Drive exit (off I-10) to the new turn-off for the plant access road. The new access road will also be used as a utility corridor that will include buried lines (telecommunications and natural gas) and a portion of the gen-tie transmission line. The new gas pipeline will connect to an existing Southern California Gas Company main pipeline south of I-10. Voice and data communications would be provided by a new twisted pair telecommunications cable. The routing for this cable will end at the existing infrastructure near Mesa Drive. In addition, the project has two other telecommunication lines required by the California Independent System Operators (CAISO) to provide operational data to the Colorado River Substation. The primary transmission-related telecommunication line will be strung overhead along the same poles as the 230-kV gen tie line to the Colorado River Substation. A redundant transmission-related telecommunications line will be a buried cable similar to the telecommunications cable for the project. Routing for both buried telecommunications cables will be adjacent to the site access road for the portion north of I-10. The redundant telecommunications line continues south of I-10 to the Colorado River Substation following the route of the gen-tie line, while the project telecommunications cable follows Black Rock Road to Mesa Drive. Laydown and staging of equipment and materials needed for construction of the access road/utility corridor will be located within the plant site or within the impact area associated with the access road/utility corridor.

Gen-tie Transmission Line

A new approximately 17-km (11-mi) 230-kV double-circuit, monopole gen-tie transmission line will be also be constructed as part of the project (Figure 2). To address Riverside County Airport Land Use Commission concerns, a portion of the gen-tie line will be outside of but parallel to the access road/utility corridor. A 396-m (1,300-ft) section of line perpendicular to Blythe Airport Runway 8-26 (oriented east-west) will be supported by 21-m (70-ft) H-Frame single circuit structures. A new unpaved access road will be constructed for the portion of the line that lies west of the access road/utility corridor. Laydown and staging of equipment and materials needed

for construction of the transmission line will be located within the plant site or within the impact area associated with the gen-tie line or access road/utility corridor. Pulling and splicing sites for the transmission line will also serve as laydown areas for small amounts of material (e.g., wire).

The transmission line will extend south from the plant site primarily along the access road/utility corridor to a point south of I-10, and then turn west to connect to SCE's planned Colorado River Switchyard (CRS) substation. BLM and SCE are currently undergoing section 7 consultation with the Service on the CRS substation as part of the Devers to Palo Verde No. 2 Transmission Line (DPV2) project. Therefore, the CRS substation is not part of the project description for the BSPP project. The substation is planned in the area immediately west of the end of the gen-tie transmission line (Figure 2).

Project construction is scheduled to begin in late 2010 on the first unit and continue for a total of 69 months. Project construction will require an average of about 600 employees, peaking at approximately 1,000 workers in month 16 of construction. Commercial operation of the first completed Unit 1 is anticipated to begin in mid-2013, with subsequent units coming online in 6- to 12-month intervals.

Construction Phasing

Project construction will occur in 3 phases, Phases 1a, 1b, and 2 (Figure 2), generally following development of the solar units, and will impact approximately 311 ha (769 ac), 1,212 ha (2,995 ac), and 1,292 ha (3,193 ac), respectively (see BIO-28 in CEC 2010b). All 3 phases will include construction of linear and nonlinear facilities.

Phase 1a linear facilities will include improvements to Black Rock Road and construction of the new access road from Black Rock Road north to the shared facilities area, the buried telecommunications and natural gas lines within the utilities corridor from Black Rock Road to the shared facilities area, the temporary construction power line from offsite to the shared facilities area, a water well area, and a portion of the rerouted drainage channel in the northeast corner, but outside of, the plant site. Phase 1a nonlinear facilities will include construction of the shared facilities area (containing a concrete batch plant, fueling depot, assembly hall, offices/trailers, parking area, and materials/equipment laydown/storage areas) and a portion of the Unit 1 power block and solar field. Phase 1a will also include the installation of temporary and permanent tortoise exclusion fencing. Temporary tortoise exclusion fencing will be installed around portions of the nonlinear features that do not correspond to permanent security fencing and may also be installed around linear features where a monitor will not be present in the immediate vicinity of construction activities. A portion of the permanent security fencing may be installed where Phase 1a corresponds with the permanent plant site boundary, and would include construction of the associated permanent tortoise exclusion fencing.

Phase 1b linear facilities will include construction of the gen-tie transmission line from the shared facilities area to the future substation and portions of the rerouted drainage channels associated with Units 1 and 2. Phase 1b nonlinear facilities will include construction of the

remainder of the Unit 1 solar field, all of the Unit 2 power block and solar field, and the land treatment unit. Similar to Phase 1a, Phase 1b will also include the installation of a portion of the permanent security fencing and both temporary and permanent tortoise exclusion fencing.

Phase 2 linear facilities will include construction of the rerouted drainage channels associated with Units 3 and 4. Phase 2 nonlinear facilities will include construction of the Unit 3 and Unit 4 power blocks and solar fields, the remainder of the power plant support facilities, and the construction/laydown area. Similar to Phases 1a and 1b, Phase 2 will also include the installation of a portion of the permanent security fencing, and temporary and permanent tortoise exclusion fencing.

Desert tortoise clearance surveys associated with construction of linear facilities, temporary tortoise exclusion fencing, and the perimeter security fence during Phases 1a, 1b, and 2 may be conducted during any season. Temporary tortoise exclusion fencing will be installed around linear features, unless a biological monitor is present in the immediate vicinity of construction activities, or any subset of the plant site phasing that does not correspond to permanent perimeter fencing. Temporary tortoise exclusion fencing will be installed prior to clearance surveys around nonlinear features. Desert tortoise clearance surveys associated with construction of nonlinear facilities during Phase 1a also may be conducted during any season. However, tortoise clearance surveys associated with construction of nonlinear facilities during Phases 1b and 2 will only be conducted during the desert tortoise's most active season (April to May, September to October). Surveys outside of these periods require approval by CFWO. Clearance surveys will be conducted in accordance with the Service's *Desert Tortoise Field Manual* (Service 2009).

<u>Phase 1a</u>

Any tortoises found during clearance surveys of linear facilities outside of the plant site (i.e., along the access road/utility corridor or gen-tie transmission line) will be moved out of harm's way within 500 m (1,640 ft) of the disturbance area. Procedures for handling tortoises will be conducted in accordance with the Service's *Desert Tortoise Field Manual* (Service 2009).

Any desert tortoises found on the surface or in a burrow during clearance surveys of linear facilities on the plant site (i.e., access road, construction powerline, utilities corridor, and water well) will be moved out of harm's way within 500 m (1,640 ft) of the disturbance area and considered a translocatee[1]. Any tortoises found during clearance surveys of nonlinear facilities on the plant site (i.e., shared facilities area, portion of unit 1) will be followed back to their burrow, contained within a 1 ha (2.5 ac) pen, monitored until the active season then considered a translocatee. Any tortoises found on the surface during clearance surveys of the perimeter security fence, rerouted drainage channels, and tortoise exclusion fencing associated with nonlinear facilities on the plant site, will be followed back to its burrow. If its burrow is on the

[1] "Translocatee" refers to tortoises that will be transmittered, given health assessments, and monitored in accordance with the Service's translocation guidance (Service 2010b) or in accordance with the final Relocation/Translocation Plan if approved by the Service at the time of Phase 1a construction activities.

plant site, then it will be contained within a 1 ha (2.5 ac) pen, monitored until the active season and considered a translocatee. If the burrow is off the plant site, the tortoise will be moved out of harm's way within 500 m (1,640 ft) of the disturbance area and considered a translocatee.

Phases 1b and 2

Any tortoises found during clearance surveys of linear facilities outside of the plant site (i.e., along the access road/utility corridor or gen-tie transmission line) will be moved out of harm's way within 500 m (1,640 ft) of the disturbance area in accordance with the Service's *Desert Tortoise Field Manual* (Service 2009) or more recent guidance. Any tortoises found during clearance surveys of nonlinear facilities on the plant site or found during clearance of the tortoise exclusion fencing, rerouted drainage channels, or perimeter security fencing will be handled and moved in accordance with the final Relocation/Translocation Plan.

Operations and Maintenance

Operation and maintenance (O&M) will occur within the plant site during the 30-year life of the project. While electrical power will be generated only during daylight hours, the plant site will be staffed 24 hours a day, 7 days per week by a total estimated workforce of 221 full time employees (when all four units are operating).

Within the fenced plant site, routine O&M will include such activities as maintenance and repair of the perimeter fence, access gates, solar array components, support facilities, and evaporation ponds, mirror washing, vehicle and equipment movement, and vegetation removal. Solar mirrors will be sprayed with treated water once or twice per week, determined by the reflectivity monitoring program. Mirror washing will use approximately 28 ha-m (230 ac-feet) per year of water. Washing will generally be done at night and will involve a water truck spraying treated (i.e., demineralized) water on the mirrors in a drive-by fashion. Because the mirrors will be angled down for washing, water will not accumulate on the mirrors; instead, it will fall from the mirrors to the ground. Due to the small volume, the applicant anticipates the water will soak into the soil with no appreciable runoff. Any remaining rinse water from the washing operation is expected to evaporate on the mirror surface.

Outside of the fenced plant site, O&M activities will be conducted within the access road/utility corridor, gen-tie transmission line ROW, rerouted drainage channels, and along the outer side of the perimeter security fence. Routine O&M activities associated with the gen-tie transmission line, access road, and utility corridor will include periodic cleaning of the line conductors and replacement and/or repair of equipment damaged by wind, dust, or accident, road grading and drainage structure repairs to maintain a drivable surface along the access roads, and repair of the perimeter security fence. Such activities are anticipated to occur throughout the year as needed. The newly constructed access road to the plant site and dirt roads will provide O&M access to the gen-tie transmission line ROW and utility corridor. A dirt road created during construction will provide O&M access to rerouted drainage channels and the outer side of the perimeter security fence.

O&M of the rerouted channels will occur to reduce the hydraulic roughness, improve flood conveyance capacity, and maintain adequate protection of the stream banks from erosion, and will include vegetation management to maintain cover at less than 38 centimeters (cm) [15 inches (in)] in height, periodic debris removal, and erosion repairs. Maintenance will occur predominantly by hand crews and pickup truck; however, it may be necessary to use heavy equipment (e.g., loader, excavator, and wheel dump trucks) to repair structural features and clean out debris following large storm events.

According to information provided by the applicant, routine O&M activities are expected to occur along existing access roads, access roads created for the project, and areas previously disturbed during construction-related activities. Therefore, we do not expect routine O&M activities will result in additional direct habitat disturbance above what will be disturbed during construction activities.

Decommissioning

The planned operational life of the proposed project is 30 years, but operation life of the facility may be longer or shorter depending on economic or other circumstances. If the facility were to become economically non-viable before 30 years of operation, permanent closure could occur sooner. In any case, BLM will require a Decommissioning Plan be prepared and put into effect when permanent closure occurs. The procedures provided in the Decommissioning Plan will be developed to ensure compliance with applicable laws and regulations, and to ensure public health and safety and protection of the environment. The Decommissioning Plan will be submitted to the BLM for review and approval prior to a planned closure. When the BLM begins to consider decommissioning, they will contact the Service to determine if additional consultation, pursuant to section 7(a)(2) of the Act, would be appropriate. Consequently, we will not analyze the potential effects of decommissioning on the desert tortoise in this biological opinion.

Conservation Measures

The proposed project includes conservation measures that will be implemented to avoid, minimize, and offset potential adverse effects to the tortoise. These measures were developed in coordination with the BLM, CEC, CDFG, and applicant, and correspond directly to the CEC's conditions of certification BIO-1 thru BIO-14, BIO-27, and BIO-28 described in the CEC's Final Decision on the proposed project (CEC 2010b). Therefore, we are incorporating by reference into this biological opinion, the CEC's conditions of certification BIO-1 thru BIO-14, BIO-27, and BIO-28 as described in the CEC's Final Decision, as the conservation measures that will be implemented by the applicant and BLM to avoid, minimize, and offset the impacts to the tortoise associated with the BSPP project. We have provided additional clarification of the requirements outlined in BIO-8, BIO-9, BIO-10, and BIO-13 below. The project description, including the CEC's conditions of certification BIO-1 thru BIO-14, BIO-27, and BIO-28, and the additional clarifications provided below, provide the basis of the effects analysis provided in this biological opinion. The CEC's Final Decision (CEC 2010b) and BLM's final EIS (BLM 2010) include additional measures to offset proposed project impacts on rare and sensitive species and natural

communities, which will be implemented to further reduce impacts to biological resources, including those associated with dust, light, and noise, resulting from the proposed project.

BIO-8: Impact Avoidance and Minimization Measures – This CEC condition of certification specifies the measures that will be implemented to manage the project site and related facilities in a manner to avoid or minimize impacts to biological resources, including desert tortoises. To clarify, these measures will also be implemented during all ground-disturbing construction and O&M activities.

BIO-9: Desert Tortoise Clearance Surveys and Fencing - This CEC condition of certification specifies the procedures, including seasonal restrictions, for conducting tortoise clearance surveys and handling and moving tortoises out of the disturbance area during construction activities. In addition, this condition of certification specifies that once the area is cleared of tortoises, temporary tortoise exclusion fencing will be installed along linear features unless a biological monitor is present during construction activities. To clarify, these procedures for conducting tortoise clearance surveys, handling and moving tortoises out of the disturbance area, and ensuring tortoises do not re-enter the disturbance area will also be implemented during O&M activities along the access road/utility corridor, gen-tie transmission line ROW, and rerouted drainage channels outside of the plant site, and along the outer side of the perimeter security fence.

BIO-10: Desert Tortoise Relocation/Translocation Plan - This CEC condition of certification specifies that the Desert Tortoise Relocation/Translocation Plan will be consistent with Service-approved guidelines, and that the final Plan will include all revisions deemed necessary by BLM, Service, CDFG, and CEC. To clarify, the final Desert Tortoise Relocation/Translocation Plan will incorporate the Service's desert tortoise translocation guidance (Service 2010b) and subsequent project-specific guidance, as appropriate for the BSPP project, and must be approved by the Service prior to the initiation of any ground-disturbing construction activities associated with Phases 1b or 2 or prior to translocation of any desert tortoises found in Phase 1a, whichever occurs first.

BIO-13: Raven Management Plan - As stated in this CEC condition of certification, the applicant will submit payment to the project sub-account of the Renewable Energy Action Team (REAT) account held by the National Fish and Wildlife Foundation (NFWF) to implement a regional management plan for common ravens for the reduction of predation by the common raven on the desert tortoise in the California desert. Payment of this one-time fee is intended to mitigate for the proposed project's portion of the cumulative and indirect effects of contributing to the population increase of common ravens in the desert region. The account was established by the REAT agencies (BLM, CDFG, Service, and CEC) in coordination with NFWF to manage the funds that will be used to implement the regional management plan.

Based on the cost allocation methodology described in *Renewable Energy Development And Common Raven Predation on the Desert Tortoise –Summary* (May 2010) and *Cost Allocation Methodology for Implementation* of *the Regional Raven Management Plan* (July 9, 2010), the

applicant will contribute a one-time fee of $105 per acre of disturbance to 2,816 ha (6,958 ac) of desert tortoise habitat that will be impacted by the proposed project. Accordingly, a fee of $730,590 will be assessed to fund the project's portion of the regional management plan for the 30-year ROW grant by the BLM. Documentation for payment of this fee will be submitted to the Service no less than 10 days prior to the initiation of ground-disturbing construction activities.

Action Area

The implementing regulations to section 7(a)(2) of the Act describe the action area to be all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR §402.02). The action area is the area of potential direct or indirect effects of the proposed action and any interrelated or interdependent human activities; the direct and indirect effects of these activities include associated physical, chemical, and/or biological effects of considerable likelihood (Service and NMFS 1998). Indirect effects are those that are caused by the proposed action and are later in time but are still reasonably certain to occur (Service and NMFS 1986). Analyses of the environmental baseline, effects of the action on the species and designated critical habitat, cumulative effects, and the impacts of the incidental taking, are based upon the action area as determined by the Service (Service and NMFS 1998).

The action area for the proposed project consists of the 2,816 ha (6,958 ac) of desert tortoise habitat that will be impacted in the project site/footprint [includes the plant site and associated linear facilities (i.e., access roads, utility corridor, gen-tie transmission line, and construction power line]. Along linear facilities off the plant site, the action area also includes a distance of up to 500 m (1,640 ft) where any tortoises will be moved out of harm's way to avoid injury from construction or O&M-related activities. The action area also includes the applicant's proposed desert tortoise recipient (translocation) sites (McCoy Mountains and Upper McCoy Wash recipient sites) and all contiguous tortoise habitat within 12.6 km (7.8 mi) of the McCoy Mountains recipient site and the Upper McCoy Wash recipient site, as identified in the Relocation/Translocation Plan. By including habitat within 12.6 km (7.8 mi) of the recipient sites, we are including all areas that tortoises are likely to move to in the first year following translocation[2]. The action area also includes the applicant's proposed control site.

Finally, the action area encompasses future conservation areas that will be acquired to offset the loss of desert tortoise habitat resulting from construction and O&M of the proposed project. The acquisition, management, and monitoring of these conservation areas are expected to have only beneficial effects to tortoises; however, the locations of these conservation areas are currently unknown. As discussed in the condition of certification BIO-12 of the CEC's Final Decision, lands selected for acquisition will be within the Colorado Desert Recovery Unit (Service (2008) and contribute to desert tortoise habitat linkages and population connectivity within and between desert tortoise critical habitat, known populations of tortoises, and/or or other preserve lands.

[2] See "Effects of the Action" section for further discussion on movement distances of translocated tortoise.

Prior to the initiation of ground-disturbing construction activities, either conservation lands will be acquired directly by the applicant or the applicant will provide funding for the acquisition (see CEC condition of certification BIO-12).

The action area does not include the area where an artificial water source would be installed in the McCoy Mountains or nearby areas on BLM lands to compensate for impacts to desert bighorn sheep (*Ovis canadensis nelsoni*) (per BIO-21) because the exact location of this water source is currently unknown. Therefore, potential direct (e.g., habitat destruction) or indirect (e.g., increasing raven predation by providing a water source for ravens) impacts to tortoises resulting from construction and operation of this water source would be addressed in a separate consultation.

STATUS OF THE SPECIES/CRITICAL HABITAT

The following section summarizes information about the desert tortoise on the legal/listing status, distribution and population trends, current threats, and status of critical habitat as discussed in the Service's biological opinion on the California Desert Conservation Area Plan Amendment for the Coachella Valley (Service 2010a). Please refer to that document as well as the draft revised recovery plan (Service 2008) for additional detailed information about these topics and the species' description, life history, and habitat affinities.

Legal/Listing Status: The Mojave population of the desert tortoise was proposed for listing by the Service on October 13, 1989, and listed as a threatened species on April 2, 1990 (Service 1989, 1990). The tortoise is also listed as a threatened species under the California Endangered Species Act. The Service designated about 2.6 million ha (6.5 million ac) of critical habitat for the tortoise in portions of California, Nevada, Arizona, and Utah on February 8, 1994 (Service 1994b). The recovery plan was developed for this species in 1994 (Service 1994a). The draft revision to the recovery plan was developed in 2008 (Service 2008), but the plan has not yet been finalized.

Distribution and Population Trends: Typical desert tortoise habitat in the Mojave Desert is characterized as creosote bush scrub below 1,676 m (5,500 ft) in which precipitation ranges from 5 cm to 20 cm (2 in to 8 in), where a diversity of perennial plants is relatively high, and production of annual plants is high. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California.

The best available information indicates the Mojave population of desert tortoise is declining in abundance in most areas throughout its range. Line distance sampling is now being used as part of a long-term monitoring strategy to detect population trends. This program was put into place in 2001, but detecting population trends is expected to be a gradual process and surveys conducted over short periods of time (e.g., 2001 to 2007) would only reveal catastrophic declines or significant changes. These data do, however, provide some information on variability in

annual and regional densities between recovery units. In general, over the first 6 years of range-wide monitoring (2001-2005, 2007), tortoises were least abundant in the Northeast Mojave Desert Recovery Unit, the highest reported densities occurred in the Upper Virgin River Recovery Unit, and considerable decreases in density were reported in 2003 in the Eastern Colorado and Western Mojave recovery units (Service 2008). The proposed project occurs in the Eastern Colorado Desert Recovery Unit per the species recovery plan (Service 1994a), which was merged with the Northern Colorado Desert Recovery Unit in the draft revised recovery plan (Service 2008) and referred to simply as the Colorado Desert Recovery Unit.

Current Threats: The majority of threats to the tortoise and its habitat are associated with human land uses including urbanization, upper respiratory tract disease and possibly other diseases, predation by common ravens and domestic and feral dogs, unauthorized off-highway vehicles activity, authorized vehicular activity, illegal collecting, mortality on paved roads, vandalism, drought, livestock grazing, feral burros, nonnative plants, changes to natural fire regimes, and environmental contaminants.

Status of Critical Habitat: The Service designated about 2.6 million ha (6.5 million ac) of critical habitat for the tortoise in portions of California, Nevada, Arizona, and Utah. The primary constituent elements of desert tortoise critical habitat were identified as sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

The proposed project is more than 8 km (5 mi) northwest of the Chuckwalla critical habitat unit and is separated from this unit by the McCoy Mountains. Most critical habitat areas are relatively unaffected by human uses and continue to provide a habitat base to support viable populations into the future. However, threats from long-term climate trends, such as recurrent and prolonged drought, and ecological processes, such as invasive nonnative plant infestations and consequent wildfire risk, are widespread and have degraded and eliminated the primary constituent elements of desert tortoise critical habitat over large areas, which if continued, would threaten the viability of populations in affected areas, including habitat linkages between core populations.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the

impacts of State and private actions which are contemporaneous with the consultation in progress.

As discussed in the "Action Area" section above, the action area for this project includes: (1) the project area, defined as the 2,816 ha (6,958 ac) project footprint [includes the plant site and associated linear facilities (i.e., access roads, utility corridor, gen-tie transmission line, and construction power line)], and a distance of up to 500 m (1,640 ft) from linear facilities where any tortoises will be moved out of harm's way, (2) the proposed desert tortoise recipient (translocation) sites, and all contiguous tortoise habitat within 12.6 km (7.8 mi) of the McCoy Mountains site and the Upper McCoy Wash site, (3) the proposed control site, and (4) future conservation areas. The environmental baseline of each of these components of the action area is described below.

Species Abundance in the Action Area

Project Area

The project area is in the Eastern Colorado Desert Recovery Unit per the species recovery plan (Service 1994a), which was merged with the Northern Colorado Desert Recovery Unit in the draft revised recovery plan (Service 2008) and referred to simply as the Colorado Desert Recovery Unit. Specifically, the project area is located entirely on BLM-managed lands in the McCoy Valley, between the McCoy Mountains to the west and McCoy Wash to the east. The project area is mostly flat, with elevations ranging from about 204 m (670 ft) at the southwestern limit of the project to about 128 m (420 ft) near the southeastern project boundary. Several deep drainages occur in the western portion of the project area adjacent to the McCoy Mountains.

The project area is primarily undeveloped but contains several BLM-designated routes of travel (unmaintained roads). The I-10 freeway crosses the southern portion of the project area, where the gen-tie transmission line and buried gas line are proposed south of I-10. During World War II, the McCoy Valley was part of the General George S. Patton Desert Training Center, officially the California-Arizona Maneuver Area, a simulated theater of operations heavily used by tanks and other military vehicles. The nearby Blythe Airport, then known as Bishop Army Field, was used as a training field by the 46th Bomb Group, and later by the 34th Bomb Group, for flying training missions in a variety of military aircraft.

Despite these past military uses, vegetation in the McCoy Valley and in the project area, has been recovering through natural recruitment and today appears relatively undisturbed. The project area is dominated by creosote bush scrub and seven other vegetation communities and land cover types, including desert dry wash woodland, unvegetated ephemeral dry wash, creosote bush/big galleta grass, stabilized and partially stabilized desert dunes, agriculture, developed, and disturbed habitat (see Table 2 in AECOM (2010a) for acreages of each vegetation/land cover type occurring in the action area). Two invasive nonnative plants, Russian thistle (*Salsola tragus*) and Saharan mustard (*Brassica tournefortii*), occur in disturbed areas

throughout the project area, especially near roads and fallow or active agricultural areas. Another nonnative plant, Mediterranean grass (*Schismus barbatus*), is prevalent throughout the creosote bush scrub.

California Natural Diversity Database (CNDDB) records show desert tortoise occurrences surrounding (but not within) the project site (AECOM 2010a), the nearest being approximately 0.32 km (0.2 mi) from the project footprint (CDFG 2009 cited in AECOM 2010a). Surveys conducted along the eastern end of the proposed DPV2 transmission line project, including the CRS substation, in 2005, 2008, and 2010 (Alice Karl and Associates *et al.* 2005, BioResource Consultants 2008, AECOM 2010b), located tortoises and sign, with the closest live tortoise being observed approximately 21 km (13 mi) west of the BSPP site. Two live tortoises and sign were also observed in 2007 approximately 3 km (2 mi) southeast of the planned CRS substation (CFWO GIS database).

Initial surveys of the plant site and re-routed drainage channels, gen-tie transmission line, access roads/utility corridor, and temporary construction power line were conducted in spring and fall 2009 following the Service's pre-project survey protocol (Service 1992). Surveys (not protocol) were also conducted within a 2-km (1-mi) zone (survey zone) around the plant site. Following the identification of an alternative site configuration and various design refinements related to potential transmission line routes and substation location, protocol surveys (Service 1992) were conducted in spring 2010 in areas of the project footprint and proposed alternative site configuration that were not previously surveyed in 2009.

A total of six desert tortoises were observed during the 2009 and 2010 pre-project surveys, of which two were found in the project footprint [one in the southwest corner of the plant site and one 91 m (300 ft) from the utility corridor] and four were found in the survey zone west of the project footprint (AECOM 2010b, AECOM 2010c). Additionally, numerous observations of tortoise sign were recorded during these surveys, most of which were observed in the western portions of the project footprint and adjacent survey zone, and included 120 burrows [of which 15 were active (showing sign of recent use) and four were occupied], 172 pallets or shallow depressions under low shrubs (of which 12 were Class 1 or 2), 55 scat (of which 13 were Class 1 or 2), 42 carcasses, and 449 observations of bone fragments (AECOM 2010b, AECOM 2010c). The presence of five active burrows, nine fresh scat, two widely spaced cover sites with eggshell fragments (indicating the potential for hatchings, at least two female tortoises) found in the project footprint, and the presence of four tortoises in the survey zone, suggests that more tortoises than the two observed males likely occur in the project footprint.

To estimate the number of tortoises in the project footprint, we applied the method for estimating tortoises described in the 2010 survey protocol (Service 2010c). This calculation yields an estimate of four subadult or adult tortoises in the project footprint, but indicates that two tortoises likely were undetected: one tortoise because it was underground and another tortoise because it escaped detection. This estimate is based on an 80 percent probability that a tortoise is above ground based on the previous winter rainfall and a 63 percent probability of detecting a tortoise if

above ground (see Service 2010c). The Service's method for estimating tortoise numbers (Service 2010c) also allows us to calculate a 95 percent confidence interval used to indicate the reliability of the data. However, since the information required to perform this calculation (i.e., total length and number of transects walked) was not provided, we are unable to calculate the 95 percent confidence interval associated with the estimate and therefore, cannot determine the reliability of the estimate.

We also estimated the number of subadult and adult tortoises in the project footprint by applying density estimates for areas outside of Desert Wildlife Management Areas (DWMAs) and critical habitat within the Eastern Colorado Desert Recovery Unit, as determined in our amended biological opinion for the California Desert Conservation Area (CDCA) Plan for the Northern and Eastern Colorado Desert (NECO) Coordinated Management Plan amendment (Service 2007). As discussed in our amended biological opinion for the NECO amendment to the CDCA Plan (Service 2007), to derive the density of tortoises outside of DWMAs and critical habitat in the Eastern Colorado Desert Recovery Unit, we multiplied the average density of tortoises in the recovery unit by 0.1, resulting in a density estimate of 0.7 tortoises per square km (1.8 tortoises per square mi). We estimated the density of tortoises within the DWMAs and critical habitat in the recovery unit based on an average of the densities for the recovery unit from line-distance sampling conducted between 2001 and 2005 (Service 2006). We considered areas outside of DWMAs and critical habitat to support lower densities of tortoises based on numerous factors, including elevation, rainfall, vegetation community composition, and other geographic variables that naturally support fewer animals where habitat conditions are not as favorable as with DWMAs and critical habitat. Based on habitat quality and the very low numbers of desert tortoises found using protocol surveys in the project footprint, and the results of several surveys for other projects along the I-10 corridor, we conclude the 0.7 tortoises per square km density estimate is a reasonable approximation for the project footprint, as well, and constitutes the best available information. Applying this density of 0.7 tortoises per square km (1.8 tortoises per square mi) to the project footprint yields an estimate of 20 subadult and adult tortoises.

Applying these two methods, we anticipate that from 4 to 20 subadult and adult tortoises may be present in the project footprint. We acknowledge that the estimate of four tortoises likely is an underestimate, based on the type and amount of tortoise sign found in the project area and the adjacent survey zone, and that the estimate of 20 tortoises likely is an overestimate since it is based on our assumptions of tortoise densities outside of DWMAs and critical habitat. However, we determined that applying the estimate of 20 tortoises in the project footprint would provide a biologically conservative approach based on the best data available to establish a baseline for analysis of the potential impacts of the proposed project.

In addition to subadult and adult tortoises, the project footprint is likely to contain juvenile tortoises. Estimating densities of hatchling and juvenile tortoises is difficult because they are extremely difficult to detect due to their small size and cryptic nature. However, based on a 4-year study of their population ecology, Turner *et al.* (1987) determined that juveniles accounted for 31 to 51 percent of the overall population. Using this range and the estimated 20 subadult and adult tortoises that could be found in the project footprint, we estimate that the project

footprint may support from 6 to 10 juveniles. We recognize that the survey data used for these estimates come from a limited number of studies and that population levels are constantly changing. We also recognize that since our estimate of the number of subadult and adult tortoises in the project footprint is likely an overestimate (as discussed above), this estimate of juveniles in the project footprint is likely an overestimate as well, but provides the best available data available to establish a baseline for analysis.

We also expect the proposed project footprint contains tortoise eggs. Estimating the number of tortoise eggs is also extremely difficult given that the eggs are buried beneath the soil surface. To estimate the number of eggs that could be present, we used the average number of eggs found in a clutch (i.e., 5.8, see Service 1994a). Assuming a 1:1 sex ratio, 10 of the 20 tortoises estimated in the project footprint may be reproductive females that together could produce approximately 58 eggs per year. However, it is difficult to estimate the number of females or eggs within the project footprint based on the low number of tortoises found during the pre-project surveys. Given the number of assumptions and extrapolations used to estimate the number of eggs [i.e., that 20 tortoises may occur on site and that 10 of those 20 may be female and equally reproductive as the tortoises in the Turner *et al.* (1984) study area], we determined that the estimate of 58 eggs on the project site has an unknown but high level of uncertainty, and therefore, does not provide a useful measure for analyzing the effects of the proposed project. Therefore, we cannot calculate a reliable estimate for the number of eggs that may be impacted by the proposed project.

The concentration of tortoise sign in the western portion of the project footprint and adjoining area is consistent with the assessment of generally higher quality habitat for tortoises in the same area, likely due to proximity to the McCoy Mountains and greater availability of water and forage associated with related drainages (AECOM 2010a). The reduced amount of tortoise sign on the eastern side of the project footprint and along the transmission line corridor south of I-10 is consistent with the assessment of lower-quality habitat in these areas. This habitat quality gradation is consistent with the recent U.S. Geological Survey (USGS) tortoise 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 area range from 0.4 to 0.6 (along the westernmost edge of the project area), to 0.3 and below (low quality) for the rest of the project area (AECOM 2010a).

Despite the lower-quality habitat in the eastern portion of the project footprint and transmission line corridor, any portion of the project footprint may be used by tortoises for dispersal from surrounding habitat (AECOM 2010a). Desert tortoises are known to use lower-quality intermountain habitat, such as on eastern parts of the project footprint, as dispersal routes, providing passage between high-quality habitat areas in the surrounding mountains (Averill-Murray and Averill-Murray 2005). Historically, tortoise populations in the Sonoran Desert have exchanged individuals at a rate of one migrant per generation (Averill-Murray and Averill-Murray 2005).

Proposed Recipient (Translocation) Sites

Recipient sites must be sufficiently large to accommodate and maintain the resident (if present) and translocated desert tortoises, as well as be free of disease (Service 2010b). In addition, identification of at least two recipient sites is necessary in case resident tortoises at the primary site are determined to be infectious. Tortoises translocated from the plant site would be translocated to the McCoy Mountains (primary site) or Upper McCoy Wash (secondary site) recipient sites. If infectious tortoises are present at the primary site, tortoises from the project site will be translocated to the secondary site, after resident tortoises at that site have been determined to be free of disease. The exact locations and boundaries of these two recipient sites will be identified in the final Relocation/Translocation Plan that will be finalized and approved by the Service before the initiation of any ground-disturbing construction activities (see "Conservation Measures" section above). No designated critical habitat occurs in or near the McCoy Mountains or Upper McCoy Wash recipient sites; therefore, none will be adversely affected.

The McCoy Mountains recipient site will be in the McCoy Valley on BLM-managed lands and adjacent to the McCoy Mountains Bighorn Sheep Wildlife Habitat Management Area (WHMA). No ROW or utility corridors currently exist, and future demand is not anticipated in this recipient site. Though two BLM-designated routes of travel (unmaintained roads) traverse the recipient site, the proposed project will block access to the recipient site from these routes. The McCoy Valley area historically has received lower levels of recreational use, and such use is not anticipated to increase substantially in the future. Habitat value for desert tortoises in this area is similar to the higher quality habitat on the western portion of the project area and therefore is expected to fulfill the feeding, breeding, sheltering requirements of translocated tortoises. The recipient site is within a proposed solar study area in BLM's Solar Energy Study Area Maps published in June 2009 as part of the public scoping process for the Solar Energy Development Programmatic EIS, which would be prioritized for solar development if this EIS is approved. However, due to the presence of several deeply incised washes, we believe the recipient site is likely impractical for future additional solar development. For the reasons discussed above, the REAT agencies assume future conflicting uses are unlikely to be proposed or approved that would impact desert tortoises at this recipient site.

The Upper McCoy Wash recipient site will be on BLM-managed lands in the upper McCoy Wash area, approximately 16 to 32 km (10 to 20 mi) north of the project area, and adjacent to designated wilderness protected from future development. The site will be chosen to avoid, to the extent possible, existing ROW or utility corridors or designated routes of travel, or areas where future demand is anticipated. The upper McCoy Wash area historically has received lower levels of recreational use, and such use is not anticipated to increase substantially in the future. Habitat value for desert tortoises in this area overall is similar to the higher quality habitat on the western portion of the project area and therefore is expected to fulfill the feeding, breeding, and sheltering requirements of translocated tortoises. The upper McCoy Wash area is not within a proposed solar study area in BLM's Solar Energy Study Area Maps published in

June 2009 as part of the public scoping process for the Solar Energy Development Programmatic EIS, which would be prioritized for solar development if the EIS is approved. For the reasons discussed above, the REAT agencies assume future conflicting uses are unlikely to be proposed or approved that would impact desert tortoises at this recipient site.

In the absence of site-specific information and for the reasons described above, we applied the same 0.7 tortoises per square km (1.8 tortoises per square mi) density to estimate tortoise density at these recipient sites as we did to estimate the density of tortoises on the project footprint. Applying this density yields an estimate of five tortoises at the approximately 688-ha (1,700-ac) McCoy Mountains recipient site (i.e., 0.7 tortoises per square km multiplied by 6.9 square km). For the Upper McCoy Wash recipient site, we anticipate that the site will be up to approximately 1,214 ha (3,000 ac), equating to roughly to the amount of higher quality habitat on the western side of the proposed project site. While we expect that some tortoises may be found in the eastern side of the project footprint, we anticipate that the majority of the tortoises found on site will be found in the higher quality habitat on the western side due to the presence of more productive, higher quality habitat. Therefore, we determined that a recipient site of roughly this same size should provide adequate area for feeding, breeding, and sheltering for translocated tortoises. Applying this density yields an estimate of eight tortoises at the approximately 1,214 ha (3,000 ac) Upper McCoy Wash recipient site (i.e., 0.7 tortoises per square km multiplied by 12 square km). However, as discussed above, we acknowledge that this estimate is likely an overestimate but provides a biologically conservative approach based on the best data available to establish a baseline for analysis of the potential impacts of the proposed project.

Proposed Control Site

To provide "control" baseline data from which to compare the effectiveness of translocation as a project minimization measure, the same number of translocated tortoises monitored will also be monitored at a control site. The exact location of the control site will be identified in the final Relocation/Translocation Plan that will be approved by the Service before the initiation of any ground-disturbing construction activities (see "Conservation Measures" section above). The control site will be within the upper McCoy Wash area described above. Per the Service's translocation guidance (Service 2010b), the control site will (1) be equivalent in habitat type/quality and tortoise population size/structure as its respective recipient site, (2) not have previously received translocated tortoises, and (3) be at least 10 km (6 mi) from either recipient site to prevent the interaction of control, resident, and translocated tortoises. Once the exact location is identified, tortoise density at the control site will be estimated prior to the initiation of translocation activities to ensure that the control site contains the appropriate number of tortoises for monitoring purposes. The control site will be used to monitor resident tortoises only; no tortoises from the project footprint will be translocated to the control site. No designated critical habitat occurs in the upper McCoy Wash where the control site is anticipated to be located; therefore, none would be adversely affected.

Future Conservation Lands

Habitat acquisition is proposed to offset impacts to tortoise habitat resulting from the proposed project. As part of the proposed project, conservation lands will be acquired within the Colorado Desert Recovery Unit as described in the species' draft revised recovery plant (Service 2008) [includes the Eastern and Northern Colorado Desert Recovery Units as identified in the species' original recovery plan (Service 1994a)]. While the location of these lands has not yet been determined, the REAT agencies have agreed that privately-owned lands will be acquired to benefit tortoise habitat linkages and population connectivity within and between tortoise critical habitat units, known populations of tortoises, and/or or other preserve lands in the Colorado Desert Recovery Unit (BIO-12). These future conservation lands will be conserved and managed in perpetuity for tortoises. Using available data on landownership and willing sellers, the Service has determined that a sufficient amount of privately owned desert tortoise habitat exists within the Colorado Desert Recovery Unit that will be available for acquisition.

The abundance of tortoises in future conservation areas is unknown since the specific areas have not yet been identified. However, because acquisition will focus on areas connected to lands with tortoise habitat equal to or better quality than the project footprint (BIO-12), we anticipate that these future conservation lands will contain suitable habitat that is currently occupied or likely to be occupied in the future.

Factors Affecting the Species Environment within the Action Area

Project Area

Due to the lack of development, tortoises in the majority of the project area (particularly the portion north of I-10) are not now impacted by extensive habitat loss or degradation. However, the tortoises are impacted to some extent by several unmaintained roads, invasive nonnative plants, and potentially by predation from common ravens foraging, nesting, and roosting along existing transmission lines south of the action area (south of I-10) and from common ravens nesting elsewhere in the vicinity.

The southern portion of the project area that includes the gen-tie transmission line crosses I-10 and then runs along an existing utility corridor that contains several existing or authorized transmission lines, and will contain the planned CRS substation and DPV2 transmission line. The existing transmission lines include the Devers to Palo Verde No. 1 and Blythe Energy lines. The Service issued biological opinions exempting take of several species, including the tortoise, associated with the Blythe Energy line in 2005, and exempting take of the tortoise associated with the Desert Southwest line in 2006 and is nearing completion of formal consultation on the potential impacts of the DPV2 line on tortoises. The Blythe Energy line was recently completed but construction on the Desert Southwest line has not yet been initiated.

The Service issued a programmatic biological opinion evaluating the effects of BLM's CDCA plan amendment for the NECO Plan on tortoises in 2002 and as amended in 2005 and 2007. The programmatic biological opinion exempted take for causal uses (recreation, mining, and vehicle use), livestock grazing, and removal of burros that BLM authorizes through approval of the CDCA Plan. Projects outside of these categories require separate consultation.

Issuance of biological opinions for the Blythe Energy and Desert Southwest transmission lines, and shortly for the DPV2 transmission line, has allowed or may allow for additional take of tortoises and degradation of tortoise habitat in the project footprint, primarily where the gen-tie line will parallel these existing and future lines in the utility corridor adjacent to I-10. Operations and maintenance activities associated with these existing and future transmission lines may also affect species populations in the project area. Issuance of the biological opinion for activities covered under the NECO Plan allows for additional take of tortoises along the designated routes of travel (unmaintained roads) in the project area.

Proposed Recipient (Translocation) Sites

The general area of both recipient sites is undeveloped and therefore not impacted by extensive habitat loss or degradation. However, both sites may be impacted to some extent by invasive nonnative plants, and the McCoy Mountains site may be impacted by predation from common ravens foraging, nesting, and roosting along existing transmission lines south of the action area (south of I-10) and from common ravens nesting elsewhere in the project vicinity.

Proposed Control Site

The exact location of the proposed control site in the upper McCoy Wash area has not yet been determined. The majority of this area is undeveloped and therefore not impacted by extensive habitat loss or degradation.

Future Conservation Areas

While the location of these lands has not yet been determined, privately owned lands will be acquired to benefit tortoise habitat linkages and population connectivity within and between tortoise critical habitat units, known populations of tortoises, and/or other preserve lands in the Colorado Desert Recovery Unit in the BLM's NECO bioregional planning unit (BIO-12). These future conservation lands will be conserved and managed in perpetuity for tortoises.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat that would be added to the environmental baseline, along with the effects of other activities that are interrelated or interdependent with that action. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification.

Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur. In contrast to direct effects, indirect effects can often be more subtle, and may affect species and habitat quality over an extended period of time, long after project activities have been completed. Indirect effects are of particular concern for long-lived species such as the tortoise, because project-related effects may not become evident in individuals or populations until years later.

Methodology

Permanent versus Temporary Impacts

Since full recovery of vegetation in the desert can take decades or longer, we consider all ground-disturbing impacts associated with the BSPP project to be permanent. Vasek *et al.* (1975) found that in the Mojave Desert transmission line construction and O&M activities result in a permanently devegetated maintenance road, enhanced vegetation along the road edge and between tower sites, and reduced vegetation cover under the towers, which recovered significantly but not completely in about 33 years. Based on a quantitative review of studies evaluating post-disturbance plant recovery and success in the Mojave and Sonoran Deserts, Abella (2010) found that reestablishment of perennial shrub cover (to amounts found on undisturbed areas) generally occurs within 100 years but fewer than 40 years in some situations. He also found that vegetation recovery times are likely impacted by a number of variables, including but not limited to climate, invasion by nonnative plants, and level of ongoing disturbance. Based on these factors, we consider temporary impacts to be equivalent to permanent impacts for the purposes of our effects analysis relative to the 30-year life of the project.

A total of approximately 2,816 ha (6,958 ac) of tortoise habitat would be directly impacted by construction and O&M activities associated with the proposed project (Table 1). As discussed in the "Description of the Proposed Action" section above, we do not anticipate additional impacts to habitat during O&M activities outside of what would be impacted during construction. The conservation measures included as part of the project description would help avoid, minimize, and offset impacts to tortoises resulting from construction and O&M activities.

As discussed in the "Environmental Baseline" section above, we estimate that up to 20 subadult and adult tortoises, up to 10 juveniles, and an unquantifiable number of eggs could occur in the project footprint. We also estimate that up to 13 subadult and adult tortoises could occur in both recipient sites combined. All of these individuals could be directly and indirectly impacted by the proposed project.

Direct Effects

Death and Injury

Construction and O&M

Death or injury of tortoises could result from collisions with or crushing by vehicles or heavy equipment, including crushing of individuals that take shelter under parked vehicles and are killed or injured when the vehicle is moved. Desert tortoises could also be injured or killed after being trapped in pipes or construction excavations. Other direct effects could include individual tortoises or their eggs being crushed or buried in burrows during construction and O&M-related activities. Because of increased human presence in the area or injured or killed due to encounters with workers' or visitors' pets, desert tortoises may be collected or vandalized. Desert tortoises may also be attracted to the construction area by application of water to control dust, placing them at higher risk of death or injury.

To minimize the death and injury of tortoises residing in or entering the construction or O&M disturbance areas (e.g., the plant site, linear facilities, and rerouted channels), the applicant would implement the general and species-specific conservation measures proposed as part of the project. Accordingly, take of tortoises would be minimized by the presence of a Designated Biologist during ground-disturbing construction and O&M activities in the project footprint (BIO-2 and BIO-11). As specified in the CEC's condition of certification BIO-1, the Designated Biologist must meet the Service's Authorized Biologist qualifications and be approved by the Service prior to the initiation of ground-disturbing construction activities. Death or injury of tortoises during construction would also be minimized by demarcation of all sensitive biological resource areas by the Designated Biologist (BIO-2). Death or injury of tortoises would be further minimized during construction and O&M activities by demarcation of all work area boundaries prior to ground-disturbing activities, limiting vehicular and equipment traffic to existing routes of travel, and designing and installing all project components off the plant site (e.g., access roads, storage and parking areas, pulling sites, and rerouted channels) to minimize impacts to native plant communities and sensitive biological resources (BIO-8).

Construction activities on the majority of the 2,768-ha (6839-ac) plant site would be conducted during the species' more active period as described in the project description and in the Relocation/Translocation Plan, thereby maximizing the potential to locate and move tortoises out of the disturbance area during construction of Phases 1b and 2. Construction of Phase 1a is proposed to begin during the species' less active season. However, the Phase 1a area includes areas of the project footprint containing a lower density of tortoise sign, and no live tortoises, active burrows, or fresh scat or tracks. Therefore, we anticipate that few, if any, tortoises likely occur in this area. However, death or injury of tortoises due to construction of any of the three phases would be minimized by the requirement for the Designated Biologist to conduct preconstruction clearance surveys of the project area prior to construction and either relocate individuals out of harm's way or translocate individuals to the recipient site as outlined in the

Service-approved Relocation/Translocation Plan, following Service-approved methods (BIO-9 and BIO-10).

Construction and O&M disturbance areas cleared of tortoises would be either enclosed with tortoise exclusion fencing or monitored by the Designated Biologist or Biological Monitors trained by the Designated Biologist to prevent individuals from re-entering the disturbance area (BIO-3, BIO-8, and BIO-9). Installation of the tortoise exclusion fencing around the plant site would preclude tortoises from re-entering or leaving if not found and removed during clearance surveys. During construction and O&M, breaches in the exclusionary fencing may allow tortoises to pass through the barrier and be affected by project-related activities. However, these potential effects would be minimized by the requirement to conduct at least two clearance surveys of the project footprint and regularly inspect all permanent and temporary tortoise exclusion fencing, and repair damage to all temporary and permanent fencing immediately (BIO-9).

Any tortoises overlooked by the initial clearance surveys may be detected during construction activities by routine site inspections by the Designated Biologist (BIO-2) or incidental observations by construction workers. The Worker Environmental Awareness Program would be administered to all onsite personnel and be repeated annually for all permanent personnel and within 1 week of arrival to any new construction personnel (BIO-6). This training would enhance the effectiveness of onsite personnel detecting tortoises during construction and O&M activities, and either avoiding them or ensuring they are properly relocated.

The posting and enforcement of specified speed limits and inspections underneath parked vehicles (BIO-8) would further reduce the risk to any tortoises that inadvertently venture onto the roadway during construction or O&M activities. To reduce the likelihood of tortoises in construction areas being trapped in pipes, trenches, or other excavations and being injured or killed, all pipes greater than 8 cm (3 in) stored close to the ground and all excavations would be covered, fenced, or backfilled, and inspected by the Designated Biologist (BIO-2 and BIO-8). To reduce the likelihood of tortoises being attracted to construction areas by application of water to control dust, the minimal amount of water needed would be applied to dirt roads and construction areas, and a Biological Monitor would patrol those areas to ensure water does not puddle (BIO-8).

Overall, we expect that death and injury of most subadult and adult tortoises would be avoided during construction and O&M activities through compliance with the conservation measures. However, since tortoise eggs and juveniles are difficult to detect, we anticipate that an unknown number of eggs and juveniles occurring in the project footprint would be killed or injured due to construction and O&M activities. We do not expect loss of eggs or juveniles in the project footprint would affect the species local population level since early life stages naturally suffer higher mortality rates and are not as important to the long-term conservation of the species as are adults.

Capture, Handling, and Relocation/Translocation

In addition to construction and O&M-related activities, accidental death and injury could result from capturing, handling, and moving tortoises for the purposes of relocating or translocating them out of the project footprint. Accidental death and injury could result from (1) stress or disease transmission associated with handling tortoises, (2) stress associated with moving individuals outside of their established home range, (3) stress associated with artificially increasing the density of tortoises in an area and thereby increasing competition for resources, and (4) disease transmission from translocated individuals to residents. Capture and handling of translocated, resident, and control tortoises for the purposes of disease testing and monitoring could also result in accidental death or injury from handling to conduct visual health assessments, draw blood for ELISA testing, and secure transmitters.

We anticipate that the applicant would capture and relocate or translocate most subadult and adult desert tortoises from harm's way in the project footprint. Because of the difficulty in locating juvenile desert tortoises or eggs, the applicant may find and move some but not all juvenile desert tortoises or eggs from the project footprint. Depending on where in the plant site tortoises are found, some individuals would be moved relatively short distances [i.e., less than 500 m (1,640 ft)] but likely still within their home range, and others would be moved farther [i.e., more than 500 m (1,640 ft)], outside of their existing home range.

Capturing, handling, and moving tortoises for the purposes of translocating them out of the project footprint may result in accidental death or injury if these methods are performed improperly, such as during extreme temperatures, or if tortoises void their bladders and are not rehydrated. Averill-Murray (2001) determined tortoises that voided their bladders during handling had lower overall survival rates (0.81-0.88) than those that did not void (0.96). If multiple tortoises are handled by biologists without the use of appropriate protective measures and procedures, such as reused latex gloves, pathogens may be spread among individuals. Walde *et al.* (2008) found that the differences in reproduction among translocated, resident, and control desert tortoises were "not likely to be statistically significant" in a study of tortoises at Fort Irwin.

Translocated tortoises may suffer a higher potential for mortality following release when they are moved into unfamiliar territory, and are less likely to have established cover sites for protection prior to home range establishment. Studies have documented various sources of mortality for translocated individuals, including predation, exposure, fire, disease, and flooding (Nussear 2004, Field *et al.* 2007, Berry 1986, U.S. Army 2009 and 2010). The degree to which tortoises move after translocation depends on whether they are released into typical or atypical habitat; that is, if the recipient area supports habitat similar to that of the source area, tortoises are likely to move less (Nussear 2004). In one study, the majority of dispersal movement away from the release site occurred during the first 2 weeks after translocation (Field *et al.* 2007). However, Field *et al.* (2007) and Nussear (2004) showed translocated tortoises appear to reduce movement

distances following their first post-translocation hibernation to a level that is not significantly different from resident populations.

Mean straight-line dispersal distances of adult translocated tortoises (males and females) reported by Nussear (2004, Figures 2 and 4) were approximately 1 km (0.6 mi), 1.5 km (0.9 mi),1.8 km (1.1 mi), 3.5 km (2.2 mi), and 6 km (3.7 mi). Walde *et al.* (2008) reported mean straight-line dispersal distances of adult translocated tortoises using two experimental treatments being 2.6 km (1.6 mi) and 4.2 km (2.6 mi) for males and 1.5 km (0.9 mi) and 2.3 km (1.4 mi) for females. In both of these studies, the mean straight-line dispersal distances were for translocated tortoises released over 500 m (1,640 ft) from their original point of origin.

Maximum straight-line dispersal distances for translocated male tortoises range from 6.2 km (3.9 mi) to 23 km (14.3 mi) in the first year following translocation (Field *et al*. 2007, Walde *et al*. 2008). Maximum straight-line dispersal distances for translocated males at each site reported in these studies ranged from approximately 6.2 km (3.9 mi) (Field *et al*. 2007) to 7.3 km (4.5 mi), 7.4 km (4.6 mi), 11.3 km (7.0 mi), 11.6 km (7.2 mi), and 12.6 km (7.8 mi) (Walde *et al*. 2008). In both of these studies, the maximum straight-line dispersal distances were for translocated male tortoises released over 500 m (1,640 ft) from their original point of origin.

We consider the 23 km (14 mi) dispersal distance likely represents an outlier since only one male tortoise moved this far, roughly twice the distance of the other translocated tortoises. Removing this outlier, the maximum straight-line dispersal distances for males would be 12.6 km (7.8 mi). Based on these data, which constitute the best available scientific and commercial data at this time, we determined that the majority of tortoises translocated long distances [greater than 500 m (1,640 ft)] may disperse up to approximately 12.6 km (7.8 mi) from the release point in first year following release. Since female tortoises were found to move shorter distances than males following translocation (Field *et al*. 2007, Walde *et al*. 2008), the 12.6 km (7.8 mi) distance captures the maximum straight-line dispersal distance of translocated females as well.

Tortoises translocated shorter distances [i.e., less than 500 m (1,640 ft)] are not likely to move as far following release as tortoises moved longer distances. Walde *et al*. (2008) found that maximum straight-line dispersal distance for male tortoises was approximately 1.5 km (0.9 mi) in the first year following translocation.

In a study conducted in Ivanpah Valley, 21.4 percent of 28 translocated tortoises died (Field *et al.* 2007). Other studies have documented mortality rates of 0, 15, and 21 percent in other areas (Nussear 2004), though this study found that mortality rates among translocated desert tortoises was not statistically different from that observed in resident populations. Because Nussear (2004) did not compare mortality rates in resident populations to those in control groups, we cannot determine if the translocation caused increased mortality rates in the resident population. Recent work on translocation associated with the expansion of Fort Irwin (U.S. Army 2009 and 2010) compared the mortality rates associated with resident and translocated populations with that of the control populations and indicated translocation did not increase mortality above

natural levels (Esque *et al.* 2010). This and other fieldwork indicate that tortoise mortality is most likely to occur in the first year after release. After the first year, translocated individuals are likely to settle into new home ranges and mortality is likely to decrease.

Desert tortoises from the BSPP site would be moved into areas already supporting resident tortoises. As a result, there could be increased competition for forage, especially during drought years. Increased tortoise densities may lead to increased inter-specific encounters and thereby increase the potential for spread of disease, potentially reducing the health of the overall population. Increased tortoise densities also may lead to increased competition for shelter sites and other limited resources or increased incidence of aggressive interactions between individuals (Saethre *et al.* 2003). Therefore, recipient sites must be sufficiently large to accommodate and maintain the resident and translocated desert tortoises (Service 2010b). Based on our current estimates of the resident population densities in the recipient sites [i.e., 0.7 tortoises per square km (1.8 tortoises per square mi)] as discussed in the "Environmental Baseline" section, we calculated the maximum allowable final density[3] at the recipient sites. Based on this calculation, no more than 58 tortoises [4] and 108 tortoises [5] can be translocated from the project footprint to the McCoy Mountains site or Upper McCoy Wash site, respectively. Since we estimate that no more than 20 subadult and adult tortoises will be found in the project footprint, translocation of individuals from the project site to either recipient site is not likely to impact the current density of the recipient site. Based on site-specific survey information, if the recipient sites prove to be too small, the applicant would be required to identify a new recipient area for the additional desert tortoises. This action would constitute a significant change in the project description and would likely require re-initiation of consultation.

Translocation has the potential to increase the prevalence of diseases, such as upper respiratory tract disease, in a resident population. Physiological stresses associated with handling and movement or from density-dependent effects could exacerbate this threat if translocated individuals with subclinical upper respiratory tract disease or other diseases begin to exhibit clinical signs of disease due to the stresses associated with handling and movement. This potential conversion of translocated desert tortoises from a non-contagious to contagious state may increase the potential for infection in the resident population above pre-translocation levels.

Following the Service's translocation guidance (Service 2010b), translocated tortoises from the plant site would be assessed for the presence of disease prior to translocation. For tortoises on the plant site that would be moved less than 500 m (1,640 ft), only visual health assessments would be conducted. For tortoises found on the plant site that would be moved greater than 500 m (1,640 ft) to the recipient site, visual health assessments and blood draw for ELISA testing

[3] Defined as 130 percent of the mean density detected in the respective recovery unit (Service 2010b). Mean density in the Eastern Colorado Desert Recovery Unit is estimated to be 7 desert tortoise per square km (18.1 desert tortoise per square mi) based on line-distance sampling conducted between 2001 and 2005 (Service 2006).

[4] Calculated as 6.9 square km recipient site multiplied by 9 desert tortoise per square km [130 percent multiplied by the mean density of the recovery unit (7 desert tortoise per square km)]

[5] Calculated as the 12 square km recipient site multiplied by 9 desert tortoise per square km [130 percent multiplied by the mean density of the recovery unit (7 desert tortoise per square km)]

would be conducted. In addition, visual health assessments and blood draw for ELISA testing would be conducted on an equivalent number of resident tortoises at the recipient site and control site. We cannot precisely predict how many tortoises would require blood draw since the final number depends on the total number of tortoises translocated, the number of tortoises translocated greater than 500 m (1,640 ft), and the actual (versus estimated) number of resident tortoises in the recipient site. However, we anticipate a maximum of 60 tortoises may require blood draw (up to 20 from the plant site, up to 20 resident[6] tortoises from the recipient site, and up to 20 tortoises at the control site).

Following the Service's translocation guidance (Service 2010b), an equal number of translocated, resident, and control tortoises should be monitored for at least 5 years. Therefore, the 60 tortoises anticipated to require blood draw for the purposes of translocation also will carry transmitters and be regularly monitored and handled annually for health assessments and blood draw for ELISA testing. Some potential exists that handling of desert tortoises for the purposes of conducting health assessments and monitoring may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids.

As discussed above, translocated tortoises have been found to disperse up to approximately 12.6 km (7.8 mi) from the release point in first year following release, though tortoises are likely to move shorter distances if habitat at the recipient site is similar to that of the source area. To minimize the risk associated with long-distance dispersal and potential contact between translocated tortoises and diseased resident tortoises, the Service recommends that health assessments and blood draw for ELISA testing is performed on a sample of the resident tortoises within the 12.6 km (7.8 mi) dispersal area to determine disease prevalence within the population. However, for the purposes of the proposed project, we have determined that ELISA testing is not necessary for resident tortoises within the 12.6 km (7.8 mi) dispersal area associated with either recipient site. Our determination is based on the assumption that tortoises translocated from the plant site are likely to remain closer to their release point due to the presence of similar, or better quality, habitat than that on the plant site and are therefore, less likely to come into contact with diseased resident tortoises.

As discussed in the "Environmental Baseline" section, both recipient sites will be located within areas of similar, or better quality, habitat to that found on the western portion of the project area, where we anticipate finding the majority of the tortoises. Availability of water, forage, and cover sites appears to be higher on the western portion of the project area and the recipient sites due to their proximity to the mountains. However, if post-translocation monitoring reveals that tortoise translocated over 500 m (1,640 ft) from the plant site to the recipient site become infected, then a sample of resident tortoises within the 12.6 km dispersal area would be tested to determine disease prevalence before additional tortoises would be translocated to that recipient site.

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[6] As discussed in the "Environmental Baseline" section, we estimate that up to five tortoises may occur in the McCoy Mountains recipient site and up to eight tortoises may occur in the Upper McCoy Wash recipient site. Therefore, our estimate that 20 resident tortoises at the recipient site may require blood draw would cover any additional tortoise up to 20 found during surveys of these recipient sites.

We cannot reasonably predict the increase in disease prevalence within the resident population that may occur due to translocation. However, the following mitigating circumstances are likely to reduce the magnitude of this threat: (1) the applicant would use experienced biologists and approved handling techniques that are unlikely to result in substantially elevated stress levels in translocated animals, (2) desert tortoise on the plant site are currently part of a continuous population with the resident populations of the primary recipient site (McCoy Mountains) and are likely to share similar pathogens and immunities, (3) some of the translocated desert tortoise would be translocated a relatively short distance, which is likely to reduce post-translocation stress associated with long-distance movements, (4) density-dependent stresses are unlikely to occur for the reasons discussed above, (5) any animal that either has clinical signs of disease or tests ELISA-positive would not be translocated, and (6) monitoring of translocated individuals would be implemented to determine the prevalence of disease transmission.

Because ELISA testing can result in false-positive results (i.e., an animal may test positive even though it is not a carrier of the disease), the potential exists for removal of healthy individuals from the translocated population due to concern over disease. These individuals would not be released into the wild and would no longer contribute to the environmental baseline for the action area. Because the applicant would coordinate with the Service and perform follow-up testing of ELISA-positive individuals, the potential for removing false-positive individuals from the translocated population is low. Consequently, we conclude that few, if any, desert tortoises will be incorrectly removed from the population due to false positive results. Similarly, some of the animals that test positive may have survived past disease infections and are healthy. Though our understanding of disease ecology is not complete and removal of these individuals from the wild population could eliminate individuals with superior fitness and genetic adaptations for surviving disease from the gene pool, the low numbers of tortoises involved likely would not be large enough to affect population genetics in the wild.

In conclusion, we do not anticipate that relocating tortoises out of harm's way, but less than 500 m (1,640 ft) from the point of capture, will result in death or injury because these individuals would be moved a relatively short distance and they would remain near or within their home range. Since relocated tortoises typically remain within their home range, we do not anticipate additional significant social or competitive impacts to resident tortoises in the area. However, following release of tortoises translocated outside of their home range, we anticipate a small number may die due to predation, exposure, disease, or competition. We anticipate most of this mortality is likely to occur in the first year after release, during the period that translocated animals are making long-distance movements and attempting to establish new home ranges. In addition, we anticipate that a small number of resident tortoises at the recipient site may die due to predation, exposure, disease, or competition. However, we cannot determine if mortality rates in the resident or translocated populations will be above natural mortality levels for the recipient site. In addition, the potential impacts of capturing, handling, and moving tortoises for the purposes of relocation or translocation would be minimized by the requirement for experienced biologists to handle all tortoises following Service-approved guidelines and relocate individuals out of harm's way or translocate individuals to the recipient site as outlined in the Relocation/

Translocation Plan (BIO-9 and BIO-10). In addition, as outlined in the Relocation/Translocation Plan, translocated tortoises would be monitored, findings reported to the Service, and adaptive management strategies implemented, as needed.

Habitat Loss

To offset permanent losses of 2,816 ha (6,958 ac) of tortoise habitat, a total of 2,816 ha (6,958 ac) of equivalent or better quality habitat would be acquired to benefit tortoise habitat connectivity and habitat linkages between tortoise critical habitat, known populations of tortoises, and/or other preserve lands in the Colorado Desert Recovery Unit in the BLM's NECO bioregional planning unit (BIO-12). These future conservation lands will be conserved and managed in perpetuity for tortoises.

Native shrubs and annual plants used by tortoises for sheltering and feeding adjacent to the project footprint also may be adversely affected by introduced or previously naturalized invasive nonnative plants (also referred to as weeds) that respond positively to ground disturbing activities. Project equipment may transport invasive nonnative plants into the project area where they may become established. Additionally, the potential introduction of noxious weeds may lead to increased wildfire risk (Brooks *et al.* 2003). However, potential degradation of habitat due to spread of invasive nonnative plants would be avoided and minimized by measures outlined in the Weed Management Plan designed to prevent the introduction of any new weeds and the spread of existing weeds as a result of project construction and O&M (BIO-14).

Indirect Effects

Human activities may provide food in the form of trash and litter or water that attracts tortoise predators such as the common raven. 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 nearby Blythe airport and other urban areas provide food, water features, and roosting/nesting substrates (buildings, signs, lamps, and utility poles) that otherwise would be unavailable. Small mammal, fox, coyote, rabbit, lizard, snake, and tortoise road kill along I-10 and other roads provide additional attractants and subsidies for opportunistic predators/scavengers. Road killed wildlife would increase with project construction and O&M traffic, further exacerbating the raven/predator attractions and increasing tortoise predation levels.

Facility infrastructure such as power poles, fencelines, buildings, and other structures on the project site could also provide perching, roosting, and nesting opportunities for ravens. Natural predation rates may be altered or increased when natural habitats are disturbed or modified. 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 the Mojave Desert prior to 1940, the existing level of raven predation on

juvenile tortoises is considered an unnatural occurrence (BLM 1990). In addition to ravens, feral dogs have emerged as significant predators of tortoises in rural residential areas. Though feral dogs may range several miles into the desert and have been found digging up and killing tortoises (Service 1994a, Evans 2001), we are not aware of any reports of feral dogs in the project area.

To minimize the generation of food and water subsidies due to construction and O&M-related activities, all trash materials would be disposed of in self-closing containers and removed daily to prevent the attraction of tortoise predators to the project footprint, road-killed animals would be immediately removed from the project footprint, and the minimal amount of water needed would be applied to dirt roads and construction areas to avoid standing water, with a Biological Monitor patrolling those areas to ensure water does not puddle (BIO-8). Also, increases in raven abundance in the project area would be minimized by measures outlined in the Raven Monitoring, Management, and Control Plan (Raven Plan) which include a program to monitor raven presence in the project vicinity, would determine if raven numbers are increasing, and would implement raven control as needed based on monitoring (BIO-13). The Raven Plan would also address raven monitoring and control at the proposed artificial water source in the McCoy Mountains to minimize impacts to bighorn sheep resulting from the BSPP project (BIO-21). To further minimize indirect and cumulative impacts of raven predation on tortoises associated with the proposed project, the applicant would contribute to the Service's Regional Raven Management Program (BIO-13) developed to address raven predation on tortoises at a population scale in the California Desert region as a conservation action for the species.

In addition, desert tortoise behavior may be impacted by increased noise levels and the presence of full-time facility lighting during construction and operation of the facility over a 30-year period. While we do not have data demonstrating the effect of increased noise levels and the presence of artificial lighting to desert tortoise behavior, several measures proposed to minimize these potential impacts on other sensitive species (BIO-8) will also benefit tortoises.

Given that the proposed construction of the plant site would result in the loss of a 2,768-ha (6,839-ac) block of habitat, the project may also impact tortoises by disrupting movement of individuals to habitat north and south of the project site. For gene flow to occur reliably across the range, populations of tortoises need to be connected by occupied areas of habitat that contain sustainable numbers of tortoises. Desert tortoise distribution and population genetic studies provide evidence that individual tortoises breed with their neighbors, those tortoises breed with their neighbors on the other side, and so on. Removal of 2,768 ha (6,839 ac) of tortoise habitat from the area between I-10 and the upper McCoy Wash area, where tortoises have been reported, may further limit movement of tortoises, though habitat would remain west and east of the project boundaries to provide for some level of connectivity to the upper McCoy Wash after construction of the proposed project.

Effect on Recovery

Per section 2(b), the primary purposes of the Act are to provide a means whereby the ecosystems upon which listed species depend may be conserved, and to provide a program for the recovery of listed species. Per section 2(c), Congress established a policy requiring all Federal agencies to use their authorities in seeking to recover listed species in furtherance of the purposes of the Act. Consistent with these purposes and Congressional policy, sections 3(5), 4(f), 7(a)(1), and the implementing regulations (50 *Code of Federal Regulations* § 402.02) to section 7(a)(2), and related preamble at 51FR19926 through 51FR19957, generally require Federal agencies to further the survival and recovery of listed species in the use of their authorities.

Pursuant to these mandates, our analysis below assesses (1) whether the proposed action adequately offsets its adverse effects to the environmental baseline to the desert tortoise, and (2) the extent to which the proposed action would cause "significant impairment of recovery efforts" or adversely affect the "species' chances for survival to the point that recovery is not attainable" (51FR19934).

The applicant would implement numerous measures to avoid, minimize, reduce, and offset the adverse effects to the relatively few tortoises in the project footprint. Overall, we expect that 20 or fewer subadult and adult and 10 or fewer juvenile desert tortoises would be captured, injured, or killed during construction of the solar facility, and that an unquantifiable number of eggs may be moved or destroyed during construction. Few tortoises of any size would be killed or injured during O&M of the facility. We expect that most subadult and adult tortoises encountered during work activities would be either moved short distances out of harm's way or translocated. Because the BLM and applicant would implement a variety of measures to reduce stress to these animals, we do not anticipate that injury or mortality would result from the handling and relocation of these animals.

We do not anticipate that loss of habitat in the project footprint would substantially reduce the ability of the tortoise to survive and recover in the wild because the recovery plan (Service 1994a) and final rule for designation of critical habitat for the species (Service 1994b) primarily focuses long-term conservation priorities in higher value habitat areas. The proposed acquisition of 2,816 ha (6,958 ac) of tortoise habitat would benefit tortoise habitat connectivity and habitat linkages between tortoise critical habitat, known populations of tortoises, and/or or other preserve lands in the Colorado Desert Recovery Unit in the BLM's NECO bioregional planning unit.

Based on the results of studies discussed above, most of the subadult and adult tortoises moved from the project footprint likely would continue to survive and reproduce at the location they are moved to (i.e., in adjacent habitat or the recipient site). Consequently, we anticipate that the proposed project would not appreciably diminish the reproductive capacity of the species, particularly in light of the relatively few tortoises that would be affected.

The distribution of the tortoise would be minimally reduced due to long-term disturbance associated with the proposed action because the proposed project would result in loss of a small percentage of the habitat in the Eastern Colorado Desert Recovery Unit [which includes the 413,022-ha (1,020,600-ac) Chuckwalla critical habitat unit, a majority of the approximately 404,685.64 ha (1,000,000 ac) Joshua Tree National Park, and additional lands]. This percentage does not constitute a substantial portion of the recovery unit. Given the location of the proposed project in an area near the edge of the tortoise's range, we do not anticipate that the amount of habitat to be lost because of the proposed project would reduce the distribution of the tortoise to an appreciable degree.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service is not aware of any future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area.

CONCLUSION

After reviewing the current status, environmental baseline for the action area, effects of the proposed action, and cumulative effects of the desert tortoise, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of desert tortoises. We base this decision on the following:

1. The applicant will implement numerous measures to ensure that most tortoises are moved out of the project footprint and injury and death of tortoises is minimized (i.e., clearance surveys, exclusion fencing, relocation, translocation, and qualified tortoise biologists).

2. The applicant will implement measures to reduce the potential for increased predation by common ravens, both in the vicinity of the project footprint and regionally, and to reduce the spread of invasive nonnative plants in the project area.

3. Current information from permanent study plots and line distance sampling does not document a statistical trend in adult tortoise densities in the Eastern Colorado Desert Recovery Unit. Nonetheless, given the small number of tortoises affected by the proposed project, we have no information to indicate that development of the proposed project would appreciably reduce the tortoise population levels in this recovery unit.

4. Few, if any, tortoises are likely to be injured and killed as a result of relocation or translocation.

5. Though the proposed project would reduce the amount of available tortoise habitat in the McCoy Valley and thereby result in a loss of habitat connectivity in the McCoy Valley between the Chuckwalla and Chemehuevi DWMAs, sufficient habitat would remain to the west and east of the proposed project to provide connectivity of tortoises in the McCoy Valley in the long term. Relocation of some tortoises into habitat adjacent to the project area, and translocation of some tortoises to a recipient site either adjacent to the project or in the upper McCoy Wash, will increase tortoise numbers in those areas. Successful translocation would minimize these effects by allowing those tortoises to remain in the population and contribute towards recovery of the species.

6. Compensation requirements through BLM, CDFG, and CEC will result in an increase in the quantity and quality of habitat managed for the conservation of the tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below for desert tortoises are non-discretionary and must be undertaken by the BLM so that they become binding conditions of any grant or permit issued to the applicant/permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity covered by this incidental take statement. If the BLM (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant/permittee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT AND EXTENT OF TAKE

We anticipate that the number of desert tortoises that may be taken would be low due to the small number of individuals found within the project footprint and the anticipated effectiveness of conservation measures described as part of the proposed action. However, quantifying the precise number of individuals that may be incidentally taken is not possible because this species is cryptically colored to avoid predation, and spends the majority of its life inhabiting burrows to avoid environmental extremes or predation, making the observation or detection of death or injury difficult. In addition, population numbers fluctuate in response to weather patterns and other biotic and abiotic factors, and population levels and the distribution of individual animals have changed since the species surveys were completed and are anticipated to continue changing over the 30-year life of the project. The number of tortoise eggs and juveniles is even more difficult to quantify because of small size, in addition to the other reasons discussed above. As a result, finding dead or injured individuals within the project area is difficult as individuals may be crushed or buried underground in burrows that were not found or inspected, and otherwise hard to recognize/detect for the reasons discussed above. Because eggs and juveniles are almost never found during clearance surveys, we assume virtually all these early life forms will be killed or injured by construction and O&M activities within the project footprint.

While we cannot provide the precise number of desert tortoises that may be taken, we have estimated the number of subadult and adult tortoises in the project footprint based on the best available information, and based on this estimate have established take thresholds that, if exceeded, will trigger reinitiation of consultation.

Take of desert tortoises is anticipated and exempted as follows:

- The disturbance of up to 2,816 ha (6,958 ac) of habitat from construction and O&M-related activities may result in accidental death or injury of tortoise eggs, juveniles, subadults or adults from crushing, trampling, or burial. If the project impacts more than this acreage of tortoise habitat, the take threshold will be exceeded.

- As discussed in the "Environmental Baseline" section above, we estimate that up to 20 subadult and adult tortoises, up to 10 juveniles, and an unquantifiable number of eggs could occur in the project footprint. While we cannot quantify the precise numbers of tortoises that may be killed or injured as a result of construction or O&M activities for the reasons discussed above, we anticipate the number of subadult and adult tortoises that may be killed or injured will be small because relatively few tortoises (2 individuals) were found during surveys, which indicates an apparently small population in the project footprint, and because most tortoises will be found during pre-project clearance surveys. Therefore, using our best professional judgment in light of best available information, we anticipate that construction of the proposed project will result in the incidental take of two individuals, and that O&M activities will result in incidental take of two individuals per year. However, based on the difficulty of detecting individual tortoises, we anticipate

each report of incidental taking likely represents the actual death or injury of two (2) tortoises. As a result, we anticipate no more than one (1) tortoise may be reported dead or injured from construction and no more than one (1) per year may be reported dead or injured from O&M activities. Thus, if more than one (1) tortoise is found injured or dead during construction activities, and more than one (1) tortoise per year is found injured or dead during O&M activities, the take threshold will be exceeded.

- Take of up to 20 subadult and adult tortoises, up to 10 juveniles, and an unquantifiable number of eggs due to trapping, capture, or collection for the purposes of relocation or translocation from within the project construction and O&M disturbance area. Because the capture, relocation, and release will be conducted by a Service-approved Biologist and, therefore, is not expected to result in direct injury or death of any relocated/ translocated tortoises, we do not want to limit the ability of the Service-approved Biologist to avoid and minimize the direct injury or death of tortoises by relocating/ translocating tortoises found during preconstruction clearance surveys. Thus, all take in the form of trapping, capture, or collection for the purposes of relocation is exempted for any eggs, juveniles, or subadult or adult tortoises found during clearance surveys, monitoring activities, or other incidental observations, subject to the reasonable and prudent measures and terms and conditions below. If any tortoises are directly injured or killed during relocation or translocation, the take threshold will be exceeded.

- All take, in the form of capture or collection of subadult and adult tortoises each in the resident and control population for monitoring. Although these tortoises from the translocated population may be captured multiple times over the course of the post-translocation monitoring effort, we do not anticipate injury or mortality of these individuals due to post-translocation monitoring.

- Take in the form of trapping, capture, or collection of up to sixty (60) subadult and adult tortoises (up to 20 translocatees from the plant site, up to 20 resident tortoises at the recipient site, and up to 20 tortoises at the control site) will be taken, in the form of capture or collection, for the purposes of blood draw to assess disease prevalence. Although such an invasive procedure presents some likelihood that individuals could be injured or killed, we do not anticipate that blood collection will result in the mortality of any individuals because blood draw will be conducted by Service-approved Biologists, following Service-approved methods. If any tortoises are directly injured or killed for the purposes of drawing blood, the take threshold will be exceeded.

IMPACT OF THE INCIDENTAL TAKING ON THE SPECIES

In the accompanying biological opinion, the Service determined that these levels of anticipated take are not likely to result in jeopardy or adversely affect the recovery of the tortoise.

REASONABLE AND PRUDENT MEASURES

The BLM and applicant are implementing conservation measures for this project as part of the proposed action to minimize the taking of desert tortoises. The Service's evaluation in the biological opinion includes consideration of the conservation measures developed by the BLM and applicant to reduce the adverse effects of the proposed project on this species. Any subsequent changes in the conservation measures proposed by BLM or applicant or in the conditions under which these activities currently occur may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 *Code of Federal Regulations* § 402.16. These reasonable and prudent measures are intended to supplement the protective measures that were proposed by BLM and applicant as part of the proposed action, and are necessary and appropriate to minimize the impact of the taking on desert tortoises.

- The applicant shall monitor and report the level of incidental take of desert tortoises to the CFWO throughout the life of the project and report on the effectiveness of the project minimization measures to reduce the impact of incidental take of tortoises.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the BLM and applicant, and all agents/contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and are intended to minimize the impact of the incidental taking. These terms and conditions are non-discretionary.

The following term and condition implements the reasonable and prudent measure above.

a) The applicant shall prepare and provide to the Service and BLM an annual report by December 31 of each year of the project. The annual report shall document but not be limited to, the following:

    - Compliance with project-specifications and conservation measures outlined in this biological opinion, including BIO-1 thru BIO-14, BIO-27, and BIO-28 outlined in the CEC's Commission Decision on the BSPP project (CEC 2010b), as they relate specifically to tortoises.

    - Any activities determined by the Designated Biologist or Biological Monitors to be out of compliance with project-specifications and conservation measures outlined in this biological opinion and the corrective measures implemented to bring the project back into compliance.

- The total amount and location of tortoise habitat disturbed by construction and O&M activities during the reporting year.

- The number and location of tortoises killed or injured during project construction or O&M activities during the reporting year and a description of the circumstances leading to the death or injury of individuals of the species.

- Activities conducted under the Desert Tortoise Relocation/Translocation Plan (BIO-10) during the reporting year, including but not limited to, the number and location of tortoise eggs, hatchlings, juveniles, subadults, or adults located during project activities and relocated or translocated during preconstruction, construction, and/or O&M activities during the reporting year and a detailed description of the relocation/translocation activities, and a detailed description of monitoring activities conducted at the recipient and control sites during the reporting year.

  If more than 20 adult tortoises, or any eggs, hatchlings, juveniles or subadults are found within the project footprint, the Designated Biologist shall immediately report the observation to the CFWO, prior to any relocation/ translocation activities. The CFWO will review the information to determine its consistency with the effects analysis above and if relocation/translocation of additional tortoises would benefit their survival and be consistent with our assumptions in the biological opinion, and if reinitiation of consultation is warranted.

- Activities conducted under the Raven Management Plan (BIO-13) during the reporting year, including but not limited to, the results of raven nest monitoring and removal of raven nests and offending ravens.

- Activities conducted under the Weed Management Plan (BIO-14), including but not limited to, invasive plant species control activities conducted during construction or O&M activities in the project disturbance area during the reporting year and the status of control activities conducted the previous year.

Disposition of Sick, Injured, or Dead Specimens

The CFWO is to be notified immediately at (760) 431-9440 if any desert tortoises are found sick, injured, or dead in the action area. Immediate notification means verbal (if possible) and written notice within 1 workday, and must include the date, time, and location of the carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state.

The CFWO should also be notified immediately at (760) 431-9440 if any endangered or threatened species not addressed in this biological opinion is found dead or injured in the project footprint during the life of the project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location.

Reporting Requirements

Please refer to the "Terms and Conditions" section above for details on reporting procedures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the BLM work with the applicant and Service to determine if the transmittered desert tortoises associated with the translocated populations can be used to answer additional research questions related to translocation or desert tortoise biology.

2. We recommend that the BLM amend the California Desert Conservation Area Plan to prohibit additional renewable energy development (e.g., solar energy facilities, wind development) within the unused portion of the 3,804-ha (9,400-ac) ROW granted for construction and O&M of the BSPP project, particularly within the proposed McCoy Mountains recipient site. We offer this recommendation because this area is likely to be used as a recipient site for translocated desert tortoises from the BSPP project. Additionally, we are aware of two other ROW applications filed with the BLM for development of large-scale solar facilities directly north of the BSPP project (NextEra's McCoy and EnXco's McCoy Soleil projects). Given these proposed projects, the potential exists that desert tortoise habitat adjacent to the McCoy Mountains may be disturbed and fragmented to the extent that desert tortoises and other wildlife populations in the area may be severely compromised.

3. We recommend that the BLM amend the California Desert Conservation Area Plan to prohibit additional renewable energy development (e.g., solar energy facilities, wind development) within the upper bajadas (mapped as "dissected fans" on the NECO Map 3-4, Landforms) in the mountains of northeastern Riverside County. We offer this recommendation because this action would protect the higher quality tortoise habitat in the CDCA plan area. At a minimum, we recommend that BLM prohibit or limit development in the upper bajadas of the McCoy Mountains (mapped as "dissected fans" on the NECO Map 3-4, Landforms) to protect the higher quality tortoise habitat in the region and prevent

isolating the proposed McCoy Mountains recipient site in light of potential future large-scale solar development.

4. We recommend that the BLM ensure that the gen-tie transmission line associated with the BSPP project also is adequate to provide for transmission of electricity from the two other solar projects proposed for construction directly north of the BSPP project: NextEra's McCoy and EnXco's McCoy Soleil projects. Use of a shared gen-tie transmission line through the BSPP project footprint will reduce, and perhaps negate, the need for additional gen-tie transmission lines to the west or east of the BSPP site and thereby, reduce additional destruction/degradation of desert tortoise habitat in these adjacent areas, including the McCoy Mountains recipient site where tortoises translocated from the project footprint may be released.

REINITIATION NOTICE

This concludes formal consultation on the proposed project for the desert tortoise. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this document, please contact Tannika Engelhard at the Carlsbad Fish and Wildlife Office at (760) 431-9440, extension 202.

Attachments:
Table 1 Estimated acreage of desert tortoise habitat permanently and temporarily impacted by construction of the proposed Blythe Solar Power Project.
Figure 1 Blythe Solar Power Project Location
Figure 2 Blythe Solar Power Project Site Plan

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U.S. Fish and Wildlife Service (Service). 2010a. Reinitiation of Endangered Species Act consultation on the effects of the California Desert Conservation Area Plan Amendment for the Coachella Valley, Riverside County, California (FWS-ERIV-10B0278-10F0649). June 30, 2010. Carlsbad, California.

U.S. Fish and Wildlife Service (Service). 2010b. Translocation of desert tortoise (Mojave population) from project sites: Plan development guidance. August 2010. Desert Tortoise Recovery Office, Reno, Nevada.

U.S. Fish and Wildlife Service (Service). 2010c. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). 2010 Field Season. Desert Tortoise Recovery Office, Reno, Nevada.

U.S. Fish and Wildlife Service and National Marine Fisheries Service (Service and NMFS). 1986. Preamble to implementation regulations for interagency cooperation. 50 CFR Part 402. Federal Register 51:19932.

U.S. Fish and Wildlife Service and National Marine Fisheries Service (Service and NMFS). 1998. Endangered Species Consultation Handbook; Final. http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Vasek, F.C., H. B. Johnson, and D. H. Eslinger. 1975. Effects of pipeline construction on creosote bush scrub vegetation of the Mojave Desert. Madroño 23:1-13.

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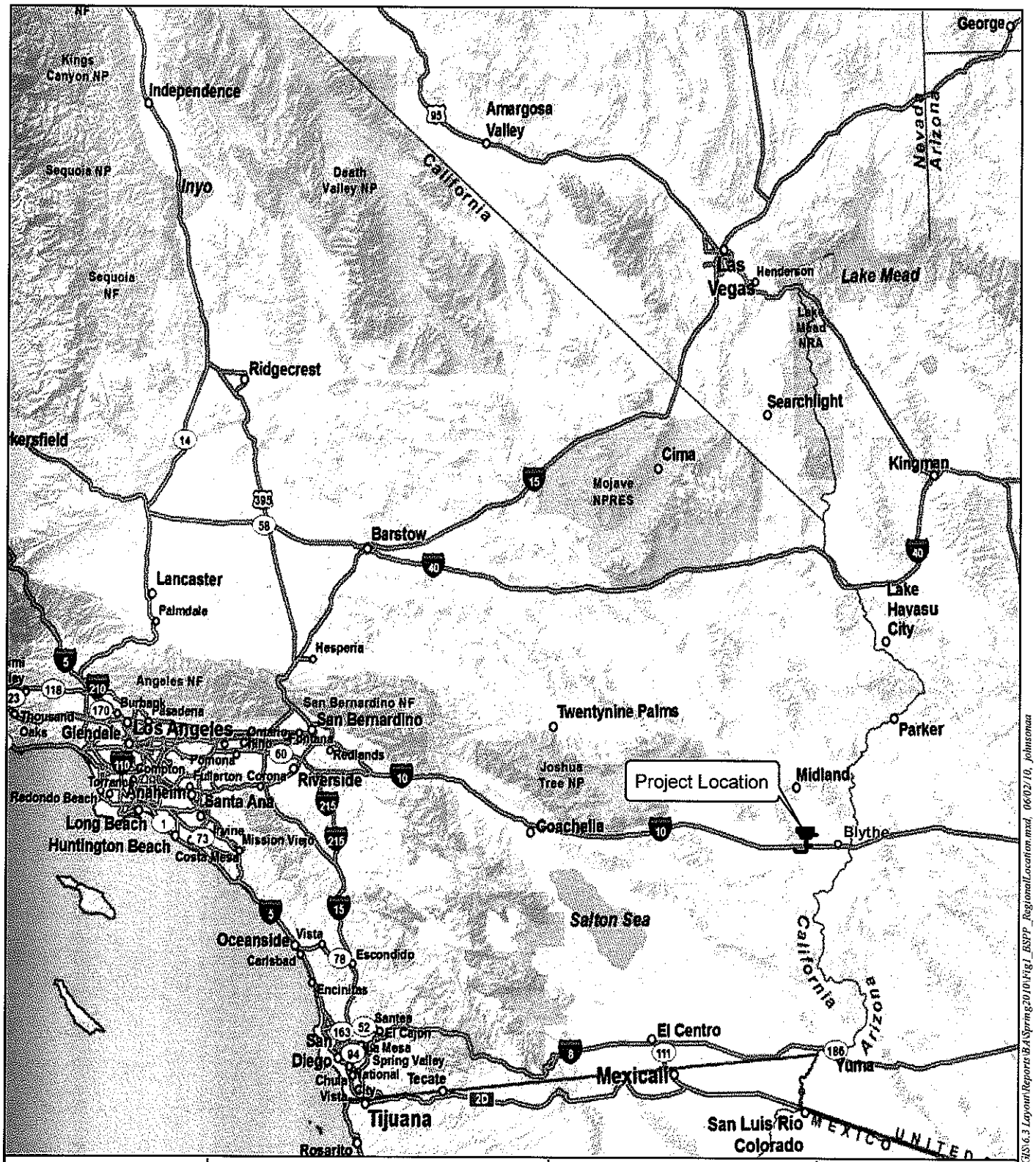
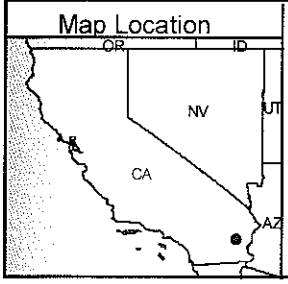


Map Location



1 inch = 40 miles

0 40 80 Miles

N W E S

Source: ESRI; AECOM 2010

Blythe Solar Power Project
Biological Assessment

Figure 1
Regional Map

AECOM

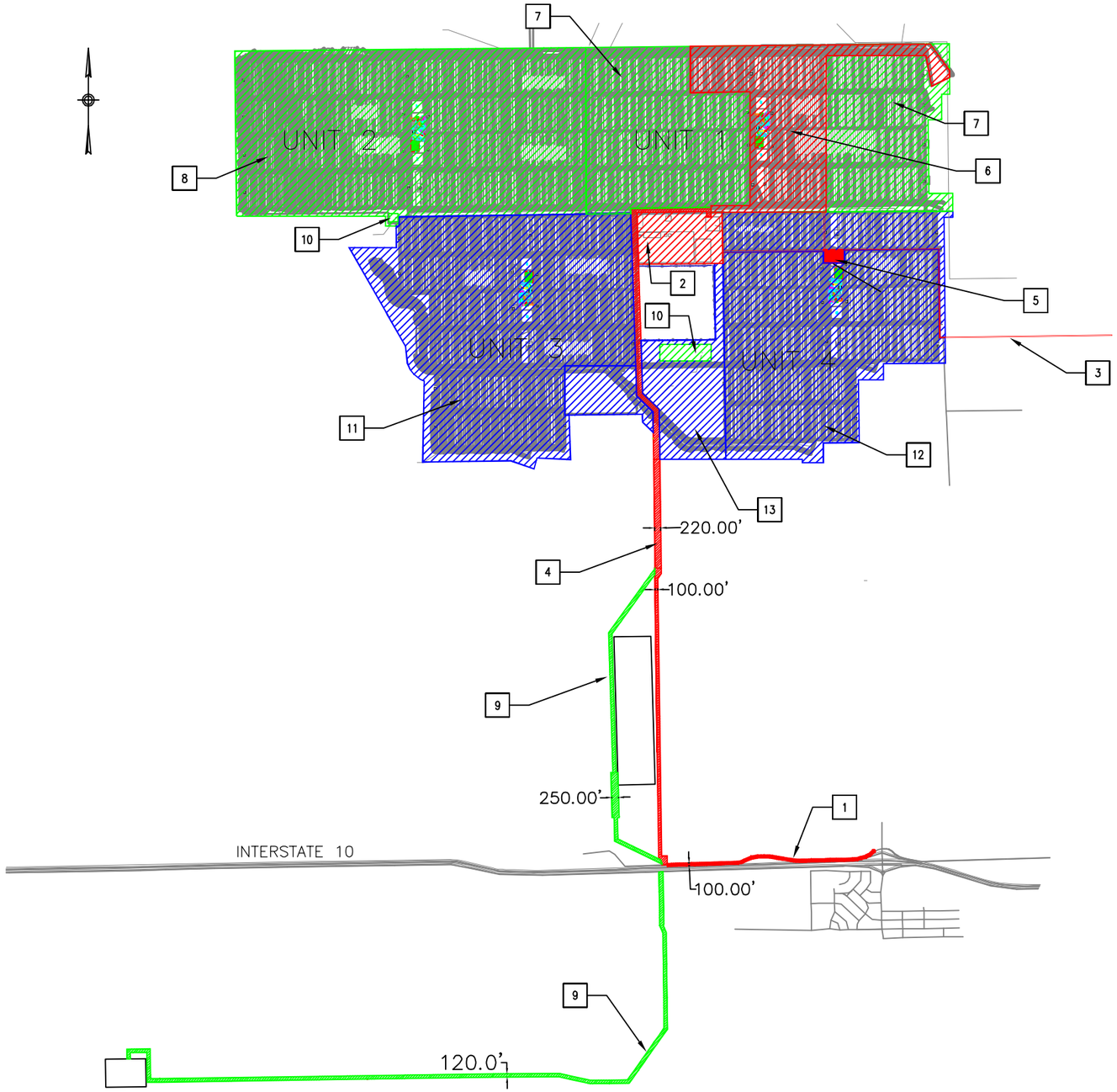
Date: June 2010

Path: P:\2009\09088083 Sol Mil Blythe\6.0 GIS\6.3 Layout\Reports\BASpring2010\Fig1_BSPP_RegionalLocation.mxd, 06/02/10, johnsonaa

Table 1. Estimated acres (ac) and hectares (ha) of desert tortoise habitat that will be permanently and temporarily impacted by construction of the proposed Blythe Solar Power Project.

Vegetation Communities and Other Cover Types	Power Plant Site[1]	Access Roads[2]	Gen-Tie Transmission line[3]	Shared Gen-Tie/Utility Corridor[4]	Temporary Construction Power[5]	Total[6]
Creosote Bush/Big Galleta Grass Association	365.13	0	4.78	0.91	0	371
Desert Dry Wash Woodland	197.08	10.76	3.78	1.32	0	213
Unvegetated Ephemeral Dry Wash	8.55	0	0	0.11	0	9
Creosote Scrub Brush	6,268.50	1.40	28.65	65.21	0.83	6,365
Total[6]	6,839 ac (2,768) ha	12 ac (5 ha)	37 ac (15 ha)	68 ac (28 ha)	1 ac (0.40 ha)	6,958 ac (2,816 ha)

[1] Calculated as the total amount of habitat that will be permanently and temporarily impacted by construction of the power plant site, perimeter security fence, and rerouted drainage channels outside of the perimeter security fence.
[2] Calculated as the total amount of habitat that will be permanently and temporarily impacted due to improvements to Black Rock Road and construction of the new access road to the power plant site.
[3] Calculated as the total amount of habitat that will be permanently and temporarily impacted within the gen-tie transmission line alignment due to construction of the transmission line (including crossing structures, pole pads, crane pads, pulling/splicing sites, spur roads, and access road) outside of the shared gen-tie utility corridor.
[4] Calculated as the total amount of habitat that will be permanently and temporarily impacted within the shared gen-tie and utility corridor due to construction of the gen-tie transmission line and buried telecommunications and natural gas lines (including crossing structures, pole pads, crane pads, and pulling/splicing sites).
[5] Calculated as the total amount of habitat that will be permanently and temporarily impacted due to construction of the temporary construction power line (either buried or overhead) up to the fenced power plant site (including trenching area, crossing structures, pole pads, crane pads, pulling/splicing sites, and new access road).
[6] Totals rounded to the nearest whole number.



PLAN VIEW

SCALE: NTS

LEGEND

- PHASE 1A DISTURBANCE
- PHASE 1B DISTURBANCE
- PHASE 2 DISTURBANCE

ITEM	DESCRIPTION	AREA (ACRES)	DURATION (MONTHS)
DISTURBED AREA PHASE 1A			
1	BLACK ROCK ROAD	17.3	APPROXIMATELY 7 MONTHS
2	SHARED FACILITIES	123	
3	CONSTRUCTION POWER	11.7	
4	UTILITIES CORRIDOR	102.4	
5	WATER WELL	3.28	
6	UNIT 1	515	
	SUB TOTAL	772.68 ACRES	
DISTURBED AREA PHASE 1B			
7	REMAINDER OF U. 1	1185	APPROXIMATELY 30 MONTHS
8	UNIT 2	1708	
9	GEN–TIE	115	
10	LAND TREATMENT UNIT	16	
	SUB TOTAL	3024 ACRES	
DISTURBED AREA PHASE 2			
11	UNIT 3	1495	APPROXIMATELY 32 MONTHS
12	UNIT 4	1342.14	
13	CONSTRUCTION AREA	390.68	
	SUB TOTAL	3227.82 ACRES	
TOTAL		7024.5 ACRES	

NO.	DATE	REVISION	BY	CHK	APP.	APP.	D'BASE UPDATE	NOTES
1	05/17	DISTURBANCE SKETCH (1814 ACRES)						
2	05/19	REDUCED TOTAL DISTURBED AREA (910 ACRES)						
3	06/30	ADDED PHASE 1B AND 2						
4	07/02	REVISED AREAS						

DESCRIPTION COST ACCOUNT

WORK COVERED BY THIS DRAWING CHARGED TO COST ACCOUNT ABOVE

CONSTRUCTION APPROVAL

APPROVAL	DATE	SCALE: AS SHOWN	DATE
		DESIGNED BY	07/02/10
		DRAWN BY	
		CHECKED BY	
		APPROVED BY	
		APPROVED BY	

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PROFESSIONAL SEAL

AECOM

AECOM
2101 WEBSTER STREET
SUITE 1000
OAKLAND, CALIFORNIA 94612

Solar Millennium LLC

JOB NO.

DWG NO. BSPP–200–201

REVISION R–4

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APPENDIX K

DESIGNATED BIOLOGIST RESEMES AND REFERENCES

Raymond D. Romero
Principal Biologist

Professional History

AECOM, 2010
Tetra Tech, 2008-2010
CH2M HILL, 2001-2007
Charis Corporation, 2000-2001
Independent Consultant, 1999-2000
Computer Sciences Corporation 1991-1999
Independent Consultant, 1990-1991
California Department of Fish and Game, 1989-1990

Education

BS, Wildlife Management, Fisheries (minor), Humboldt State University
AA, General Liberal Arts and Sciences, Ventura College

Registrations

Certified Wildlife Biologist (CWB), TWS, 2007

Years of Experience

With AECOM 0
With other firms 21

Technical Specialties

Regulatory Permitting
Desert Ecology
USFWS Authorized Desert Tortoise Biologist

Mr. Romero has over 21 years of professional experience as a staff and consulting wildlife biologist supporting various corporations, consulting firms, military installations, and Federal/State regulatory agencies. He has over 18 years experience managing various projects and supervising multi-disciplinary environmental professionals. Mr. Romero has over 10 years experience supporting Department of Defense (DoD) contracts including the United States (U.S.) Air Force, Army, Marines and Navy. In 2007, he received his Wildlife Biologist Certification from The Wildlife Society (TWS). He has also been an authorized biologist on over 50 U.S. Fish and Wildlife Service (USFWS) biological opinions for the desert tortoise. His primary duties have included technical and management support to ensure compliance with various environmental regulations such as the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), Endangered Species Act (ESA), Sikes Act (SA), Migratory Bird Treaty Act (MBTA), Fish and Wildlife Coordination Act (FWCA), Clean Water Act (CWA), as well as numerous State and DoD regulations. He has routinely coordinated with such agencies as the USFWS, U.S. Department of Agriculture (USDA), U.S. Geological Survey-Biological Resources Division (USGS-BRD), Natural Resources Conservation Service (NRCS), National Park Service (NPS), U.S. Bureau of Land Management (BLM), U.S. Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), California State Parks Service (CSPS), Federal Energy Regulatory Commission (FERC), California Energy Commission (CEC), California State Lands Commission (CSLC), California Public Utilities Commission (CPUC), Nevada Department of Wildlife (NDOW), Arizona Game and Fish Department (AGFD), and Union Pacific Railroad (UPR). He has obtained permits including USFWS Biological Opinion (BO), USFWS Section 10A permit, USFWS Right-of-Way (ROW) and Standard Use Permit (SUP), USFWS depredation permit, BLM ROW permit, CDFG Section 2081 permit, CDFG 1600 Agreement, CDFG scientific collecting permit, CWA Section 401/404 permit, and NPS SUP.

Professional Affiliations

The Wildlife Society
Desert Tortoise Council
The Nature Conservancy

Training and Certifications

CPR and First Aid, AECOM, 2010
Driver Training, AECOM, 2010
Supervisor Training, Tetra Tech, 2009
Loss Control Leadership, Tetra Tech, 2009
Project Management (PM 101 and 201), Tetra Tech, 2008
Wind Energy Project Management , Tetra Tech, 2008
Bat Ecology and Field Techniques Workshop, TWS, 2006
Bat Management Conference, TWS, 2005
California Tiger Salamander Workshop, TWS, 2003
Flat-tailed Horned Lizard Workshop, BLM, 2001
Southwestern Willow Flycatcher Workshop, Southern Sierra Research Station, 2001
Desert Springs & Wetlands Assessment Workshop, Desert Managers Group, 2001
Desert Tortoise Line-Distance Sampling Workshop, USFWS, 2001
Frontline Leadership, Computer Sciences Corporation, 1999
Environmental Compliance Assessment Management, Shipley and Associates, 1999
National Military Fish and Wildlife Association Conference, Wildlife Management Institute, 1998
Effective Technical Writing, Shipley and Associates, 1996
Regional Habitat and Species Conservation Planning Conference, UC Davis, 1996
The Wildlife Society Annual Conference, TWS, 1995 - 1998, 2001, 2003, 2009
Desert Tortoise Conference, Desert Tortoise Council, 1992 - 1995, 2001, 2003, 2009
Mohave Ground Squirrel Workshop, TWS, 1992, 2005
Desert Tortoise Workshop, Desert Tortoise Council, 1990, 1993, 2000 – 2006 (Instructor)

Experience

Southern California Edison, Stirling Transmission Line, Mojave Desert, California. Principal Biologist.
Performed vegetation community mapping and habitat suitability assessment along a nearly 100-mile long portion of the Stirling transmission line corridors – Pisgah to Gale substations and Pisgah to Lugo substations. Supervised up to 6 field biologists. Assisted with production of a biological resources technical report to document the findings. [06/2010: AECOM]

Southern California Edison, Leatherneck Transmission Line, Yucca Valley, California. Principal Biologist. Performed a biological survey for special status species within a 22-mile long portion of the Leatherneck transmission line corridor. [05/2010: AECOM]

CPV, Lazy J Wind Energy Project, New Mexico. **Project Manager.** Managed biological resource surveys and technical reports in support of this proposed wind energy project. [04/2010-05/2010: Tetra Tech]

RES, Granite Mountain Wind Energy Project, Apple Valley, California. **Project Manager.** Managed biological resource surveys, technical reports, agency coordination, and regulatory permitting in support of this proposed wind energy project in southern California. [03/2010 - 05/2010: Tetra Tech]

CPV, Saltdale Wind Energy Project, Ridgecrest, California. Project Manager. Managed biological and cultural resource surveys, technical reports, Worker Environmental Awareness Program (WEAP), and agency coordination in support of this proposed wind energy project in southern California. [11/2009 - 05/2010: Tetra Tech]

Iberdrola, Dillon Wind Energy Project, San Gorgonio Pass, California. **Project Manager**. Managed biological resource survey and technical report in support of this wind energy project in southern California. [07/2009 - 11/2009: Tetra Tech]

US Navy, Moffett Field, California. Task Manager. Managed biological resource technical report in support of a remediation project. [04/2009 - 5/2010: Tetra Tech]

Iberdrola, Amargosa Solar Energy Project, Amargosa Valley, Nevada. **Project/Task Manager.** Project manager of engineering support, cultural resource survey, technical reports, and agency coordination in support of a proposed solar energy project in southwestern Nevada. Biological resources task manager to conduct plant and wildlife surveys in Spring 2010 and produce technical reports in support of the EIS. [01/2009 - 05/2010: Tetra Tech]

Cogentrix, Proposed Solar Energy Projects, Silurian Valley and Daggett, California and Jean, Nevada. Task Manager. Biological resources task manager that led wildlife, botanical, and waters field surveys at 4 proposed utility scale solar sites. Managed staff and subcontractors, produced proposals, procured equipment, consulted with agencies, produced and reviewed technical reports. Support in anticipation of two Applications for Certification (AFC) documents for southern CA, two EIS documents for southern NV and various permit applications. [07/2008 - 05/2010: Tetra Tech]

eSolar, Alta Vista/Gaskell/Willow Springs Solar Energy Projects, Antelope Valley, California. Project Manager. Managed staff and subcontractors in support of the three

AFCs for the proposed solar energy projects. [07/2008 - 09/2009: Tetra Tech]

Iberdrola, Tule Wind Energy Project, Eastern San Diego County, California. Project Manager. Managed biological and cultural resource surveys, technical report s, agency coordination, and production of an EA in support of a proposed wind energy project. [07/2008 - 05/2010: Tetra Tech]

Confidential Client, Alternative Energy Prospecting in Arizona, California, Colorado, New Mexico, and Utah. Task Manager. Biological resoruces task lead in support of five critical issues analysis (CIA) reports. [03/2008 - 05/2008: Tetra Tech]

Edison Mission Energy, Proposed Solar Energy Project, Edwards, California. Task Manager. Biological resources task lead in support of a CIA field survey and report for a proposed site in southern California. [03/2008 - 04/2008: Tetra Tech]

Florida Power and Light (FPL), Solar Energy Prospecting, Mojave Desert, California. Task Manager. Biological resources task lead in support of a due diligence desk top analysis and ground truthing for various sites in southern California. [03/2008 - 09/2008: Tetra Tech]

PPM Energy, Inc., Mojave Desert Wind Energy Projects, Mojave Desert, California. Task Manager. Provided management and technical support for biology related tasks including proposals, literature searches, and special-status species (desert tortoise, burrowing owl, Mohave ground squirrel, and raptor) presence/absence surveys. Provided technical writing for fatal flaws analyses of three potential wind energy farms. Interfaced with BLM staff on surveying and reporting efforts. [08/2007 - 10/2007: CH2M Hill]

Los Angeles County Sanitation District, Mesquite Regional Landfill Project, El Centro, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, awareness trainings, special-status species (plants, desert tortoise, burrowing owl, and nesting migratory bird) presence/absence surveys, compliance monitoring and technical reporting for the construction of the landfill railroad spur. Authorized biologist to work under the auspices of the USFWS BO issued for the project. [01/2007 - 10/2007: CH2M Hill]

BrightSource Energy, Ivanpah Solar Energy Generating System (ISEGS) Project, Primm, Nevada. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, habitat characterization, special-status species (plants, desert tortoise and raptor) presence/absence surveys, and technical writing (fatal flaws analyses, Application for Certification, and Biological Assessments [BA]) for the proposed installation of a 5.25 square mile solar energy plant. Provided supervision of numerous staff and subcontract biologists for the field survey effort. Worked with GIS to create data dictionaries to standardize data collection. Coordinated with USFWS, BLM, CDFG and CEC regarding surveying, reporting, and permitting efforts. [12/2006 - 10/2007: CH2M Hill]

County of Santa Barbara, Lompoc Wind Energy Farm Project, Lompoc, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, habitat characterization and mapping, special-status species surveys, avian point counts, and technical writing for the proposed installation of a 1,000 acre wind energy farm. Technical writing was provided for the draft EIR. Coordinated with the County of Santa Barbara, local experts, and Audubon Society. [08/2006 - 10/2007: CH2M Hill]

Corrections Corporation of America, California City Prison Expansion Project, California City, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, agency coordination, technical writing in support of the supplemental EIR, special-status species (desert tortoise, Mohave ground squirrel and burrowing owl) presence/absence surveys, awareness training, compliance monitoring, and agency reporting. Authorized biologist to work under the auspices of the USFWS BO issued for the project. [06/2006 - 10/2007: CH2M Hill]

U.S. Air Force, Plant 42 Area of Concern 3 Project, Palmdale, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, special-status species (plants, desert tortoise, Mohave ground squirrel, burrowing owl, migratory bird) surveys, production and presentation of an environmental awareness training, as well as coordinating and writing technical reports for the Department of Toxic Substances Control and CDFG. [05/2006 - 10/2007: CH2M Hill]

National Aeronautics and Space Administration, X-37 Test Program, Edwards Air Force Base, California. Task Manager. Provided management and technical support for all biology related tasks including literature searches, agency coordination, technical writing in support of the EA and permitting for the proposed National Aeronautics and Space Administration (NASA) X- 37 Test Program. Focused wildlife species included the desert tortoise. Coordinated with NASA and Air Force personnel on EA content. [11/2003 - 05/2004: CH2M Hill]

California High Speed Rail Authority, California High Speed Rail Project, Sacramento, California. Task Manager. Co-wrote the biological resources and jurisdictional waters technical evaluation for the linear railway project segment between Los Angeles and San Diego, CA via the Inland Empire. The program level analysis primarily relied on GIS, databases, and literature searches focusing on jurisdictional waters including wetlands and vernal pools, sensitive plant communities, threatened and endangered species, species of special concern, and wildlife movement corridors. The evaluation was incorporated into the joint EIS/EIR for the project. [10/2002 - 04/2003: CH2M Hill]

Pacific Gas and Electric, Investigative and Remedial Action Project, Hinkley, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, special-status species (desert tortoise, Mohave ground squirrel, and burrowing owl) surveys, technical writing in support of the Mitigated Negative Declaration (MND) and permitting for the ground water treatment system and extraction wells. Authorized biologist to work under the auspices of the USFWS BO issued to Pacific Gas and Electric (PG&E). [08/2002 - 10/2007: CH2M Hill]

Pacific Gas and Electric, Investigative and Remedial Action Project, Topock, Arizona. Project Manager. Provided long-term management and technical support for the groundwater remediation project. Managed nearly 1 million dollar budget, provided oversight of numerous staff and subcontract biologists, and responsible for numerous reports and permits. Liaison between regulatory agencies (USFWS, BLM, and CDFG) and project staff. Biological oversight and support included special-status species (desert tortoise and southwestern willow flycatcher) surveys, wetlands and jurisdictional waters delineations, preconstruction surveys, compliance monitoring, awareness trainings, and technical writing. Produced numerous biological reports, construction completion reports, restoration plan, streambed alteration agreement applications, BAs including a programmatic biological assessment, various sections for CEQA documents, and

regulatory permits (USFWS BO, BLM ROW, USFWS ROW/SUP, CDFG 1600, etc.). Authorized biologist to work under the auspices of the USFWS BO issued to PG&E. [08/2002 - 10/2007: CH2M Hill]

Lockheed Martin, On-call Biological Support Services, Palmdale, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, special-status species (desert tortoise, Mohave ground squirrel, burrowing owl, and migratory bird) surveys, production and presentation of a desert tortoise awareness training, and Section 7 Consultation with the USFWS to obtain a BO for the desert tortoise. Tasks performed at Lockheed Martin Plants 9 and 10. Regularly interfaced with client. Coordinated with USFWS and CDFG regarding Section 7 and 2081 permitting, respectively. Authorized biologist to work under the auspices of the USFWS BO issued to Lockheed Martin. [07/2002 - 10/2007: CH2M Hill]

PPM Energy, Inc., Fairmont Wind Energy Project, Lancaster, California. Task Manager. Provided management and technical support for all biology related tasks including proposals, literature searches, habitat characterization and mapping, special-status species surveys, avian point counts, and technical reporting for the proposed installation of a wind farm. Technical writing support was provided for the draft EIR and regulatory permitting. [03/2002 - 11/2005: CH2M Hill]

Los Angeles Department of Water and Power, Owens Lake Dust Mitigation Project, Owens Lake, California. Task Manager. As the biological resources task lead, provided management and technical support for wildlife biology related tasks including the Western Snowy Plover Mitigation Monitoring Program. Over four years, managed an annual budget of more than 0.5 million dollars, provided oversight of several staff and subcontract biologists, and responsible for numerous deliverables. Streamlined the environmental compliance reporting process for the appropriate regulatory agencies. Responsible for a program that entailed performing awareness trainings, preconstruction and presence/absence surveys, and mitigation monitoring. Liaison between the field biologists and client/regulatory agencies. Provided technical writing support for several CEQA documents, regulatory permits, and biological reports. Routinely coordinated and ensured compliance with CDFG, CSLC, and Great Basin Unified Air Pollution Control District permit conditions to minimize potential impacts to sensitive biological resources. [01/2002 - 12/2006: CH2M Hill]

Pacific Gas and Electric, Environmental Permitting Review, San Francisco, California. Senior Wildlife Biologist. As part of a senior review team, categorized several hundred land, planning, and environmental permits in preparation for the restructuring of PG&E. Key elements of the permits were entered into a standardized Excel spreadsheet. Permits included grants, titles, deeds, right of ways, easements, joint use agreements, etc. [01/2002 - 05/2002: CH2M Hill]

BLM, Imperial Sand Dunes Recreation Area, El Centro, California. Senior Wildlife Biologist. Served as the liaison between CH2M HILL and the BLM. Onsite within the BLM office full-time and coordinated with BLM staff on a daily basis. Assisted BLM with any and all matters pertaining to the lawsuit filed by the Center for Biological Diversity and other environmental organizations against the BLM. Consulted with the USFWS on behalf of the BLM. Performed substantial literature searches and data collections. Prepared case files for court appeals. Established and maintained the legal administrative record. Co-wrote and provided technical assistance with three major documents prepared for the BLM Imperial Sand Dunes Recreation Area including the BA, Recreation Area Management Plan, and EIS. The documents focused on the following special-status

species Peirson's milkvetch, desert tortoise, flat-tailed horned lizard, and Colorado Desert fringe-toed lizard. [10/2001 - 03/2002: CH2M Hill]

Monument 3D, Seismic Exploration Project, Los Banos, California. Biological Consultant. Provided part-time biological surveying and monitoring support for the Monument 3D Seismic Project located in Los Banos, CA. Support was a cooperative effort with the ACOE, USFWS, and CDFG. The project traversed 250 square miles and several sensitive biological resource habitats including Volta and Los Banos State Wildlife Areas, San Luis National Wildlife Refuge, Waters of the U.S., San Joaquin kit fox, San Joaquin antelope squirrel, riparian brush rabbit, riparian woodrat, giant garter snake, blunt-nosed leopard lizard, burrowing owl, and numerous special status plant species. Responsibilities included compliance with the ACOE Nationwide 6 Permit, USFWS BO, CDFG Memorandum of Agreement (MOA), seismic plan of operations, and several other protection measures. Coordinated with the third party USFWS/CDFG biological monitor, project biologists, and seismic personnel. Conducted pre-activity surveys, compliance monitoring, and ecological restoration support. Provided verbal summaries and written standardized monitoring reports. Additional responsibilities included recording sensitive species and sign, minimizing project impacts, and reporting noncompliance issues. [03/2002 - 08/2002: Bio Environmental Associates]

U.S. Army, Fort Irwin, California. Project Manager/Senior Wildlife Biologist. Provided managerial and technical support to the Fort Irwin Directorate of Public Works to ensure compliance with Federal, State, local, and Army Regulations (ARs) pertaining to natural resources. These regulations included NEPA, ESA, SA, MBTA, FWCA, CWA, and AR 200-3 as well as other ARs. Provided support to other programs within the department such as Air and Water Quality (AWQ), Hazardous Waste (HW), and Cultural Resources. Administrative writing experience included standard operating procedures, statements of work, statements of qualifications, proposals, and cost estimates. Technical writing experience included EIS and EA support, ESA annual reports, resource management plans, biological assessments, damage assessments, mitigation/monitoring plans, compliance monitoring reports, regulatory coordination letters, and standardized field forms. Fieldwork experience included biological research, presence/absence surveys, clearance surveys, zone of influence surveys, line-distance sampling, compliance monitoring, awareness training, radio tagging and tracking, passive integrated transponder (PIT) tagging, wildlife relocations, wildlife damage control, ecological restoration, and floral/faunal inventories. Responsible for managing sensitive species and habitats including desert tortoise, Lane Mountain milkvetch, Mohave ground squirrel, burrowing owl, American badger, LeConte's thrasher, golden eagle, prairie falcon, loggerhead shrike, Mojave fringe-toed lizard, Waters of the US (8 playas and 12 natural springs), Joshua tree woodland, and desert tortoise critical habitat. Permit coordination and authorizations included ESA Section 7 consultation, ESA compliance monitor authorization, line-distance sampling, MBTA depredation, and State scientific collecting permits. Authorized biologist on USFWS biological opinion for the desert tortoise at Fort Irwin. Familiar with various Federal, State, and local protocols and guidelines pertaining to biological field techniques and documentation. Routinely coordinated with Military Police on wildlife damage control issues. Interfaced with client (Army) on a daily basis. Experienced with fiber optic scope, Palm Pilot, GPS, and GIS technology. Participated in numerous educational briefings and community outreach programs. Received DoD defensive driver's and explosive ordnance training. [11/2000 - 10/2001: Charis Corporation]

Level (3), Fiber Optic Communications Line Installation Project, Mojave Desert/Tehachapi Mountains/San Joaquin Valley, California. Biological Consultant. Provided environmental compliance support as outlined in the EIR, Biological Evaluation

(BE), and various regulatory permits for the Level (3) Communications Fiber Optic Project. Responsible for the segment located between Cajon Pass and Bakersfield, CA. Support was a cooperative effort with the ACOE, USFWS, CDFG, CPUC, and UPR. This linear project traversed several sensitive biological resource habitats including desert tortoise, Tehachapi slender salamander, yellow-blotched salamander, western spadefoot toad, San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, Mohave ground squirrel, burrowing owl, elderberry beetle, Joshua tree woodland, oak tree woodland, and Waters of the U.S. Responsibilities included compliance with the ACOE nationwide permit, CDFG streambed alteration agreement, and numerous USFWS, CDFG and County protection measures. Assumed responsibilities of lead field biologist. Coordinated with biologists, archaeologists, environmental inspectors, and construction personnel on a daily basis. Provided awareness trainings, pre-activity surveys, compliance monitoring, and ecological restoration support. Provided daily verbal summaries and written monitoring reports. Also recorded sensitive species and sign, minimized project impacts, and reported noncompliance issues. Received UPR 2000 safety training. [1/2000 - 10/2000: Chambers Group]

AT&T, Telephone Communications Line Removal Project, Mojave Desert, California. Biological Consultant. Provided environmental compliance support as outlined in the EIR, BE, and various regulatory permits for the AT&T P140 Coaxial Cable Removal Project located between Baker, CA and Laughlin, NV. Support was a cooperative effort with the ACOE, USFWS, NPS, CDFG, BLM, and CPUC. This linear project traversed several sensitive biological resource habitats including Mojave National Preserve, desert tortoise, desert bighorn sheep, Mohave ground squirrel, burrowing owl, Joshua tree woodland, and Soda dry lake. Responsibilities included compliance with the EIS, ACOE nationwide permit, CDFG streambed alteration agreement, USFWS BO for the desert tortoise, NPS standard use permit, construction plan of operations, and several other protection measures. Authorized biologist to work under the auspices of the USFWS BO issued for this project. Assumed responsibilities of assistant lead biologist. Coordinated with project biologists, NPS, BLM, and construction personnel on a daily basis. Provided awareness trainings, pre-activity surveys, compliance monitoring, and ecological restoration support. Provided daily verbal summaries and several written standardized reports. All desert tortoises within the zone of impact were captured, processed, and relocated. Processing entailed weighing, measuring, marking, sexing, health profiling, diagramming, and photographing each tortoise. Sensitive plants including Joshua trees and cacti were flagged and avoided when possible. Joshua trees directly within the right-of-way were excavated and relocated nearby. Additional responsibilities included recording sensitive species and sign, collecting desert tortoise shell remains, minimizing project impacts, and reporting noncompliance issues. [10/1999 - 11/1999: On-track Consulting]

U.S. Air Force, Edwards Air Force Base, California. Program Manager. Directed the conservation program comprising of natural resources, cultural resources, and Environmental Impact and Analysis Process (EIAP) staff in support of AFFTC/EM. Additionally, supported joint efforts with the US Army, Navy, and Marines. Managed an annual 2.5 million dollar budget with a staff consisting of over 40 biologists, archaeologists, and environmental planners. Assumed responsibilities of the Environmental Department Manager in his absence. Department comprised of over 100 staff members and an annual 7 million dollar budget. Responsible for providing technical and administrative support to ensure compliance with Federal, State, local, and Air Force regulations pertaining to natural resources, cultural resources, and EIAP. These regulations included NEPA, ESA, SA, MBTA, FWCA, CWA, National Historic Preservation Act, Archaeological Resources Protection Act, and Native American Graves Protection and

Repatriation Act. Provided support to other programs within the department such as AWQ, HW, Installation Restoration Program, GIS, and Community Relations Program. Responsible for employee hiring, development, evaluation, morale, discipline, and termination. Developed, planned, budgeted, scheduled, tracked, and reported overall support using database, spreadsheet, presentation, and timeline software. Produced statements of work, statements of qualifications, budgets, proposals, cost estimates, and metrics. Established priorities to ensure tasks were completed within time and budget constraints. Procured necessary materials and equipment to perform program tasks. Reviewed, commented, and approved all conservation reports and other government deliverables prior to customer submittal. Interfaced with client (Air Force) on a daily basis. Member of several technical and review committees. Promoted employee development through continued education courses and professional memberships. Participated in employee recognition programs. Promoted community outreach by volunteering for Science Fairs, Job Fairs, Base Open House, Antelope Valley Fair, and classroom/field trip educational events for local schools. [09/1998 - 09/1999: Computer Sciences Corporation]

U.S. Air Force, Edwards Air Force Base, California. Section Lead. Supervised and trained several natural resources staff in support of AFFTC/EM. Provided technical and administrative support to ensure compliance with Federal, State, local, and Air Force regulations pertaining to natural resources. These regulations included NEPA, ESA, SA, MBTA, FWCA, and CWA. Responsible for developing, planning, budgeting, scheduling, tracking and reporting using database, spreadsheet, presentation, and timeline software. Provided technical support to other programs within the department such as EIAP, CR, AWQ, HW, Installation Restoration Program, GIS, and Community Relations Program. Administrative writing experience included statements of work, statements of qualifications, standard operating procedures, budgets, proposals, cost estimates, and metrics. Technical writing experience included EIS and EA support, ESA No Affect Letters, ESA Annual Reports, resource management plans, biological assessments, damage assessments, mitigation/monitoring plans, standardized field forms, and compliance monitoring reports. Fieldwork experience included biological research, presence/absence surveys, clearance surveys, pre-activity surveys, compliance monitoring, awareness training, radio telemetry, bird banding/tagging, small mammal trapping, wildlife relocations, wildlife damage control, ecological restoration, and floral/faunal inventories. Responsible for managing sensitive species and habitats including desert tortoise, desert cymopterus, Barstow woolly sunflower, alkali mariposa lily, Mohave ground squirrel, burrowing owl, American badger, LeConte's thrasher, golden eagle, prairie falcon, loggerhead shrike, Waters of the US (3 playas and 1 wetland), Joshua tree woodland, mesquite woodland (Los Angeles Significant Ecological Area), yardangs, and desert tortoise critical habitat. Permit coordination experience included writing 16 BAs in support of ESA Section 7 consultations, ESA compliance monitor authorizations, CWA Section 401/404 permits, MBTA depredation permits, State scientific collection permits, and bird banding permits. Familiar with various Federal, State, and local protocols and guidelines pertaining to biological field techniques and documentation. Established priorities to ensure tasking was completed within time and budget constraints. Reviewed, commented, and approved all natural resources reports and other government deliverables prior to customer submittal. Assisted customer with development of an overall natural resources management strategy for Edwards AFB. Administered the Base desert tortoise adoption, natural resources awareness training, and compliance monitoring programs. Routinely coordinated with Security Police on wildlife damage control issues. Maintained client (Air Force) relationships on a daily basis. Coordinated directly with project proponents to minimize environmental impacts. Developed various mitigation measures. Experienced with GIS and GPS technology. Authorized biologist on over 40 USFWS BOs issued to Edwards AFB. Promoted community outreach by volunteering for numerous

Science Fairs, Job Fairs, Base Open House, Antelope Valley Fair, and classroom/field trip educational events for local schools. Received DoD defensive driver's and explosive ordnance training. Co-recipient of the Regional Award of Merit for Environmental Resources and Conservation by the Kern Council of Governments. [07/1991 - 08/1998: Computer Sciences Corporation]

BLM, Desert Tortoise Study Plot, Kramer Junction, California. Biological Consultant. Original research team member of a long-term mark-recapture study designed to monitor the desert tortoise. Established a new 60-day study plot near Kramer Junction, CA. Study was a cooperative effort with the USFWS, BLM, and CEC. Authorized biologist to work under the auspices of the USFWS BO issued for this project. Surveyed, captured, processed, and released desert tortoises. Processing entailed identifying, weighing, measuring, marking, sexing, health profiling, diagramming, photographing, and attaching radio transmitters and PIT tags. Additional responsibilities included daily radio tracking, recapturing and processing tortoises, recording desert tortoise sign, collecting shell remains, and assessing human impacts. Provided thorough documentation using several standardized field forms. Procedures were accomplished in accordance with permits, protocols, and guidelines. [04/1991 - 06/1991: EnviroPlus Consulting]

KRGT, Kern River Gas Transmission Pipeline, Mojave Desert, California. Biological Consultant. Provided environmental compliance support as outlined in the EIR, BO, Memorandum of Understanding and various other regulatory permits for the Kern River Gas Transmission Pipeline Responsible for the segment located between Mesquite, NV and Barstow, CA. Support for this linear project was a cooperative effort with the ACOE, USFWS, CDFG, BLM, and FERC. Ensured adherence to established permit conditions, mitigation measures, protocols, and guidelines to minimize environmental impacts. Authorized biologist to work under the auspices of the USFWS BO issued for this project. Responsible for awareness trainings, pre-activity surveys, compliance monitoring, tortoise relocations, ecological restoration, and daily reports. Produced extensive field notes to document desert tortoises and sign, daily construction activities, and any noncompliance issues. Operated fiber optic scope to ensure no tortoise presence within burrows. [03/1991 - 04/1991: Dames and Moore]

U.S. Air Force, Edwards Air Force Base, California. Biological Consultant. Provided environmental compliance support with Federal, State, local, and Air Force regulations pertaining to natural resources including NEPA, ESA, MBTA, FWCA, and CWA. Responsibilities included biological assessments, damage assessments, pre-activity and clearance surveys, inventories, compliance monitoring, and awareness trainings. Provided natural resources sections and reviews of environmental assessments. Conducted field surveys and produced biological assessments in support of Section 7 consultations. Authorized biologist to work under the auspices of the USFWS BOs issued to the Air Force. [10/1990 - 06/1991: Computer Sciences Corporation]

Del Webb/Summerlein Homes, Las Vegas, Nevada. Biological Consultant. Performed desert tortoise pre-activity surveys and relocations in preparation for proposed golf course and housing development sites in Las Vegas and Henderson, NV. Support was a cooperative effort with USFWS and Nevada Division of Wildlife. Authorized biologist to work under the auspices of the USFWS BO issued for this project. Surveyed, captured, processed, and relocated desert tortoises outside impact zones. Processing entailed identifying, weighing, measuring, marking, sexing, health profiling, drawing blood samples, rehydrating, diagramming, and photographing each tortoise. Additional responsibilities included recording desert tortoise sign, collecting shell remains, and assessing human impacts. Provided thorough documentation using several standardized

field forms. Procedures were accomplished in accordance with the EIR, permits, protocols, and guidelines. [08/1990 - 10/1990: Converse Environmental]

CDFG, Wild Trout Program, Rancho Cordova, California. Seasonal Biologist. Crew leader of the Wild Trout Program. Responsible for assessing and monitoring the health of California's wild trout fishery. Supervised several staff members and volunteers. Assigned duties, maintained schedules, coordinated activities, resolved conflicts, and ensured objectives were met. Conducted freshwater fish population censuses by boat and backpack electro-shocking. Captured, identified, weighed, measured, marked, removed scale samples, and released fish at point of capture to assess health of fishery. Performed riparian and stream habitat assessments to determine health of system. Determined water quality and flow to assess health of stream. Photo documented procedures and sites for future reference. Provided thorough documentation using standardized field forms. Duties were performed at various streams throughout California. [07/1990: CDFG]

Honda Motor Corporation, California City Test Track, Los Angeles, California. Biological Consultant. Performed desert tortoise pre-activity surveys and relocations in preparation for the construction of the Honda Corporation automobile test track located in Cantil, CA. Cooperative effort with the USFWS, CDFG, BLM, and University of California Los Angeles. Authorized biologist to work under the auspices of the USFWS BO issued for this project. Surveyed, captured, processed, and relocated desert tortoises outside the impact zone. Processing entailed identifying, weighing, measuring, marking, sexing, health profiling, nasal flushing, drawing blood samples, diagramming, photographing, and radio transmitter attachment. Cared for over 20 tortoises that were placed in temporary holding pens to monitor their health. Additional responsibilities included radio tracking, adaptive behavioral studies of relocated tortoises, recording desert tortoise sign, collecting shell remains, and assessing project impacts. Provided thorough documentation using several standardized field forms. Procedures were accomplished in accordance with the EIR, permits, protocols, and guidelines. [02/1990 - 06/1990: SAIC]

CDFG, Game Bird Hunting Program, Oroville, California. Seasonal Biologist. Operated hunter check stations at Colusa, Delevan, Sutter, and Sacramento National Wildlife Refuges. Cooperative effort with USFWS. Escorted hunters throughout refuges. Assigned waterfowl hunter blinds. Monitored hunter activity. Identified and recorded bagged waterfowl and upland game birds. Ensured compliance with hunting regulations. Reported all offenses to the game warden. [11/1989 - 01/1990: CDFG]

CDFG, Wild Trout Program, Rancho Cordova, California. Seasonal Biologist. Assistant crew leader for the Wild Trout Program. Responsible for monitoring and assessing the health of California's wild trout fishery. Supervised several staff members and volunteers in absence of crew leader. Conducted freshwater fish population censuses by boat and backpack electro-shocking. Captured, identified, weighed, measured, marked, removed scale samples, and released fish at point of capture to assess health of fishery. Performed riparian and stream habitat assessments to determine health of system. Determined water quality and flow to assess health of stream. Photo documented procedures and sites for future reference. Provided thorough documentation using standardized field forms. Duties were performed at various streams throughout California. [07/1989 - 11/1989: CDFG]

Honors and Awards

Co-recipient of the Kern Council of Governments *Regional Award of Merit for Environmental Resources and Conservation.* Computer Sciences Corporation. 1998.

Publications and Presentations

Migratory Birds Indirectly Benefiting from Dust Control at Owens Lake, CA. The Wildlife Society Annual Conference. Poster Presentation. Burlington, VT. 2003

Admi*nistering a United States Fish and Wildlife Service Approved Desert Tortoise Awareness Briefing.* Desert Tortoise Council Workshop. Paper Presentation. Ridgecrest, CA. 2000 – 2006.

Desert Tortoise Education Program at Edwards Air Force Base. National Military Fish and Wildlife Association Conference. Paper Presentation. Orlando, FL. 1998.

Freshwater Shrimp of Edwards Air Force Base, CA. National Military Fish and Wildlife Association Conference. Poster Presentation. Orlando, FL. 1998.

Contact Information

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Ray Romero References

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Ray Bransfield
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CDFG San Bernardino
Becky Jones
Tel: 661.285.5867
Email: dfgpalm@roadrunner.com

BLM Palm Springs
Mark Massar
Tel: 760.833.7100
Email: mark_massar@ca.blm.gov

County of San Bernardino
Milo Rivera
Tel: 951.310.8325
Email: sierraazuel@sbcglobal.net

Edwards AFB
Mark Hagan
Tel: 661.277.1401
Email: mark.hagan@edwards.af.mil

Kiva Biological
Peter Woodman
Tel: 760.861.3961
Email: kivabio@aol.com

EnviroPlus Consulting
Gilbert Goodlett
Tel: 760.954.4265
Email: torthunter@aol.com

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Ray Romero
Address	40 Palatine #109
City, State, Zip Code	Irvine, CA 92612
Phone Number(s)	8057987656
Email Address	romero_raymond@sbcglobal.net

2. Date: MAY 14, 2010

3. Areas in which authorization is requested (check all that apply):

☒ San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
☒ Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☒ Nevada ☒ Utah ☒ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**
Project Name	Blythe Solar Power Project	
Federal Agency (If Applicable)	Bureau of Land Mangge ment	
Proponent or Contractor	Palo Verde Solar 1	

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities

6. **Education:** Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
HUMBOLDT STATE UNIVERSITY	9/84-5/90	WILDLIFE MANAGEMENT MAJOR FISHERIES MINOR	MAY 1990
VENTURA COLLEGE	9/81-6/84	LIBERAL ARTS AND SCIENCES	JUNE 1984

7. **Desert Tortoise Training.**

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes DTC WORKSHOP	2000-2006	RIDGECREST, CA	RAY ROMERO
2. Field Training SAIC	1990	CANTIL, CA	PETER WOODMAN
3. Translocation CONVERSE ENVIRONMENTAL	1990	LAS VEGAS, NV	GILBERT GOODLETT
4.			

8. **Experience** - Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary. Please use numbers in each column; do not use "X's" to indicate participation in the activity. If your experience is limited to **less than three desert tortoise positions**, please include additional job experience and references in the section below (pg. 5).

Experience by project and activity:

Please include: **Project Name** **Job Title** **Dates of Employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**	**Conduct Clearance Surveys (Hrs/Days)**	**Excavate DT burrows (No.)**	**Locate DT No. < 100mm ≥ 100mm**	**Handled for Relocation DTs (No.)**	**Excavate, and relocate DT nests (No.)**
1. DOD, RENEWABLE ENERGY, UTILITIES, PRISON, LANDFILL SENIOR BIOLOGIST OCT 2001 - OCT 2007	TONY DEJULIO 9493336631 TDEJULIO@JSANET.COM	1030 HRS	0	5 & 32	0	0
2. FORT IRWIN SENIOR BIOLOGIST NOV 2000 - OCT 2001	MICKEY QUILLMAN 7602526000 MQUILLMAN@CA.BLM.GOV	120 HRS	0	0 & 6	0	0
3. LEVEL (3) COMMUNICATIONS SENIOR BIOLOGIST JAN 2000 - OCT 2000	LARRY FREEBERG 9492615414 LFREEBERG@CHAMBERSGROUPINC.COM	850 HRS	20	3 & 10	5	0
4. AT&T COMMUNICATIONS SENIOR BIOLOGIST OCT 1999 - NOV 1999	GLENN GOODLETT 7603713592 TORTHUNTER@AOL.COM	280 HRS	48	5 & 30	30	0
5. EDWARDS AIR FORCE BASE SENIOR BIOLOGIST JUL 1991 - SEPT 1999	MARK HAGAN 6612771401 MARK.HAGAN@EDWARDS.AF.MIL	4850 HRS	300	50 & 250	30	0
6. BLM BIOLOGIST APR 1991 - JUN 1991	GILBERT GOODLETT 7603713592 TORTHUNTER@AOL.COM	260 HRS	0	4 & 28	32	0
7. KERN RIVER GAS TRANSMISION BIOLOGIST MAR 1991 - APR 1991 LAS VEGAS HOUSING DEVELOPERS BIOLOGIST AUG 1990 - OCT 1990	TOM OLSON CRAIG KNOWLES	700 HRS	150	15 & 75	65	3

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Name (Number should correspond to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/ Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and Inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. DOD, RENEWABLE ENERGY, UTILITIES, PRISON, LANDFILL	0	2,400	2,400	2,800	100	8
2. FORT IRWIN	0	40	100	140	0	2
3. LEVEL (3)	0	1,200	2,400	2,400	120	16
4. AT&T	20	200	480	480	100	4
5. EDWARDS AIR FORCE BASE	20	5,000	10,000	10,000	1,800	100
6. BLM	0	0	0	0	0	0
7. KERN RIVER LAS VEGAS	5	350	350	0	40	5

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours:
OR total number of 8-hour days: APPROX. 20,000 HRS

Total number of miles/kilometers walked conducting survey transects:

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 20

≥100 mm: 142

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
WIND AND SOLAR ENERGY	4,000	40

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Dates of employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: [signature] **Date:** 14 May 2010

Shelly Dayman Resume, References and Authorized Biologist Request Form

Shelly Dayman

Wildlife Biologist

1420 Kettner Blvd, Suite 500
San Diego, CA, 92101
Office: 619 684 6931 Cell: 619 820 0768

Education
BS, Biology, Ecology Major, University of Calgary, 1994

Certifications
FERC Environmental Compliance
Desert Tortoise Handling Workshop
Mohave Ground Squirrel Workshop

Shelly Dayman has 9 years of experience conducting biological surveys including vegetation mapping; construction monitoring; and wildlife surveys for desert tortoise, western burrowing owl, and small mammals in southwestern United States. Ms. Dayman is familiar with Biological Opinions, Streambed Alteration Agreements, Biological Resources Reports, Environmental Assessment/Initial Studies, Mitigated Negative Declarations, the biological sections of Environmental Impact Reports and Statements as well as the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

Ms. Dayman has experience in the identification of flora and fauna in the Mohave, Sonoran, and Chihuahuan Deserts, with experience in sage scrub habitat, riparian areas, chaparral, playas and vernal pools, and woodlands and disturbed habitat in the southern United States. She has conducted small mammal trapping in the Sonoran and Chihuahuan Deserts, with some trapping experience in sage scrub and chaparral habitat in Riverside County. She has performed protocol level surveys for burrowing owl and Mohave Desert tortoise. Ms. Dayman has over 2,500 hours of experience conducting desert tortoise surveys and has observed and conducted visual health assessments on 19 desert tortoises during the course of surveys.

Project Experience

Solar Millenium Power Projects, Kern and Riverside Counties, CA
Conducted focused Mohave Desert tortoise and burrowing owl protocol focused surveys for a solar array project. Responsible for project planning, survey coordination, and writing of technical documents.

Los Angeles Department of Water & Power Niland Solar Energy Survey, Niland, CA
Conducted protocol burrowing owl surveys in Imperial County. Biological resources were assessed and appropriate mitigation measures for resources observed were recommended.

Cal Energy Black Rock Survey, Calipatria, CA
Conducted a burrowing owl survey in Imperial County. Described biological resources on-site and appropriate mitigation measures.

Sloan Canyon Trail Project, Henderson, NV
Conducted focused Desert tortoise surveys for a trail project on Bureau of Land Management land for a proposed trail.

Mojave Solar Power Project, San Bernardino County, CA
Conducted focused Mohave Desert tortoise and burrowing owl protocol focused surveys for a solar array project.

Beacon Solar Power Project, Kern County, CA
Conducted focused Desert tortoise protocol surveys. Mapped sign of other special status wildlife species.

Confidential Project
Conducted biological reconnaissance surveys throughout the Mojave desert (Kern County and San Bernardino County) to determine suitability of habitat for sensitive and/or listed species. Assisted client in assessing sites for suitability for development.

SANDAG and Caltrans District 7 SR76 Tracking and Road Kill Surveys, Oceanside, CA
Assisted in a movement study to determine wildlife corridors. Identified wildlife tracks and road kill.

Bureau of Land Management Sloan Canyon Biological Survey, Henderson, NV
Conducted a biological survey on BLM land within this area of the Mohave desert. The survey used USFWS protocols for Mohave Desert tortoise and other federal, state, and BLM protected species.

City of Murrieta Guava Street Natural Environment Study, Murrieta, CA
Conducted a focused burrowing owl survey for a project involving the removal and replacement of an existing bridge. Assisted in the preparation of an NES with compliance with the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

City of Murrieta Main Street Natural Environment Study, Temecula, CA
Conducted a focused burrowing owl survey for a project involving the removal and replacement of an existing bridge. Assisted in the preparation of an NES with compliance with the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

County of Riverside Proposed Projects, Riverside, CA
Reviewed proposed projects to determine if they were consistent with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Attempted to establish an “active relocation” program for burrowing owls in Western Riverside County. Reviewed environmental documents, including EIRs, biological surveys, and archaeological surveys. Work was performed prior to joining this firm.

Kern River Pipeline Project, Barstow, CA
Conducted right-of-way and buffer surveys for special-status species (primarily the threatened desert tortoise). Documented daily construction and biological activities. Worked with the construction contractor,

environmental inspectors, the lead biologist, and other biological monitors to identify and eliminate potential environmental issues. Complied with the U.S. Fish and Wildlife Federal Biological Opinion, the California Department of Fish and Game 2081 Permit, the Memorandum of Understanding and FERC requirements and guidelines. Work was performed prior to joining this firm.

The University of Arizona, Research Studies, Tucson, AZ
Evaluated biological communities including plant, invertebrate and small mammal communities. Determined percent cover, biomass and plant species diversity. Captured and processed small mammals, made species identifications, and recorded body measurements. Identified pitfall trapped invertebrates to functional taxonomic groups. Used radio-telemetry to determine the effects of roads on mortality in western box turtles. Work was performed prior to joining this firm.

References

Arthur Davenport
Lead Biologist – Greystone Transmission Line
Davenport Biological Services (formerly with USFWS)
P.O. Box 1692
Barstow, CA 92312
Telephone: 619-729-4242
artdavenpo@aol.com

Charles German
Lead Biologist – Kern River Pipeline
P.O. Box 3351
Wrightwood, CA 92397
Telephone: 805-895-9842
eric_german@yahoo.com

Milo Rivera
Wildlife Biologist County of San Bernadino
2405 Falling Oak Dr.
Riverside, CA 92506
Telephone: 951-310-8325
sierraazuel@sbcglobal.net

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Shelly Dayman
Address	1420 Kettner Blvd., Suite 500
City, State, Zip Code	San Diego, CA 92101
Phone Number(s)	619-233-1454 (office), 619-820-0768 (cell)
Email Address	shelly.dayman@aecom.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

☐ San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
☒ Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**
Project Name	Blythe Solar Power Project	
Federal Agency (If Applicable)	USFWS	
Proponent or Contractor	Palo Verde Solar I, LLC	

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities

6. **Education:** Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
University of Calgary, Calgary, Canada	1990-1994	Ecology	B.S.

7. **Desert Tortoise Training.**

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes DT Surveying, Monitoring, Handling	11/2009	Ridgecrest, CA	Desert Tortoise Council
2. Field Training			
3. Translocation			
4. DT Surveying, Monitoring, Handling	11/2004	Ridgecrest, CA	Desert Tortoise Council

8. **Experience** - Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary. Please use numbers in each column; do not use "X's" to indicate participation in the activity. If your experience is limited to **less than three desert tortoise positions**, please include additional job experience and references in the section below (pg. 5).

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Name (Number should correspond to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/ Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Solar Millennium (Palo Verde Solar)	0	0	0	300 Hrs 18 staff	0	6
2. Solar Millennium (Palo Verde Solar)	0	5 Hrs	60 Hrs	550 Hrs 28 staff	0	7
3. Edison Mission Energy	0	0	0	0	0	1
4. Sloan Canyon Trail Project	0	0	0	60 2 Staff	0	0
5. Beacon Solar Project	0	0	0	0	0	0
6. Mojave Solar One Project	0	0	0	0	0	0
7. Greystone Environmental	0	0	0	0	0	0

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Name (Number should correspond to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/ Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
8 ~~1.~~ Kern River Pipeline	0	720 Hrs	720 Hrs	0	40 Hrs	4
~~2.~~						
~~3.~~						
~~4.~~						
~~5.~~						
~~6.~~						
~~7.~~						

Experience by project and activity:

Please include: **Project Name** **Job Title** **Dates of Employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**	**Conduct Clearance Surveys (Hrs/Days)**	**Excavate DT burrows (No.)**	**Locate DT No.** **< 100mm** **≥ 100mm**	**Handled for Relocation DTs (No.)**	**Excavate, and relocate DT nests (No.)**
1. Solar Millennium (Palo Verde Solar) Lead Field Biologist March 2010 - May 2010	Julie Ogilvie, AECOM 619-764-6822 julie.ogilvie@aecom.com	0	0	2	0	0
2. Solar Millennium (Palo Verde Solar) Lead Field Biologist March 2009 - May 2009	Erin Riley, AECOM 619-764-6889 erin.riley@aecom.com	0	0	3	0	0
3. Edison Mission Energy Biologist August 2008	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	0	0	1	0	0
4. Sloan Canyon Trail Project Biologist June and July 2008	John Ko, AECOM 970-484-6073 john.ko@aecom.com	0	0	3	0	0
5. Beacon Solar Project Biologist May 2008	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	0	0	1	0	0
6. Mojave Solar One Project Biologist April and May 2008	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	0	0	5	0	0
7. Greystone Environmental Biological Monitor December 2002 to April 2003	Arthur Davenport 619-729-4242 artdavenpo@aol.com	0	0	1	0	0

Experience by project and activity:

Please include: **Project Name** **Job Title** **Dates of Employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**	**Conduct Clearance Surveys (Hrs/Days)**	**Excavate DT burrows (No.)**	**Locate DT No. < 100mm ≥ 100mm**	**Handled for Relocation DTs (No.)**	**Excavate, and relocate DT nests (No.)**
8. ~~1.~~ Kern River Pipeline Biological Monitor December 2002 to April 2003	Charles German 805-895-9842 eric_german@yahoo.com	0	0	3	0	0
~~2.~~						
~~3.~~						
~~4.~~						
~~5.~~						
~~6.~~						
~~7.~~						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours:
OR total number of 8-hour days: 250 days

Total number of miles/kilometers walked conducting survey transects:
1,900 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 0

≥100 mm: 1

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Salt Creek Burrowing Owl Survey	100	10

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Dates of employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: Shelley Day **Date:** Sept 10, 2010

Katie Hall

Biologist

1420 Kettner Blvd, Suite 500
San Diego, CA, 92101
Office: 619 764 6826 Cell: 619 666 4031

Education
BA, Geography, Environmental Sciences concentration; minor Geology, University of Tennessee, Knoxville, TN, 1999. Graduated with Honors; Gamma Theta Upsilon. Emphasis on physical geography, biodiversity, ecology, biogeography, and geographic information systems.

Certifications
U.S. Army Corps of Engineers Wetland Delineator Certification Training Program 2003 & ARM Supplement 2007
NEPA Documentation Certification Training Program, Shipley Group, 2002
TxDOT Precertifications:
- Wetland Delineation
- USACE Permits - Nationwide Permits
- USACE Permits – Section 404 Permits
- Protected Species Determination (Habitat)
- Hazardous Materials Assessment
- Environmental Document Preparation

Avian Focused Protocol Surveys
Vernal Pool Fairy Shrimp
Authorized Desert Tortoise Biologist
Scientific Collection Permit
Aborist Certification
Desert Tortoise Handling Workshop
Mohave Ground Squirrel Workshop
California GnatCatcher Permit
Wetland Delineation Training, Wetland Training Institute
Wetland Delineation Arid West Supplement Training, Wetland Training Institute
Beginner, Intermediate, and Advanced Tracker Naturalist Class, San Diego Tracking Team
Wilderness First Responder, Wilderness Medical Associates

Katie Hall has more than 9 years of multidisciplinary experience serving as environmental scientist, ecologist, research assistant, and assistant manager on various projects related to environmental compliance, ecological assessment, and scheduling.
Ms. Hall has 4 years of focused experience conducting biological surveys; vegetation mapping; construction monitoring; and wildlife surveys for desert tortoise, western burrowing owl, and has experience in the identification of flora and fauna in the Mohave, Sonoran, and Chihuahuan Deserts, with experience in sage scrub habitat, riparian areas, chaparral, playas and vernal pools, and woodlands and disturbed habitat in the southern United States.

Ms. Hall’s relevant experience includes biological analysis and performing GPS-surveying on various NEPA-compliant projects for the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). Past experience includes projects for federal clients, such as the United States Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (EPA), U.S. Army, and Department of Defense (DoD). State and local government contacts and clients include TxDOT; Texas Parks and Wildlife (TPWD); Texas Council on Environmental Quality (TCEQ); Texas Water Development Board (TWDB); and various municipalities throughout southern, central, and northern Texas. Additional experience on projects in Virginia and California with NEPA/CEQA compliance with local, state, and federal regulations.

Ms. Hall has worked on projects for private landowners, government agencies, and industrial companies. She has conducted surveys for state and federally listed plant and wildlife species. She has experience in performing protocol-level surveys for federally and state-listed threatened and endangered species including Desert tortoise, burrowing owl, Quino checkerspot butterfly, least Bell's vireo, and arroyo toad. She holds a State scientific collecting permit and a Federal Endangered Species Act 10(a)(1)(A) independent permit to perform fairy shrimp surveys, Desert Tortoise certification, and CA Arborist Certification. Ms. Hall has over 3,000 hours of experience conducting desert tortoise surveys, including clearance surveys, and has observed and conducted visual health assessments on 35 desert tortoises during the course of surveys. She has handled and relocated one desert tortoise during this time.

Project Experience

Solar Millenium Power Projects, Kern and Riverside Counties, CA
Conducted focused Mohave Desert tortoise and burrowing owl protocol focused surveys for a solar array project.

Los Angeles Department of Water & Power Niland Solar Energy Survey, Niland, CA
Conducted protocol burrowing owl surveys in Imperial County. Biological resources were assessed and appropriate mitigation measures for resources observed were recommended.

Sanitation Districts of Los Angeles County Mesquite Regional Landfill Biological Compliance, Imperial County, CA
Was the Authorized Biologist for desert tortoise. Responsible for project planning, coordination of construction and biological monitoring, mitigation compliance, and implementing the biological monitoring during project construction.

Cal Energy Black Rock Survey, Calipatria, CA
Conducted a burrowing owl survey in Imperial County. Described biological resources on-site and appropriate mitigation measures.

City of Murrieta Main Street Natural Environment Study, Temecula, CA
Conducted a focused burrowing owl survey for a project involving the removal and replacement of an existing bridge. Assisted in the preparation of an NES with compliance with the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

Caltrans SR 76 Biological Assessment, San Diego, CA
As a biologist, conducting preconstruction wildlife movement study for SR 76 biological assessment using tracking station, tracking transect, and roadkill surveys. Responsible for data summary and assisting with the summary monitoring report.

Caltrans State Route 76 Realignment and Widening Project,
San Diego County, CA
As a biologist, performed formal USACE wetland and jurisdictional delineation for a 16-mile segment of the San Luis Rey River. Determined federal and state jurisdictional extents of a semi-arid riverine system, which contains rare and sensitive habitat for listed and special status plant and animal species. Assisted in obtaining agency concurrence on field methodology, and conducted and supervised delineation field teams during the formal USACE wetland delineation. Assisted in preparation of wetland delineation report sections and alternatives analysis.

Pine Tree Wind Development Project, Kern County, CA
Assisted in creating and presenting an educational program for the Pine Tree Wind Development Project focusing on species awareness and protecting the federal and state

listed Mojave desert tortoise. The education program was presented to the District's employees as mandated by the USFWS prior to working in areas potentially occupied by the tortoise. Assisted with presence/absence surveys for the federally threatened Mojave desert tortoise. Responsible for project planning, coordination of construction and biological monitoring, mitigation compliance, and implementing the biological monitoring during project construction.

Pine Tree Wind Development Project, Kern County, CA
Assisted in conducting focused surveys for the Mojave desert tortoise, following a modified protocol, approved by the local BLM office. Also assisted in reviewing sections of the environmental documentation for the project.

Confidential Project
As a wildlife biologist, assisted in conducting focused surveys for the western burrowing owl. Project area consisted of over 300 acres. Also assisted in reviewing sections of the environmental documentation for the project.

Confidential Project
Led the 2007-2008 desert tortoise and western burrowing owl field effort during a focused absence/presence survey of species that had the potential to occur within the impact area of a planned solar energy project located in the western Mojave desert. More than 2,000 acres of land was surveyed for the target species, in addition to a 1-mile buffer zone. Vegetation mapping and an inventory of any special status wildlife was also conducted. Responsible for planning and implementing all stages of the survey effort. Also responsible for data management and preparation of the desert tortoise survey report.

MCB Camp Pendleton Basewide Vernal Pool Floral and Faunal Surveys, San Diego County, CA
As a biologist, assisting in the field collection of vernal pool branchiopod species in various training areas on base. Assisting in laboratory identification of *Branchinecta lindahli*, *Branchinecta sandiegonensis*, and *Streptocephalus woottoni*. Also helping to update and maintain data collected during these surveys in the database.

Caltrans District 11 State Route 52 San Diego Ambrosia Transplantation Project, San Diego County, CA
The terminus of State Route 52 will be extended eastward from its current location in Santee, California. A small population of San Diego ambrosia (*Ambrosia pumila*; federally listed as endangered) growing in the project footprint required transplantation to a nearby mitigation site. As the project restoration ecologist and field manager, Ms. Hall was responsible for planning, implementing, monitoring, and reporting on the project.

MCB Camp Pendleton Focused Survey and Inventory of Pendleton Button-Celery, San Diego County, CA
Ms. Hall was one of the main biologists that performed focused rare plant surveys for Pendleton button-celery (*Eryngium pendletonense*) on MCB Camp Pendleton. A total of 850 acres was surveyed for this rare plant to document new populations and obtain complete mapping and associated data for existing and new occurrences. Submeter GIS equipment and cutting-edge database technology were utilized during the survey process.

Caltrans SR-76 Biological Assessment, San Diego, CA
Conducting preconstruction wildlife movement study for SR 76 using tracking stations, tracking transects, and roadkill surveys. Also assisting in data collection and entry into the database. Previously performed rare plant surveys, southwestern arroyo toad surveys, least Bell's vireo surveys, and wetland delineation as part of the overall biological assessment.

Los Angeles Department of Public Works Mesquite Habitat Monitoring Plan, Glamis, CA

Assisted in creation and finalization of revised habitat monitoring plan to incorporate sampling of small mammals, birds, and vegetation as indicators for and in concert with desert tortoise monitoring.

REFERENCES

Lyndon Quon
Senior Biologist
AECOM
1420 Kettner Blvd., Ste. 500
San Diego, CA 92101
619-233-1454
lyndon.quon@aecom.com

Jacqueline Finck
Widllife Biologist
Garcia & Associates
435 Lincoln Way
Auburn, CA 95603
530-823-3151
jfinck@garciaandassociates.com

Peggy Wood
Widllife Biologist
1133 N. Cedarview Drive
Bozeman, MT 59715
435-881-6444
pegwood@mtwest.net

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Katie Hall
Address	1420 Kettner Blvd., Suite 500
City, State, Zip Code	San Diego, CA 92101
Phone Number(s)	619-233-1454
Email Address	katie.hall@aecom.com

2. Date: 9/10/10

3. Areas in which authorization is requested (check all that apply):

☐ San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
☒ Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**
Project Name	Blythe Solar Power Project	
Federal Agency (If Applicable)	USFWS	
Proponent or Contractor	Palo Verde Solar I, LLC	

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
University of Tennesse (UTK)	1994-1999	Geography/Geology Minor Ecology	BA/BS

7. Desert Tortoise Training.

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes DT Surveying, Monitoring, Handling	11/2007	Ridgecrest, CA	Desert Tortoise Council
2. Field Training			
3. Translocation			
4.			

8. Experience - Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary. Please use numbers in each column; do not use "X's" to indicate participation in the activity. If your experience is limited to **less than three desert tortoise positions**, please include additional job experience and references in the section below (pg. 5).

Experience by project and activity:

Please include: **Project Name** **Job Title** **Dates of Employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**	**Conduct Clearance Surveys (Hrs/Days)**	**Excavate DT burrows (No.)**	**Locate DT No.** **< 100mm** **≥ 100mm**	**Handled for Relocation DTs (No.)**	**Excavate, and relocate DT nests (No.)**
1. Solar Millennium Projects, Kern and Riverside Counties Desert Tortoise Biologist March - May 2009	Erin Riley, AECOM 619-233-1454 erin.riley@aecom.com			5		
2. Mesquite Regional Landfill Project Desert Tortoise Biologist/Monitor Spring 2008	Jennifer Guigliano, AECOM 619-233-1454 jennifer.guigliano@aecom.com	500		7, 7		
3. Pine Tree Wind Development Project Desert Tortoise Biologist 2007 and 2008	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	500	1	0, 5	1	
4. The Beacon Project Desert Tortoise Biologist April - May 2007	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	500		0, 5		
5. Harper Lake Solar Project Desert Tortoise Biologist May - June 2007	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com	500		1, 1		
6. Union Pacific Railroad Glamis Derailment Project Desert Tortoise Biologist/Monitor February 2006	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com			0, 2		
7. Pine Tree Wind Development Project - Barren Ridge Switching Station Desert Tortoise Biologist/Monitor August - September 2006	Lyndon Quon, AECOM 619-233-1454 lyndon.quon@aecom.com			0, 2		

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Name (Number should correspond to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/ Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Solar Millennium Projects		12		500, 3-5		5
2. Mequite Regional Landfill Project		150	150			5
3. Pine Tree Wind Development Project	1	1,000	1,000			5
4. The Beacon Project						5
5. Harper Lake Solar Project		500	500	500, 3		5
6. Union Pacific Railroad Glamis Derailment Project		240	240		240	2
7. Pine Tree Wind Development Project - Barren Ridge Switching Station		240	240		240	5

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours:
OR total number of 8-hour days: >3,000 hours

Total number of miles/kilometers walked conducting survey transects:
>2,000 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 0

≥100 mm: 1

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Beacon Project-WBO	500	3
Harper Lake Project	500	3

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Dates of employment**	**Supervisor / Project Contact** **Name** **Phone** **Email address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: Katie S. Hall **Date:** 9/10/10

APPENDIX L

SAMPLE FORMS

Change Evaluation

Notification

Non-compliance

Non-compliance Resolution Report

CHANGE EVALUATION FORM

PALO VERDE SOLAR I, LLC

BLYTHE SOLAR POWER PROJECT

Evaluation Number: _____ **Date:** _____ **Phone:** _____

Inspector: _____ **Time:** _____

Station Numbers: _____ to _____ **Structure Number:** _____

Milepost: _____ **Map Number:** _____

Evaluation Type: ☐ Minor Change ☐ Major Change (Requires Approval)

Land Ownership: ☐ Private ☐ Federal

Describe Change/Purpose: _____

Type of Resources: _____

Summary of Impacts: _____

Proposed Mitigation Measures: _____

Change From:

- ☐ EIS Mitigation _____
- ☐ COC _____
- ☐ Project Description _____
- ☐ Permit Conditions (list permit number and condition/requires permitting agency approval): _____

Reviewed by: _____ (SIGNATURE) _____ (NAME—PLEASE PRINT) _____ (DATE)

SAMPLE

NOTIFICATION FORM

PALO VERDE SOLAR I, LLC

BLYTHE SOLAR POWER PROJECT

Notification Number: _____ **Date:** _____ **Issued to:** _____

Monitor: _____ **Time:** _____

Station Numbers: _____ to _____ **Structure Number:** _____

Milepost: _____ **Map Number:** _____

BE AWARE THAT THE FOLLOWING PROJECT CONDITIONS (e.g., COCs, EIS, Local, State or Federal Permits) ARE NOT BEING MET:

_____

_____

_____

_____

_____

_____

TO FIX OR CORRECT THE CONDITION YOU MUST:

_____

_____

_____

_____

_____

_____

If this condition is not resolved satisfactorily by _____, a non-compliance report will be issued.

Your prompt attention to this matter is appreciated.

Notification Resolved: _____ _____ _____

(SIGNATURE) (NAME—PLEASE PRINT) (DATE)

SAMPLE

NON-COMPLIANCE REPORT

PALO VERDE SOLAR I, LLC

BLYTHE SOLAR POWER PROJECT

NCR Number: _____ **Date:** _____ **Other Parties at Site:** _____

Monitor: _____ **Time:** _____

Station Numbers: _____ to _____ **Structure Number:** _____

Milepost: _____ **Map Number:** _____

Non-Compliance Level: ☐ Non-Compliance ☐ **Stop Task Order**

Land Ownership: ☐ Private ☐ Federal

In Non-Compliance With: ☐ EIS ☐ COCs ☐ State Permit ☐ Federal Permit

Mitigation Measure Number/Permit and Condition Number: _____

Describe Resource Impact (Include Resource Number): _____

Describe Activity That Resulted in Non-Compliance: _____

Documentation: ☐ Photo ☐ Video ☐ Drawing ☐ Lab Sample ☐ Other _____

Communication: ☐ PVSI _____ ☐ CEC _____ ☐ BLM _____

☐ Contractor /Operator _____ ☐ Other _____

Requirements for Resolution: _____

Resolved by: _____ (SIGNATURE) _____ (NAME—PLEASE PRINT) _____ (DATE)

SAMPLE

NON-COMPLIANCE RESOLUTION REPORT

PALO VERDE SOLAR I, LLC

BLYTHE SOLAR POWER PROJECT

NCR Number: _____ **Date:** _____ **NCRR Number:** _____

Monitor: _____ **Time:** _____

Describe Affected Resources: _____

Summary of Corrective Actions: _____

Conditions of Approval: _____

Approval:

_____ (SIGNATURE) _____ (NAME—PLEASE PRINT) _____ (DATE)

SAMPLE