



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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In Reply Refer To:
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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



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.

Solar Power Plant and Support Facilities

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).

Phase 1a

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 translocatee¹. 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 translocation². 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 (CNDDDB) 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 plan (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 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 InjuryConstruction 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 density³ at the recipient sites. Based on this calculation, no more than 58 tortoises⁴ and 108 tortoises⁵ 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 resident⁶ 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.

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 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 translocated 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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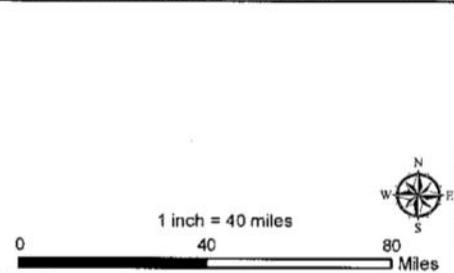
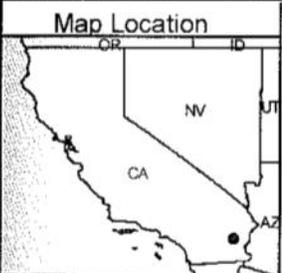
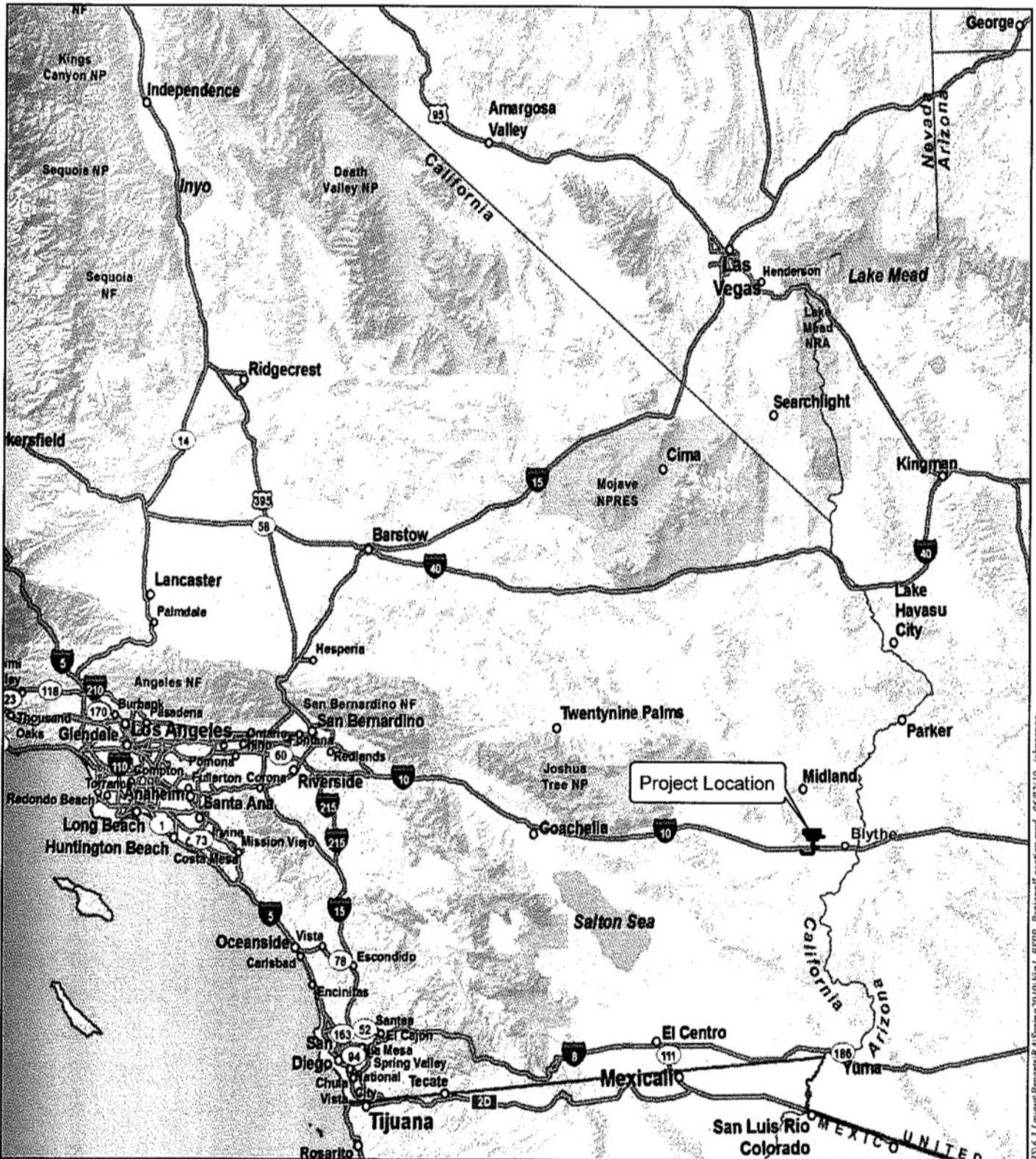
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Blythe Solar Power Project
Biological Assessment

Figure 1
Regional Map

Source: ESRI, AECOM 2010

AECOM

Date: June 2010

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.

