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February 26, 2009

BY HAND DELIVERY

Docket Unit, No. 08-AFC-2
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Beacon Energy Solar Project, AFC No. 08-AFC-2
USFWS Habitat Conservation Plan

Dear Docket Clerk:

Attached is a courtesy copy of the Low-Effect Habitat Conservation Plan prepared for the U.S. Fish and Wildlife Service in connection with the Beacon Solar Energy Project.

If you have any questions please don't hesitate to contact me.

Very truly yours,

DOWNEY BRAND LLP

Sophia J. Rowlands

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Attachments
cc: Beacon Solar Energy Project (via e-mail w/o attachments)

Low-Effect
Habitat Conservation Plan
for the Beacon Solar Energy Project

Prepared for:

Beacon Solar, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

Contact: Kenneth Stein

Prepared by:

EDAW, Inc.
1420 Kettner Boulevard
Suite 500
San Diego, California 92101

Contact: Jennifer Guigliano

February 2009

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Tables and Figures

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Executive Summary

Beacon Solar, LLC (Beacon) proposes to develop a 250-megawatt solar energy facility called the Beacon Solar Energy Project (BSEP or Project). The Project Area includes the 2,012-acre Plant Site (solar array, power generating equipment, support facilities, three evaporation ponds, and access roads) and the Project's linear facilities (transmission line, switchyard, and natural gas supply pipeline) (Figure 1, see Appendix A). The Project Area is located along State Route 14, approximately four miles north-northwest of the northern boundary of California City, approximately 15 miles north of the Town of Mojave, and approximately 24 miles northeast of the City of Tehachapi, in Kern County, California.

The Project will use parabolic trough solar thermal technology, based on the technology that has been successfully used for nearly 20 years at the nine existing Solar Electric Generating System facilities located at Harper Lake, Kramer Junction, and Daggett in the Mojave Desert. This technology involves a modular solar array field composed of many parallel rows of solar collectors normally aligned in a north-south horizontal axis. Each solar collector has a linear parabolic-shaped reflector that focuses the sun's radiation on a receiver located at the focal point of the parabola.

The desired term of the incidental take permit is 33 years, which encompasses the anticipated 25-month construction phase of the Project, and the 30-year expected operational life of the facility. The Low-Effect Habitat Conservation Plan (LEHCP) and incidental take permit (ITP) would cover the federally listed desert tortoise (*Gopherus agassizzi*), the California listed Mohave ground squirrel (*Spermophilus mohavensis*), and the western burrowing owl (*Athene cunicularia*), a California Species of Special Concern (hereinafter "Covered Species").

Beacon would minimize impacts to Covered Species by implementing a series of specific and general construction measures, including preconstruction surveys for Covered Species, biological monitoring of all construction activities, and mandatory contractor education programs. Unavoidable impacts to habitats of Covered Species would be mitigated through acquisition of offsite lands, with requirements for secured funding for enhancement, mitigation site monitoring, and reporting to the U.S. Fish and Wildlife Service and the California Energy Commission, with concurrence from the California Department of Fish and Game.

The LEHCP and ITP will encompass up to approximately 2,141.2 acres, including the 2,012-acre Plant Site, up to 5.8 acres for a transmission line, and up to approximately 123.4 acres in offsite mitigation lands for Covered Species.

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Section 1
Introduction and Background

1.1 Overview and Background

Beacon Solar, LLC. (Beacon) proposes to develop a 250-megawatt (MW) solar energy facility called the Beacon Solar Energy Project (BSEP or Project). Each of the major components of the Project is described in Section 2. A Screening Form for a Low-Effect Habitat Conservation Plan (LEHCP) Determination was submitted to the U.S. Fish and Wildlife Service (Service) on January 24, 2008. Concurrence was obtained from the Service on an LEHCP process in an email from Judy Hohman to Kimberly McCormick, counsel for Beacon on February 25, 2008.

1.2 Permit Holder/Permit Duration

Applicant:	Beacon Solar, LLC
Name and Title of Principal Officer:	Ryan O'Keefe (561) 304-5237
Mailing Address:	700 Universe Boulevard Juno Beach, Florida 33408
Name and Title of Contact:	Kenneth Stein, Environmental/Permitting (561) 691-2216
Mailing Address:	700 Universe Boulevard, MS JES/JB Juno Beach, Florida 33408

The term of the incidental take permit (ITP) being requested is 33 years, which includes the anticipated Project construction period and the operational life of the Project. The construction phase of this Project is estimated to take approximately 25 months, while the planned operational life of the Project is estimated to be 30 years.

1.3 Permit Boundary/Covered lands

The proposed Project is located in Kern County along State Route 14 (SR 14), approximately four miles north of the northern boundary of California City, approximately 15 miles north of the Town of Mojave, and approximately 24 miles northeast of the City of Tehachapi (Figure 1). The Project site occurs at the intersection of four U.S. Geological Survey quadrangles: Mojave Northeast, Cinco, Cantil, and California City North. Landmarks in the area include Red Rock Canyon State Park to the north, Koehn Lake to the east-northeast, and the Desert Tortoise Natural Area (DTNA) to the east.

The Project consists of a 2,012-acre Plant Site and linear facilities (transmission line and natural gas pipeline) as described in Section 2. The solar array field and related power plant facilities (Plant Site) will be located east of SR 14, while a relatively small area west of the highway (up to

5.8 acres) is proposed to be used for interconnection with an existing Los Angeles Department of Water and Power (LADWP) high voltage transmission line at LADWP's existing Barren Ridge Switching Station. The natural gas pipeline will travel along California City Boulevard and Neuralia Road, with a 0.5-mile segment extending from Neuralia Road into the northeastern area of the Plant Site along the disturbed corridor of an existing distribution line, and will continue for another 1.3 miles through the Plant Site to the power block (Figure 1).

Access to the Plant Site would occur from SR 14 along an upgraded existing dirt road. Access to the transmission line route west of SR 14, under either transmission line option, would be constructed using the existing LADWP transmission line access roads where possible to reduce land disturbance, with construction of new stub access roads from the existing access roads to each of the new transmission tower locations, where necessary.

Preliminary inquiries have been initiated for the potential acquisition of compensation lands in the vicinity of the DTNA, although compensation lands may be acquired elsewhere in consultation with the Service, the California Department of Fish and Game (Department), and the California Energy Commission (CEC).

1.4 Species to Be Covered by Permit

The following species are the Covered Species under the LEHCP.

Covered Species	Federal Status/State Status
Desert Tortoise, Mojave population (Gopherus agassizii)	Threatened/Threatened
Mohave ground squirrel (Spermophilus mohavensis)	None/Threatened
Western burrowing owl (Athene cunicularia)	None/Species of Special Concern

Although Mohave ground squirrel (MGS; *Spermophilus mohavensis*) and western burrowing owl (WBO; *Athene cunicularia*) are not currently federally listed species, they are included in this LEHCP as Covered Species to afford them federal incidental take coverage in the event they become federally listed during the term of this LEHCP.

1.5 Regulatory Framework

1.5.1 Federal Endangered Species Act

Section 9 of the Endangered Species Act (Act) and Federal regulations promulgated pursuant to Section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined by regulation 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. The Service defines "harass" as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns that 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.

Pursuant to Section 11(a) and (b) of the Act, any person who knowingly violates Section 9 of the Act, or any permit, certificate, or regulation related to Section 9, may be subject to civil penalties of up to $25,000 for each violation or criminal penalties up to $50,000 and/or imprisonment of up to one year.

Individuals and State and local agencies proposing an action that is expected to result in the take of federally listed species are encouraged to apply for an ITP under Section 10(a)(1)(B) of the Act to be in compliance with the law. The Service issues such permits when take is not the intention of, and is incidental to, otherwise legal activities. A Habitat Conservation Plan, commonly referred to as an HCP, must accompany an application for an ITP. The regulatory standard under Section 10(a)(1)(B) of the Act is that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable. Under Section 10(a)(1)(B) of the Act, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and adequate funding for a plan to minimize and mitigate impacts must be ensured.

Section 7 of the Act requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species, destroy, or adversely modify listed species’ critical habitat. “Jeopardize the continued existence of…” pursuant to 50 CFR § 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of an ITP under Section 10(a)(1)(B) of the Act by the Service is a Federal action subject to Section 7 of the Act. As a Federal agency issuing a discretionary permit, the Service is required to consult with itself (i.e., conduct an internal consultation). Delivery of the LEHCP and a Section 10(a)(1)(B) permit application initiates the Section 7 consultation process within the Service.

The requirements of Section 7 and Section 10 substantially overlap. Elements unique to Section 7 include analyses of impacts on designated critical habitat, analyses of impacts on listed plant species, if any, and analyses of indirect and cumulative impacts on listed species. Cumulative effects are effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area, pursuant to Section 7(a)(2) of the Act. The action area is defined by the influence of direct and indirect impacts of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this LEHCP to meet the requirements of Section 7 and to assist the Service with its internal consultation.

1.5.2 The Section 10(a)(1)(B) Process - Habitat Conservation Plan Requirements and Guidelines

The Section 10(a)(1)(B) process for obtaining an ITP has three primary phases: (1) the LEHCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase.

During the LEHCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An LEHCP submitted in support of an ITP application must include the following information:

- impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- measures that will be implemented to monitor, minimize, and mitigate impacts; funding that will be made available to undertake such measures; and procedures to deal with unforeseen circumstances;
- alternative actions considered that would not result in take; and
- additional measures the Service may require as necessary or appropriate for purposes of the LEHCP.

The LEHCP development phase concludes and the permit processing phase begins when a complete application package is submitted to the appropriate permit-issuing office. Based on the LEHCP pathway, a complete application package consists of (1) an LEHCP, (2) a permit application, and (3) a $100 fee from the applicant. The Service must also publish a Notice of Receipt of the LEHCP package in the Federal Register to allow for a 30-day public comment period. The Service also prepares an Intra-Service Section 7 Biological Opinion; and prepares a Set of Findings, which evaluates the Section 10(a)(1)(B) permit application as in the context of permit issuance criteria (see below). An Environmental Action Memorandum explains the Service's determination that the LEHCP is categorically excluded from the National Environmental Policy Act (NEPA) because there will be no individual or cumulative significant effects on the human environment. An implementing agreement is not required for an LEHCP. A Section 10(a)(1)(B) ITP is granted upon a determination by the Service that all requirements for permit issuance have been met. Statutory criteria for issuance of the permit specify that:

- the taking will be incidental;
- the impacts of incidental take will be minimized and mitigated to the maximum extent practicable;
- adequate funding for the LEHCP and procedures to handle unforeseen circumstances will be provided;
- the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;
- the applicant will provide additional measures that the Service requires as being necessary or appropriate; and
- if the Service has received assurances, as may be required, the LEHCP will be implemented.

During the post-issuance phase, the Permittee and other responsible entities implement the LEHCP, and the Service monitors the Permittee's compliance with the LEHCP as well as the long-term progress and success of the LEHCP. The public is notified of permit issuance by means of the Federal Register.

1.5.3 National Environmental Policy Act

The purpose of NEPA is twofold: to ensure that Federal agencies examine environmental impacts of their actions (in this case deciding whether to issue an

incidental take permit) and to utilize public participation. NEPA serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project alternatives to help the Service decide whether to issue an ITP (Section 10(a)(1)(B) permit). NEPA analysis must be done by the Service for each LEHCP as part of the ITP application process. Because the Service has determined that the Project qualifies for an LEHCP, the Service will issue an Environmental Action Memorandum explaining its determination that the Project is categorically excluded from NEPA because there will be no individual or cumulative significant effects on the human environment.

1.5.4 National Historic Preservation Act

All Federal agencies are required to examine the cultural impacts of their actions (e.g., issuance of a permit). This may require consultation with the State Historic Preservation Office and appropriate Native American tribes. To complete compliance, the applicants may be required to contract for cultural resource surveys and possibly mitigation.

1.5.5 Other Introductory or Background Topics as Appropriate

Other relevant laws to the ITP process include the Migratory Bird Treaty Act, Clean Water Act, California Endangered Species Act, California Environmental Quality Act, and other state and local legislation.

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Section 2
Project Description/Activities Covered by Permit

2.1 Project Description

Beacon proposes to develop a 250-MW solar energy facility (BSEP or Project). The construction phase of this Project is estimated to take approximately 25 months, while the operational lifetime of the Project is anticipated to be up to approximately 30 years.

The Project will use parabolic trough solar thermal technology, based on the technology that has been successfully used for nearly 20 years at the nine existing SEGS facilities located at Harper Lake, Kramer Junction, and Daggett in the Mojave Desert. This technology involves a modular solar array field composed of many parallel rows of solar collectors normally aligned in a north-south horizontal axis. Each solar collector has a linear parabolic-shaped reflector that focuses the sun's radiation on a receiver located at the focal point of the parabola.

The solar collectors track the sun from east to west during the day to ensure that the sun is continuously focused on the linear receiver. The linear receiver contains a heat transfer fluid (HTF), a synthetic oil that heats up to approximately 740°F as it circulates through the receiver and returns to a series of heat exchangers where the HTF is used to generate steam that drives a turbine, which generates electrical power.

The Project proposes to use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, other industrial uses such as mirror washing, and domestic and potable uses will be supplied from onsite groundwater wells. A sanitary septic system and leach field will dispose sanitary wastewater.

Project cooling water blowdown will be piped to three lined, onsite evaporation ponds in the highly disturbed western portion of the Plant Site. The evaporation ponds will use the sun's energy to remove water from the cooling system waste. The three evaporation ponds will have a nominal surface area of 8.3 acres each for a total of 25 acres. Each pond will have enough surface area so that the evaporation rate exceeds the cooling tower blowdown rate at maximum operating conditions and at annual average conditions. Pond depth will be selected so that the ponds will not need to have residual solids removed during the life of the plant and to deter use by birds. However, the pond water will be tested periodically (e.g., for selenium) throughout the life of the solar plant.

The ponds will have multiple layers. The ponds are designed to contain the sediments for the life of the project (30 years); however, if one of the ponds is taken out of service, dewatered residues from the pond will be sent to an appropriate offsite landfill as nonhazardous waste. No offsite backup cooling water supply is planned at this time; the use of multiple onsite water supply wells and redundancy in the well equipment provides an inherent backup in the event of outages affecting one of the onsite supply wells.

The Project will utilize a natural gas-fired boiler for startup and emergency operations. Natural gas would also be used to fuel the HTF heaters, which are used for freeze protection during nighttime hours because of the relatively high freezing point (54°F) of the HTF. A new, approximately 17.6-mile, eight-inch natural gas pipeline will be constructed to serve the Project (Figure 1). This pipeline will connect with an existing Southern California Gas pipeline that terminates in California City. The Project would have a diesel-fueled firewater pump for fire protection.

The Project will require powerlines to connect the system to the grid. Two options have been proposed for a new 230-kilovolt (kV) transmission line crossing the small area west of SR 14, connecting the Project to the regional electrical grid as discussed in Section 2.2 below. Figure 1 shows a conceptual layout of the proposed Project. Each of the major components of the Project is described in detail below.

2.2 Activities Covered by Permit

The LEHCP and ITP will cover Project activities (construction and operations) on the Plant Site and the Project's linear facilities, as well as activities associated with compensation lands acquired to mitigate Project impacts to Covered Species.

2.2.1 Plant Site

The layout of the Project's Plant Site (2,012 acres) includes the solar array and power block area, the three evaporation ponds, and onsite support facilities (e.g., administration building and warehouse). An existing dirt road off SR 14 will be upgraded (paved) to provide access to the solar array, power block, and support facilities on the Plant Site. The entire property will be fenced with low-maintenance fencing (e.g., single or double strand barbed-wire fence) to prevent human access; in addition, desert tortoise (DT; *Gopherus agassizzi*)-proof fencing will be erected around the Plant Site to deter DT and other wildlife entrance onto the Plant Site.

The evaporation ponds (Figure 1) will include a double liner system with a leak collection and recovery system. All or a portion of the liner system will be armored to facilitate potential maintenance activities with reduced risk of liner damage. The ponds will have sufficiently steep slopes to deter nesting, with at least two feet of freeboard to prevent birds from watering at the berm edges. The evaporation ponds will be designed to contain any accumulated bottom solids for the life of the Project. If waste needs to be removed for pond maintenance reasons, it will be transported off site for disposal as nonhazardous waste in accordance with applicable laws and regulations. In addition, a bioremediation area is planned in a disturbed area of the Plant Site to handle soil impacted by incidental leaks and spills of HTF.

Mass grading of the Plant Site will occur at the beginning of the Project construction period, following installation of DT-proof fencing around the Plant Site and clearance surveys. Approximately 5,160,000 cubic yards of earth will be moved. Because the preliminary site-grading plan is designed to be balanced, no import or export of soil is expected for general earthwork. Earthwork associated with the proposed Project will include excavation for foundations and underground systems.

Operations and maintenance activities will occur within the Plant Site during the life of the project and will include washing of mirrors, periodic maintenance of solar array

components and appurtenances, and vehicle and equipment movement within the Plant Site to perform necessary operations and maintenance activities. Although impacts to Covered Species are not anticipated due to proposed management, monitoring, and mitigation measures, these activities have the potential to result in take of transient individuals within the Plant Site.

2.2.2 Natural Gas Pipeline

A 17.6-mile, eight-inch natural gas pipeline will be constructed to provide fuel for startup and emergency operations (Figure 1). The pipeline will connect to an existing Southern California Gas pipeline in the California City area via Neuralia Road and California City Boulevard, with a 1.8-mile segment extending from Neuralia Road into the Plant Site along an existing distribution line and through a cleared, ruderal area. Of the 1.8-mile segment, 1.3 miles is within the Plant Site, and the remaining 0.5 mile is between the Plant Site and Neuralia Road. This pipeline will be constructed within a 15- to 20-foot right-of-way (ROW), entirely within previously disturbed road shoulders and along disturbed access roads, thereby avoiding native vegetation. The pipeline construction will involve nearly simultaneous trenching, laying of pipe, and backfilling so that no open trenches will be left unattended during daylight hours. Any open trenches that cannot be backfilled will be covered with steel plates at night. Spoils will be stockpiled in disturbed areas presently lacking native vegetation. These areas will be delineated with stakes and flagging prior to construction to avoid natural resources where possible and to define the limits where stockpiling can occur. Once completed, no impacts along the natural gas pipeline are anticipated. Any periodic maintenance that may occur would occur within the disturbed areas and would not result in impacts to any of the covered species.

2.2.3 Transmission Line and Tower Structures

LADWP's 230-kV Barren Ridge Substation is located across SR 14 southwest of the Plant Site (Figure 1). Two options have been fully evaluated and are being considered as a potential means for interconnecting the Project to the existing Barren Ridge facility. Under Transmission Option 1, approximately 5.0 acres would be disturbed for construction of the pole pads, pole site work areas, and pull/splicing sites. Transmission Option 2 would result in disturbance of 5.8 acres for these activities. Beacon Solar is seeking take coverage for both options, only one of which would eventually be built.

For either transmission line option, periodic maintenance activities could include cleaning of the line conductors and repair of equipment damaged by wind, dust, or accident. Activities could also include road and drainage structure repairs. Such activity would occur infrequently, perhaps once per year. Existing dirt roads west of SR 14 would provide construction and Operations and Management (O&M) access to transmission line structures whenever possible. DT-proof secure gates would be installed where access roads leave SR 14 and enter the Plant Site; no access roads outside of the Plant Site would be fenced.

2.2.4 Onsite Habitat Creation

The Plant Site is traversed diagonally from southwest to northeast by Pine Tree Creek Wash, a dry desert wash (Figure 2, see Appendix A). The U.S. Army Corps of Engineers (USACE) issued an approved jurisdictional determination on February 5, 2008, that

concluded the aquatic features occurring on the Plant Site are not jurisdictional waters of the U.S. (USACE February 5, 2008, see Appendix B). A delineation of the Plant Site identified 16.00 acres of jurisdictional California waters (state waters) that will require authorization under the California Fish and Game Code Section 1600 (Streambed Alteration Agreement [SAA]). These state waters include 14.96 acres of Pine Tree Creek Wash and 1.04 acres of an unnamed dry railroad wash.

Pine Tree Creek Wash is approximately 10,900 linear feet and bisects the Plant Site. It will be rerouted along and inside the eastern property boundary, outside the DT-proof fencing but within a low-maintenance security fence. A smaller, unnamed dry wash occurring within the Plant Site is approximately 2,150 linear feet and crosses under the railroad tracks. It will also be rerouted and a channel created to transport water north and then west to east across the Plant Site, joining with Pine Tree Creek Wash at the eastern boundary of the Plant Site.

The washes are mainly devoid of vegetation with seven random reaches (totaling 2,990 linear feet) in Pine Tree Creek Wash characterized by low vegetation cover (approximately 15 percent). The rerouted dry wash will be a trapezoidal channel approximately 14,000 feet long with 3:1 gradient slopes and a minimum bottom width of 345 feet (to a maximum of about 2,900 feet at the end of transition to match the sheet flow path). The proposed rerouted wash will have an average depth of approximately eight feet, with an earthen bottom and banks and riprap reinforcement in areas prone to erosion. The rerouted channel will match the original sheet flow drainage path and be revegetated with native vegetation to minimize habitat disturbance in accordance with the SAA.

Pursuant to discussions with the Department, the Project would mitigate for the loss of 16.00 acres of unvegetated dry wash by onsite replacement of habitat through the creation of an unvegetated channel, at a ratio of 1:1. Impacts to 2.4 acres of vegetated dry wash would be mitigated on site through the creation of vegetated portions of a rerouted channel, at a ratio of 2:1.

Maintenance activities may also occur within the rerouted wash and may consist of periodic debris removal and erosion repairs.

2.2.5 Offsite Conservation Lands

As part of the LEHCP and ITP, up to 123.4 acres of offsite conservation lands will be permanently conserved to mitigate Project impacts to Covered Species. To the extent practicable, up to 117.4 acres of offsite conservation lands will be acquired immediately adjacent to, or in proximity to, existing blocks of conserved lands that support the Covered Species. To support protection and conservation of the WBO within the passive relocation area, the Project proponent has also agreed to establish a conservation easement over approximately six acres of the parcel located north of the access road and east of SR 14 to protect the lands in perpetuity.

The following qualitative criteria will be applied in selecting lands to acquire to compensate for the take of Covered Species.

- Compensation lands should be part of a larger block of lands that are either already protected or planned for protection (e.g., the DTNA and its proposed

expansion area), or feasibly could be protected by a public resource agency (e.g., the Department) or a private biological reserve organization (e.g., the Desert Tortoise Preserve Committee [DTPC]).

- Parcels should have inherently moderate to good habitat that is likely to regenerate naturally when current disturbances are removed. Parcels should not be subject to such intensive recreational, grazing, or other uses that recovery is rendered unlikely or lengthy. Nor should those invasive species that are likely to jeopardize habitat recovery (e.g., Saharan mustard [Brassica tournefortii]) be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration.

- Parcels should provide habitat that is as good as or better than the habitat being impacted by the Project. Preferably, the lands would comprise sufficiently good habitat that they are either currently occupied or will likely be occupied by the Covered Species, once they are protected from anthropogenic impacts and/or otherwise enhanced.

- The parcels should be connected to known, occupied lands. Preferably, the existing population on these occupied lands would represent a population that is stable, recovering, or likely to recover.

The Project has initially focused on the region east of the Project Area, in the vicinity west of the DTNA, for acquisition of compensation lands. This region was targeted for potential acquisition because (1) it meets the criteria for compensation lands, (2) has the potential to support the Covered Species, and (3) is within the same geographic area as the populations of Covered Species at or near the BSEP. Acquiring and including these lands in the DTNA would increase the block of protected, high-quality habitat currently provided by the preserve and promote an important conservation and recovery measure for the Covered Species. To the extent that land cannot be acquired in this particular area due to availability or cost, other suitable lands within this population will be pursued.

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Section 3
Environmental Setting/ Biological Resources

3.1 Environmental Setting

3.1.1 Climate

In the Project Area, the historic daytime summer temperature ranges from an average of 97.7°F to 104.3°F. The historic daytime winter temperature ranges from an average of 28.2°F to an average daytime high of 33.9°F.

According to the Western Regional Climate Center website, the average annual rainfall for Mojave, California (17.5 miles from Project Area) was determined to be 5.87 inches from 1948 through 2005 (2007). The possible precipitation observations for this period of record were calculated to be 97.3 percent. The rainy season is from November through March, with the majority of the rainfall occurring in January. Summer monsoons emanating from the Gulfs of Mexico and California also provide moisture, but these storms occur with unpredictable reliability in the Project Area and generally do not appreciably augment the annual rainfall totals.

3.1.2 Topography/Geology

Topography in the vicinity of the Project Area is generally flat with elevations ranging from approximately 2,020 feet to approximately 2,340 feet. The Plant Site is relatively flat, with elevations ranging from approximately 2,220 feet above mean sea level (amsl) in the southwest to 2,025 feet amsl in the northeast.

Soils within the Project Area consist primarily of Arizo Gravelly Loamy Sand (two to nine percent slopes), Cajon Loamy Sand (zero to five percent slopes), Rosamond Clay Loam-Saline-Alkali, and Cajon Gravelly Loamy Sand (zero to nine percent slopes). These soils are generally found in alluvial fans and floodplains and are well drained to excessively drained. The Rosamond Clay Loam, which occurs in the northern section of the Project Area, is slightly to moderately saline. The Plant Site has been heavily disturbed by past agricultural activities, with much of the area remaining as barren, fine soils with scattered to absent annual plant growth; parts of the area are in the process of recolonization with desert saltbush.

3.1.3 Hydrology/Streams, Rivers, Drainages

The Project Area is within South Lahontan Hydrologic Region, which includes the Owens, Mojave, and Amargosa river systems, the Mono Lake drainage system and numerous other internally drained basins. The Region is bounded to the west by the crest of the Sierra Nevada, to the north by the watershed divide between Mono Lake and

East Walker River drainages, to the east by the California-Nevada border, and to the south by the crest of the San Gabriel and San Bernardino mountains and the divide between watersheds draining south toward the Colorado River and those draining to the north.

The Project Area does not include any major rivers, or associated tributaries to any rivers. Pine Tree Creek Wash, a dry desert wash, trends north-northeast to south-southwest through the center of the Plant Site. A smaller, unnamed dry desert wash traverses the southwestern portion of the Plant Site for 2,150 linear feet. These washes ultimately drain into Koehn Dry Lake, seven miles to the northeast. The 100-year flood zone follows this portion of Pine Tree Creek through the Plant Site.

3.1.4 Existing Land Use

The approximately 2,012-acre Plant Site is almost completely vacant and significantly disturbed from past agricultural activities that occurred between 1952 and the mid-1980s (Earth Satellite Corporation, 1997). There are several abandoned structures in a small-developed area just outside the Plant Site boundary and east of SR 14. An existing north-south Union Pacific rail line crosses the future plant access road but is west of the proposed solar facilities.

Other existing land uses in the vicinity of the Plant Site include the Honda Proving Center, an automotive and motorcycle test track facility located approximately 0.8 mile to the east of the Plant Site, and the Jawbone Canyon Off Highway Vehicle (OHV) open use area. The Jawbone Canyon OHV area is located approximately one mile north of the Plant Site on the west side of SR 14 and includes a ranger station, a store with dining facilities, and an outdoor entertainment and bar area. Red Rock Canyon State Park is located approximately four miles to the north of the Plant Site and features scenic desert cliffs, spectacular rock formations, and a campground with 50 primitive camping sites. Licensed vehicles and street legal OHVs with green stickers may travel on the dirt roads throughout the park.

3.1.5 Plant Site Vegetation Communities and Cover Types

The proposed 2,012-acre Plant Site is located on abandoned agricultural land that is primarily barren, with approximately 369.2 acres revegetated with disturbed allscale (*Atriplex polycarpa*) scrub (see Fallow Agricultural - Disturbed Atriplex Scrub in Figure 3a, see Appendix A) (EDAW, 2007; 2008a). Seven vegetation communities were mapped within the Project Area and one-mile buffer: Mojave Creosote Bush Scrub; Mojave Desert Wash Scrub; Mojave Mixed Woody Scrub; Tamarisk Scrub; Developed; Fallow Agriculture - Disturbed; and Fallow Agriculture - Disturbed Atriplex Scrub (Figures 3a and 3b, see Appendix A. The majority of the Mojave Creosote Bush Scrub occurs outside of the Project Area, to the west, south, and east, within the one-mile survey buffer. No sensitive plant communities occur in the Project Area. A summary of the total acreages for each vegetation community identified within the Project footprint areas of permanent and temporary disturbance (Plant Site, Natural Gas Pipeline Route, and Transmission Line Options) is provided in Appendix B. The entire natural gas pipeline will be placed within developed areas (Figure 3b, see Appendix A).

3.2 Covered Species

The LEHCP Covered Species include the DT, MGS and WBO. These species are discussed below.

Desert Tortoise, Mojave Population (*Gopherus agassizzi*)

Status and Distribution – The DT was listed by the Service as threatened on August 20, 1980, and by the Department as threatened on August 3, 1989 (Service 1989). Critical habitat was designated by the Service in 1994 (Service 1994a), and a recovery plan was issued by the Service in 1994 (Service 1994b). DT in the immediate vicinity of the Project are not in a Critical Habitat Unit designated by the Service (Service 1994a) nor in a Desert Wildlife Management Area (DWMA) as designated by the Service Recovery Plan (Service 1994b) or in the West Mojave Plan (U.S. Bureau of Land Management [BLM] 2005). Historic densities in the valley in which the Project lies were zero to 20 DT per square mile (Berry and Nicholson 1984). Recent sampling north of the Project Area suggested very low DT densities, less than four adult DT per square kilometer (Keith et al. 2005).

The DT population has fluctuated rangewide, with population levels varying within regions. Regional and local population monitoring efforts have indicated that the DT population has declined over the last 20 years, although encounter rates using the line distance sampling technique (a general indicator of regional population density) remained relatively stable over the recent two-year period between 2002 and 2004 (Service 2005). The Project Area is located in the Western Mojave Recovery Unit, which encompasses the Joshua Tree, Ord-Rodman, Superior-Cronese, and Fremont-Kramer DWMAs. The population densities within each of the Western Mojave Recovery Unit DWMAs are highly variable, but overall, the DT population has steadily decreased since monitoring efforts began.

The Fremont-Kramer DWMA DT population is the closest monitoring area to the BSEP. Based on encounter rates from the Service's line distance sampling program, the population density of DT within this DWMA appears to have been relatively stable recently, ranging from a 2002 encounter rate of 0.10, to a 2004 encounter rate of 0.13 along monitoring transects (Service 2005). However, other monitoring data have identified that the DT population within the local area has declined over the past 20 years, in part due to OHV activity (Service 2005).

Designated Desert Tortoise Critical Habitat – No designated critical habitat for the DT occurs in the Project Area. The nearest critical habitat is the Fremont-Kramer Critical Habitat Unit, approximately nine miles northeast.

Habitat Characteristics/Use – Habitat consists of firm but not hard ground, usually soft sandy loams and loamy sands to allow for burrow construction. The flattened forelimbs of the DT and other gopher tortoises are capable tools for burrow construction. The species also occupies rocky slopes. Optimal habitat consists of Creosote Bush Scrub vegetation and subsets of this plant community, supporting a variety of moisture-rich ephemeral vegetation on which the species feeds. Annual precipitation within DT habitat averages between two and eight inches per year. The DT is not found in soils too loose for burrow construction, or in dry lakes. The species generally occurs below 4,000 feet amsl although it can be found up to about 5,000 feet (Stebbins 1985). DT are usually

most active early March through early June and again between September and early November, although they are marginally active throughout the summer as well. The species is herbivorous and is most active when forage plants are available or when pooled water is available for drinking.

Occurrences within the Project Area –

Within the Plant Site: Surveys of the Plant Site in 2007 and 2008 found only two DT sign within the Plant Site boundary: an intact juvenile carcass that had been depredated by a common raven (*Corvus corax*) and a deteriorated adult burrow (Figures 4a and 4b, see Appendix A). During the 2007 survey, two other sets of old (greater than four years since death) bone and carapace fragments were found near the southern edge of the Plant Site boundary. The 2008 survey documented two live DT north of the Plant Site and east of the railroad tracks, one associated with a burrow (Figure 4b). There was no evidence that DT currently inhabit the Plant Site. Following the 2007 surveys, another juvenile DT carcass, also preyed upon by a raven, was observed during subsequent fieldwork at the Plant Site. In addition, one live adult DT was also detected on the northwestern edge of the Plant Site boundary, along the main access road, and was likely a transient from adjacent habitat (EDAW 2007; 2008a).

Outside the Plant Site: Within the transmission line routes west of SR 14, four live DT and 13 burrows were observed in 2007, and numerous scat, eggshells, and carcasses were observed in 2003 and in 2007 (EDAW, 2007) (Figure 4a, see Appendix A). Based on these data, DT are known to occur within the proposed transmission line corridor west of the Plant Site, west of SR 14.

Surveys of the natural gas pipeline route were conducted in 2008 and reported in the 2008 Spring Survey Report (EDAW 2008a). The pipeline is located completely within disturbed areas. Only one live tortoise was found, on the 1,000-foot Zone of Influence (ZOI) transect, north of California City Boulevard. DT scat was observed near this DT observation and also observed about one mile north of California City on the west side of Neuralia Road on the 1,000-foot ZOI transect. One DT carcass (Class 5) was observed 330 feet from the proposed natural gas pipeline.

Mohave Ground Squirrel (***Spermophilus mohavensis***)

Status and Distribution – The MGS was listed by the State as rare in 1971 and reclassified as threatened in 1984 per the California Endangered Species Act (Fish & Game Code §§2067). It is not currently federally listed. The species is known to occupy portions of Inyo, Kern, Los Angeles and San Bernardino counties in the western Mojave Desert. The species ranges from near Palmdale on the southwest to Lucerne Valley on the southeast, Olancha on the northwest and the Avawatz Mountains on the northeast (Gustafson 1993).

All MGS detections in the region of the proposed Project are shown in Figure 5. The California Natural Diversity Database (CNDDB) contains nine records of MGS occurrence within 10 miles of the Project Area. Three locations occur in Jawbone Canyon, from a point just west of SR 14 to Blue Point. A fourth occurrence is near the southern edge of Red Rock Canyon State Park on the west side of SR 14. MGS have also been recently observed to the southeast on Cache Creek near the western

boundary of the DTNA. Three occurrences are farther east, but within the DTNA. There are 10 other records within 12.4 miles that have not been entered into the CNDDB (Figure 5). All of these additional detections are associated with the DTNA.

Habitat Characteristics/Use – MGS inhabits desert areas, including alluvial fans, basins, and plains with deep sandy or gravelly friable soils with an abundance of native herbaceous vegetation. This species is typically associated with a variety of habitats, e.g., Mojave Creosote Bush Scrub, shadscale desert scrub, alkali scrub, and Joshua Tree Woodland. The species feeds on green vegetation and seeds but may also eat carrion. The MGS remains underground from August through February or March and is active during the spring and summer.

Occurrences within the Project Area –

Within the Plant Site: The abandoned agricultural lands east of SR 14, where the Plant Site is located, do not provide suitable habitat for this species. The only shrub vegetation within the Plant Site consists of several patches of allscale and a narrow strip of scattered shrubs along the dry desert wash. This area does not provide the cover and diverse food resources that are necessary to support an MGS population (Leitner and Leitner 1998; Leitner 2007).

Outside the Plant Site: Potential MGS habitat occurs west of the Plant Site and SR 14. Potential take of this species is being determined based on assumed presence of this species within suitable habitat within the area spanned by the proposed transmission line. Either of the transmission line route options, associated access roads, and the substation facility west of SR 14 could result in direct impacts to potential MGS habitat. However, associated loss of habitat is minor and discontinuous, occurring in small patches that are still usable, albeit degraded due to proximity to existing transmission lines and SR 14. The natural gas pipeline will be located entirely within disturbed areas and along roadways and is not anticipated to support MGS.

Based on this information, MGS are assumed to be present in suitable habitat west of SR 14, where Project transmission facilities will be constructed. Dr. Leitner's full assessment is included in Appendix B.

Western Burrowing Owl (*Athene cunicularia*)

Status and Distribution – The WBO is considered a Species of Special Concern by the Department due to intensive development pressure on the species' habitat. It is not currently federally or state listed. WBO in California are generally nonmigratory and occur mostly in the Central and Imperial valleys, primarily in agricultural areas. Small, scattered populations occur in the Mojave Desert. Population density seems to be correlated with prey availability, particularly small mammals (Klute et al. 2003).

Habitat Characteristics/Use – WBO habitat consists of annual and perennial grasslands, deserts, and scrublands, characterized by low-growing vegetation in addition to active and fallow agricultural areas (Zarn, 1974; California Burrowing Owl Consortium [CBOC], 1993). Suitable WBO habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of WBO habitat and both natural and artificial burrows provide protection, shelter, and nests for WBO. WBO typically use burrows made by mammals, such as ground squirrels

or badgers but also may use man-made structures, such as cement culverts; cement, asphalt or wood debris piles; or openings beneath cement or asphalt pavement.

Occurrences within the Project Area – In 2007, the Project Area and CEC one-mile buffer (shown in Figure 4a, see Appendix A) were considered suitable WBO habitat, as assessed per Phase I of the CBOC protocol. Phase II surveys for WBO were conducted in the Project Area during DT protocol surveys. Rather than a 500-foot buffer survey around the Project Area boundaries for WBO (per CBOC protocol), the ZOI transects for the protocol DT surveys with two additional CEC-recommended transects within the one-mile buffer zone were surveyed for burrows suitable for WBO. Additional WBO surveys were conducted in 2008 due to expansion of the Project limits and the inclusion of a 17.6-mile natural gas pipeline component in the Project design. These additional surveys were conducted between March 25 and June 12, 2008, within the 80-acre and 14-acre parcels, the two transmission line options, and the natural gas pipeline route, along with associated ZOIs and other buffers. Surveys along the natural gas pipeline route included the buffer area out to 1,000 feet.

Within the Plant Site: In 2007, five burrows with recent WBO sign were found within the Plant Site and two of these burrows were documented as occupied by WBO (see Figure 4a). The two WBO observed at the occupied burrows were assumed to be WBO pairs. In addition to the data collected during the protocol surveys, a WBO was observed within the Plant Site, just south of the access road, on September 4, 2007, during a groundwater pump test. No WBO were detected within the Plant Site during the 2008 surveys.

Outside the Plant Site: Four potential WBO were detected during the 2007 surveys outside the Plant Site in the Project Area and buffer. Within the one-mile ZOI buffer, 13 burrows with sign were detected, including five burrows with recent sign. All WBO detected were seen within 10 meters of a burrow with recent sign. During the 2008 biological resources surveys, two WBO were observed in flight, one during the DT surveys and one during the focused WBO survey (see Figure 4b). Both WBO were observed outside of the Plant Site. One was observed southeast of the Plant Site and one was observed just north of California City Boulevard, within the CEC 1,000-foot survey buffer associated with the natural gas pipeline. Eleven animal burrows with potential WBO sign were observed; six of these burrows showed recent WBO sign (active) and five had degraded WBO sign (inactive). Of the 11 potential WBO burrows observed, nine were active (recent WBO sign) and two were inactive (WBO burrows but without recent sign).

3.3 Covered Plant Species

No coverage for plant species has been requested under this LEHCP.

Section 4
Potential Biological Impacts/ Take Assessment

4.1 Direct and Indirect Impacts

This section addresses impacts for each covered species by project component, including the Transmission Line Options, Plant Site, and the Natural Gas Pipeline.

4.1.1 Desert Tortoise

Potential Desert Tortoise Impacts – Transmission Line Routes and West of SR 14

Optimal DT habitat consists of Mojave Creosote Bush Scrub vegetation, supporting a variety of moisture-rich ephemeral vegetation on which the species feeds. Suitable DT habitat occurs outside of the Plant Site, west of SR 14, in the area spanned by proposed Project transmission lines, where Mojave Creosote Bush Scrub provides suitable habitat for the species (EDAW, 2007).

Potential Direct Impacts

Direct permanent impacts to the DT could potentially result from Project-related construction activities west of SR 14. Impacts include installation of 10 poles (under Option 1) or 17 poles (under Option 2) within suitable DT habitat and use of temporary work areas associated with installation of the proposed 230-kV transmission line. The pole site work areas, pull sites, and splicing sites within DT habitat would result in temporary disturbance that would be considered permanent based on slow recovery time of habitats in desert ecosystems. In addition, up to 1.7 acres of DT habitat would be impacted by construction and O&M activities associated with the construction of the Option 2 switchyard and associated electrical tie-in. Potential new access roads created under Option 1 would affect up to 3.2 acres and under Option 2 would affect up to 1.7 acres. Additionally, spur roads would be created to access 10 pole sites under Option 1 (up to 0.3 acre) and 17 pole sites under Option 2 (up to 0.5 acre).

In summary, based on habitat assessments, 5.0 acres (under Option 1) or 5.8 acres (under Option 2) of suitable DT habitat would be directly impacted by the Project (Table 1). During construction and O&M activities, direct impacts to DT also could result from vehicle strikes if DT attempted to cross nearby roads.

Table 1
Project Beacon
Project Component by Phase and Potential Impact to Covered Species Habitat

Project Component	Occurrence during Project Phase		Potential Impact to Listed Wildlife Habitat			
			Option 1		Option 2	
	Construction	Operations & Maintenance	Desert Tortoise[1]	Mohave Ground Squirrel[1]	Desert Tortoise[1]	Mohave Ground Squirrel[1]
			Permanent	Permanent	Permanent	Permanent
Plant Site						
	NA	NA	0 acres	0 acres	0 acres	0 acres
Natural Gas Pipeline						
	NA	NA	0 acres	0 acres	0 acres	0 acres
Transmission Line						
Pole Pads	X	X	10 pads 0.6 acre	9 pads 0.6 acre	17 pads 1.0 acre	17 pads 1.0 acre
Pull Sites	X		3 sites 0.5 acre	3 sites 0.5 acre	3 sites 0.5 acre	3 sites 0.5 acre
Splice Sites	X		1 site 0.4 acre	1 site 0.4 acre	1 site 0.4 acre	1 site 0.4 acre
Switchyard	X	X	0 acres	0 acres	1.7 acres	1.7 acres
Access Road	X	X	3.2 acres	3.2 acres	1.7 acres	1.7 acres
Spur Roads	X	X	0.3 acre	0.3 acre	0.5 acre	0.5 acre
Total of Permanent Impacts			**5.0 acres**	**5.0 acres**	**5.8 acres**	**5.8 acres**
Overall Total Impact			**5.0 acres**	**5.0 acres**	**5.8 acres**	**5.8 acres**

[1] All desert tortoise (DT) habitat and potential Mohave ground squirrel (MGS) habitat co-occur (i.e., the same areas that are considered DT habitat are also considered potential MGS habitat, and vice versa, except for a small area east of SR 14, where 2,500 square feet (0.06 acre) of impact was classified as suitable for the DT, but not suitable for MGS. The impact numbers associated with the pole pads under Option 1 are displayed as the same value (i.e., 0.6 acre), due to rounding to one decimal place.

The BSEP would only contribute to a minor loss of habitat west of SR 14, and would implement a series of conservation measures to ensure that impacts to the species are avoided and minimized to the greatest extent feasible, and that habitat acquisition and conservation would mitigate for any unavoidable impacts to the species.

Potential Indirect Impacts

The following potential indirect impacts to special status wildlife species resulting from the Project transmission line were considered: (1) habitat fragmentation, where removal of habitat elements results in separation of formerly connected habitat patches; (2) creation of new recreational access into a formerly inaccessible area; (3) increased raptor predation on reptiles, songbirds, and small mammals resulting from an increase in perch sites provided by support structures such as transmission line towers; (4) introduction of exotic vegetation; and (5) alteration of surface drainage patterns, which may cause differential senescence and death of plant species used by special status wildlife species. Indirect impacts from habitat fragmentation are expected to be negligible due to the relatively small and discontinuous areas of native habitat that would be affected by the Project transmission line. No new ingress will occur because roads already exist throughout the area of the transmission line options. Introduction of exotic vegetation will be minimized by the elimination of seed sources on construction equipment and follow-up removal of exotic introductions due to the Project.

<u>Potential Desert Tortoise Impacts – Plant Site</u>

In August 2007, Dr. Alice Karl assessed the Plant Site and immediate vicinity for DT habitat quality (see Karl, 2008; Appendix B). Dr. Karl concluded, based on the following facts, that the Plant Site is not suitable for either DT population maintenance or recovery:

- Onsite habitat quality
  - Vegetation – species composition, shrub cover, shrub patchiness
  - Soil characteristics
  - Hydrology;
- Adjacent habitat quality;
- Extent and type of existing disturbance;
- Lack of value of the habitat to long-term and current use by DT; and
- Lack of connectivity.

The majority of the Plant Site has no potential to host DT because either it is devoid of vegetation or shrub cover is less than two percent. In areas where shrubs are regrowing, the Fallow Agricultural - Disturbed Atriplex Scrub is unlike the native community adjacent to the Plant Site. Portions of the surrounding area are native Mojave Creosote Bush Scrub, whereas the regrowth area is a nearly monotypic allscale stand. This area has patchy shrub cover with broad barren areas, has poor soil friability (i.e., fine, slightly hard soils), and shows evidence of periodic inundation by water, potentially hazardous to DT. While there is potential that a DT could be observed in these shrub patches or in the wash that crosses the Plant Site, the use of these areas would be attributable to the proximity of the adjoining native habitat outside of the Plant Site and would likely be

temporary due to the poor habitat potential within the Plant Site. Additionally, even the Mojave Creosote Bush Scrub north of the Plant Site is only poor-to-fair quality DT habitat and is substantially disrupted by historic agriculture; consequently, DT density is expected to be low in these areas.

The Plant Site lies on a broad area of non-DT habitat that has been unusable by DT for decades as a consequence of agricultural activities. The area therefore has had no value for DT population persistence or recovery for many years. DT have also been excluded from the allscale-dominated regrowth community in the northern portion of the Plant Site by a chicken-wire perimeter fence that was originally erected to exclude rabbits from the agricultural fields. Long segments of this chicken-wire fence are intact, thus constituting an effective block to most DT movement into the Plant Site. There is a possibility that a transient DT might be observed within the Plant Site; however, this would largely be due to the proximity of native habitat outside of the area.

It is highly unlikely that the Plant Site and the associated wash through the site are currently serving as movement corridors between suitable DT habitats (see Karl, 2008; Appendix B). This was confirmed during surveys conducted on the Plant Site (EDAW 2007). The regrowth area is merely a patch on the northwest side of the Plant Site, bounded on the east and south by large barren areas, so it does not lead to any habitat. While DT are known to walk across small bare patches or along edges of large barren patches, the large expanses of barren areas on the Plant Site are likely to be too inhospitable for travel because of their size (up to 0.5 mile wide between vegetation patches) and lack of cover. Therefore, dispersal across these large areas is highly unlikely. Further, such large patches would not be included within a DT's home range, so a DT would have no reason to be traveling across them.

Finally, Pine Tree Creek Wash, which crosses the eastern-central portion of the Plant Site, is characterized by poor shrub diversity and poor, discontinuous shrub cover with barren sections up to 1,875 feet long (EDAW, 2008b). This wash is mostly bordered by barren land and its northern terminus is dominated by stands of exotic Russian thistle (*Salsola tragus*). The wash also transitions from moderately suitable habitat south of the Project site to nonhabitat in the northeast within and adjacent to the Plant Site. These factors strongly suggest that DT are not using the wash as a movement corridor. Continuous habitat exists east of the Plant Site, that begins and ends at the same place as the wash and provides useful connective habitat. This area will also be augmented by the relocated and revegetated wash.

Potential Direct Impacts

No impacts to DT are expected within the Plant Site boundary area due to a lack of suitable habitat, although it is recognized that a low possibility exists that one or a few transient DT may be found in regrowth areas that connect to native habitat off site (e.g., in the wash or in saltbush scrub). The Plant Site consists of highly degraded, remnant habitat (the wash) and vegetative regrowth that is both unrepresentative of native habitat and contains undesirable biotic and abiotic features. There are 369.2 acres of Fallow Agricultural - Disturbed Atriplex Scrub and 60.3 acres of Mojave Desert Wash Scrub within the Plant Site boundary, for a total of 429.5 acres of vegetated cover that is not deemed suitable habitat for the DT but has a low potential to be occupied by transient DT. Given the poor quality of this vegetative cover for the species and the limited amount of suitable adjoining habitat from which animals might disperse, a

generous estimate of the number of transient DT that might be temporarily present within the Plant Site boundary during the life of the Project, primarily during the construction phase prior to installation of DT-proof exclusion fencing, would be two individuals. The adjacent habitat nearest the vegetative regrowth on the Plant Site that might host this species is the disturbed Mojave Creosote Bush Scrub and Fallow Agricultural - Disturbed Atriplex Scrub outside the Plant Site boundary to the west. DT surveys and observations indicate a very low density of animals in this area.

Although the development within the Plant Site would result in the loss of disturbed and degraded lands that have a low potential for occasional use by transient DT, loss of this transient use, if any, would be offset by the acquisition and conservation of valuable habitat for this species that would provide for the long-term maintenance of an equal or greater number of individuals.

Potential Indirect Impacts

Potential indirect impacts associated with erosion and deposition from grading at the Plant Site would be avoided by implementation of best management practices (BMPs) and Project Design Features (PDFs) to control erosion and sedimentation during construction. A Drainage Study and a Mitigation Plan completed for the BSEP as part of the SAA include the design of the new desert wash channel to ensure the water containing capacity and associated structure match that of the original wash. This includes the new wash terminating at the same location as the existing wash (Figure 2). Additionally, some portions of the rerouted wash channel will be revegetated with native vegetation and will be accessible to DT and other wildlife for foraging and cover. Based on the PDFs, no take of DT or DT habitat will occur as a result of rerouting the wash.

The proposed Project has the potential to indirectly impact DT populations by increasing the attraction of common ravens into the area and thereby potentially increasing raven predation on juvenile DT. While potential attractants associated with the Project are not within DT habitat, the movement of ravens throughout the area and over potential DT habitat adjacent to and in the vicinity of the Project Area could increase the chances of a raven encountering and depredating a DT. A Raven Monitoring, Management, and Control Plan (RMMCP) has been created to monitor raven activity and specify management and control measures that will avoid, minimize, or mitigate impacts. Many of the Project components, such as the evaporation ponds, waste management, dust suppression, and potential perching locations have been designed to limit their attractiveness to ravens. The RMMCP will monitor the success of these features and determine if additional management and control measures are needed.

Finally, DT of all sizes might briefly fence-walk the Plant Site barrier fence, once the fence is constructed, thereby potentially making them more susceptible to predation by coyotes (*Canis latrans*); however, this potential impact has a low probability of occurring. First, there are few DT adjacent to the site. Second, the site already presents a barrier to DT, as evidenced by the distribution of live DT sign, which virtually stops immediately outside the Plant Site boundary wherever observed (Figure 4a). (There is also a discontinuous chicken-wire fence along the border that has presented a barrier since agriculture began on the site.) Third, fence-walking would be temporary, as DT become habituated to the fence (A. Karl, field notes for Hyundai Motor America Test Track Project; B. Boarman, pers. comm. to A. Karl on Fort Irwin Expansion Project translocated DT). Finally, depredation on adult DT by coyotes appears to occur only in or

following drought years, when other prey is unavailable. Prey availability during Project construction cannot be predicted at this time.

Potential Desert Tortoise Impacts – Natural Gas Pipeline

A natural gas pipeline would be constructed from California City to the solar block along California City Boulevard, Neuralia Road, and an existing dirt road that accesses the eastern edge of the Plant Site. This approximately 17.6-mile pipeline would occur entirely within the disturbed and developed shoulders of the existing roads and will avoid native habitat. Approximately 60.0 acres of developed/disturbed area would be temporarily disturbed for the natural gas pipeline. The natural gas pipeline would be located below ground and minimal maintenance or repair activity is anticipated; therefore, no direct or indirect impacts to DT during operations are anticipated. Construction monitoring of the natural gas pipeline in addition to other proposed construction management measures would facilitate protection of the species, if present, during construction of the natural gas pipeline.

4.1.2 Mojave Ground Squirrel

Dr. Phil Leitner performed two habitat assessments of the Project Area, one on August 10, 2007, and one on October 15, 2007 (Leitner, 2007). He also evaluated relevant published and unpublished data, including the CNDDB, and 30 years of his personal research on the habitat requirements of the MGS (Leitner, 2008; Appendix B).

Potential Mojave Ground Squirrel Impacts – Transmission Line Routes and West of SR 14

The only vegetation community in the Project Area capable of supporting MGS is the Mojave Creosote Bush Scrub west of SR 14. This area is located on a large alluvial fan deposited by outflows from Pine Tree Canyon. This relatively undisturbed habitat has moderately diverse vegetation that could provide adequate forage and cover for MGS. The habitat on this portion of the Project Area appears suitable for the species but is not of high quality.

Direct permanent impacts to potential MGS habitat could result from Project-related construction activities west of SR 14 (Figure 1). Impacts include installation of nine poles (under Option 1) or 17 poles (under Option 2) and use of temporary work areas associated with installation of the proposed 230-kV transmission line. With the exception of one less pole pad, the impact acreages for MGS are the same as for DT, as described in Section 4.1.1 above. Based on habitat assessments, 5.0 acres (under Option 1) or 5.8 acres (under Option 2) of potential MGS habitat would be directly impacted by the Project (see Table 1). During Project construction, direct impacts to MGS, if present, could result from vehicle strikes or burial in burrows; vehicle strikes also could occur during O&M activities if MGS are present.

No other direct or indirect impacts have been identified.

Potential Mojave Ground Squirrel Impacts – Proposed Plant Site

Within the Plant Site boundary, 369.2 acres of Fallow Agricultural - Disturbed Atriplex Scrub and 60.3 acres of degraded Mojave Desert Wash Scrub have been identified, for

a total of 429.5 acres that support scattered perennial vegetation. The remainder of the Plant Site is classified as Fallow Agricultural - Ruderal. This 1,582-acre area is essentially barren and has no perennial vegetation. An extensive area of Mojave Creosote Bush Scrub immediately adjoins the Plant Site to the east and south. It appears to provide suitable habitat for the MGS, although there are no occurrence records and no evidence of any trapping attempts.

The 429.5 acres of the Plant Site that have some perennial plant cover are not suitable habitat for the MGS because they do not have the food resources necessary to support resident animals, and demographic evidence supports the position that this type of vegetative cover is not suitable MGS habitat because it is not capable of supporting a resident population. Dr. Leitner concluded that the disturbed vegetation on the Plant Site is incapable of supporting a resident MGS population.

A desert wash runs through the center of the Plant Site, from the southwest to the northeast. This area is not suitable for occupancy by MGS because the shrub vegetation is sparse, plant diversity is low, and there is little cover or forage appropriate for the species.

The Plant Site has no value as a movement corridor for MGS. Although dispersing juveniles might attempt to enter the Plant Site from adjoining creosote bush habitat to the west, south, or east, they would not cross the wide bands of barren fallow agricultural land. The degraded wash that crosses the Plant Site would not serve as a movement corridor because its vegetative cover is highly discontinuous, with some barren stretches as long as 1,875 feet.

Potential Direct Impacts

Similar to the DT, no impacts to MGS are expected within the Plant Site, although it is not possible to rule out the presence of transient individuals. Although the 429.5 acres of disturbed vegetation on the Plant Site would not support resident MGS, it is not possible to rule out the occasional presence of transient individuals. The Fallow Agricultural - Disturbed Atriplex Scrub on the Plant Site is isolated from suitable MGS habitat by wide areas of barren Fallow Agricultural - Ruderal land to the south, east, and north. The only possible way in which transient MGS could access this 429.5-acre area is from the area of Mojave Creosote Bush Scrub to the west, toward SR 14. A reasonable estimate, based upon population studies in the Coso area, is that this nearby habitat could support three to six adult MGS. It is possible that adults or their offspring could temporarily move into the Fallow Agricultural - Disturbed Atriplex Scrub area on the Plant Site. However, the risk to transient individuals is quite small, since vegetation removal and grading will take place over a brief period (i.e., approximately three months) at the beginning of the plant construction phase. Once vegetation removal has been completed, it is very unlikely that animals would enter the Plant Site. Based on this information, a generous estimate of the number of transient MGS that might be temporarily present within the Plant Site boundary during the life of the Project would be two individuals.

Although the development within the Plant Site could result in the incidental take of up to two transient MGS that could occasionally enter these disturbed and degraded lands, the loss would be offset by the acquisition and conservation of valuable habitat for this species that would provide for the long-term maintenance of an equal or greater number of individuals

Potential Indirect Impacts

Potential indirect impacts associated with erosion and deposition from grading at the Plant Site would be avoided by implementation of BMPs to control erosion and sedimentation during construction. A Drainage, Erosion, and Sediment Control Plan has been prepared to manage sediment on the site and was included in the SAA Notification Package (Worley Parsons, 2008). In addition, compliance with the Clean Water Act Section 402, State Water Resources Control Board General Construction, and General Industrial Permits will include preparation and implementation of appropriate Storm Water Pollution Prevention Plans that will define the BMPs and facilitate management of erosion, sediment, and water quality during both the construction and operation phases of the Project. No impacts to listed species from erosion or sediment during construction are anticipated.

Potential Mojave Ground Squirrel Impacts – Natural Gas Pipeline

No MGS or MGS habitat are present within the Natural Gas Pipeline; therefore, no impacts are anticipated.

4.1.3 Western Burrowing Owl

Potential Western Burrowing Owl Impacts – Project Area

For the transmission line, direct impacts to WBO could result from the installation of the transmission line, the establishment of work areas on site, and wildlife mortality by crushing or vehicle collisions during Project construction and subsequent operations and maintenance activities.

On the Plant Site, direct impacts to WBO could result from crushing of occupied burrows and destruction of nests, collisions with construction and maintenance vehicles, and taking of breeding and wintering habitat as a result of development of the solar array, power generation and support facilities, access roads, maintenance facilities, and substation.

In the Natural Gas Pipeline, all construction will occur within the existing developed areas. No WBO will be impacted within the Natural Gas Pipeline.

On the basis of WBO survey data, the locations of the power generation and support facilities, transmission structures, access roads, and electrical substation, two WBO pairs would be impacted by the Project. Direct impacts to the WBO and other birds listed under the Migratory Bird Treaty Act will be avoided by implementation of Project avoidance and minimization measures, as outlined in the mitigation section of this document.

4.2 Anticipated Take of Covered Species

Implementation of the Project may result in the take of individual Covered Species under the LEHCP. It is anticipated that the type of take would most likely be in the form of harassment during construction and operation, and through impacts to Covered Species habitat. Beacon is seeking take coverage for the BSEP for DT, MGS, and WBO (see Section 5.2), in addition to 5.0 to 5.8 acres of DT and MGS habitat (Table 1).

4.3 Anticipated Impacts on Covered Plant Species

There are no anticipated impacts to any listed plant species.

4.4 Effects on Critical Habitat

There are no anticipated impacts to designated critical habitat.

4.5 Cumulative Impacts

Only one other large development project, the Pine Tree Wind Development project, is currently planned in the vicinity of the BSEP Project Area covered by this LEHCP (LEHCP Area). The Pine Tree project consists of 80 wind turbines, each generating 1.5 MW of electricity, for a total of 120 MW. The Pine Tree project is currently under construction approximately six miles to the west of the LEHCP Area. Although the Pine Tree project is in relatively close proximity to the LEHCP Area, its impacts have been fully mitigated under a separate Federal Biological Opinion and State Section 2081 Incidental Take Permit. The Pine Tree project therefore does not contribute a cumulative effect to the effects analyzed in this LEHCP.

The LADWP Barren Ridge-Castaic Transmission Project is currently in the environmental review process and proposes construction of a new transmission line from the Barren Ridge Switching Station to the Castaic Power Plant near Santa Clarita, Los Angeles County. This new transmission line project would be located to the southwest of the LEHCP Area and would cross desert scrub communities that are of relatively higher quality than the small amount of desert scrub associated with the LEHCP Area. Due to its proximity to the LEHCP Area, it is assumed that the LADWP Barren Ridge-Castaic Transmission Project would affect the same types of biological resources that are associated with the BSEP. It is also assumed that the LADWP Barren Ridge-Castaic Transmission Project would obtain Federal and State incidental take authorization under a project-specific Biological Opinion and Section 2081 Incidental Take Permit and therefore fully mitigate any impacts to Covered Species. The LADWP Barren Ridge-Castaic Transmission Project therefore would not contribute a cumulative effect to the effects analyzed in this LEHCP.

Due to high levels of human activity in the area, habitat loss, degradation, and fragmentation are considered significant issues in the western Mojave Desert (BLM, 2005). However, given the current disturbed and degraded nature of the Plant Site east of SR 14, development of the Plant Site will not further reduce the amount of available habitat for special status species such as DT. With implementation of transmission line route Option 1, a small area of native habitat (5.0 acres) west of SR 14 would be permanently impacted by LEHCP activities. Transmission line route Option 2 would impact 5.8 acres of native habitat west of SR 14. In either case, the loss of habitat for Covered Species will be mitigated by the requirement for the Project to acquire and permanently protect suitable habitat for these species off site.

4.6 Anticipated Impacts of the Taking

Desert Tortoise

Implementation of the Project would result in a negligible impact to DT due to (1) the lack of DT habitat on most of the Project Area; (2) implementation of Project avoidance and minimization

measures such as site fencing, a preconstruction DT clearance, and a raven control program; and (3) minor impacts to no more than 5.8 acres of DT habitat.

The small amount of impact to DT habitat (i.e., up to 5.8 acres) on the transmission line would occur in small, noncontiguous patches, in proximity to previously disturbed areas such as SR 14 and historic agricultural fields, factors that decrease the quality of DT habitat west of the Plant Site. The Project is also located on the western edge of the species' range, which is not recognized as a key area for desert tortoise recovery (Service, 1994b). Key areas that support important core habitat and breeding populations of DT within the region occur to the east of the Project, including the DTNA, where potential compensation land acquisitions have been targeted (Berry 1997a).

Mohave Ground Squirrel

Implementation of the Project would result in a negligible impact to MGS. Impacts to MGS habitat are similar to those anticipated for DT (i.e., up to 5.8 acres of potential habitat west of SR 14 and the potential take of two transient MGS east of SR 14). Habitat impacts would occur in small, noncontiguous patches, in close proximity to previously disturbed areas such as SR 14 and historic agricultural fields. The quality of the species' habitat west of the Plant Site is relatively low and the Project is located at the western edge of the MGS range. Combined with the past agricultural disturbance in the region, the Project and its vicinity do not represent core breeding areas or movement corridors for the species. Although little is known about core population areas for MGS, historic populations of the species have been documented east of the Project, in the vicinity of the DTNA where potential compensation land acquisitions have been targeted.

Western Burrowing Owl

Implementation of the Project also would result in a negligible impact to WBO. Utilizing the formula for determining the level of impact to WBO outlined by CBOC, the Project impact would equate to 13 acres (6.5 acres per pair of WBO for the two assumed pairs of WBO detected within the Plant Site boundaries). Although the disturbed nature of the Plant Site supports small mammals, upon which WBO prey, there are many other similar and suitable foraging areas immediately adjacent to the Project that can be utilized by WBO. Due to the relatively sporadic distribution of the species within the western Mojave, the Project Area would not represent a key movement corridor for the species.

Section 5
Conservation Program/Measures to Minimize and Mitigate for Impacts

5.1 Biological Goals

Section 10(a)(2)(A) of the Act requires that an LEHCP specify the measures that the permittee will take to minimize and mitigate to the maximum extent practicable the impacts of the taking of any federally listed animal species as a result of activities addressed by the LEHCP.

As part of the "Five Point" Policy adopted by the Service in 2000, HCPs must establish biological goals and objectives (65 Fed. Reg. 35242, June 1, 2000). The purpose of the biological goals is to ensure that the operating conservation program in the LEHCP is consistent with the conservation and recovery goals established for the species. The goals are also intended to provide to the applicant an understanding of why these actions are necessary. These goals are developed based on the species' biology, threats to the species, the potential effects of the Covered Activities and the scope of the LEHCP.

The goals of this LEHCP are to conserve and enhance DT, MGS, and WBO habitat and increase population viability of these species within the LEHCP area. As outlined in the "Five Point" Policy, the biological goals of an LEHCP are the broad, guiding principles of the plan. Biological goals of LEHCPs are typically simple, measurable goals. Due to the low level of effects of the Project on Covered Species, the biological goals of the LEHCP are primarily habitat based, instead of species based. For each of the Covered Species, measureable biological goals have been established that either support the recovery goals of species listed under the Act or provide for conservation of nonlisted species covered by this LEHCP.

Desert Tortoise

The primary DT biological goal is to acquire and preserve DT habitat in a consolidated, contiguous area of high-quality core habitat. This conserved habitat would compensate for anticipated take of up to two transient DT and the loss of relatively low-quality habitat west of SR 14 that would be lost through construction of the Project. The conserved lands would be contiguous with currently protected lands, to the extent possible, and would thereby increase the likelihood of species recovery. These conserved lands will contribute an incremental increase in the size of the existing block of protected core DT habitat, thus increasing the likelihood of recovery by the species. This core habitat is essential in maintaining successful breeding metapopulations of the species. Other biological goals associated with the species include the implementation of habitat and species impact avoidance and minimization measures during construction of the Project, and during operation and maintenance of the facility.

Mohave Ground Squirrel

The biological goals for MGS recovery are similar to those outlined for DT. Specific objectives include the conservation of MGS habitat in a consolidated, contiguous area of high-quality core habitat. This conserved habitat would compensate for anticipated take of up to two transient MGS and the loss of relatively low-quality habitat west of SR 14 that would be lost through construction of the Project. Additionally, habitat impact avoidance and minimization measures would be implemented during Project construction.

Western Burrowing Owl

The WBO is not currently listed as threatened or endangered, and no formal recovery plan exists for the species. However, the LEHCP's biological goals for the species would include acquisition and preservation of habitat with equal to or greater value to the species, both in terms of habitat quality and quantity, thus increasing the population viability of the species within the region.

To accomplish these Biological Goals, Beacon will implement a combination of the following:

- Acquire and conserve in perpetuity suitable DT, MGS, and WBO habitat; and
- Enhance and manage in perpetuity the DT, MGS, and WBO habitat acquired and conserved as compensation for Project impacts to those species.

Beacon will coordinate with the Service, Department, CEC, and any approved third-party entity, such as the DTPC, to acquire up to 117.4 acres of land (or 115 acres under Transmission Option 1) that support suitable habitat for Covered Species (DT, MGS, and WBO) with sufficient acreage to compensate for any adverse effects or impacts associated with implementation of the Project. Beacon will provide financial assurances to guarantee that an adequate level of funding is available to implement all minimization, mitigation, and compensation measures identified, including a guaranteed enhancement and endowment fund associated with all compensation lands acquired under the LEHCP.

The overall concept of Beacon's development plan and LEHCP continues to be to promote the use of highly disturbed lands, and lands adjacent to disturbed and developed areas, and to direct conservation and habitat enhancement toward contiguous blocks of open space suitable for the Covered Species that would increase the likelihood of recovery of the Covered Species.

5.2 Biological Objectives

Biological objectives of an LEHCP are measurable components that are necessary to achieve a biological goal. The biological objectives of this LEHCP include the amount of habitat to be acquired, the habitat quality of the acquisition, and the anticipated number of individuals of each Covered Species in the acquired habitat. A summary of anticipated mitigation for impacts to Covered Species is provided in Table 2 below.

A description of the proposed compensation for take within the Plant Site is included in Section 5.2.1 and for take in areas west of SR 14 in Section 5.2.2. A summary of total compensation for take associated with the Project is provided in Section 5.2.3. Upon completing the acquisition, Beacon will place a conservation easement over the entire habitat acquisition and will provide

funding for the enhancement and management of the conserved lands, in perpetuity. The amount of guaranteed funding is outlined in Section 7 of this LEHCP.

Table 2
Beacon Solar Energy Project:
Proposed Mitigation for Potential Impacts to Covered Species

Listed Species	Total Impact[1]	Total Mitigation Acreage
Within Plant Site Boundary		
Desert Tortoise	Up to 2 transients	20
Mohave Ground Squirrel	Up to 2 transients	100
Western Burrowing Owl	2 pairs	20
Total within Plant Site Boundary		*100*[2]
Transmission Line Corridor West of Plant Site Boundary (see AFC Section 5.3.3.1 for details)		
With Option 1		
Desert Tortoise	5.0 acres	5.0 (1:1 ratio)
Mohave Ground Squirrel	5.0 acres	15.0 (3:1 ratio)
Total West of Plant Site Boundary (with Option 1)		*15.0*
With Option 2		
Desert Tortoise	5.8 acres	5.8 (1:1 ratio)
Mohave Ground Squirrel	5.8 acres	17.4 (3:1 ratio)
Total West of Plant Site Boundary (with Option 2)		*17.4*
Grand Total Project (with Option 1)		115[2,3]
Grand Total Project (with Option 2)		117.4[2,3]

[1] The temporary impacts are considered permanent in this desert ecosystem.
[2] Acreage values assume compensation lands can be acquired that are simultaneously suitable for all three species.
[3] The proposed acreage compensation for impacts to DT and MGS habitat also will mitigate any take of DT and/or MGS that may occur during project operations.

Desert Tortoise

Potential take of DT would be fully mitigated with the acquisition of 25 acres (under Transmission Line Option 1) or 25.8 acres (under Transmission Line Option 2) (Table 2). This represents a 1:1 mitigation ratio for impacts to DT habitat and the acquisition of 20 acres to compensate for potential take of up to two transient DT on the Plant Site and the potential take of DT in other areas of the Project.

Mohave Ground Squirrel

Potential take of MGS would be fully mitigated with the acquisition of 115 acres (under Transmission Line Option 1) or 117.4 acres (under Transmission Line Option 2) (Table 2) of habitat suitable for MGS. This represents a 3:1 mitigation ratio for impacts to MGS habitat, and the acquisition of 100 acres to compensate for potential take of up to two transient MGS on the

Plant Site and the potential take of MGS in other areas of the Project. Beacon will coordinate with the CEC and the Department to identify suitable MGS compensation lands.

Western Burrowing Owl

Two pairs of WBO would potentially be displaced through construction of the Project and will require mitigation per the ratios identified in the CBOC's *Western Burrowing Owl Survey and Mitigation Guidelines.* Mitigation for potential impacts to WBO will consist of two activities: (1) passive relocation of WBO from the construction area, and (2) acquisition and preservation of 20 acres of offsite lands suitable for WBO. The purpose of the passive relocation is to avoid direct impacts to any onsite WBO from the proposed Project. Approximately 6 acres of land will be set aside in a conservation easement adjacent to the project site to provide suitable habitat for passive relocation of WBO found on site prior to construction. Additional habitat will be acquired and preserved at an additional offsite location to ensure a minimum of 20 acres of compensation lands. Beacon will coordinate with the Department to identify additional suitable WBO compensation lands. The habitat to be acquired will be within the range of the species and will consist of suitable WBO habitat.

5.2.1 Compensation for Potential Impacts within Plant Site Boundary

Desert Tortoise

There are 369.2 acres of Fallow Agricultural - Disturbed Atriplex Scrub and 60.3 acres of Mojave Desert Wash Scrub within the Plant Site boundary, for a total of 429.5 acres of vegetated cover that is not deemed suitable habitat for the DT but has a low potential to be occupied by transient DT. Given the poor quality of this vegetative cover for the species and the limited amount of suitable adjoining habitat from which animals might disperse, a generous estimate of the number of DT that might be temporarily present within the Plant Site boundary during the life of the Project, primarily during the construction phase, would be two. The habitat that could likely provide a source for transient individuals of DT is the patch of Mojave Creosote Bush Scrub outside the Plant Site boundary to the west of the Fallow Agricultural - Disturbed Atriplex Scrub. DT surveys and observations indicate a very low density of animals in this area outside the Plant Site boundary.

Beacon is proposing the acquisition of offsite habitat to compensate for possible incidental take of up to two transient DT. The most recent published population density estimates of DT within the DTNA are approximately 25 individuals per square kilometer in 1992 (or 25 DT per 247.11 acres, equivalent to approximately one DT per 10 acres) (Berry, 1997b). The purchase, protection, and enhancement of DT habitat in the vicinity of the DTNA is anticipated to support the species at similar densities. Therefore, the acquisition of 20 acres of high-quality habitat suitable for the DT would be expected to provide habitat for a minimum of two animals. This would adequately compensate for the potential loss of transient use by DT of highly degraded vegetative cover within the Plant Site boundary, primarily prior to installation of exclusionary fencing at the start of construction.

Mohave Ground Squirrel

Although the 429.5 acres of disturbed vegetation on the Plant Site would not support resident MGS, it is not possible to rule out the occasional presence of transient individuals. Beacon has proposed to acquire 100 acres of offsite habitat to compensate for the possible incidental take of two transient MGS on 429.5 acres of degraded land within the Plant Site boundary. The methodology used for determining the amount of compensation land that must be acquired is explained in Appendix B (Leitner, 2008).

Western Burrowing Owl

The Project proposes the passive relocation of onsite WBO to artificial burrows located off site. The artificial burrows will be located within a 14.39-acre parcel under the control of Beacon (Assessors Parcel Number 469-14-011), located just outside of the Plant Site boundary, east of SR 14 and north of the facility access road). To support protection and conservation of the WBO within the relocation area, Beacon has agreed to establish a conservation easement over approximately six acres of the parcel to protect the lands in perpetuity (CEC, 2008). A total of four artificial burrows will be constructed in this area to facilitate passive relocation of two pairs of WBO identified previously on the Plant Site. The artificial burrows will be constructed as close to the northern border of the parcel as feasible to maximize distance between construction areas and the access road in an effort to decrease indirect disturbance and increase the potential for occupancy by burrowing owls.

In addition to conservation of lands to facilitate passive relocation, Beacon will acquire 20 acres of habitat suitable for the WBO to compensate for the potential impact to two WBO pairs. The CBOC and the Department mitigation guidelines recommend a ratio of 6.5 to 19.5 acres per pair of WBO (or single individual) impacted, depending on whether the replacement habitat is occupied and/or contiguous with the occupied area to be impacted, and also Project-specific negotiations with the Department. Based on discussions with WBO expert, Pete Bloom, conservation of 20 acres would provide enough habitat for two pairs of WBO (Pete Bloom, personal communication, 2008).

5.2.2 Compensation for Potential Impacts to the Area West of SR 14

Desert Tortoise

Project impacts west of SR 14 associated with the transmission line facilities would require DT compensation for loss of suitable habitat through the acquisition of up to an additional 5 acres (under Option 1), and up to 5.8 acres (under Option 2) of habitat suitable for the DT. Based on the quality of habitat and potential for continued use by DT, mitigation acreage was calculated based on a 1:1 ratio (Table 2). This compensation acreage would include coverage for any potential take of individuals west of SR 14 during the life of the BSEP.

Mohave Ground Squirrel

Project impacts west of SR 14 associated with the transmission line facilities would require MGS and DT compensation for loss of suitable habitat through the acquisition of up to an additional 15 acres (under Option 1), and up to 17.4 acres (under Option 2) of habitat suitable for both species. Based on the quality of habitat and potential for use by

Covered Species, mitigation acreage was calculated based on a 3:1 ratio for the MGS (Table 2). This compensation acreage would include coverage for any potential take of individuals west of SR 14 during the life of the BSEP.

Western Burrowing Owl

Due to implementation of avoidance and mitigation measures, no direct impacts to WBO will occur west of SR 14; therefore, no additional compensation is required for this part of the Project Area.

5.2.3 Compensation Acreage Summary

Compensation for impacts to Covered Species would include a total of up to 115 acres (with Transmission Line Option 1) or up to 117.4 acres (with Transmission Line Option 2). Mitigation acreage requirements will be accomplished by land acquisition acceptable to the Service, Department, and CEC. Direct permanent and temporary impacts to potential DT, MGS, and WBO habitat would be mitigated as described in Sections 5.2.1 and 5.2.2 above. Funding for the long-term management of the preserved land will also be included as described in Section 7 below.

5.3 Avoidance, Minimization, and Mitigation Measures

5.3.1 Measures to Avoid and Minimize Impacts

During the Project site selection process, available lands were assessed that would address several factors, including the appropriate size and location of a Project site, relative to existing resources. These resources included both existing infrastructure (e.g., proximity to electrical transmission facilities, and roadways), and previously disturbed lands. The Project site that was selected consists of primarily former agricultural lands that have been highly disturbed for the past several decades. The disturbed lands do not represent suitable habitat for the Covered Species. Thus, selection of the Project site avoids impacts to these species to the greatest extent feasible.

Through the ongoing development of the Project design, transmission line routes and a natural gas pipeline route were selected, based on minimizing effects on biological resources, while meeting the needs of the Project. Although the two transmission line options cross a small portion of the habitat of Covered Species, the design of the Project optimizes the use of existing access roads, to the extent feasible. Additionally, the natural gas pipeline route was selected, based on the feasibility to place the majority of the route within previously disturbed road shoulders, thus minimizing effects to native habitats and Covered Species.

General Measures (GM)

The following is a list of general impact avoidance and minimization measures that would apply to all Project activities. These measures are standard practices designed to prevent environmental degradation, and the Project applicant will ensure implementation of these measures to avoid and minimize impacts to Covered Species to the greatest extent feasible.

GM-1 Visual preconstruction surveys for Covered Species will be completed within all temporary and permanent impact areas no more than 30 days prior to commencement of construction activities in the survey area. Rare plant species and special status wildlife species habitat will be identified during rare plant surveys and flagged for avoidance. If construction occurs during or following a high-rainfall year, rare plant surveys will be conducted to identify and flag newly detected populations.

GM-2 The construction contractor(s)/crew(s) will be educated about the biological constraints of the Project. All construction personnel who work in the survey area will attend a contractor education program, developed and presented by a Project biologist prior to the commencement of construction activity. This Worker Environmental Awareness Program (WEAP) will be included in the Mitigation, Monitoring, and Reporting Program (MMRP), which comprehensively describes avoidance, minimization, and mitigation measures; documents their implementation; and monitors their effectiveness. The construction crews and contractor(s) will be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by the CEC and other agencies who must issue approvals for the Project.

GM-3 Construction crews and contractors will be responsible for avoiding all shrubs and trees within the construction zone to the extent feasible. Shrubs and trees will be flagged during rare plant surveys to indicate priority for avoidance.

GM-4 The anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and flagging prior to construction to avoid natural resources where possible. Construction-related activities outside of the impact zone will be avoided.

GM-5 New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area as delineated under GM-4. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads (e.g., new spur roads associated with both transmission line options) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

GM-6 Spoils should be stockpiled in disturbed areas presently lacking native vegetation. Stockpile areas should be marked to define the limits where stockpiling can occur.

GM-7 BMPs will be employed to prevent loss of vegetation due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within two days of discovery.

GM-8 Fueling of equipment will take place within existing paved roads and not within or adjacent to drainages or native desert vegetation. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. Spill kits will be available to respond to potential spills.

GM-9 Construction activity will be monitored by a Biological Monitor (BM) and oversight will be provided by an Authorized Biologist ([AB] qualified to handle DT) to ensure compliance with avoidance and minimization measures.

GM-10 Beacon is supportive of funding a monitoring program to document potential nesting ravens. The details of the funding mechanism and monitoring program will be coordinated with the Service, Department, and CEC prior to initiation of the Project ground-disturbing activity. (See desert tortoise mitigation measure DT-23 and the RMMCP for details of the proposed Raven monitoring program.)

GM-11 An MMRP will be created to comprehensively describe avoidance, minimization, and mitigation measures; document their implementation; and monitor their effectiveness.

GM-12 The introduction of exotic plant species will be controlled by implementation of measures described in the MMRP. The introduction of exotic plant species will be avoided and controlled wherever possible, and may be achieved through physical or chemical removal and prevention. Preventing exotic plants from entering the Plant Site via vehicular sources will include measures such as implementing Trackclean or other methods of vehicle cleaning for vehicles coming and going from the Plant Site. Earth-moving equipment shall be cleaned prior to transport to the Project site. Weed-free rice straw or other certified weed-free straw shall be used for all hay employed for erosion control.

GM-13 The Project applicant will mitigate for permanent impacts to habitat deemed suitable for occupancy by Covered Species. Mitigation will primarily include the offsite purchase of in-kind habitat of equal or greater value than that of the impacted habitat. Long-term management of the land by an appropriate organization that is approved by the resource agencies shall include necessary enhancements and reporting to the resource agencies. This will be funded as part of the land acquisition fees. The location of the preserved land and the management program would be negotiated between the resource agencies (including the CEC) and the Project applicant.

GM-14 The pipeline construction will involve nearly simultaneous trenching, laying of pipe, and backfilling so that no open trenches will be left unattended during daylight hours. Any open trenches that cannot be backfilled will be covered with steel plates at night. BMs will oversee pipeline construction to ensure that sensitive resources including Covered Species are avoided or when possible relocated to a safe location.

Desert Tortoise

Direct and indirect impacts to DT will be avoided and minimized through implementation of the following measures.

DT-1 Prior to ground-disturbance, the entire Plant Site (east of the railroad tracks) will be fenced with a permanent DT-proof fence to keep DT in habitat adjacent to the Project site from entering the Project site during construction and operations phases. The fencing type will be one-inch by two-inch vertical mesh galvanized fence material, extending at least two feet above the ground and buried at least one foot. Where burial is impossible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent the DT from digging under the fence. DT-proof gates will be established at all Project site entry points. Any utility corridors and tower locations will be temporarily fenced to prevent DT entry during construction. Temporary fencing must follow guidelines for permanent fencing and supporting stakes will be sufficiently spaced to maintain fence integrity. All fence construction will be

monitored by qualified biologists to ensure that no DT are harmed. Following installation, the fencing will be inspected monthly and during all major rainfall events. Any damage to the fencing will be repaired within two days of observing damage.

DT-2 A clearance for any DTs that may be on the Plant Site east of SR 14 and the railroad tracks by virtue of connection to adjacent native habitat will be conducted in all areas with shrub cover after installation of exclusion fencing. A minimum of two clearance passes must be completed and these must coincide with heightened DT activity from late March through May and during October. This will maximize the probability of finding all DT. It is anticipated that no or very few DT will be found. Any DT found will be moved to a location outside of the Project boundaries using techniques approved by the CEC, Department, and Service. Relocation should occur only when daily ground temperatures do not exceed 108°F and air temperatures fall below 90°F (i.e., early spring or fall), so that animals can safely find refuge in potentially unfamiliar areas without the added constraints of lethal temperatures. No DT will be moved between mid-April and early October, unless ambient temperatures are favorable. If the schedule of construction requires that clearance surveys continue past the safe time to relocate DT (i.e., past early April), then continued searches for DT would include temporarily affixing found DT with transmitters for ease of relocating them and relocating them during autumn, at a safe time for translocation. Once the site is deemed free of DTs after two consecutive clearance passes, heavy equipment will be allowed to enter the site to perform construction activities.

DT-3 West of SR 14, all DT will be removed from fenced construction zones to artificial burrows outside the temporary fencing. DT may be moved during seasons when daily ambient temperatures exceed lethal levels, but only late in the day when ground temperatures fall below 108°F and air temperatures fall below 90°F. These DT will be temporarily monitored to ensure that their behaviors resulting from relocation do not affect their survival.

DT-4 Following site clearance, a report will be prepared by the AB to document the clearance surveys, the capture and release locations of all DT found, individual DT data, and other relevant data. This report will be submitted to the Department, Service, and CEC (Agency Representatives).

DT-5 An AB and BMs will be appointed to oversee compliance with the protection measures for the DT and other species. The AB or BM will be on site during fencing activities. The AB or BM will have the right to halt all activities that are in violation of the DT protection measures. Work will proceed only after hazards to the DT are removed and the species is no longer at risk, or the AB has moved the individual from harm's way. The AB and BM will have in their possession a copy of all the compliance measures while work is being conducted on site. The AB and BM will be responsible for awareness trainings, surveys, compliance monitoring, and reporting.

DT-6 The Project proponent will submit the names and statement of qualifications of all proposed ABs and BMs to Agency Representatives for review and approval at least 30 days prior to initiation of any DT handling, clearance, and preactivity surveys. Project activities will not begin until the ABs and BMs are approved by the aforementioned agencies. Only ABs will be allowed to handle and relocate DT when necessary. BMs will ensure compliance with the protection measures but will not be allowed to survey for or handle DT. Workers will notify the AB or BM of all DT observations.

DT-7 The AB and BM will be responsible for awareness trainings, surveys, compliance monitoring, and reporting.

DT-8 Impacts from vehicle strikes are minimized by employee education on the proper procedures for operating vehicles on the Project site. Personnel will utilize established roadways (paved or unpaved) in traveling to and from the survey area and will utilize existing tracks on site whenever possible. Cross-country vehicle and equipment use outside designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of DT, a speed limit of 25 miles per hour will be established for travel within DT habitat areas.

DT-9 A trash abatement program will be established. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.

DT-10 Workers will be prohibited from bringing pets and firearms to the Plant Site.

DT-11 As much as is feasible, parking and storage will occur within the DT exclusion fencing. Anytime a vehicle or construction equipment is parked for longer than two minutes in unfenced DT habitat, the ground under the vehicle will be inspected for the presence of DT before it is moved. If a DT is observed, it will be left to move on its own. If it does not move within 15 minutes, the AB will remove and relocate the animal to a safe location outside of the Project boundary.

DT-12 All vehicles and equipment will be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility.

DT-13 Intentional killing or collection of either plant or wildlife species including listed species such as the DT in the survey area and surrounding areas will be prohibited. The AB, BM, and Agency Representatives will be notified of any such occurrences within 24 hours.

DT-14 For emergency response situations, the AB will notify the Agency Representatives within 24 hours. As a part of this response, the Agency Representatives may require additional measures to protect the DT. During any responses related to human health, fire, hazardous waste, or repairs requiring off-road vehicle and equipment use, the Agency Representatives may also require measures to recover damaged habitat.

DT-15 Water will be applied to the construction ROW, dirt roads, trenches, spoil piles, and other areas where ground-disturbance has taken place to minimize dust emissions and topsoil erosion. During the DT active season, a BM will patrol these areas to ensure water does not puddle for long periods and attract DT, common ravens, and other wildlife to the Project site.

DT-16 Upon locating a dead or injured DT, the AB will make initial notification to the Agency Representatives within 24 hours of its finding. The notification must be made by telephone and writing to the nearest Service Field Office. The report will include the date

and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. DT fatally injured as a result of Project-related activities may be submitted for necropsy using methods in Berry (2003), if desired by the Agency Representatives. DT with fewer major injuries will be transported to a nearby qualified veterinarian for treatment at the expense of the Project proponent. If an injured animal recovers, the offices of the Agency Representatives will be contacted for final disposition of the animal.

DT-17 On a monthly basis until construction is completed, the AB will prepare a brief report for the Agency Representatives, documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report will also provide information on the overall biological resources-related activities conducted, including the WEAP, clearance/preactivity surveys, monitoring activities, and any observed DT including injuries and fatalities.

DT-21 Annual monitoring reports will be prepared addressing the habitat enhancement and conservancy of the mitigation lands acquired to compensate for impacts to Covered Species. The reports will be prepared by the entity or organization to which Beacon assigns the compensation lands. That entity will be responsible for conducting the habitat enhancement (which may include habitat restoration, construction and maintenance of protective fencing, etc.), habitat monitoring, and annual reporting. The report will address the level of success of the habitat enhancement, and any suggestions for devising or implementing adaptive management strategies to improve the long-term viability of the covered species associated with the acquired lands. The annual report will be submitted to Beacon, and the CEC, Department, and Service at the end of each calendar year, for no less than five years.

DT-22 The design of the rerouted wash will incorporate no greater than 30-degree interior slopes, whenever feasible. This design will prevent DT from being trapped within the rerouted wash. The only exception to this is at the first turn (Turn 1) where the wash is initially redirected. The side slopes at Turn 1 will be 2:1 to accommodate anticipated flows and hydraulic energy (see the Mitigation Plan for more detail on the rerouted wash).

DT-23 An RMMCP will be designed and implemented to identify the conditions of concern specific to the Project that may attract ravens to the area and to define a monitoring, management, and control plan that will (1) monitor raven activity and (2) specify management and control measures that will avoid, minimize, or mitigate impacts. The monitoring effort is intended to provide qualitative data that can be interpreted by the BM and AB to determine if PDFs are working or if additional management and control measures are needed to mitigate impacts to DT.

Plan objectives include:

1. Clearly identify how the Project would utilize PDFs to manage the conditions of concern specific to the BSEP that may attract ravens to the area.
2. Document the effectiveness of PDFs in addition to raven management and control measures implemented at the BSEP.

3. Specify how and when mitigation measures would be selected and implemented if the monitoring suggests the need for additional controls.
4. Define triggers for modification of management and control measures using adaptive management principles.

DT-24 In the unlikely event that a DT is found on the Project site during Project Operations, the DT will be captured; boxed in a clean, escape-proof box; and temporarily maintained in a cool, quiet, safe location until the AB can arrive to remove it from the site, but no more than one day. The capture location will be recorded. If ambient temperatures exceed lethal levels on a daily basis, the AB will confer with the Department and Service representatives prior to transporting the DT outside the DT-proof fence. By moving DT outside the Plant Site boundary, the Project would be maintaining DT within their home range, not translocating them. All DT moved, whether from the Plant Site, during fence construction, or during construction for linear facilities, would be monitored to ensure their safety. All handling would be conducted within the constraints detailed in DT-2 and DT-3.

Mohave Ground Squirrel

Direct and indirect impacts to MGS will be avoided and minimized through implementation of the following measures.

MGS-1 A qualified biologist will conduct onsite monitoring of ground-disturbing activities in all areas with the potential to support MGS, primarily in the western portion of the survey area, west of SR 14 where portions of both transmission line options would be constructed. During construction activities, monthly and final compliance reports shall be provided to the Department and other relevant regulatory agencies documenting the effectiveness of mitigation measures and the level of take associated with this Project.

MGS-2 Impacts from vehicle strikes are minimized by employee education on the proper procedures for operating vehicles on the site. Personnel will utilize established roadways (paved or unpaved) in traveling to and from the survey area and will utilize existing tracks on site whenever possible. Cross-country vehicle and equipment use outside designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of MGS, a speed limit of 25 miles per hour will be established for travel within MGS habitat.

MGS-3 A trash abatement program will be established. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness to ravens.

Western Burrowing Owl

Direct and indirect impacts to WBO will be avoided and minimized through implementation of the following measures.

WBO-1. A preconstruction survey of the permanent and temporary impact areas will be conducted to locate active WBO burrows. The survey will consist of walking parallel transects and noting any fresh WBO sign or presence of WBO (may be combined with DT preconstruction surveys).

WBO-2. No disturbance will occur within 160 feet of occupied burrows during the nonbreeding season (September 1 – January 31) or within 250 feet of occupied burrows

during the breeding season (February 1 – August 31), unless a qualified biologist approved by the Department verifies through noninvasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrow are foraging independently and are capable of independent survival. A minimum of 6.5 acres of foraging habitat will be preserved, contiguous with occupied burrow sites to the extent possible, for each pair of breeding owls or single, unpaired resident owls.

WBO-3. WBO within the temporary or permanent impact areas and a 160-foot buffer will be excluded from active burrows during the nonbreeding season (September 1 – January 31) and encouraged to passively relocate to suitable, unoccupied habitat at least 160 feet outside of the exclusion area. Offsite burrows will be supplemented at a 2:1 replacement ratio of enhanced natural, unoccupied burrows or artificial burrows (a total of 4 artificial burrows), per guidelines from the CBOC (1993) and Department Memorandum (1995). After burrows are confirmed to no longer be in use (1 week), the burrow will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bag will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. If WBO activity is detected at a burrow during the breeding season (February 1 – August 31), a 250-foot buffer will be flagged surrounding the occupied burrow and all Project-related activity will remain outside of the flagged area. WBO will not be moved or excluded from burrows during the breeding season.

WBO-4. A BM will be on site during all construction activities in potential WBO habitat.

WBO-5. The WBO will be covered as part of the WEAP element of the CEC-required Biological Resources Mitigation Implementation and Monitoring Program or MMRP.

WBO-6. Trash and food items will be removed from the plant site daily and disposed of properly to avoid attracting ravens, a potential predator of the WBO.

WBO-7. During construction activities, monthly and final compliance reports will be provided to the Department and other applicable resource agencies documenting the effectiveness of mitigation measures and the level of take associated with the BSEP. Biological issues also will be covered in the ongoing compliance reporting required by the CEC.

5.3.2 Measures to Mitigate Unavoidable Impacts

Desert Tortoise

DT-18 The Project proponent will compensate for impacts to potential DT habitat in the area west of the Plant Site potentially affected during construction activities related to both transmission line options (5.0 acres under Option 1 or 5.8 acres under Option 2). This will be accomplished either by land acquisition acceptable to the Service, Department, and CEC or an assessed financial contribution calculated based on the final construction footprint. Direct permanent and temporary impacts to potential DT habitat would be mitigated at a 1:1 ratio. Funding for the long-term management of the preserved land will also be included.

DT-19 The Project proponent will compensate for the potential impact to two transient DT that may enter the Plant Site based on anticipated increase in carrying capacity.

Beacon will purchase 20 acres to compensate for the incidental take of up to two transient DT on the Plant Site. As with the DT-18 land acquisition, the location must be approved by the Service, Department, and CEC and include funding for the long-term management of the preserved land (on a per-acre of impact basis) and a fee title or conservation easement shall be granted to the Department or other Department-approved nonprofit entity.

DT-20 Upon completion of compensatory lands acquisition, Beacon, or an acceptable third-party such as the DTPC, will prepare a Mitigation Land Acquisition report that will discuss the habitat characteristics of the parcel(s) of land, and how they meet the requirements of the DT. The report would be submitted to the Agency Representatives.

Mohave Ground Squirrel

MGS-4. The Project proponent will compensate for the direct permanent and temporary impacts to potential MGS habitat associated with both transmission line options (5.0 acres under Option 1 or 5.8 acres under Option 2) at a ratio of 3:1 for a total of 15 acres under Option 1 or 17.4 acres under Option 2. All MGS compensation lands will be suitable for DT and therefore will also compensate for potential losses to DT habitat. As with the DT land acquisition, the location must be approved by the Department and CEC and include funding for the enhancement and long-term management of the compensation land (on a per-acre of impact basis). Fee title or a conservation easement shall be conveyed to the Department or other agency approved nonprofit entity.

MGS-5. Beacon will purchase 100 acres to compensate for the incidental take of up to two transient MGS on the Plant Site. As with the MGS-4 land acquisition, the location must be approved by the Department and CEC and include funding for the enhancement and long-term management of the compensation land (on a per-acre of impact basis). Fee title or a conservation easement shall be conveyed to the Department or other Department-approved nonprofit entity.

Western Burrowing Owl

WBO-8. The CBOC's mitigation guidelines used by the Department recommend that mitigation for impacts to WBO should be based on the number of pairs directly impacted. Mitigation ratios are based on whether suitable acquired habitat is occupied by the species or is contiguous to the impact area. The CBOC and the Department mitigation guidelines recommend a ratio of 6.5 to 19.5 acres per pair of WBO (or single individual) impacted, depending on whether the replacement habitat is occupied and/or contiguous with the occupied area to be impacted, and also Project-specific negotiations with the Department. Two burrowing owls have been documented to occur within the Plant Site in different areas. Assuming that each detected WBO is part of a mated pair and therefore the Plant Site supports two burrowing owl pairs, and the proposed compensation lands are occupied and/or contiguous, the anticipated mitigation will include 20 acres of suitable habitat. The offsite mitigation lands will include the six acres adjacent to the Project Area, which will be placed into a conservation easement to protect the relocation area and artificial burrows, and additional acreage acquired at a second location, to be determined and approved by the Department and CEC. Funding for the long-term management of the land preserved would also be provided (on a per–acre-of-impact basis).

5.4 Monitoring

Monitoring tracks compliance with the terms and conditions of the LEHCP and ITP. There are three types of monitoring: (1) compliance monitoring tracks the permit holder's compliance with the requirements specified in the LEHCP and ITP; (2) effects monitoring tracks the impacts of the Covered Activities on the Covered Species; and (3) effectiveness monitoring tracks the progress of the conservation strategy in meeting the LEHCP's biological goals and objectives (includes species surveys, reproductive success, etc.). Monitoring provides information for making adaptive management decisions.

Construction and Compliance Monitoring

Beacon will coordinate with the Service to designate an AB to conduct construction monitoring activities (see Section 5.3.2, GM-9; DT-5). The AB will prepare and submit an annual monitoring report to Beacon, and the Service, Department, and CEC. The monitoring report will address all project construction activities conducted and document all take of covered species, during the year monitored. The annual report will also summarize the total level of take of Covered Species through the life of the project. The AB will also be responsible for preparing and submitting monthly memoranda to Beacon, and the Service, Department, and CEC on the general status of activities and species observations during construction. The last annual report will be prepared and submitted within one month of the completion of monitored construction activities.

Beacon will also designate a Compliance Monitor (CM), who will monitor the overall compliance of the Project, in terms of the LEHCP and permit requirements. The CM will prepare and submit an annual plan compliance monitoring report to Beacon, and the Service, Department, and CEC. The annual report will address all of the plan and permit requirements, the level of compliance, and any suggestions for devising or implementing any adaptive management strategies. The last annual report will be prepared and submitted within one month of the expiration of the permit.

Biological Goals and Objectives Monitoring

It is the intent of Beacon to acquire all mitigation lands and place them into conservancy, prior to the initiation of Project construction. As such, only one Mitigation Land Acquisition report will be prepared by Beacon. This report will discuss the habitat characteristics of the parcel(s) of land, and how they meet the requirements of each Covered Species. The report will be submitted to the Service, Department, and CEC. Once the acquisition of all lands has been completed, no other monitoring reports will be required that would document the progress of the acquisitions.

Beacon will provide payment into a habitat enhancement and endowment fund. This endowment will fund the preparation of annual monitoring reports addressing the habitat enhancement and conservancy of the mitigation lands acquired to compensate for impacts to Covered Species. The annual monitoring reports will be prepared by the entity or organization to which Beacon assigns the lands. That entity will be responsible for conducting the habitat enhancement (which may include habitat restoration, construction and maintenance of protective fencing, etc.), habitat monitoring, and annual reporting. The report will address the level of success of the habitat enhancement, and any suggestions for devising or implementing adaptive management strategies to improve the long-term viability of the Covered Species associated with the acquired lands. The annual report will be submitted to Beacon, and the Service, Department, and CEC at the end of each calendar year, for no less than five years.

5.5 Performance and Success Criteria

Acquisition of Species Habitat

Beacon will acquire all Compensation Lands prior to initiating ground-disturbing activities within the LEHCP Area, unless financial assurance is provided to the Service and the CEC in the form of an irrevocable letter of credit, a pledged savings account, or another form of security ("Security") approved by the Service and the CEC, to ensure funding for the acquisition, enhancement, and long-term endowment of the Compensation Lands. All Compensation Lands will be acquired and fee title transferred to the Service, Department, or an approved third-party entity, or placed in permanent conservatorship with the Service, Department, or an approved third-party entity, within 18 months after ground-disturbance. The Compensation Lands will provide sufficient acreage to offset the impacts to the Covered Species, as summarized in Table 2. Upon the identification of potentially suitable Compensation Lands, Beacon or an approved third-party will prepare and submit a report to the Service, Department, and CEC outlining the suitability of the lands for compensatory purposes. Upon approval of the suitability of the lands by the Service, Department and CEC, and following the successful acquisition of the Compensation Lands and subsequent placement into conserved status, the performance and success criteria for acquisition of the Compensation Lands will be deemed to have been met.

Initial Enhancement of Species Conservation Habitat

Beacon will provide funding for initial enhancement of the Compensation Lands, which will be used for activities such as removing waste from and fencing the Compensation Lands. Performance and success criteria for initial enhancement will be deemed to have been met upon acceptance of the initial enhancement funding by the Service and CEC.

Long-term Monitoring and Management of Species Conservation Habitat

Beacon will provide for the long term monitoring and management of the Compensation Lands by providing initial funding for a long-term, non-wasting endowment to be used for that purpose. Once the endowment has been funded and secured, the performance and success criteria for long term monitoring and management of the Compensation Lands will be deemed to have been met.

5.6 Adaptive Management Strategy

The adaptive management strategy will be an integral part of an operating conservation program that addresses the uncertainty in the conservation of Covered Species. Adaptive management should identify and address any uncertainties and integrate a monitoring program that detects the necessary information and incorporates a feedback loop that links implementation and monitoring to a decision-making process that results in appropriate changes in management. Adaptive management should help the permittee achieve the biological goals and objectives of the LEHCP.

All Compensation Lands will be acquired and conveyed to the Service, Department, or an approved third-party prior to the initiation of ground-disturbing activities, or within 18 months of the initiation of ground-disturbance, if financial assurances are provided by Beacon as described in Section 5.5 above. Annual monitoring reports will be prepared by Beacon or an approved third-party and submitted to the Service, Department, and CEC and will report on the viability of

the lands as habitat for the species covered under the LEHCP. The reports will also convey any suggestions for adaptive management strategies, and how the endowment funding may be used to implement such strategies.

5.7 Reporting

See Section 5.4 for the types of monitoring activities that require the preparation of Annual Reports. Annual Reports to the Service will include:

1. Brief summary or list of project activities accomplished during the reporting year (e.g., this includes development/construction activities, and other covered activities).
2. Project impacts (e.g., number of acres graded, number of buildings constructed, etc.).
3. Description of any take that occurred for each covered species (includes cause of take, form of take, take amount, location of take and time of day, and deposition of dead or injured individuals).
4. Brief description of conservation strategy implemented.
5. Monitoring methods and results (compliance, effects, and effectiveness monitoring) and survey information (if applicable).
6. Description of circumstances that made adaptive management necessary; documentation of discussions with the CEC, Service, and Department; and how adaptive management was implemented. Include a table summarizing the cumulative totals, by reporting period, of all adaptive management changes to the LEHCP, including a very brief summary of the actions.
7. Description of any changed or unforeseen circumstances that occurred and how they were dealt with.
8. Funding expenditures, balance, and accrual.
9. Description of any minor or major amendments.

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Section 6
Plan Implementation

6.1 Changed Circumstances

6.1.1 Summary of Circumstances

Section 10 regulations (CFR §§ Sections 17.22(b)(2), 17.32(b)(2) of the Act require that an LEHCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the LEHCP. In addition, the LEHCP No Surprises Rule (50 CFR §§ 17.22 (b)(5), 17.32 (b)(5)) describes the obligations of the Permittee and the Service. The purpose of the No Surprises Rule is to provide assurance to the non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented LEHCP, in light of unforeseen circumstances, without the consent of the Permittee.

Changed circumstances are defined in 50 CFR § 17.3 as changes in circumstances affecting a species or geographic area covered by an LEHCP that can reasonably be anticipated by plan developers and the Service and for which contingency plans can be prepared (e.g., the new listing of species, a fire, or other natural catastrophic event in areas prone to such event). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan's operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the LEHCP), then the Permittee will implement those measures as specified in the plan. However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures absent the consent of the Permittee, provided that the LEHCP is being "properly implemented" (properly implemented means the commitments and the provisions of the LEHCP have been or are fully implemented).

The following sections discuss changed circumstances.

6.1.2 Newly Listed Species

If a new species that is not covered by the LEHCP but that may be affected by activities covered by the LEHCP is listed under the Act during the term of the Section 10(a)(1)(B) permit, the Section 10 permit will be reevaluated by the Service and the LEHCP covered activities may be modified, as necessary, to ensure that the activities covered under the LEHCP are not likely to jeopardize or result in the take of the newly listed species or adverse modification of any newly designated critical habitat. Beacon shall implement the modifications to the LEHCP Covered Activities identified by the Service as necessary to avoid the likelihood of jeopardy to or take of the newly listed species or adverse

modification of newly designated critical habitat. Beacon shall continue to implement such modifications until such time as the Permittee has applied for and the Service has approved an amendment of the Section 10(a)(1)(B) permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the Service notifies Beacon in writing that the modifications to the LEHCP Covered Activities are no longer required to avoid the likelihood of jeopardy of the newly listed species or adverse modification of newly designated critical habitat.

6.1.3 Vandalism of Mitigation Lands

If vandalism occurs to the security fencing along the perimeter of the mitigation lands, the conservation steward will notify the Service, and repair or replace any damaged infrastructure associated with the mitigation site. Costs of reasonably anticipated periodic maintenance associated with the mitigation lands have been included in the overall endowment fund.

6.1.4 Wildfires

If fire occurs on the mitigation lands, the conservation steward will notify the Service. Since periodic fire events are a natural process, Beacon and the conservation steward would not be responsible for replanting any desert scrub vegetation lost in any fire. However, the conservation steward would implement BMPs that would protect against erosion and invasion by nonnative plant species, thus optimizing the potential for a natural recovery of the desert scrub community. These costs have been included in the overall endowment fund.

6.1.5 Invasion of Nonnative Species

If a new nonnative plant or animal infestation occurs within the mitigation lands, the conservation steward will develop a plan and implement approved measures to control and eradicate (if possible) the infestation. The plan will be presented to the Service for approval. The plan will describe any additional funding required to implement the plan. This changed circumstance does not include nonnative plant and animal species that currently exist on or in the vicinity of the mitigation lands, since these invasive species constitute circumstances typical of the area. Costs for an invasive species control plan have been included in the overall endowment fund.

6.2 Unforeseen Circumstances

Unforeseen circumstances are defined in 50 CFR § 17.3 as changes in circumstances that affect a species or geographic area covered by the LEHCP that could not reasonably be anticipated by LEHCP developers and the Service at the time of the LEHCP's negotiation and development and that result in a substantial and adverse change in status of the Covered Species. The purpose of the No Surprises Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented LEHCP, in light of unforeseen circumstances, without the consent of the Permittee.

In case of an unforeseen event, the Permittee shall immediately notify the Service staff that have functioned as the principal contacts for the proposed action. In determining

whether such an event constitutes an unforeseen circumstance, the Service shall consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the LEHCP; percentage of range conserved by the LEHCP; ecological significance of that portion of the range affected by the LEHCP; level of knowledge about the affected species and the degree of specificity of the species' conservation program under the LEHCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

If the Service determines that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstances where the LEHCP is being properly implemented, the additional measures required of the Permittee must be as close as possible to the terms of the original LEHCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters that are already set aside in the LEHCP's operating conservation program. Additional conservation and mitigation measures shall involve the commitment of additional land or financial compensation or restrictions on the use of land or other natural resources otherwise available for development or use under original terms of the LEHCP only with the consent of the Permittee.

6.3 Amendments

6.3.1 Minor Amendments

Minor amendments are changes that do not affect the scope of the LEHCP's impact and conservation strategy, change amount of take, add new species, and change significantly the boundaries of the LEHCP. Examples of minor amendments include correction of spelling errors or minor corrections in boundary descriptions. The minor amendment process is accomplished through an exchange of letters between the permit holder and the Service's Field Office.

6.3.2 Major Amendments

Major amendments to the LEHCP and permit are changes that do affect the scope of the LEHCP and conservation strategy, increase the amount of take, add new species, and change significantly the boundaries of the LEHCP. Major amendments often require amendments to the Service's decision documents, including the NEPA document, the biological opinion, and findings and recommendations document. Major amendments will often require additional public review and comment.

6.4 Suspension/Revocation

The Service may suspend or revoke their respective permits if Beacon fails to implement the LEHCP in accordance with the terms and conditions of the permits or if suspension or revocation is otherwise required by law. Suspension or revocation of the Section 10(a)(1)(B) permit, in whole or in part, by the Service shall be in accordance with 50 CFR 13.27-29, 17.32 (b)(8).

6.5 Permit Renewal

In the event that the BSEP continues to function beyond the end of its anticipated operational life, the LEHCP permit would need to be renewed.

Upon expiration, the Section 10(a)(1)(B) permit may be renewed without the issuance of a new permit, provided that the permit is renewable, and that biological circumstances and other pertinent factors affecting covered species are not significantly different than those described in the original LEHCP. To renew the permit, Beacon shall submit to the Service, in writing:

- a request to renew the permit with reference to the original permit number;
- certification that all statements and information provided in the original LEHCP and permit application, together with any approved LEHCP amendments, are still true and correct, and inclusion of a list of changes;
- a description of any take that has occurred under the existing permit; and
- a description of any portions of the project still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

If the Service concurs with the information provided in the request, it shall renew the permit consistent with permit renewal procedures required by Federal regulation (50 CFR 13.22). If Beacon files a renewal request and the request is on file with the issuing Service office at least 30 days prior to the permit's expiration, the permit shall remain valid while the renewal is being processed, provided the existing permit is renewable. However, Beacon may not take listed species beyond the quantity authorized by the original permit. If Beacon fails to file a renewal request within 30 days prior to permit expiration, the permit shall become invalid upon expiration. Beacon and the mitigation bank operator must have complied with all annual reporting requirements to qualify for a permit renewal.

6.6 Permit Transfer

Due to various market forces inherent in the energy generation field, Beacon may seek to sell or transfer ownership of the property during the life of the permit. If such an event were to occur, the permit would need to be transferred to the new owner.

In the event of a sale or transfer of ownership of the property during the life of the permit, the following will be submitted to the Service by the new owner(s): written documentation providing assurances pursuant to 50 CFR 13.25 (b)(2) that the new owner will provide sufficient funding for the LEHCP and will implement the relevant terms and conditions of the permit, including any outstanding minimization and mitigation. The new owner(s) will commit to all requirements regarding the take authorization and mitigation obligations of this LEHCP unless otherwise specified in writing and agreed to in advance by the Service.

Section 7
Funding

7.1 Costs of LEHCP Implementation

Beacon, or an approved third-party entity, will purchase all Compensation Lands required to offset impacts to Covered Species. While the BSEP team has begun identifying the location and characteristics of lands that could be used for compensatory mitigation, the acquisition of compensation lands is dependent upon all parties agreeing upon the number of acres that need to be acquired, since that can affect availability and cost. The ultimate goal is to acquire compensatory lands that would offset the loss of the biological values associated with construction and operation of the BSEP that cannot be completely mitigated on site. Species specialists who are knowledgeable about the habitat requirements of the Covered Species would evaluate candidate properties. As potential compensatory lands are identified, the BSEP team, or third-party approved by the agencies, would coordinate closely with the CEC, Department, and Service to obtain consensus that the targeted lands are suitable. A Property Analysis Record (PAR), or a PAR-like analysis, would be conducted on compensation lands that are provisionally acceptable to both BSEP and the resource agencies or are similar to lands likely to be acquired. The PAR would model the anticipated costs associated with the acquisition of land, as well as management expenses (e.g., fencing, habitat enhancement, monitoring, etc.), while accounting for escalation in costs associated with inflation. The result of the PAR model would be an accurate estimate of the long-term endowment costs that would be required to fully implement all compensation measures.

A deed restriction will be placed on the lands to ensure the continued use of the lands as a mitigation site. This deed restriction cannot be altered without the written permission of the Service. Beacon has sufficient financial assets to implement the terms of this LEHCP and will be responsible for funding the LEHCP. Beacon understands that failure to provide adequate funding and a consequent failure to implement the terms of this LEHCP in full could result in temporary permit suspension or permit revocation. Consistent with the terms of this LEHCP, these funds will be used to cover the costs of purchasing suitable Compensation Lands, enhancing the lands if necessary, maintaining the mitigation lands through establishment of an endowment fund, and fulfilling monitoring requirements outlined in the LEHCP. Beacon will ensure that funds are available to cover all changed circumstances above the estimated costs displayed for each changed circumstance. To help achieve the performance standards required by this LEHCP, Beacon will establish an endowment fund of sufficient size capable of funding the mitigation implementation, maintenance of the mitigation site, and project monitoring requirements.

7.2 Funding Source(s)

Beacon will provide financial assurances to guarantee that an adequate level of funding is available to implement all avoidance, minimization, and compensation measures identified in

the LEHCP. These funds will be used solely for implementation of the measures associated with the Project.

Compensation Lands Acquisition

Beacon, or an approved third-party, shall complete acquisition of the proposed Compensation Lands prior to initiating ground-disturbing Project activities, unless financial assurance is provided to the Service and CEC, in the form of an irrevocable letter of credit, a pledged savings account, or another form of security ("Security") approved by the Service and the CEC, to ensure funding in the amount of $299,000 (if Option 1 is adopted) or $305,240 (if Option 2 is adopted).

The amount of the Security is calculated as follows:

Item/Activity	Unit Cost (per acre)	Impact Acres		Option 1 Costs	Option 2 Costs
		Option 1	Option 2		
Conservation Strategy					
Acquisition of Compensation Lands for Covered Species	$1,000	115	117.4	$115,000	$117,400
Enhancement of Compensation Lands for Covered Species	$250	115	117.4	$28,750	$29,350
Endowment to Support Long- Term Maintenance of Compensation Lands for Covered Species	$1,350	115	117.4	$155,250	$158,490
GRAND TOTAL	**$2,600**	**115**	**117.4**	**$299,000**	**$305,240**

If Security is provided, Beacon, or a third-party entity approved by the Service, Department, and CEC, shall complete the proposed Compensation Lands acquisition within eighteen (18) months of the start of Project ground-disturbing activities. A minimum of three months prior to acquisition of the 115.0 acres (117.4 acres if Option 2 is adopted) of Compensation Lands, Beacon, or an approved third-party entity, shall submit to the Service, Department, and CEC a formal acquisition proposal identifying specific properties comprising the acres that will be purchased. The Service and CEC would approve all of the parcels comprising the 115.0 acres (117.4 acres if Option 2 is adopted) in advance of purchase. The Compensation Lands are expected to be acquired in the western Mojave Desert; are expected to promote conservation of the DT, MGS, and WBO; and will be subject to the conditions listed below.

Compensation Lands Acquisition Conditions

In conjunction with the Beacon funding obligations related to the Compensation Land actions and following the Service and CEC field review and approval of the proposed 115 acres (117.4 acres if Option 2 is adopted) to be purchased, Beacon or an approved third-party entity shall comply with the following conditions:

a) Preliminary Report: Provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary documents for the proposed 115 acres (117.4 acres if Option 2 is adopted [and/or conservation easement]). All documents conveying or conserving Compensation Lands and all conditions of title/easement are subject to the approval of the Service and CEC.

b) Title/Conveyance: Transfer fee title to the 115 acres (117.4 acres if Option 2 is adopted) of Compensation Lands to the Service, CEC, or an approved third-party organization under terms approved by the Service and CEC. Convey a conservation easement on the 115 acres (117.4 acres if Option 2 is adopted) of Compensation Lands to the Service, CEC, or an approved third-party entity.

c) Enhancement Fund (as necessary): Fund the initial protection and enhancement of the 115 acres (117.4 acres if Option 2 is adopted) by providing enhancement dollars to the Service, CEC, or an approved third-party entity.

d) Endowment Fund: Prior to ground-disturbing expansion Project activities, provide to the Service, CEC, or an approved third-party entity, a permanent capital endowment in the amount determined through the PAR or PAR-like analysis that will be conducted for the 115 acres (117.4 acres if Option 2 is adopted) of Compensation Lands. Interest from this amount shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the Compensation Lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the Compensation Lands. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the Service, CEC, or approved third-party entity to ensure the continued viability of the species on the 115 acres (117.4 acres if Option 2 is adopted).

e) Security Deposit: Beacon may proceed with ground-disturbing Project activities before fully performing its duties and obligations as set forth above only if Beacon secures its performance by providing to the Service, CEC, or approved third-party entity administrative proof of funding necessary to cover land acquisition and easement costs, fencing/cleanup costs and, as necessary, initial protection and enhancement of the acquired 115 acres (117.4 acres if Option 2 is adopted). If the Security is provided to allow the commencement of Project disturbance prior to completion of compensation actions, Beacon or an approved third-party entity must complete the required actions no later than 18 months after the start of the ground-disturbing activities. The Security will provide that the Service, CEC, or approved third-party entity may draw on the principal sum if it is determined that Beacon has failed to comply with the Conditions of Certification in the California Energy Commission License Decision for the Project. The Security will be returned to Beacon upon completion of the legal transfer of the Compensation Lands to the Service, CEC, or approved third-party entity.

f) Reimbursement Fund: Provide reimbursement to the Service or CEC for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other state agency reviews; and overhead related to completing the acquisition of Compensation Lands.

If all actions for Compensation Lands described above are not completed within 18 months of initial ground-disturbing activity, Beacon shall consult with the Service and CEC and possibly develop alternate compensation land proposals subject to the above requirements.

Beacon is responsible for all Compensation Lands acquisition/easement costs, including but not limited to title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing Compensation Lands; escrow fees or costs; toxic waste clearance; and other site cleanup measures.

7.3 Funding Mechanism and Management

As previously discussed throughout the LEHCP, Beacon, or an approved third-party entity, will purchase all necessary Compensation Lands prior to the initiation of ground-breaking activities, or, in the alternative, provide financial assurance that the Compensation Lands will be acquired within 18 months of initiation of ground-disturbing activities. Beacon will also establish an endowment fund to guarantee the funding required for conserving and enhancing the mitigation lands for the long-term benefit of the species covered by the LEHCP.

Section 8
Alternatives

8.1 Summary

Section 10(a)(2)(A)(iii) of the Act [and 50 CFR §§17.22(b)(1)(iii) and 17.32(b)(1)(iii)] requires that alternatives to the taking of species be considered and reasons why such alternatives are not implemented be discussed.

8.2 No Action Alternative

Under the No Action Alternative, the Project would not be constructed, and the electrical power that would have been generated by the Project would be generated by other facilities, presumably using natural gas-fired or other fossil-fueled generation. Because the Project facilities would not exist, its direct environmental impacts would not occur. However, indirect impacts would result from greater fossil fuel consumption and ultimately additional air pollution. It is expected that since solar power is generated close to peak consumption periods of the day, the peaking power needs met by BSEP-generated power otherwise would be met by fossil fuel-fired peaking units such as simple-cycle gas turbines and other rapid starting equipment (e.g., reciprocating engines) that would produce higher levels of air emissions than a solar thermal power plant.

In 2002, the state established the Renewable Portfolio Standard (RPS) program, with a goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The 2003 Energy Report recommended accelerating the 20 percent goal for renewables to 2010, while the 2004 Energy Report and the state's 2005 Energy Action Plan recommended increasing the target percentage to 33 percent by 2020. The 2006 Energy Report Update states that "California must accelerate its pace of development if it is to meet its long-term Renewable Portfolio Standard Goal of generating 33 percent of the state's electricity from renewable sources by 2020, as recommended by Governor Schwarzenegger, the Energy Commission, and the California Public Utilities Commission" (CEC, 2006). The 2007 Integrated Energy Policy Report (IEPR) states that "renewable resources are an essential tool for reaching AB 32 goals," but that "program adjustments" are needed to meet the 2010 and 2010 Renewable Portfolio Standard goals (CEC, 2007). The 2007 IEPR cites the "critical imperative to reduce greenhouse gas emissions" and "management of the risk borne by ratepayers for electricity generation" as the two main considerations driving the need to achieve the RPS goals. The IEPR states that the goal of 33 percent renewables by 2020 is achievable "with a concerted effort by and coordinated support from government, industry, and the public" (CEC, 2007).

Under the No Action Alternative, the proposed solar Project would not be developed and the State's RPS program goals would not be supported. The purpose of the Project is to generate renewable solar power and provide electric power to Californian electrical users. The No Action Alternative is not the appropriate choice because it does not provide the additional power

needed in California in a manner that assists California in meeting its renewable power and greenhouse gas reduction goals.

8.3 Alternative 2 – Project Site Alternatives

Beacon conducted an exhaustive analysis of multiple site alternatives that would meet the technical requirements of the solar electrical generating project. Seven alternative sites were analyzed, and all were rejected from further consideration, due to a variety of factors. Environmental factors that weighed against these alternatives sites included greater impacts to special-status species habitats, as well as no environmental advantage (i.e., no reduced environmental impact) compared to the proposed site.

8.4 Alternative 3 – Reduced Footprint Alternative

The selection of a 250-MW project size considers several factors including available land aggregation, transmission capacity where land can be aggregated, design limitations, and operational constraints. Further, optimization studies show the size of a project utilizing parabolic trough technology to be most economically viable in blocks of 250 MW with sizing significantly larger than 250 MW resulting in increasingly unacceptable parasitic losses due to pumping.

Since the facility's power output is directly related to the size of the solar collector area, a smaller facility would require a smaller site with a smaller footprint and thus, conceptually, lower potential for adverse environmental impacts. However, the site selection process carefully considered potential environmental issues and the selected site could accommodate a 250-MW plant without any significant environmental impacts. Therefore, there is no substantial environmental advantage to a smaller sized BSEP, and given that a 250-MW facility is preferable from an economic perspective, the idea of a smaller Project was rejected.

Section 9
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Appendices

A. Maps/Figures

B. Biological Reports/Biological Assessments

C. Property Analysis Record

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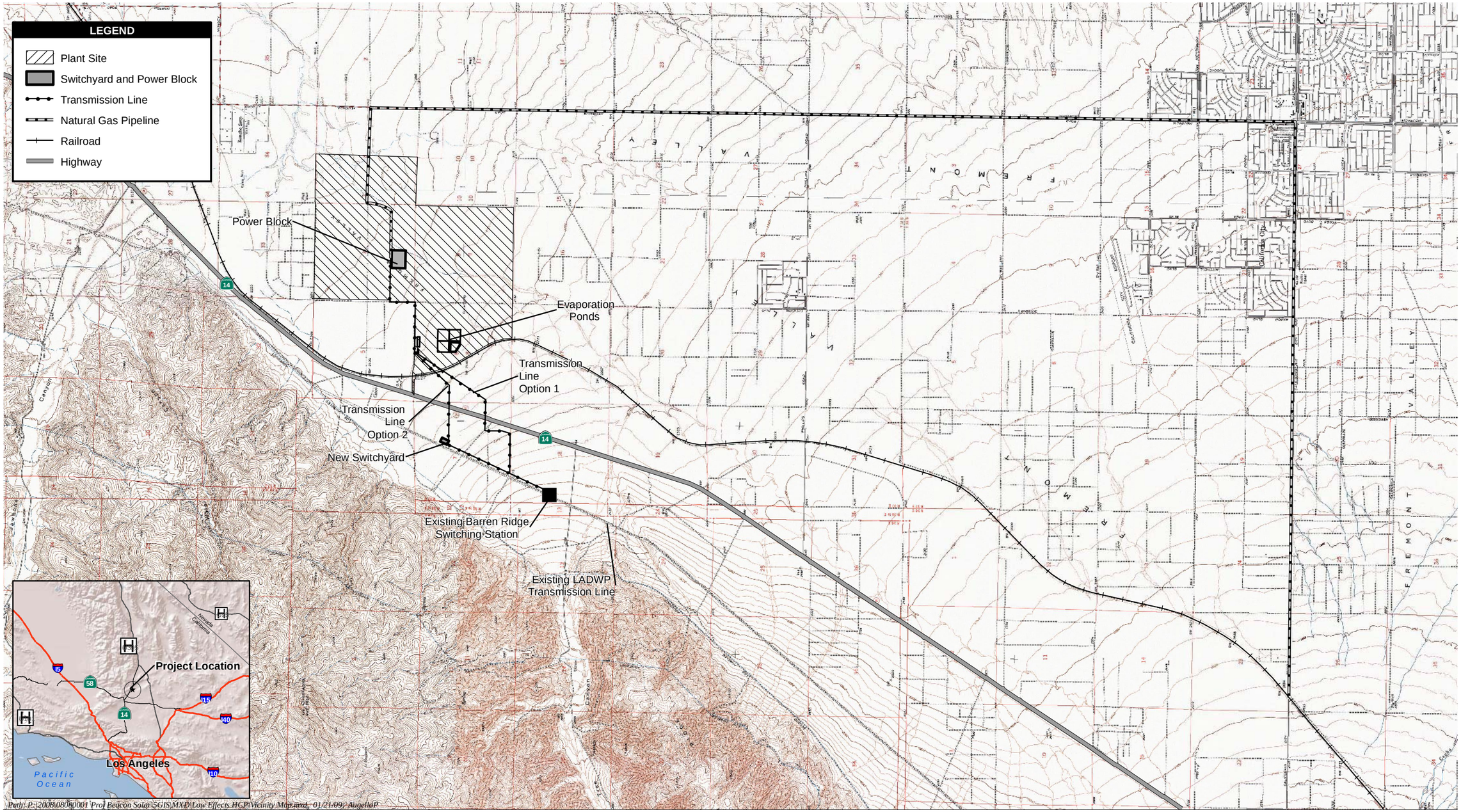
Appendix A

Maps/Figures

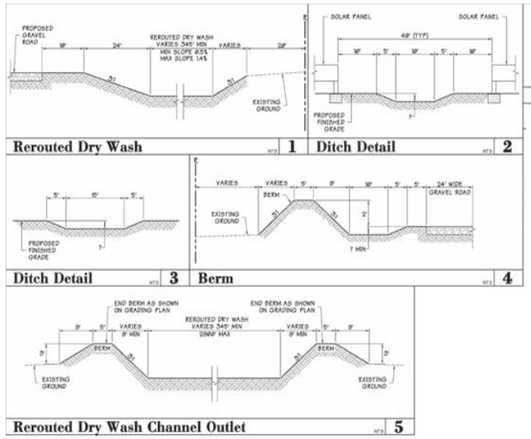


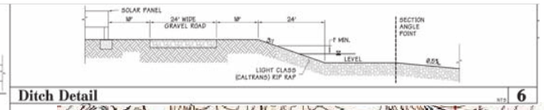
Source: TetraTech 2007; Kern County 2007; WorleyParsons 2008; ESRI 2003, 2008; USGS 2008; USGS 7.5' Topo Quad Mojave NE 1994, Cinco 1994, Cantil 1973, Sanborn 1973, California City North 1973, California City South 1973

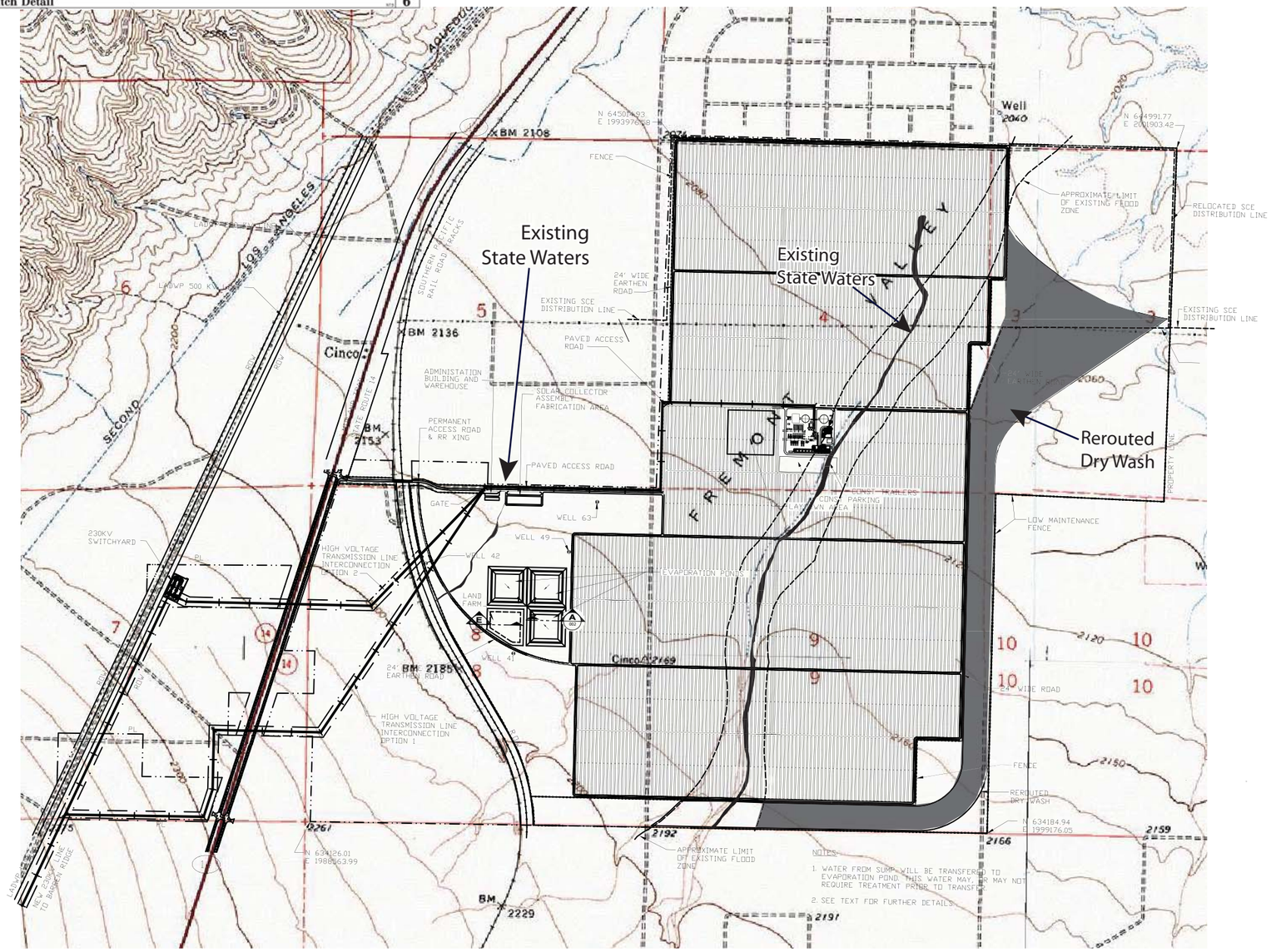
1 0.5 0 1 Miles

Scale: 1:63,360; 1 inch = 1 mile

Figure 1
Beacon Solar Energy Project







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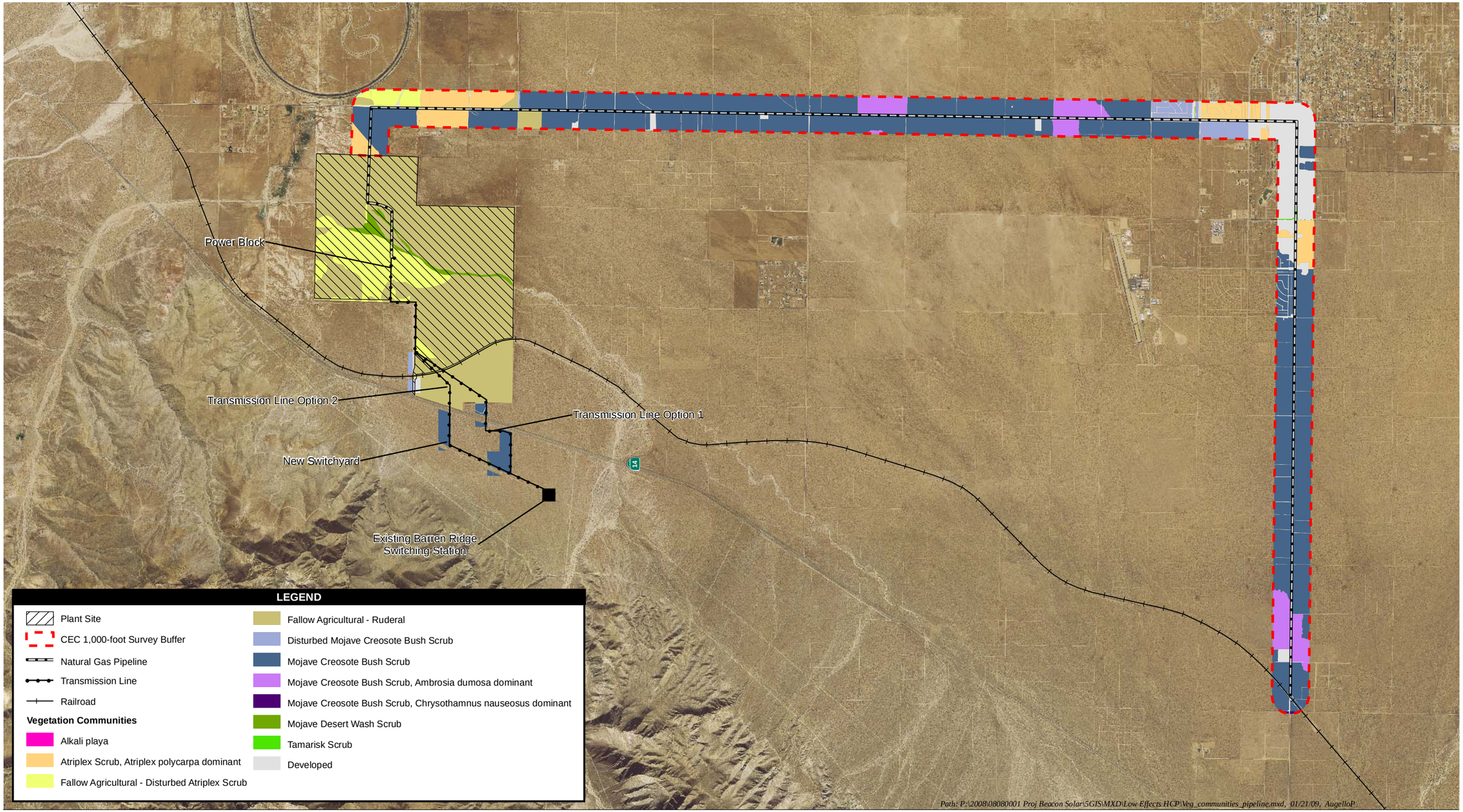
Source: Worley Parsons Resources & Energy 2007

1,500 750 0 1,500 Feet

Figure 2
Facilities Layout and Rerouted Wash



Source: NAIP 2005; EDAW 2007; TetraTech 2007; WorleyParsons 2007; Kern County 2007

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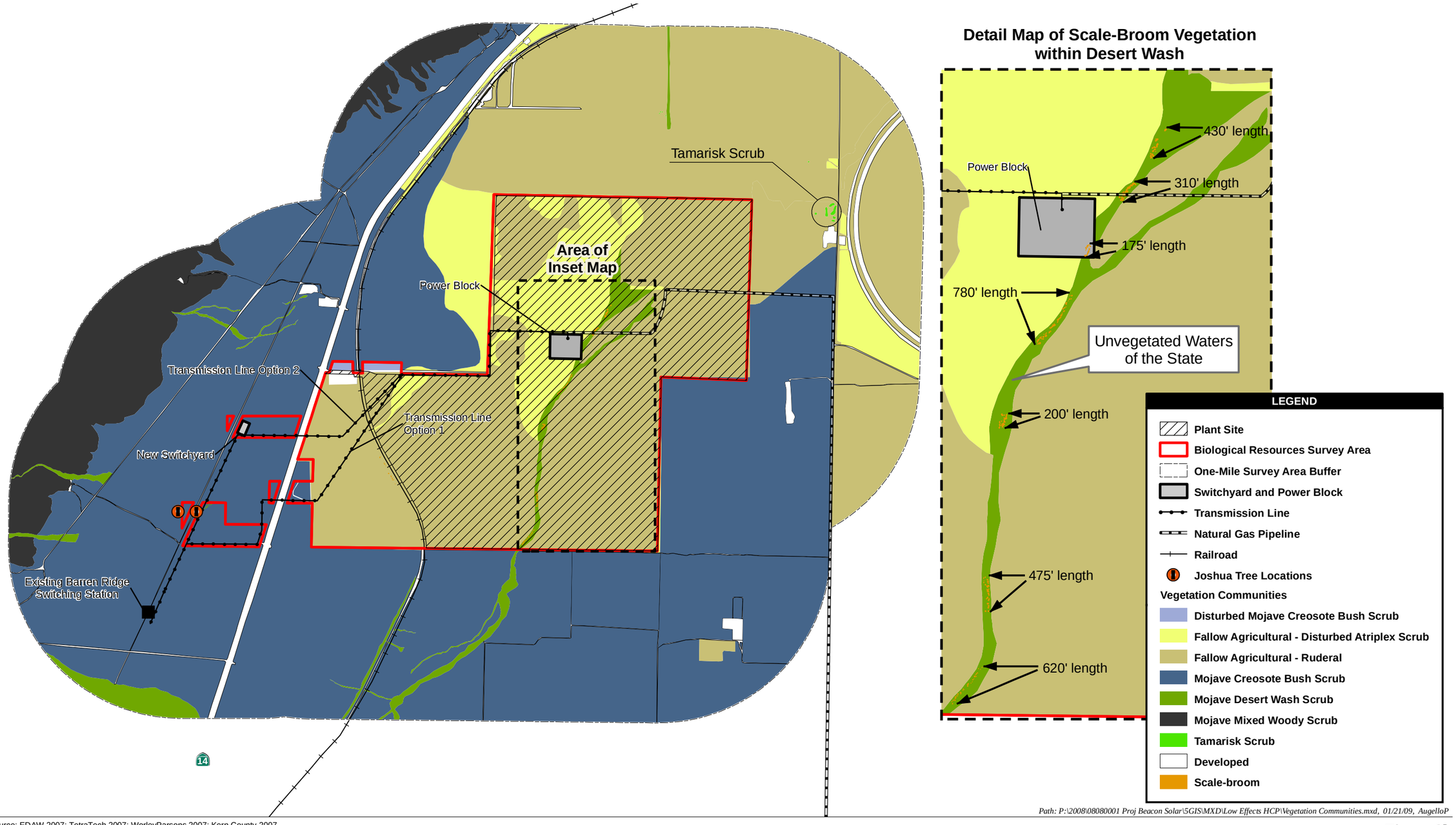
Scale: 1:63,360; 1 inch = 1 mile

Figure 3a
Vegetation Communities Along the Natural Gas Pipeline and Surrounding Survey Area



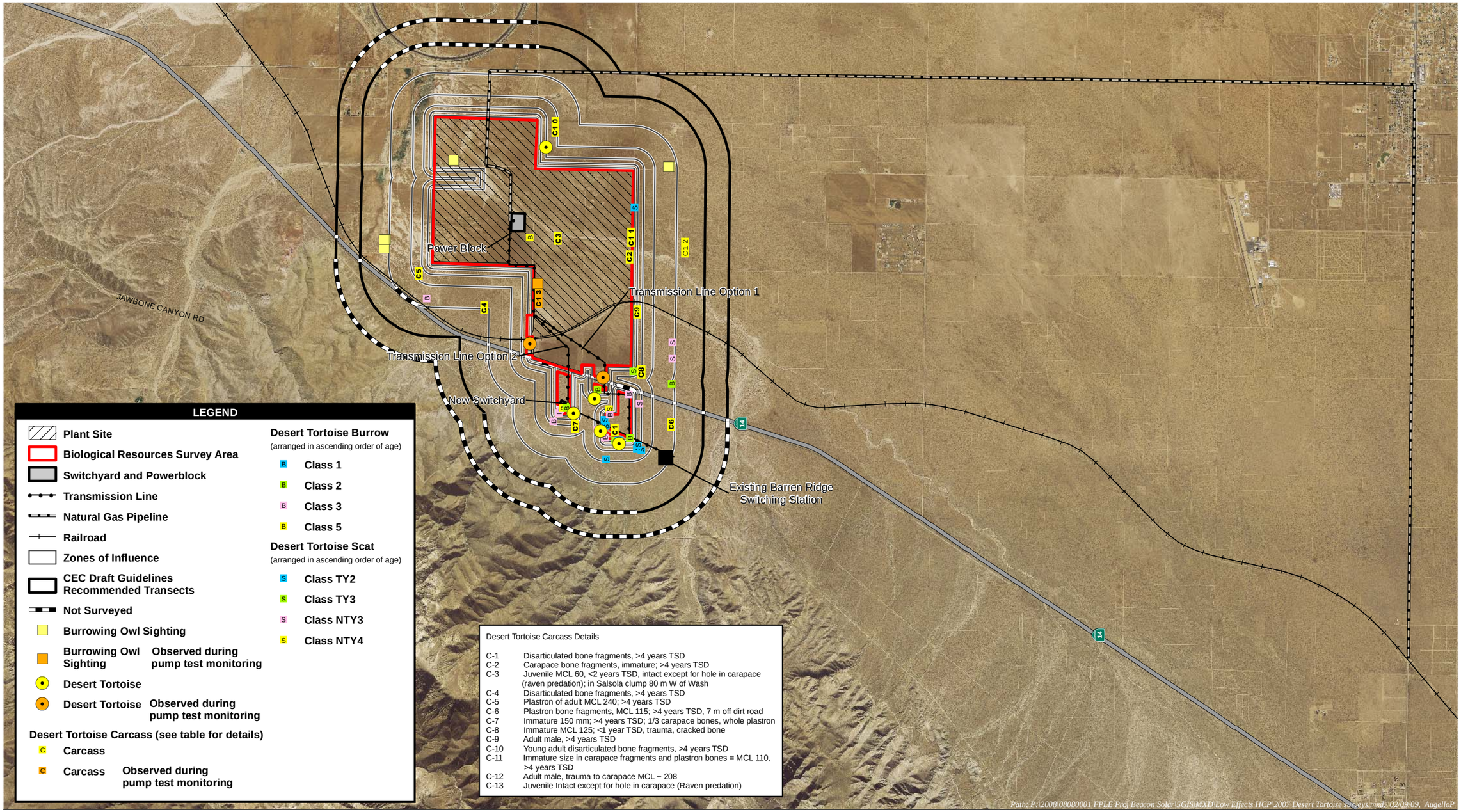
Path: P:\2008\08080001 Proj Beacon Solar\5GIS\MXD\Low Effects HCP\Vegetation Communities.mxd, 01/21/09, AugelloP

Source: EDAW 2007; TetraTech 2007; WorleyParsons 2007; Kern County 2007

3,000 1,500 0 3,000 Feet

Scale: 1:36,000; 1 inch = 3,000 feet

Figure 3b
Vegetation Communities of the Plant Site, Transmission Line Options and Surrounding Survey Area



Source: TetraTech 2007; Kern County 2007; USGS 2007; CNDDB 2007; Peggy Wood 2007; EDAW 2007; NAIP 2005; WorleyParsons 2007

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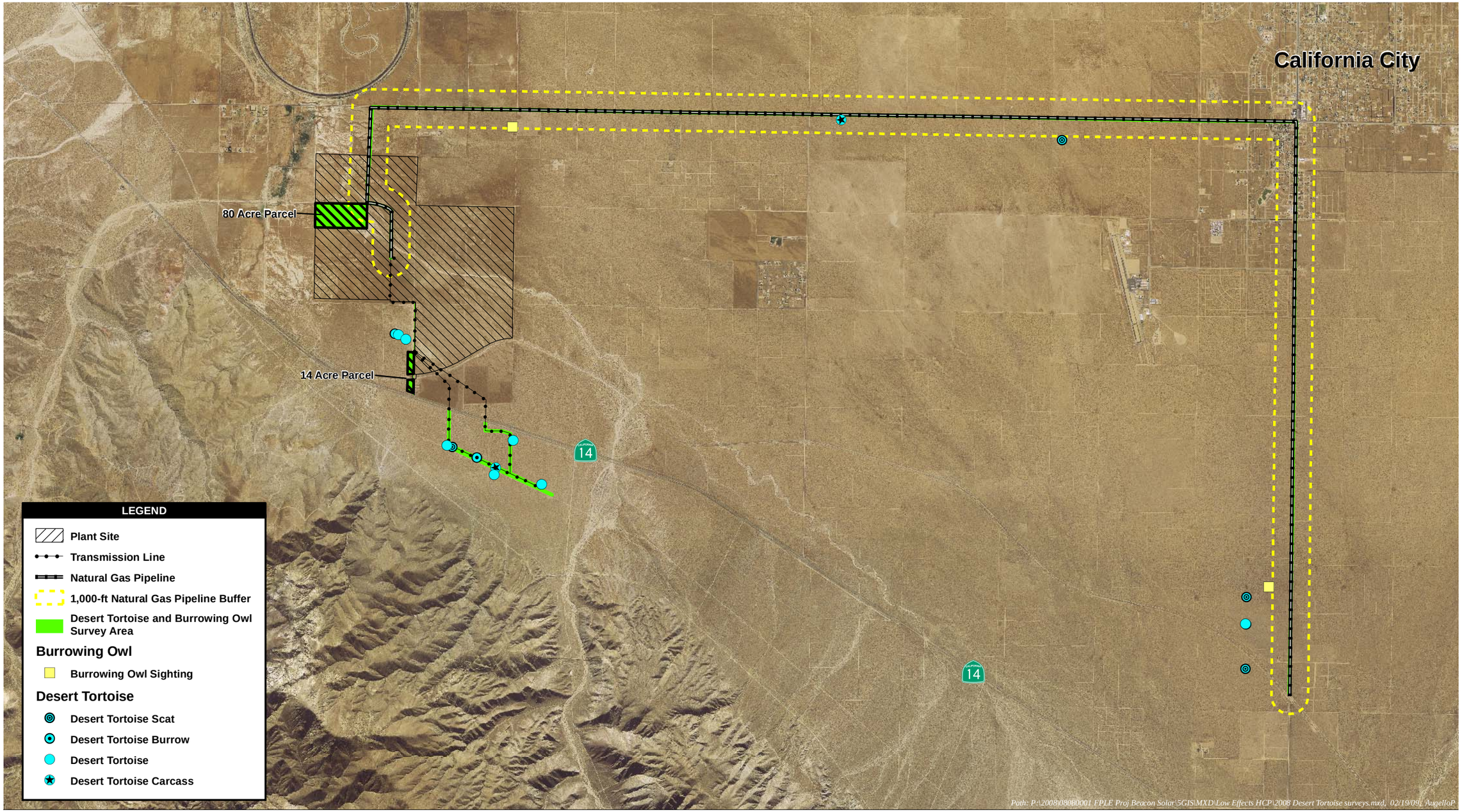
Scale: 1:63,360; 1 inch = 1 mile

Figure 4a
Desert Tortoise and Sign and Western Burrowing Owl from 2007 Surveys and Site Visits

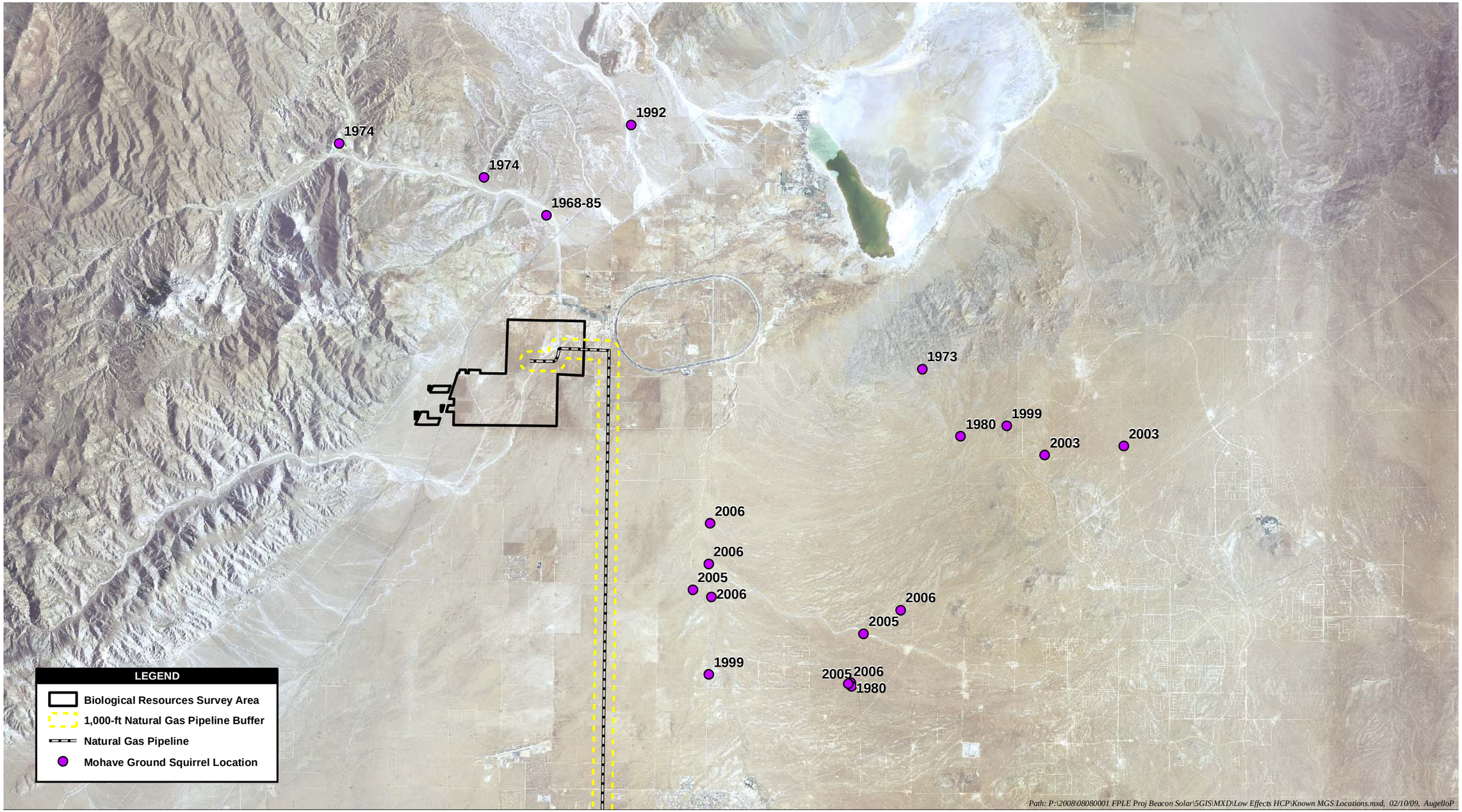


Source: NAIP 2005; EDAW 2008; TetraTech 2007; WorleyParsons 2007

1 0.5 0 1 Miles

Scale: 1:63,360; 1 inch = 1 mile

Figure 4b
Desert Tortoise and Sign and Western Burrowing Owl from 2008 Surveys and Site Visits



Source: NAIP 2005; Leitner 2007

10,000 5,000 0 10,000 Feet

Scale: 1:120,000; 1 inch = 10,000 feet

Figure 5
Known Mohave Ground Squirrel Locations

Appendix B

Biological Reports/Biological Assessments

Table B-1
Acreage of Vegetation Communities and Other Cover Types
for the Beacon Solar Energy Project Area

Vegetation Communities and Other Cover	Total Acreage
PLANT SITE	
Mojave Desert Wash Scrub	60.3
Developed	2.7
Fallow Agricultural-Ruderal	1,579.7
Fallow Agricultural-Disturbed Atriplex Scrub	369.2
Waters of the State[1]	16.0
Subtotal Plant Site	*2,011.9*[1]
LINEAR FACILITIES	
Transmission Line Options	
Mojave Creosote Bush Scrub	
Option 1	5.0
Option 2	5.8
Fallow Agricultural-Ruderal	0.9
Natural Gas Pipeline	
Developed (road/road shoulder)	60.0
Subtotal Linear Facilities (with Option 1)	*65.9*
Subtotal Linear Facilities (with Option 2)	*66.7*
Total with Transmission Option 1 Acres	**2,077.8**[1]
Total with Transmission Option 2 Acres	**2,078.6**[1]

[1] Acreage of waters of the state not added to total as area is counted within other vegetation communities.

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Alice E. Karl, Ph.D.
P.O. Box 74006
Davis, CA 95617

January 3, 2008

Mr. Arrie Bachrach
Senior Program Manager
ENSR
1220 Avenida Acaso
Camarillo, CA 93012

Re: Summary of August 10, 2007 site visit for FPLE Beacon Solar Energy Project

Dear Arrie,

On August 10, Manjunath Venkat (ENSR), Lyndon Quon (EDAW), Phil Leitner and I visited the FPLE Beacon Solar Energy Project (BSEP or Project) site in Fremont Valley to look at the habitat and determine whether it would be suitable for desert tortoises (my task) and Mohave ground squirrels (Phil's task). We drove around the site (all east of Highway 14, as we know that tortoises reside in the small Project area west of Highway 14) and walked through the habitat at several points. We described and photographed the habitat, partially mapped it, and also examined the habitat surrounding the site.

Below is a brief description of each area. Please refer to the vegetation map from EDAW labeled Fig. 2, "Vegetation Communities" (attached). For reference, I have labeled the areas on the map.

Area A - The area in the southwest, identified as Fallow Agricultural-Ruderal, is largely barren of shrubs. Split-grass (*Schismus arabicus*), plus annuals that are indicators of disturbance (*Salsola tragus, Ambrosia acanthicarpa*) are common, but split grass is the only available forage for tortoises. The soil is clay and relatively hard, although there is a shallow layer (about three inches) of depositional loamy sand over the top.

Area B - Within the barren area along the northern edge, there is a small patch of nearly monospecific allscale (*Atriplex polycarpa*) that is continuous to native habitat to the north. (This is identified as Fallow Agricultural-Disturbed Atriplex Scrub on the map.) The shrub community, while almost entirely one species, is fairly established, and about 22-25% cover. The soil is very fine and the area is replete with numerous tiny basins that obviously hold water temporarily. There is a shallow layer of depositional loamy sand over the clay lens.

Area C – This native habitat adjacent to Area B, north of the site boundary, is fair tortoise habitat. The shrub diversity is low, comprising mostly creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with occasional

goldenhead (*Acamptopappus sphaerocephalus*). Shrub cover is about 18%. The soil is generally fine and there are numerous tiny basins.

Area D - This area is similar to Area B, but appears to hold less water. The annual community is also more established and filaree (*Erodium cicutarium*) covers approximately 65% of the surface. The substrate is composed of about 20 % fine gravel and the soil is slightly hard. As in Area B, the site has been established almost exclusively by allscale, but there are large patches throughout the area that are devoid of vegetation. Even outside the barren patches, the allscale is represented by scattered small clumps of shrubs (a few yards in diameter) or individuals.

In the northern portion of this area and to the north, the basins become more common and the vegetation more sparse. The only tortoises here and to the north would likely be transients.

Area E - This area is nearly identical to Area D, but the barren patches are small, rather than large.

Swale – This swale, where the water has been artificially diverted from the wash onsite, is mostly vegetated by Russian thistle (*Salsola tragus*; an exotic annual indicative of disturbance and common in ruderal areas in this region) with some allscale and cheesebush (*Ambrosia salsola*). There are also a few scattered creosote bush and occasional other shrubs. Both the swale and connecting wash are typically dry, probably only holding water during high-intensity storms or possibly during historic agricultural practices. Each is bounded for most of both sides by nearly barren habitat, although there is some shrub cover northwest of the wash (Area D).

Area F - This entire area is essentially barren and has been bladed. The maximum cover is in the northeastern corner of Section 9, where there is about 1-2% shrub cover.

Area G - This entire area is essentially identical to Area F.

Native Habitat East of Section 9 - This area is creosote bush scrub dominated by creosote bush and allscale, with sudominant and common winterfat (*Krascheninnikovia lanata*). Goldenhead is fairly common towards the south. Shrub cover is about 18%. The topography is very gently undulating and the soil, while loose-sandy, is stabilized. The substrate has no coarse particles. Toward the southern portion of this section, there is more loam in the soil and fine gravel in the substrate.

We ran out of time and were unable to look at the habitat along the southern border. However, I looked at this on a subsequent site visit on November 13 and found it to be essentially barren.

Desert Tortoise Habitat Analysis

Below is a brief summary of the quality of the habitat for tortoises, followed by a detailed discussion:

Area A - This is not tortoise habitat.

Area B – It is poor tortoise habitat. There's a low possibility that a tortoise could be here because of connection to native habitat to the north.

Area C – (Section 5, north of site) This is fair tortoise habitat. Tortoises are probably here in very low numbers.

Area D – (Section 4) This is very poor tortoise habitat. There's a low possibility that one or two tortoises could be here because it is a sizeable patch and continuously connected to native habitat to the west. There is a decreasing possibility of tortoises in the northern part of the site in Section 4 as the habitat becomes increasingly sparse.

Note: The old chicken-wire fence along the northern border is mostly intact and would serve as a barrier to tortoises.

Area E - Same as Area D.

Swale - This is not tortoise habitat.

Area F - This is not tortoise habitat.

Area G - This is not tortoise habitat. The native habitat to the southeast is medium-quality tortoise habitat.

So, the only places where a tortoise might be found are Areas B, D and E or the wash. I don't think that there are any tortoises there, but it's possible because there's shrub cover that has been there quite awhile and because the areas are partially connected to tortoise habitat outside the site. However, I don't believe that these should be considered tortoise habitat or have any conservation value for desert tortoises, even if one or a few tortoises are found there. My rationale is based on the quality of this regrowth habitat, the broad area of adjacent non-habitat, the low quality of the adjacent intact habitat, the type and history of the disturbance, and the length of time that this block of land has been out of use by the local tortoise population. To explain:

In areas where allscale has re-invaded the site, it is unlike the native community surrounding the survey area. The surrounding habitat is native Creosote Bush Scrub whereas the regrowth area is nearly a monotypic allscale stand. It is patchy, with broad, open areas, has poor soil friability (i.e., fine, slightly hard soils) and shows evidence of periodic inundation by water. So, even though tortoises are known to occupy native saltbush scrub communities in relatively low densities, those occupied native scrub communities are far different in vegetation

structure and composition, soil, and hydrology than the invaded area on the Project site.

While there is a possibility that a DT might be observed in the allscale shrub patches on the site or in the wash that extends through the eastern portion of the survey area (see below), this would largely be due to the adjoining native habitat outside of the Project boundary and is likely to be temporary use because of the poor quality. It should also be recognized that even the native habitat north of the site is only poor to fair tortoise habitat, so tortoise densities there are expected to be low to very low.

The wash through the eastern-central portion of the site has poor shrub diversity and cover and is largely bordered by barren land. The northern terminus ("swale") is dominated by stands of exotic Russian thistle. Poor habitat in the wash limits the wash's usefulness as occupiable habitat or a movement corridor. Furthermore, while there is good tortoise habitat south of the Project, there is little habitat that such a "corridor" could connect to this. There is no habitat north or east of the wash or for much of the area west of the wash; these areas are entirely denuded of vegetation by long-term agriculture. The only shrub-populated area is the area northwest of the wash (see above).

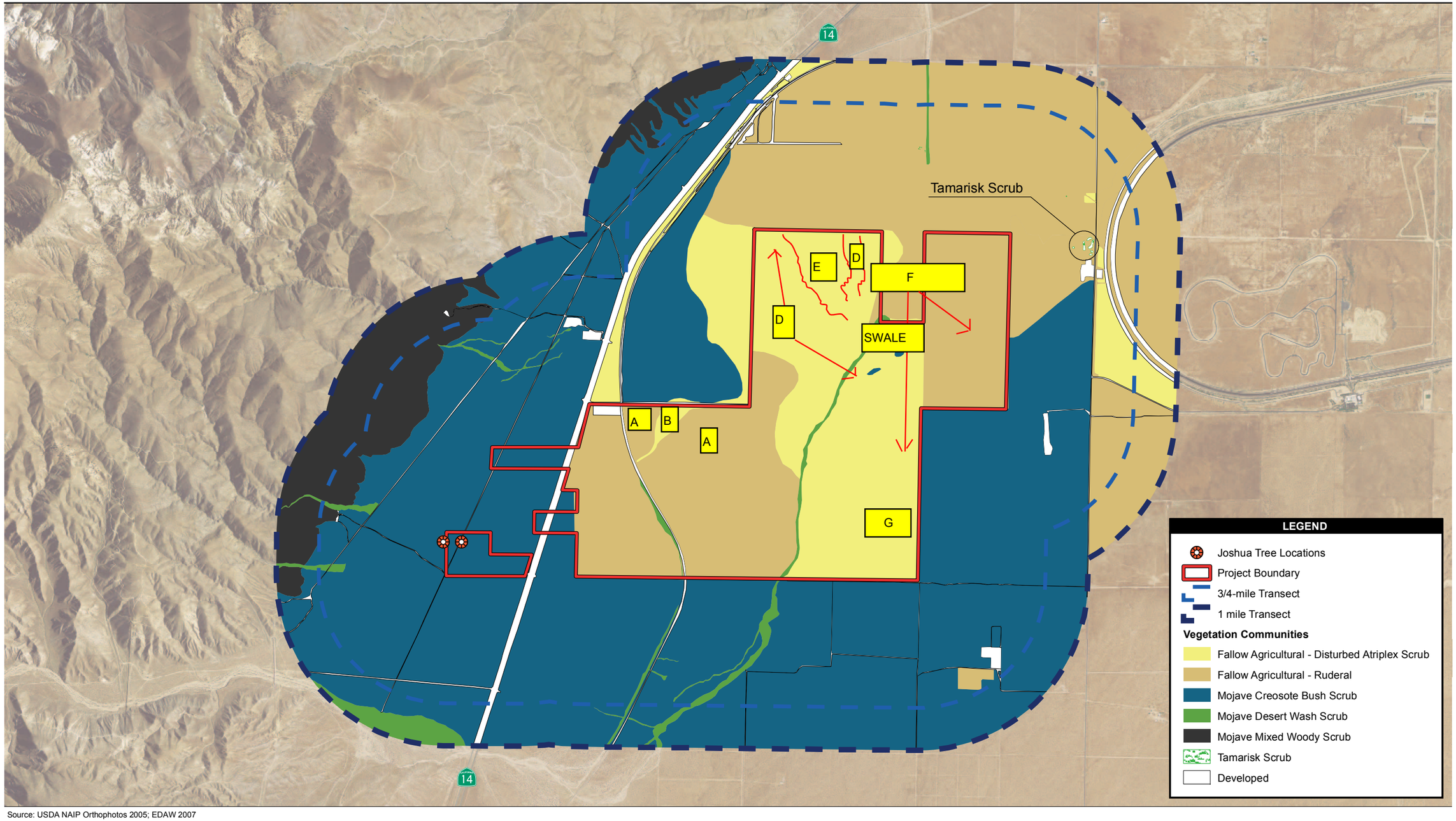
Not only does the site and some of the adjacent area to the east and northwest comprise a broad area of contiguous non-habitat, but this area also has been excluded from tortoise use for decades, due to farming. So, the area has had no value for population persistence or recovery for many years. Even the allscale-regrowth in the north is still moderately well excluded from tortoise use by the chicken-wire perimeter fence (originally erected to keep rabbits out of the alfalfa) that is intact for long segments. This fence would effectively block much of the movement of tortoises onto the site.

A clearance would be appropriate, after the entire site is fenced in tortoise-proof fencing. (This can be done at a fairly reasonable cost, using four-strand wire fencing and metal T-stakes, with tortoise fabric hung from the bottom 2-3 feet and buried.) I suspect that we won't find tortoises, but we may find a couple.

Respectfully,

Alice Karl

Cc: Kenny Stein
Lyndon Quon
Kim McCormick
Sara Head
Manjunath Venkat



Source: USDA NAIP Orthophotos 2005; EDAW 2007

3,000 1,500 0 3,000 Feet

Scale: 1:36,000; 1 inch = 3,000 feet

Figure 2
Vegetation Communities

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DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

REPLY TO
ATTENTION OF:

February 5, 2008

Office of the Chief
Regulatory Division

Kenneth Stein
Beacon Solar, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

Dear Mr. Stein:

Reference is made to your letter (Corps File No. 2007-1414-CLM), dated November 5, 2007 for a Department of the Army Jurisdictional Determination to construct a wind power generation project in unnamed tributaries to Koehn Dry Lake within an unincorporated area of Kern County, California.

Based on the information furnished in your letter, we have determined that Kohn Dry Lake does not exhibit any evidence of navigation. Using the criteria at 33 CFR Part 328.3, the Corps has determined that Koehn Dry Lake exhibits insufficient evidence of interstate commerce to meet the requirements of 33 CFR Part 328.3(a)(3)(iii) and does not meet the requirements for navigability at 33 CFR Part 328.3 (a)(1). Based on the above information and the Solid Waste Agency of Northern County Supreme Court Decision, your project does not discharge dredged or fill material into a water of the United States or an adjacent wetland. Therefore, the project is not subject to our jurisdiction under Section 404 of the Clean Water Act and a Section 404 permit is not required from our office.

Please be aware that our determination does not preclude the need to comply with Section 13260 of the California Water Code (Porter/Cologne) and we recommend that you contact the California Regional Water Quality Control Board to insure compliance with the above regulations. Furthermore, our determination does not obviate the need to obtain other Federal, state, or local authorizations required by law.

This letter contains an approved jurisdictional determination for the Beacon Street Solar Energy Project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix C) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDS-O, 2042B
1455 Market Street, San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by April 6, 2008. It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to Crystal L. Marquez at the letterhead address by April 6, 2008. The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

A courtesy copy of this letter has been sent to Mr. Joshua Zinn, EDAW Inc., 1420 Kettner Boulevard, Suite 500, San Diego, CA 92101. If you have any questions regarding this matter, please contact Crystal L. Marquez at (805) 585-2143. Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Antal Szijj
Senior Project Manager
North Coast Branch

Enclosures

BEACON SOLAR ENERGY PROJECT

BIOLOGICAL BASIS FOR MOHAVE GROUND SQUIRREL MITIGATION

Philip Leitner

December 5, 2008

Mitigation for impacts to the state-listed Mohave ground squirrel (*Spermophilus mohavensis*) at the BSEP Plant Site should be based on the best available biological evidence. This analysis integrates what is known about habitat requirements of the species with the ecological characteristics of the proposed Plant Site.

Habitat Suitability at the Proposed Plant Site

Within the boundary of the proposed 2012 acre Plant Site, we have identified 369.2 acres of Fallow Agricultural-Disturbed Atriplex Scrub and 60.3 acres of degraded Mojave Desert Wash Scrub, for a total of 429.5 acres that support scattered perennial vegetation. The remainder of the Plant Site is classified as Fallow Agricultural-Ruderal. This 1582.5 acre area is essentially barren and has no perennial vegetation.

The entire Plant Site was formerly an alfalfa farm. The land surface was completely graded in preparation for agricultural production and all natural vegetation was removed. After the land was taken out of alfalfa production and abandoned, a saltbush shrub (allscale or *Atriplex polycarpa*) and a few invasive herbaceous plant species became established in the northwest portion of the site, in the area designated as Fallow Agricultural-Disturbed Atriplex Scrub (Fig. 3 Spring 2008 Survey Report). The Mojave Desert Wash Scrub forms a narrow discontinuous band of degraded perennial vegetation contiguous with the eastern side of the Fallow Agricultural-Disturbed Atriplex Scrub and extending south into the Fallow Agricultural-Ruderal area. The scattered patches of shrubs in the wash are primarily of two species: creosote bush (*Larrea tridentata*) and scale-broom (*Lepidospartum squamatum*). It appears that browsing by sheep following abandonment of alfalfa growing was responsible for the damaged appearance of the surviving perennials here. The northern terminus of the wash is dominated by dense stands of exotic Russian thistle (*Salsola tragus*).

The 429.5 acres of the Plant Site that have some perennial plant cover are not suitable habitat for the Mohave ground squirrel, because they do not have the food resources necessary to support resident animals. According to the best dietary information available, Mohave ground squirrels require forage from a variety of native shrub and herbaceous species to sustain them through their active season (Leitner and Leitner 1998, 2008). Mohave ground squirrels will eat saltbush foliage and are also known to consume small amounts of two non-native herbs: red-stemmed filaree (*Erodium cicutarium*) and Mediterranean grass (*Schismus arabicus*). These three plant species are present in the Fallow Agricultural-Disturbed Atriplex Scrub found on the Plant Site. However, there is no evidence that Mohave ground squirrels can maintain themselves on a diet made up of only these plants. In a nine-year study of 754 fecal samples collected at four sites in the Coso Range of Inyo County, there was not a single case in which the diet consisted of only

one or any combination of these three food items. Creosote bush and scale-broom, the two shrubs found along the northern portion of the desert wash, are known to have toxic foliage. They are rarely eaten by herbivores, generally only during drought conditions when there is no other forage. Mohave ground squirrels will take small amounts of creosote bush foliage, as well as the seeds, but again this is totally inadequate to sustain them.

In addition to dietary studies, demographic evidence supports the position that this type of vegetative cover is not suitable Mohave ground squirrel habitat, in that it is not capable of supporting a resident population.

During the Coso Grazing Exclosure Monitoring Study (1988-1996), long-term studies of Mohave ground squirrel populations were conducted on four sites (Leitner and Leitner 1998). One of these sites was unique in that the shrub vegetation was almost entirely made up of saltbush. Two species were present: shadscale (*A. confertifolia*) and allscale (*A. polycarpa*). Although strongly dominated by saltbush, this site provided much better habitat than the Beacon Plant Site in that it was a natural desert plant community with a few other shrub species, good production of native annual plants in years with adequate winter rainfall, and undisturbed desert soil profile.

This *Atriplex*-dominated site was the only one of the four study sites that did not support a permanent Mohave ground squirrel population. In 1988, the first year of the study and a good reproductive year, only transient juveniles were captured here. No Mohave ground squirrels were trapped here over the next four years. A few adults were resident from 1993-1996, but were found only in a small area on the northeastern edge of the study site where the shrub diversity was highest and a few individual shrubs of species known to be important in the diet were found. This occupied area was continuous with better quality habitat to the east. The great majority of the site, where the shrub community was essentially a monotypic stand of *Atriplex*, never supported resident Mohave ground squirrels during the nine year study period.

Finally, protocol trapping data also support the position that monotypic saltbush scrub like that found in the northwest portion of the Beacon Plant Site is not likely to be occupied by Mohave ground squirrels. On May 5, 2008, an e-mail was sent to all biologists who currently hold an MOU authorizing them to conduct Mohave ground squirrel trapping studies. They were asked if they had ever trapped in the type of disturbed *Atriplex* scrub that we have identified on the Beacon Plant Site and, if so, whether they had captured Mohave ground squirrels. We received replies from six of them. Two of these biologists had actually trapped in this type of vegetation, but never detected Mohave ground squirrels. Although the sample size is not large, these trapping surveys were conducted at six different locations in Los Angeles and San Bernardino counties. In all cases, the trapping was carried out on previously disturbed land that had been invaded by *Atriplex polycarpa*, the same situation found at the Plant Site. These six sites had varying degrees of connectivity to nearby suitable habitat, but none was completely isolated.

Based upon these three lines of evidence, we would conclude that the disturbed vegetation on the Plant Site is incapable of supporting a resident Mohave ground squirrel population. Any claim to the contrary would require clear and convincing factual evidence.

The Proposed Plant Site in Regional Context

Although the 429.5 acres of disturbed vegetation on the Plant Site would not support resident Mohave ground squirrels, it is not possible to rule out the occasional presence of transient individuals. The California Natural Diversity Data Base contains nine records of Mohave ground squirrel occurrence within 16 km (10 mi) of the Beacon project site. Four of them are to the north, in Jawbone Canyon and near the southern edge of Red Rock Canyon State Park. Mohave ground squirrels have also been detected recently to the southeast on Cache Creek near the western boundary of the Desert Tortoise Natural Area.

An extensive area of Mojave Creosote Bush Scrub immediately adjoins the Plant Site to the east and south. It appears to provide suitable habitat for the Mohave ground squirrel, although there are no occurrence records and no evidence of any trapping attempts. To the west of State Route 14 is a wide strip of Mojave Creosote Bush Scrub on the alluvial fans reaching down from the mountains. This area is characterized by vegetation and soil conditions that are suitable for Mohave ground squirrels. To the north and northeast of the Plant Site are fallow agricultural lands that do not provide Mohave ground squirrel habitat. Because the southern and northeastern sections of the Plant Site consist of barren Fallow Agricultural-Ruderal land, the Plant Site itself has no value as a movement corridor for Mohave ground squirrels. Although dispersing juveniles might attempt to enter the Plant Site from adjoining creosote bush habitat to the west, south, or east, they would not cross the wide bands of barren fallow agricultural land. This conclusion is based upon research in the Coso area of Inyo County showing that a small playa acted as a complete barrier to the dispersal movements of radiocollared juveniles (Harris and Leitner 2005). There is no evidence indicating that this species would attempt to traverse extensive areas without cover. The degraded wash that crosses the Plant Site would not serve as a movement corridor because its vegetative cover is highly discontinuous, with some barren stretches as long as 1800 feet.

The Fallow Agricultural-Disturbed Atriplex Scrub on the Plant Site is isolated from suitable Mohave ground squirrel habitat by wide areas of barren Fallow Agricultural-Ruderal land to the south, east, and north. The only possible way in which transient Mohave ground squirrels could access this 429.5 acre area is from the area of Mojave Creosote Bush Scrub to the west, toward State Route 14. A reasonable estimate, based upon population studies in the Coso area, is that this nearby habitat could support 3-6 adult Mohave ground squirrels. It is possible that adults or their offspring could temporarily move into the Fallow Agricultural-Disturbed Atriplex Scrub area on the Plant Site. However, the risk to transient individuals is quite small, since vegetation removal and grading will take place over a brief period (~3 months) at the beginning of the plant construction phase. Once vegetation removal has been completed it is very unlikely that animals would enter the Plant Site. Thus, we are proposing the acquisition of off-site habitat to compensate for possible incidental take of up to two transient individuals.

Methods for Determining Mitigation Requirement

We propose to acquire sufficient off-site habitat to compensate for the possible incidental take of two transient Mohave ground squirrels on 429.5 acres of degraded land within the Plant Site

boundary. This section explains our method for determining the amount of compensation land that must be acquired.

First, it is necessary to estimate the difference between the current carrying capacity of potential mitigation lands (e.g., near the DTNA) and their future carrying capacity after acquisition and improvement.

We can estimate the future carrying capacity of good quality, protected habitat by reference to studies at two Coso sites during the period 2001-2008. Over this 8-yr time period, the number of Mohave ground squirrels recorded each year averaged 5.1 at one site and 6.5 at the other. Each of the two trapping grids had an area of 62 acres, indicating that a density of roughly 1 individual / 10 acres.

We actually have some empirical data on the current carrying capacity of lands in the vicinity of the DTNA. In the spring of 2008, the DFG trapped a section (640 acres) in this area that was recently purchased as mitigation land for desert tortoise and Mohave ground squirrel. The area had been adversely impacted by sheep grazing and OHV activity prior to being purchased as conservation land. No Mohave ground squirrels were captured in the trapping effort this spring, although one tortoise was seen. The entire 640 acres was not completely sampled by trapping and there was only one trapping session, so Mohave ground squirrels may have been present but not detected. However, these results strongly indicate that the population density of the species on this parcel is currently very low, possibly approaching zero.

The DFG property where the trapping was conducted is immediately adjacent to a site in southwest corner of the DTNA where two Mohave ground squirrels were captured during a single trapping session in spring 1999 (Leitner 2001). These two animals were trapped on a 22 acre grid, suggesting a population density of about 1 individual / 10 acres in an area that had enjoyed long-term protection. This information on carrying capacity of protected lands is consistent with the Coso data.

These 2 field studies suggest that acquiring and protecting land in the vicinity of the DTNA could increase the Mohave ground squirrel density from approximately 0 to 1 per 10 acres. The DFG property adjacent to the DTNA that had been unprotected until 2007 appeared to have a Mohave ground squirrel population density close to zero, while adjoining land that had been managed for conservation for >20 years supported about 1 animal / 10 acres. **Based upon this evidence, purchasing 20 acres would yield habitat for 2 individuals, compensating for the possible incidental take of 2 Mohave ground squirrels at the Plant Site.**

However, a more conservative approach would be to assume that potential conservation lands subject to OHV use and livestock grazing currently support Mohave ground squirrels, but at densities below 1 animal / 10 acres. A generous estimate for unprotected land would be 0.8 animal / 10 acres, as compared to 1 animal / 10 acres in a protected area. If such land were purchased for conservation and protected by fencing to improve habitat quality, it should certainly increase carrying capacity by 25% or 0.2 animal / 10 acres.

Then, based upon this projected increase in the carrying capacity of compensation lands from 0.8 animal / 10 acres to 1 animal / 10 acres, we can determine the acreage of compensation land that is needed. **The increase of 0.2 individual per 10 acres protected would indicate that the purchase of 100 acres is required to compensate for the incidental take of up to 2 Mohave ground squirrels on the Plant Site.**

References:

Harris, J.H. and P. Leitner. 2005. Long-distance movements of juvenile Mohave ground squirrels, *Spermophilus mohavensis*. The Southwestern Naturalist 50:188-196.

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Leitner, P. 2001. Mohave Ground Squirrel Study, Final Report, 1998-2000. Prepared for Desert Tortoise Preserve Committee, Inc., Riverside, CA. 33 pp. + appendix.

Leitner, P. and B.M. Leitner. 1998. Mohave Ground Squirrel Study, Coso Known Geothermal Resource Area, Major Findings, 1988-1996. Final Report. 42 pp. + appendix.