

## 5.3 Biological Resources

This section addresses potential impacts to biological resources (vegetation; wildlife and wildlife habitats; and State jurisdictional waters) of the BSEP. It discusses the LORS related to biological resources and characterizes the biological resources of the Project site and linear facilities routes. It then discusses potential Project impacts on those resources during construction and operation, and identifies mitigation measures as needed for identified adverse impacts. Additional detail on the biological surveys and studies that were performed including personnel qualifications of key staff conducting the surveys can be found in the Biological Technical Report (BTR) provided as AFC Appendix F.1.

### 5.3.1 LORS Compliance

The Project will comply with applicable Federal, State, and local LORS throughout Project construction and operation. Potentially applicable LORS are summarized in Table 5.3-1 and discussed in the following text.

**Table 5.3-1 LORS Applicable to Biological Resources**

LORS	Applicability	Where Discussed In AFC
<b>Federal:</b>		
Endangered Species Act (ESA) of 1973 and implementing regulations, 16 USC §1531 et seq.; 50 CFR §17.1 et seq.	Designates and protects federally threatened and endangered plants and animals and their critical habitats. Requires federal agency consultation with the U.S. Fish and Wildlife Service (USFWS) and issuance of Biological Opinion and incidental take authorization for listed species.	Section 5.3.3
Migratory Bird Treaty Act (MBTA) 16 USC §703-711	Prohibits take of protected migratory birds.	Section 5.3.3
Bald and Golden Eagle Protection Act, 16 USC §668	Prohibits take of bald and golden eagles.	Section 5.3.3
Clean Water Act (CWA) §404	Regulates discharge of pollutants into "Waters of the U.S."	Section 5.3.3
<b>State:</b>		
California Endangered Species Act (CESA) of 1984, Fish and Game Code §§2050 – 2098	Protects California's endangered and threatened species, including species designated as candidates for listing. Requires incidental take authorization under Sections 2080.1 or 2081 for listed species.	Section 5.3.3

<b>LORS</b>	<b>Applicability</b>	<b>Where Discussed In AFC</b>
Fish and Game Code (FGC) Fully Protected Species: §3511: Fully protected birds §4700: Fully protected mammals §5050: Fully protected reptiles and amphibians §5515: Fully protected fishes	Prohibits the taking of listed plants and animals that are classified as “Fully Protected” in California.	Section 5.3.3
Title 14 California Code of Regulations (CCR) §§670.2 and 670.5	Listings of plants and animals of California declared to be threatened or endangered.	Section 5.3.3
Title 14 CCR § 15000 <i>et seq.</i>	Describes information needed to evaluate biological resources impacts of a project.	Section 5.3.3
FGC §§1600-1607, Streambed Alteration Agreement (SAA)	Requires California Department of Fish and Game (CDFG) to review project impacts to State jurisdictional waters (bed, banks, channel, or associated riparian areas of a river, stream, or lake), including impacts to wildlife and vegetation from sediments, diversions, and other disturbances.	Section 5.3.3
Native Plant Protection Act (NPPA) of 1977, Fish and Game Code §1900 <i>et seq.</i>	Provides specific protection measures for identified populations of state rare and endangered plants.	Section 5.3.3
FGC §§3503, 3511, 3513	Provides protection for bird species, primarily raptors (birds of prey).	Section 5.3.3
<b>Local:</b>		
Kern County General Plan	Ensures that proposed development projects demonstrate a high degree of compatibility with any threatened or endangered species habitat that they may affect.	Section 5.3.3

**5.3.1.1 Federal LORS**

**Endangered Species Act (ESA) (16 USC §§1531 *et seq.*)**

This 1973 law, administered by the USFWS, is designed to minimize impacts to imperiled plants and animals, as well as facilitate recovery of such species. Declining plant and animal species are listed as “endangered” or “threatened” based on a variety of factors. “Take” of a listed species is prohibited except as authorized through consultation with USFWS and issuance of an Incidental Take Statement under Section 7 or under Section 10 of the ESA, depending on whether there is federal agency action required for the proposed project (i.e., a federal permit required or funding involved). “Take” is defined under the ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct.” No Federal agency action has been identified for the BSEP, and the Project therefore is obtaining

take authorization under ESA Section 10. Section 10 permitting requires preparation of a Habitat Conservation Plan (HCP) to ensure the continued viability of listed species and their habitats, followed by issuance of an Incidental Take Permit and preparation of an Implementation Agreement. If there is limited potential for impacts to federally listed species, a “low effect” HCP can be prepared. The Ventura Field Office of the USFWS oversees ESA permitting actions in the Project area and has determined that the Project qualifies for the low effect HCP process.

**Migratory Bird Treaty Act (MBTA) (16 USC §§703-711).**

This law prohibits actions resulting in the pursuit, capture, killing, and/or possession of any protected migratory bird, nest, egg, or parts thereof. The USFWS maintains a list of designated migratory birds occurring in various regions of the United States.

**Bald and Golden Eagle Protection Act (BGEPA) (16 USC §668).**

This act specifically protects bald and golden eagles from harm and from trade in parts (feathers, skins, etc.) of these species.

**Clean Water Act (CWA) (§404).**

It is not anticipated that the Project will have any impacts on “Waters of the U.S.,” and therefore no permit will be required from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. In a letter dated February 5, 2008, the USACE issued a jurisdictional determination that the Project is not subject to Section 404 jurisdiction and does not require a Section 404 permit (see USACE concurrence letter in Appendix F.2).

**5.3.1.2 State LORS**

**California Environmental Quality Act (CEQA) (Public Resources Code §§21000 et seq.)**

CEQA requires State and local agencies to evaluate the environmental impacts of their actions and to identify significant environmental effects of proposed projects (including impacts on biological resources). CEQA further requires State and local agencies and project proponents to avoid, minimize and mitigate significant effects on the environment. CEQA applies to “projects” proposed to be undertaken or requiring approval by State and/or local governmental agencies. “Projects” are activities that have the potential to have a physical impact on the environment. The CEC licensing process is a CEQA-equivalent process under the Warren-Alquist Act, Public Resources Code §25500; see also CEQA Section 21080(b)(6).

**California Endangered Species Act (CESA) (Fish and Game Code §§2050 et seq.).**

The California Endangered Species Act (CESA) prohibits the “take” (defined as “to hunt, pursue, catch, capture, or kill”) of State-listed species except as otherwise provided in state law. CESA, administered by the CDFG, is similar to the Federal ESA, although unlike the federal law, CESA applies incidental take prohibitions to species currently petitioned for State-listing status (i.e., candidate species). State lead agencies are required to consult with the CDFG to ensure that their authorized actions are not likely to jeopardize the continued existence of any State-listed species or result in the degradation of occupied habitat.

Under Section 2081, CDFG authorizes “take” of State-listed endangered, threatened, or candidate species through incidental take permits or memoranda of understanding if: 1) the take is incidental to otherwise lawful activities, 2) impacts of the take are minimized and fully mitigated, 3) the permit is consistent with regulations adopted in accordance with any recovery plan for the species in questions, and 4) the applicant ensures suitable funding to implement the measures required by the CDFG. Beacon Solar will be submitting a Section 2081 permit application to the CDFG shortly following submittal of the AFC. Under the Warren-Alquist Act, the CEC licensing process is a CESA-equivalent process. As such, Beacon Solar has incorporated the pertinent information from both the 2081 application and the Biological Technical Report into this AFC.

**California Fish and Game Code § 3511.**

This State law describes bird species, primarily raptors, which are “fully protected.” Fully protected birds may not be taken or possessed, except under specific permit requirements.

**California Fish and Game Code §3500.**

Under this State law it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Code or any associated regulation.

**California Fish and Game Code §3503.5.**

This State law makes it unlawful to take, possess, or destroy birds of prey. It also prohibits the take, possession, or destruction of nests or eggs of any bird of prey.

**California Fish and Game Code §§4700, 5050, 5515.**

These State laws list mammal, amphibian, and reptile species that are classified as “fully protected” in California.

**Native Plant Protection Act (NPPA) (Fish and Game Code §§1900 et seq.).**

The NPPA includes measures to preserve, protect, and enhance rare and endangered native plant species. Definitions for “rare and endangered” are different from those contained in CESA, although CESA-listed rare and endangered species are included in the list of species protected under the NPPA.

**Title 14, California Code of Regulations, §§670.2, 670.5.**

These State regulations list plant and animal species designated as threatened and endangered under CESA. California species of special concern (CSC) are those species that are indicators of regional habitat changes or are considered potential future protected species. CSCs do not have any special legal status, but are intended by CDFG for use as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel.

**California Fish and Game Code §§1600-1607.**

Pursuant to these sections, CDFG regulates all changes to the natural flow, bed or bank, of any river, stream, or lake that supports fish or wildlife resources. A stream is defined broadly as a body of water that

flows at least periodically, or intermittently, through a channel that has banks and that supports fish or other aquatic biota. Such areas are referred to as State jurisdictional waters. Impacts to vegetation and wildlife from sediment, diversions, and other disturbances are included in the review. As the BSEP plant site contains State jurisdictional waters, the Project will submit a Section 1600 Streambed Alteration Agreement (SAA) application to CDFG, shortly following submission of the AFC.

### 5.3.1.3 Local LORS

#### **Kern County General Plan, Land Use/Conservation/Open Space Element (2004).**

Kern County requires actions to ensure that proposed development projects demonstrate a high degree of compatibility with any threatened or endangered species habitat they may affect. The administering agency is the Kern County Planning Department.

### 5.3.1.4 Involved Agencies

Federal, State, and local agencies involved in biological resource issues related to BSEP are provided in Table 5.3-2. Copies of correspondence with biological resources agency personnel are provided in Appendix F.2

**Table 5.3-2 Agencies and Agency Contacts**

<b>Agency Contact</b>	<b>Phone/E-mail</b>	<b>Permit/Issue</b>
Judy Hohman, Senior Biologist USFWS 2493 Portola Road, Suite B Ventura, CA 93003	(805) 644-1766/ Judy_Hohman@fws.gov	Federal ESA, Section 10 Low Effect Habitat Conservation Plan/Incidental Take Permit.
Annette Tenneboe, Environmental Scientist CDFG 1234 East Shaw Avenue Fresno, CA 93710	(559) 243-4017/ ATenneboe@dfg.ca.gov	Section 2081 Incidental Take Permit; Streambed Alteration Agreement, Section 1600.
Crystal L. Marquez, Biologist/Project Manager, North Coast Branch, Regulatory Division U.S. Army Corps of Engineers 2151 Alessandro Drive, Suite 110 Ventura, CA 93001	(805) 585-2148/ <a href="mailto:crystal.marquez@usace.army.mil">crystal.marquez@usace.army.mil</a>	USACE issued February 5, 2008 jurisdictional determination that BSEP does not require Section 404 permit

### 5.3.1.5 Required Permits and Permit Schedule

As shown in Table 5.3-3, the Beacon Solar Energy Project may require several permits that are specific to biological resources issues.

**Table 5.3-3 Required Biological Resource Permits and Permitting Schedule**

<b>Permit/Approval</b>	<b>Schedule</b>
Federal Endangered Species Act, Section 10 Habitat Conservation Plan/Incidental Take Permit	Discussions have been initiated with the USFWS to develop a Section 10 Low Effect Habitat Conservation Plan for the BSEP. It is anticipated that the Section 10 ITP will be issued in 6-12 months.
California Endangered Species Act, Section 2081 Incidental Take Permit	CESA Section 2081 permitting will be required for species listed under CESA that are not federally protected as well as those listed under both ESA and CESA. A draft Section 2081 permit application will be submitted to CDFG shortly after AFC submittal (see Appendix F.2 for relevant correspondence).
CDFG Section 1600 Streambed Alteration Agreement	A Section 1600 Streambed Alteration Agreement (SAA) application will be submitted to the CDFG, and it is anticipated that CDFG will issue the draft Streambed Alteration Agreement within 3-4 months of submittal.

### 5.3.2 Affected Environment

The BSEP plant site is located along SR-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 (Figure 5.3-1). The site is located at the intersection of four U.S. Geological Survey quadrangles: Mojave NE, 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 to the east.

The site is situated in the Fremont Valley, just east of the Piute Mountains (the southern extent of the Sierra Nevada), in the northwestern Mojave Desert. The Fremont Valley is typified by creosote bush scrub vegetation, with patches of desert saltbush scrub, desert wash scrub, and agriculture (mostly abandoned). No permanent surface water occurs in the vicinity of the BSEP plant site, although several dry desert washes occur in the area.

#### 5.3.2.1 Regional Setting

The BSEP plant site is located approximately three miles west of the Desert Tortoise Natural Area (DTNA), approximately one mile south of the Jawbone/Butterbrecht Area of Critical Environmental Concern (ACEC), and approximately seven miles west of federally designated desert tortoise critical habitat (Figure 5.3-2). Several special status plant and wildlife species have been documented as occurring within 10 miles of the Project site (Figure 5.3-2).

#### 5.3.2.2 Project Site and Vicinity Description

With the sole exception of the access road to and from SR-14, the solar energy facilities and associated construction and operations footprint are located within the approximately 2,012-acre plant site east of SR-14 and east of the Union Pacific railroad tracks (Figure 5.3-1). This area has been heavily disturbed by past agricultural activities, and parts of the area are in the process of recolonization with desert saltbush vegetation. Two dry desert washes which are likely to fall under CDFG jurisdiction as State jurisdictional waters, run from south to north across this area.

There are two options for the transmission line route that will interconnect the BSEP with the Los Angeles Department of Water and Power (LADWP) system. Option 1 is approximately 3.5 miles in length, and would run west from the power block across SR-14 and south to LADWP's Barren Ridge Switching Station (Figure 5.3-1). Option 2 is also approximately 3.5-mile-long (approximately 1.6 miles at the plant site), and would run west for about 2.3 miles from the power block across SR-14 to a new switching station to be constructed at the location where the Project's transmission line first meets the LADWP right-of-way (ROW); a second line slightly over a mile long would be constructed in the expanded LADWP ROW south to the Barren Ridge Switching Station. The area surrounding the plant site, including the area crossed by both transmission line options, consists primarily of Mojave Creosote Bush Scrub (Figure 5.3-3).

An approximately 17.6-mile, eight-inch natural gas pipeline is proposed to serve the Project. This pipeline will connect with an existing Southern California Gas pipeline at a location west of California City. The pipeline will be buried within previously disturbed road shoulders and disturbed access routes and will avoid areas with native vegetation.

To comply with CEC requirements and with specific resource agency survey protocols for special status species, biological surveys were conducted of the plant site and a one-mile buffer area around its boundaries. Note that the actual area for which 100 percent surveys were conducted is larger than the current plant site boundary. This is because at the time the surveys were conducted, the plant site boundary was still being refined. To ensure that everything within what could become the plant site boundary was surveyed, an area comprising approximately 2,317 acres was subject to full-coverage surveys and is referred to as the "survey area" in the text and figures of this AFC. The 2,012-acre plant site is located within the 2,317-acre survey area.

Topography in the survey area is generally flat with elevations ranging from approximately 2,020 feet to approximately 2,340 feet. Soils within the survey area consist primarily of Arizo Gravelly Loamy Sand (2 to 9 percent slopes), Cajon Loamy Sand (0 to 5 percent slopes), Rosamond Clay Loam-Saline-Alkali, and Cajon Gravelly Loamy Sand (0 to 9 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 survey area, is slightly to moderately saline. The survey area has been heavily disturbed by past agricultural activities, and parts of the area are in the process of recolonization with desert saltbush vegetation. A small cluster of abandoned structures occurs adjacent to the east side of SR-14 and adjacent to the site access from SR-14. Further east of SR-14, the survey area is traversed north-south by Union Pacific railroad tracks (Figure 5.3-1).

### 5.3.2.3 Special Status Biological Resources

Prior to beginning field surveys, Project biologists consulted the CDFG California Natural Diversity Database (CNDDB) (RareFind Version 3.1.0; CDFG, 2007), California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS, 2007), and the Natural Resources Conservation Service Web Soil Survey (USDA, 2007). These resources were consulted to determine historic occurrence of special status plant and wildlife species and other natural resources within the vicinity of the BSEP survey area (Figure 5.3-2). Additionally, the USFWS and the CDFG provided letters (see Appendix F.2) listing special status species that they require to be considered. Species were considered to have special status if they meet any of the following criteria: 1) protected under the ESA and/or CESA; 2) designated a CDFG species of special concern (SSC); 3) designated a CDFG fully protected species; 4) protected under the BGEPA (USFWS,

2007); 5) a fish or wildlife species with commercial and/or recreational value; or 6) included on the CNPS List 1A (presumed extinct in California), 1B (rare, threatened, and endangered in California and elsewhere), or 2 (rare, threatened, or endangered in California, but more common elsewhere). CNPS List 1A, 1B, and 2 species are considered special status plant species if they meet the definitions in NPPA §1901 or CESA §§2050-2098.

Habitat conditions for special status species were evaluated with respect to conditions in the survey area, and surveys were initiated to determine the presence/absence of species with the potential to occur on or near the survey area. The following special status species were identified as having the potential to occur on or near the survey area.

**Federal or State Listed (ESA or CESA)**

- Mojave tarplant (*Deinandra mojavensis*) – CESA endangered
- Mojave desert tortoise (*Gopherus agassizii*) – ESA and CESA threatened
- American peregrine falcon (*Falco peregrinus anatum*) – CESA endangered
- Mohave ground squirrel (*Spermophilus mohavensis*) – CESA threatened

**CDFG Species of Special Concern or CNPS List 1A, 1B, or 2**

- Mojave tarplant (*Deinandra mojavensis*) – CNPS List 1B
- Red Rock tarplant (*Deinandra arida*) – CNPS List 1B, CDFG rare
- Alkali mariposa lily (*Calochortus striatus*) – CNPS List 1B
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*) – CNPS List 1B
- Creamy blazing star (*Mentzelia tridentata*) – CNPS List 1B
- Charlotte's phacelia (*Phacelia nashiana*) – CNPS List 1B
- Northern harrier (*Circus cyaneus*) – CDFG SSC
- Western burrowing owl (*Athene cunicularia*) – CDFG SSC
- Loggerhead shrike (*Lanius ludovicianus*) – CDFG SSC
- California horned lark (*Eremophila alpestris actia*) – CDFG SSC
- Le Conte's thrasher (*Toxostoma lecontei*) – CDFG SSC
- American badger (*Taxidea taxus*) – CDFG SSC

**5.3.2.4 Biological Surveys**

Comprehensive biological resource surveys designed to meet all applicable CEC, CDFG and USFWS requirements were conducted in the spring of 2007 and are summarized in this section of the AFC. Additional detail on survey methodology and results can be found in the Biological Technical Report contained in Appendix F.1. Because the plant site boundary was still being refined at the time that biological resources surveys were initiated in the spring of 2007, Beacon Solar chose to survey a large area including all property currently available for purchase that was intended to incorporate all potential facilities designs. This 2,317.2-acre survey area is depicted in Figure 2 and most of the other Figures in Appendix F.1.

Note that after completion of those surveys, the following areas were added to the Project and, therefore, were not subject to 100 percent survey coverage during the 2007 surveys:

- An approximately 80-acre parcel in the north-central portion of the plant site and a narrow, approximately 30-ft wide strip of land along the north east boundary of the plant site; and
- Approximately 0.5 mile of the gas pipeline route, from the eastern edge of the plant site, extending east to Neuralia Road.

The 80-acre parcel and the narrow strip of land, both within the plant site boundary, are being subject to all of the same required biological resource-related surveys this spring (2008) that were conducted in the spring of 2007. Like the rest of the plant site, these areas are highly disturbed from past agricultural activities and the surveys are not expected to reveal any new information that would materially affect environmental impact analyses. While neither area was subject to the same 100 percent survey coverage as the rest of the plant site in 2007, several of the required 2007 zone of influence (ZOI) transects crossed the areas and generated sufficient information to suggest that the 2008 spring surveys will yield results similar to the 2007 surveys for the rest of the plant site.

The gas pipeline will be constructed entirely within the disturbed shoulders of existing roads (or within the road bed), except for the last 1.8 miles (1.3 miles within the plant site, and 0.5 mile between the plant site and Neuralia Road) where the pipeline is proposed to be installed within an already-disturbed SCE distribution line right of way. Spring 2008 surveys will include that segment of the gas pipeline.

As discussed in detail in the Biological Technical Report (Appendix F.1), Beacon Solar believes that the areas within which the two transmission line options occur were adequately surveyed during the 2007 spring surveys since much of the land was either included in the 100 percent coverage survey area or was crossed multiple times by ZOI transects. Nevertheless, because the centerlines/footprints of those options have been more accurately defined since the 2007 spring surveys were conducted, both transmission line option routes will also be surveyed in spring 2008.

### **CEC Survey Guidelines**

At a pre-application meeting on May 8, 2007, CEC Staff provided Beacon Solar with their Draft Recommended Biological Resources Field Survey Guidelines for Large Solar Projects (hereafter referred to as CEC Draft Guidelines). The CEC Draft Guidelines recommend that biological surveys be conducted according to established protocols within and around the proposed plant site, and additional surveys be conducted as necessary to ultimately cover a one-mile buffer around the plant site to evaluate suitable habitat and record occurrence and sign of special status species in this area. The CEC Draft Guidelines also were intended to evaluate potential wildlife habitat and corridors in the Project vicinity that may be disrupted as a result of Project implementation.

The biological resources survey area is depicted in Figure 5.3-3. Because this survey area would be subject to USFWS protocol desert tortoise surveys, including surrounding ZOI transects intended to cover a 0.5-mile buffer surrounding the survey area, the CEC agreed in the pre-application meeting that two additional transects – one at 0.75 miles and one at one mile out from the survey area boundary – would be appropriate for meeting the CEC Draft Guidelines' one-mile buffer requirement. These two additional CEC-recommended transects are depicted in Figure 5.3-4.

As shown in Figure 5.3-4 with dashed lines, certain sections of the 0.75-mile and one-mile CEC-recommended transects were not surveyed because the area is completely disturbed (e.g., roadways or privately developed land), the terrain was difficult to traverse, or because access to private lands was not available. In these areas, biological resources are expected to be similar to those already documented along the completed sections of the CEC transects in the same vegetation communities. Surveys were not performed in the mountainous areas because permission to access was not granted by the owner. It was determined that any biological resources information obtained from surveying these areas is not likely to contribute materially to the impact analysis. Furthermore, much of the unsurveyed area is to the west of SR-14, which is across the highway and away from the area where the almost all Project facilities and activities will occur.

#### **Vegetation Communities and Flora**

Project biologists conducted botanical field assessments and surveys on five days (21 person-days) from May 4 through June 1, 2007 (EDAW, 2007a; see Appendix F.1). Surveys were conducted by walking or driving dirt access roads throughout the entire survey area, focusing on plant species inventory, community characterization, and vegetation community mapping. Areas of native habitat, including Mojave Creosote Bush Scrub, Mojave Desert Wash Scrub, and areas of Fallow Agriculture-Disturbed Atriplex Scrub, were surveyed by pedestrian transects, with biologists walking five meters apart searching for rare plant occurrences. Areas of agricultural and ruderal vegetation were surveyed by walking some areas and driving the dirt access roads while vegetation communities were mapped and a plant species inventory was compiled. Vegetation communities are used to describe species assemblages and patterns of plants across the landscape. Vegetation communities were classified based on Holland (1986) and Sawyer and Keeler-Wolf (1995). When necessary, vegetation community names were assigned on the basis of characteristics observed in the field that did not readily fit into the existing nomenclature. Where appropriate, the percentage of shrub/canopy cover was estimated for each vegetation community. Although direct access to the 80-acre addition on the northeastern portion of the plant site was not available during the initial biological surveys, Project biologists were able to extend the vegetation mapping into this area, based on aerial photograph interpretation and by direct visual observation from the edge of the parcel.

The area was also assessed for sensitive vegetation and rare plant potential. Vegetation communities were mapped on a 1 inch = 200 foot scale aerial photo. Although the area mapped was very large, most of the site is dominated by just a few vegetation/cover types, so no minimum mapping unit was used in the vegetation community analysis. All botanical surveys follow the rare plant and vegetation survey guidelines provided by CNPS (CNPS, 2001). Vegetation mapping was conducted out to the one-mile buffer boundary from strategic vantage points whenever direct access was not feasible.

#### **State Waters Streambed Delineation**

On October 16, 2007 and February 27, 2008, Project specialists visited the site to formally delineate the boundaries of State jurisdictional waters within the survey area. Delineation at the site involved recording the boundaries of State jurisdictional waters with a sub-foot accuracy Global Positioning System (GPS) unit. Field data were processed using ESRI, Inc., geographic information systems (GIS) software to define the location and extent of State jurisdictional waters within the survey area. Features used to determine the extent of riverine State jurisdictional waters include the presence of shelving and/or scour resulting in an established bank, bed, and channel of the ephemeral wash and its associated vegetation (Cowardin et al.,

1979). At sites within the ephemeral wash where no diagnostic surface features occurred, subsurface characteristics were investigated to identify hydric features.

### **General Wildlife Surveys**

General wildlife surveys were conducted concurrently with protocol wildlife surveys and vegetation mapping during May and June 2007 (see photos in Attachment B of Appendix F.1 for photos). All wildlife sign and sightings were recorded and special status species were mapped using GPS units. Species covered under the MBTA were observed throughout the study area. (A complete listing of species observed during surveys that are covered under the MBTA is presented in Attachment F of Appendix F.1).

### **Special Status Wildlife Surveys**

Surveys conducted for the Mojave desert tortoise (DT), the western burrowing owl (WBO), and the Mohave ground squirrel (MGS) are described below. Surveys for all other special status species (American peregrine falcon, northern harrier, loggerhead shrike, California horned lark, Le Conte's thrasher, and American badger) were incorporated into these protocol surveys.

***Mojave Desert Tortoise.*** USFWS-approved biologists conducted presence/absence surveys for DT between May 1 and May 21, 2007 (EDAW, 2007b). The survey followed the guidelines published in the USFWS Field Survey Protocol for any Non-Federal Action That May Occur within the Range of the Desert Tortoise (USFWS, 1992), which includes five ZOI transects outside of and parallel to the survey area boundary at 100, 300, 600, 1,200, and 2,400 feet (Figure 5.3-4). In addition, to comply with the recommendations of the CEC Draft Guidelines, additional transects were surveyed at 3,960-foot (0.75-mile) and 5,280-foot (one-mile) intervals from and parallel to the edge of the survey area boundary. While these additional transects are more broadly focused than the DT protocol transects and are not a formal part of the tortoise survey, they provide information on DT presence and on other biological resources in the area around the survey area.

The entire survey area (100 percent coverage) was surveyed according to protocol by spacing transects 10 meters apart. The survey was conducted by slowly and systematically walking linear transects while surveyors visually searched for tortoises and tortoise sign. Particular emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. The USFWS ZOI transects were surveyed in suitable and accessible off-site desert scrub habitat and therefore were not surveyed on SR-14 or at the Honda automotive test track east of Neuralia Road to the east of the site. All tortoise sign was recorded. Tortoises observed were measured at middle carapace length and evaluated for health. Carcasses were aged, measured (if possible), and classed using Dr. Alice Karl's *Key to Sign Classes* classification system (Attachment C of Appendix F.1). The height and width of burrow openings were measured and burrow depth was recorded. Sign of recent use of burrows was recorded and the burrows were classed using Dr. Karl's classification system. Scat was measured and classed using Dr. Karl's classification system. All sign locations were recorded using GPS.

On August 10, 2007, Dr. Karl evaluated the survey area to characterize the habitat for its suitability for DT. Dr. Karl focused on the survey area east of SR-14 because the western side of the property is a known DT habitat (i.e., DT were observed there during Project protocol surveys and the vegetation community is relatively undisturbed, see Dr. Karl's habitat assessment report in Attachment D of Appendix F.1).

**Mohave Ground Squirrel.** Dr. Philip Leitner, a well-known MGS expert, conducted a field assessment of habitat conditions for MGS on August 10, 2007, and on October 15, 2007 (see habitat assessment report in Attachment D of Appendix F.1). The entire survey area was surveyed by driving dirt access roads and walking through selected areas, focusing on the species composition and physical structure of the vegetation, soil conditions, and evidence of rodent activity. Habitat conditions immediately adjoining the survey area were also observed. MGS protocol trapping surveys were not conducted because presence is being assumed where potential MGS habitat exists west of SR-14.

**Western Burrowing Owl.** Burrowing owl surveys were performed according to the protocol established by the California Burrowing Owl Consortium (CBOC) (1993) and accepted by CDFG. In addition to the 500-foot buffer surrounding the survey area required by CBOC protocol, as noted earlier, the CEC requires a habitat evaluation within a one-mile buffer surrounding the survey area.

Project biologists assessed the survey area and surrounding one-mile buffer for WBO habitat on May 8, 2007 (Phase I of the CBOC protocol). A burrow survey, Phase II of the CBOC protocol, was conducted in conjunction with DT protocol surveys, during which the entire survey area was surveyed by line transects with 10-meter spacing between transects. Additionally, five transects circumnavigating the survey area, plus two additional CEC-recommended transects within the one-mile buffer, were surveyed for burrows. All burrows with potential WBO sign (white-wash, pellets, feathers, bones) were mapped using GPS units. Project biologists conducted Phase III of the CBOC protocol, four WBO burrow and presence/absence surveys, between May 9 and August 3, 2007 (EDAW, 2007c).

To locate WBOs, surveyors drove established paved and dirt roads, stopping at observation points that provided a wide view, and scanned for owls and burrows with 8 x 10 power binoculars and a 20- to 40-power spotting scope. Vehicles were used as blinds, when possible, to minimize disturbance to owls. If burrows with sign were not visible from established roads, surveyors approached the burrows on foot, carefully verifying presence or absence of WBOs at the burrows. All WBO locations were mapped using GPS units.

### 5.3.2.5 Survey Results

The existing conditions described below represent findings within the survey area and one-mile buffer.

#### Vegetation Communities

Seven vegetation communities were mapped within the survey area (Figure 5.3-3; see Attachment B of Appendix F.1 for representative photos). The acreage of each vegetation community within the survey area and surrounding buffer area is provided in Table 5.3-4. Vegetation types are described in detail below, incorporating observations from Dr. Karl's DT habitat evaluation.

**Mojave Creosote Bush Scrub.** Mojave Creosote Bush Scrub is an open shrub community dominated by the creosote bush (*Larrea tridentata*). While dominated by shrubs (approximately 18 percent shrub cover), this vegetation community also has a perennial and herbaceous layer apparent in years with sufficient rainfall. Other important shrubs in this community include white bursage (*Ambrosia dumosa*), box thorn (*Lycium andersonii*), silver cholla (*Opuntia echinocarpa*), and occasional Joshua trees (*Yucca brevifolia*). This community typically occurs on well-drained soils in alluvial fans, bajadas, and upland slopes. It is one of the

most widely distributed desert plant communities in the Mojave Desert and occurs from the desert floor up to about 3,500 feet, extending into northwestern Arizona and southern Utah. It is the primary habitat type in the undisturbed areas in the one-mile buffer. A total of 111.5 acres of Mojave Creosote Bush Scrub was mapped within the survey area and 5,302.1 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3).

**Table 5.3-4 Vegetation Communities and Cover Types**

<b>Vegetation Communities and Other Cover</b>	<b>Survey Area (Acres)</b>	<b>One-Mile Buffer (Acres)</b>
Mojave Creosote Bush Scrub	111.5	5,302.1
Mojave Desert Wash Scrub	57.8	164.4
Mojave Mixed Woody Scrub	0.0	604.6
Tamarisk Scrub	0.0	1.8
Developed	70.3 <sup>1</sup>	253.5
Fallow Agricultural-Ruderal	1,785.0	3,233.1
Fallow Agricultural-Disturbed Atriplex Scrub	352.6	1,355.9
Total acres	2,377.2 <sup>1</sup>	10,915.4
<sup>1</sup> Includes 60 acres of natural gas pipeline right-of-way.		

**Mojave Desert Wash Scrub.** Mojave Desert Wash Scrub is an open shrubby community with scattered microphyllous trees and shrubs on well-drained sandy soils. This vegetation community is found in washes, arroyos, and canyons of intermittent streams throughout the Mojave Desert. The dominant plant in this community is the scale broom (*Lepidospartum squamatum*). Other shrubs occurring in this community are box thorn, bladderpod (*Isomeris arborea*), rubber rabbitbush (*Chrysothamnus nauseosus*), bladder sage (*Salazaria mexicana*), and Mormon tea (*Ephedra nevadensis* and *E. californica*).

Two washes traverse the survey area (see State jurisdictional waters discussion below), and are shown on Figure 5.3-5. One minor wash passes from west to east under the railroad tracks and then turns north within the western section of the plant site. This wash is unvegetated. The second wash trends southwest to northeast within the eastern portions of the plant site. This second wash supports a gradually reestablishing Mojave Desert Wash Scrub community and will be rerouted around the BSEP facilities, as discussed in Section 2.0, Project Description. A total of 57.8 acres of Mojave Desert Wash Scrub was mapped within the survey area and 164.4 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3). No wetlands occur in the survey area.

**Mojave Mixed Woody Scrub.** The Mojave mixed woody scrub occurs in areas characterized by steep, overly drained soils with extremely low water-holding capacity. The most common species of this plant community are spiny hopsage (*Grayia spinosa*), goldenhead (*Acamptopappus sphaerocephalus*), cheesebush (*Ambrosia [Hymenoclea] salsola*), winter fat (*Kraschennikiovia lanata*), Mormon tea, and white bursage. This community is found on the western edge of the buffer where the area begins to rise in elevation. No Mojave Mixed Woody Scrub was mapped within the survey area and 604.6 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3).

**Tamarisk Scrub.** This community is dominated by tamarisk (*Tamarix ramosissima*), a nonnative shrub to small tree from Central Asia. The plant was originally introduced for erosion control and windbreak purposes. It has become highly invasive of native habitats and can cause many detrimental effects, especially in riparian communities. No Tamarisk Scrub was mapped within the survey area and 1.8 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3).

**Developed.** The areas mapped as developed include unpaved and paved roads, a rail line, canals, and other areas cleared for residential uses (Table 5.3-4). A total of 70.3 acres of developed land was mapped within the survey area (including 60 acres of natural gas pipeline right-of-way) and 253.5 acres was mapped in the one-mile buffer.

**Fallow Agricultural-Ruderal.** The Fallow Agricultural-Ruderal vegetation community covers the majority of the survey area. The BSEP plant site was formerly used for agricultural purposes and is dominated by ruderal nonnative plants. This plant community occurs in areas that are now unable to effectively retard soil loss through wind and water erosion. Vegetation cover within this community ranges from 0 to 2 percent. The dominant plant species are Russian thistle (*Salsola tragus*), Sahara mustard (*Brassica tournefortii*), and Mediterranean schismus (*Schismus arabicus*). A total of 1,785 acres of Fallow Agricultural-Ruderal was mapped within the survey area and 3,233.1 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3).

**Fallow Agricultural-Disturbed Atriplex Scrub.** The Disturbed Atriplex Scrub community occurs on areas previously used for agricultural purposes but that have now become occupied with several atriplex shrub species. The dominant species is the allscale (*Atriplex polycarpa*), which is particularly effective at reoccupying abandoned agricultural lands. Other plants occurring together are shadscale (*Atriplex confertifolia*), Russian thistle, and salt heliotrope (*Heliotropium curassavicum*). Shrub cover in this vegetation community is approximately 22 to 25 percent. A total of 352.6 acres of Fallow Agricultural-Disturbed Atriplex Scrub was mapped within the survey area and 1,355.9 acres was mapped in the one-mile buffer (Table 5.3-4; Figure 5.3-3).

**Sensitive Vegetation Communities.** Sensitive vegetation communities are those that are considered rare in the region, support special status plant or animal species, or receive regulatory protection (e.g., waters, which includes wetlands as defined by the USACE and CDFG). In addition, vegetation communities listed on the CNDDDB as having the highest inventory priorities are considered sensitive (CDFG, 2003). There are no sensitive vegetation communities in the survey area or in the one-mile buffer.

There were a few scattered Joshua tree individuals within and immediately adjacent to the survey area. However, these individuals were not numerous or dense enough to be considered as Joshua tree woodland.

### **State Jurisdictional Waters**

Two dry desert washes within the survey area were delineated as State jurisdictional waters (Figure 5.3-5). A minor wash within the western section of the plant site flows approximately 6,200 feet across the survey area, south to north, parallel to and west of the railroad tracks, passing under the railroad tracks to enter the plant site approximately 1,800 feet south of its northern boundary, with a total length of approximately 2,000 linear feet within the plant site. This wash is unvegetated and will be rerouted to pass west of the proposed evaporation ponds, follow the northern and western boundaries of the plant site, then turn east to pass

through the plant site between solar arrays and terminate in the outflow of the eastern wash that will be diverted. The eastern wash flows approximately 8,150 linear feet across the survey area, from southwest to northeast, and then continues in a more dispersed pattern to Koehn Lake (Figure 5.3-5). The Project design will divert this wash in a constructed, earthen bottom channel, designed to be capable of conveying the volume and energy that the existing wash currently conveys so that flows leaving the site toward Koehn Lake are the same as at present. The total area of State jurisdictional waters encompasses approximately 18.4 acres within the survey area, of which 13.7 acres occurs within the plant site boundary.

### **Flora**

Thirty-three plant species were documented within the survey area, eight of which are nonnative introduced species (Appendix F.1). No special status plant species were detected within the survey area, although three CNPS List 1A plant species (alkali mariposa lily, creamy blazing star, and Charlotte's phacelia) have a moderate potential to occur, and two other plant species (Red Rock tarplant, CDFG rare and CNPS List 1B; Red Rock poppy, CNPS List 1B) have a low potential to occur. Due to low annual rainfall in 2007, conditions to adequately assess the site for certain special status plant species were less than satisfactory. Therefore, the presence or absence of these species will be determined by additional surveys conducted in spring 2008, which is considered to be an above-average rainfall year.

**State Rare Plant Species.** Prior to the 2007 surveys, no rare plant species had been documented as occurring within the survey area or in the surrounding vicinity. Based on site-specific habitat evaluations, one State rare plant species, the Red Rock tarplant, was considered to have a low potential to occur within the survey area and surrounding one-mile buffer, and one State-listed plant species, the Mojave tarplant, is not expected to occur due to elevational restrictions (Table 5.3-5).

Red Rock tarplant was listed by CDFG as rare in 1972. The plant species has no Federal listings but is recognized as List 1B by the CNPS (2007). Red Rock tarplant, an annual plant species growing to approximately 7 to 40 inches tall, is a severely restricted endemic species known only from 10 small populations within the boundaries of Red Rock Canyon State Park (Faull, 2004). This species occupies seeps, springs, and seasonally moist alluvium within the Creosote Bush Scrub community.

Red Rock tarplant was not detected within the survey area, although low rainfall in 2007 produced conditions that were less than satisfactory for detecting this species. Red Rock tarplant is considered to have a very low potential to occur within the survey area because of its restricted endemism to the geologic substrates in combination with the mesic conditions present in Red Rock Canyon State Park. The survey area is located approximately 5.5 miles south of Red Rock Canyon; however, the topography of the survey area does not support the characteristic substrate and mesic conditions where Red Rock tarplant is found. Furthermore, the survey area lacks the preferred clay soil washes that the plant inhabits.

**Other State Special Status Plant Species.** Three species included on the CNPS List 1B (alkali mariposa lily, creamy blazing star, and Charlotte's phacelia) have a moderate potential to occur in the survey area, although they were not detected during 2007 spring surveys (Table 5.3-5). These species are most likely to be found in Mojave Creosote Bush Scrub, Mojave Desert Wash Scrub, and Fallow Agricultural-Disturbed Atriplex Scrub (Figure 5.3-3), across the central section of the survey area and surrounding the survey area to the west, south, and east. One additional species included on the CNPS List 1B, Red Rock poppy, has a low potential to occur within the survey area.

**Table 5.3-5 Potentially Occurring Special Status Plant Species  
Relevant to the Beacon Solar Energy Project**

<b>Common Name Scientific Name</b>	<b>Sensitivity Status <sup>1</sup></b>	<b>General Habitat Description (CNPS, 2007)</b>	<b>Flowering Period</b>	<b>Probability of Occurrence <sup>2</sup></b>
Alkali mariposa lily <i>Calochortus striatus</i>	CNPS: List 1B	Chaparral, Chenopod scrub, Mojavean desert scrub, meadows and seeps, in mesic soils. Grows at elevations of 230-5,235 feet.	Geophyte that flowers April-June	Moderate potential of occurrence on site. A small population occurs in Red Rock Canyon State Park nearby. Survey area has Chenopod scrub and Mojavean desert scrub, which are suitable habitat.
Red Rock tarplant <i>Deinandra arida</i>	CDFG: Rare CNPS: List 1B	Mojavean desert scrub in clay, volcanic tuff. Grows at elevations of 984-3,117 feet.	Annual that blooms April-November	Low potential to occur on site due to unsuitable soils and lack of mesic conditions. Less than 10 occurrences are known from the Red Rock Canyon State Park and Last Chance Canyon in Kern County, approximately 5.5 miles north of the survey area (CDFG, 2007).
Mojave tarplant <i>Deinandra mohavensis</i>	CDFG: Endangered CNPS: List 1B	Chaparral (mesic), riparian scrub. Grows at elevations of 2,790-5,250 feet.	Annual that blooms July-October	Not expected to occur on site due to unsuitable habitat and low elevation. Four known populations occur in natural springs northeast of the survey area, characterized by mesic conditions and suitable elevations (CDFG, 2007).
Red Rock poppy <i>Eschscholzia minutiflora ssp. Twisselmannii</i>	CNPS: List 1B	Mojavean desert scrub in volcanic tuff. Grows at elevations of 2,230-4,035 feet.	Annual that flowers March-May	Low potential of occurrence on site due to lack of suitable soils in the survey area. Possibly could occur in drainages that drain slopes from the west. Known populations are located from the Rand and El Paso mountains in Kern County.
Creamy blazing star <i>Mentzelia tridentate</i>	CNPS: List 1B	Mojavean desert scrub. Grows at elevations of 2,297-3,806 feet.	Annual that flowers March-May	Moderate potential of occurrence on site due to suitable habitat and range in elevation on site. One occurrence in nearby Red Rock Canyon State Park and six occurrences in San Bernardino County (CDFG, 2007).

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	General Habitat Description (CNPS, 2007)	Flowering Period	Probability of Occurrence <sup>2</sup>
Charlotte's phacelia <i>Phacelia nashiana</i>	CNPS: List 1B	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Grows at elevations of 1,969-7,218 feet.	Annual that blooms March-June	Moderate to high potential of occurrence on site in suitable habitat. Known populations occur approximately one mile northwest and 2.25 miles southwest of the survey area in suitable habitat (CDFG, 2007).
<sup>1</sup> Sensitivity Status Key <u>State</u> CDFG <u>Other</u> CNPS 1B: Considered rare, threatened, or endangered in California and elsewhere.				
<sup>2</sup> No populations of rare plants were observed on site during the focused survey periods, although low annual rainfall in 2007 produced less than satisfactory conditions to detect these plants if present.				

### **Fauna**

Forty-three wildlife species were detected during general reconnaissance and protocol wildlife surveys (Appendix F.1). Ten of these species were reptiles, 26 were bird species, and 7 were mammal species.

Several wildlife species, including Le Conte's thrasher and flat-tailed horned lizard, were observed in the dry desert wash that runs northeast to southwest across a large portion of the survey area. However, this wash disperses at the northern boundary of the site where the Mojave Desert Wash Scrub community gives way to Fallow Agricultural-Ruderal vegetation, thereby terminating the continuity of usable wildlife habitat that would constitute a wildlife corridor connecting to areas north of the survey area (Figure 5.3-3).

Several species of migratory birds were observed using the Disturbed Atriplex Scrub in May. Although the mountains to the west are a known flyway for migratory raptors and passerines, the survey area is located at a lower elevation and does not support the vegetation and topography that typically characterize areas that are attractive to these species during migration. The survey area occurs along a known inland shorebird migration route, connecting California's Central Valley with the Gulf of California. Although the Project's evaporation pond has the potential to attract migratory birds, monitoring and, if necessary, mitigation measures will ensure that impacts are less than significant. Any mitigation measures will be developed through discussions between Beacon Solar and the resource agencies, based on the results of ongoing monitoring of the evaporation ponds. Such mitigation measures, if needed, would likely involve adaptive management measures associated with the maintenance of the evaporation ponds. The nature of the measures would depend on the potential hazard to wildlife, if any, that was identified. The kinds of measures that might be selected could include anti-perching devices to discourage use of the ponds by birds and routine removal of evaporation pond precipitate to ensure that priority pollutant concentrations are below levels of concern.

Two federally listed and/or State-listed wildlife species were detected in the Project area (DT and American peregrine falcon), and another has the potential to occur west of SR-14 where transmission facilities would

be located (MGS). All three of these species are discussed below. Six other special status wildlife species with potential to occur onsite (northern harrier, WBO, California horned lark, Le Conte’s thrasher, loggerhead shrike, and the American badger) are described in Table 5.3-6.

**Table 5.3-6 Potentially Occurring Special Status Wildlife Species Relevant to the BSEP**

<b>Common Name Scientific Name</b>	<b>Sensitivity Status<sup>1</sup></b>	<b>Habitat Requirements</b>	<b>Probability of Occurring On site</b>
<b>Reptiles</b>			
Desert tortoise <i>Gopherus agassizii</i>	ESA: Threatened CESA: Threatened	Various desert scrubs and desert washes up to about 5,000 feet, but not including playas.	Detected in native habitat in the ZOI west and east of the survey area and in the vicinity of both transmission line route options in May 2007. One potential burrow, one shell fragment, and one juvenile carcass were observed within the eastern section of the survey area. Two live, probable transient adult tortoises were observed during groundwater pump tests onsite in September 2007.
<b>Birds</b>			
Northern harrier <i>Circus cyaneus</i>	CDFG: Species of Special Concern	Grasslands and agricultural fields during migration and in winter.	Detected. Two individuals were observed in the one-mile buffer northeast of the survey area during May 2007 surveys.
American peregrine falcon <i>Falco peregrinus anatum</i>	CESA: Endangered CDFG: Fully Protected	Open habitats from tundra, moorlands, steppe, and seacoasts to mountains, and open forested regions, especially where there are suitable nesting cliffs.	Detected. One individual was observed perched on a utility pole at the eastern border of the survey area during May 2007 surveys.
California horned lark <i>Eremophila alpestris actia</i>	CDFG: Species of Special Concern	Fields, grasslands, shores, and tundra habitats.	Detected. Multiple individuals of this species were observed frequently throughout the survey area and within the one-mile buffer within barren areas during May 2007 surveys.
Western burrowing owl <i>Athene cunicularia</i>	CDFG: Species of Special Concern	Grassland and open scrub from the seashore to foothills. Strongly associated with ground squirrel burrows.	Detected. Two individuals were observed in the survey area, one in the northeastern section and one in the western section in native habitat, and at least three other individuals were observed in the one-mile buffer during May, July, and August 2007 surveys. One additional individual was observed during a groundwater pump test in September 2007 (Figure 5.3-6). Active burrows were observed near all individual observations.

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Probability of Occurring On site
Le Conte's thrasher <i>Toxostoma lecontei</i>	CDFG: Species of Special Concern	IAreas with sparse desert scrub. Uses cholla cactus for nesting.	Detected. Two individuals were observed in the eastern section of the survey area and one individual was observed in the one-mile buffer southwest of the survey area during May 2007 surveys.
Loggerhead shrike <i>Lanius ludovicianus</i>	CDFG: Species of Special Concern	Semiopen country with utility posts, wires, and trees to perch on.	Detected. Several individuals were observed throughout the eastern section of the survey area and the one-mile buffer during May 2007 surveys.
<b>Mammals</b>			
Mohave ground squirrel <i>Spermophilus mohavensis</i>	CESA: Threatened	Mojave desert scrub, alkali scrub, and Joshua tree woodland between 1,800 and 5,000 feet. Sandy to gravelly soils.	Moderate in the Mojave Creosote Bush Scrub in the western portion of the survey area. The remainder of the site does not provide suitable habitat. Mohave ground squirrels were detected approximately two miles north of the survey area in 1985. The species is assumed to be present in the survey area west of SR-14.
American badger <i>Taxidea taxus</i>	CDFG: Species of Special Concern	Coastal sage scrub, mixed chaparral, grassland, oak woodland, chamise chaparral, mixed conifer, pinyon-juniper, desert scrub, desert wash, montane meadow, open areas, and sandy soils.	Moderate. Although this species has been detected within one mile of the eastern edge of the survey area, no sign of the species was detected during surveys in May 2007. This species is considered relatively common in native habitats of the area (Karl, 2007)
<sup>1</sup> Sensitivity Status Key <u>Federal</u> ESA <u>State</u> CDFG and CESA			

**Federally Listed Wildlife Species – Desert Tortoise.** A single DT and several tortoise burrows, scat, and eggshells were observed at the outlet of Pine Tree Canyon, southwest of the survey area but within the buffer area for both BSEP transmission line options, during 2003 biological surveys in support of Barren Ridge Switching Station for the Pine Tree Wind Development Project (EDAW, 2004). The live tortoise was translocated; no other live DT were discovered in this area during the 2003 protocol DT surveys for the Pine Tree project.

No live tortoises were encountered in the survey area during the BSEP presence/absence surveys. Five live DT were encountered during the BSEP ZOI transect surveys, all within 630 feet of the survey area where native habitat remains (Figure 5.3-4). Four of the five live tortoises found were encountered west of SR-14, in the southwest corner of the survey area. The fifth tortoise was encountered approximately 600 feet outside the eastern edge of the survey area. All were adult tortoises with middle carapace length ranging from approximately 200 to 235 millimeters. Most of the observed tortoise sign (burrows, carcasses,

and scat) were also found in the southwest section of the survey area, west of SR-14. Only two recent tortoise sign were found in the eastern section of the survey area: an intact juvenile carcass that had been depredated by a raven (C3 in Figure 5.3-4) and a deteriorated adult burrow. Two other sets of old (greater than four years since death) bone and carapace fragments were found near the southern edge of the survey area (C2 and C11 in Figure 5.3-4). There was no evidence that tortoises currently inhabit the survey area.

A juvenile DT carcass, preyed upon by a raven, was documented within the survey area on September 4, 2007, by a biologist monitoring a groundwater pump test. Two additional live adult tortoises were detected within the survey area during subsequent groundwater pump tests. One was detected on the northwest edge of the survey area along the main access road, and is likely a transient from adjacent habitat. The second live tortoise was detected at the western edge of the survey area (outside the plant site boundary), approximately 350 feet east of SR-14 (Figure 5.3-4).

Dr. Alice Karl's assessment of DT habitat within the survey area (see habitat assessment report in Attachment D of Appendix F.1) concluded that the eastern section of the survey area is not suitable for either maintenance or recovery of the population. This analysis was based on vegetation (species, cover, patchiness), soil characteristics, hydrology, and extent of disturbance. In areas where shrubs were regrowing, the Disturbed Atriplex Scrub was unlike the native community surrounding the survey area. These areas of Disturbed Atriplex Scrub also experience periods of inundation by water and exhibit poor soil friability. While there is a possibility that a DT might be observed in these shrub patches or in the wash that extends through the eastern portion of the survey area, this would largely be due to the proximity of native habitat outside of the survey area.

**State-Listed Wildlife Species.** The federally listed DT is also listed as threatened under CESA. The MGS, listed as threatened under CESA, has the potential to occur west of SR-14 where transmission facilities would be located (see habitat assessment report in Attachment D of Appendix F.1).

**Mohave Ground Squirrel.** The CNDDDB includes nine records of MGS occurrence within 10 miles of the survey area (Figure 5.3-2). Three locations are in Jawbone Canyon, from 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. Two records are from Cache Creek near the western boundary of the Desert Tortoise Natural Area (DTNA). Three records document occurrences of MGS farther east, within the DTNA. Ten additional records, not yet included in the CNDDDB, occur within 12.4 miles of the survey area within the DTNA. All lands to the west of SR-14 in the vicinity of the survey area are included in the Mohave Ground Squirrel Conservation Area proposed in the West Mojave Plan (BLM, 2005). However, the protections associated with the Mohave Ground Squirrel Conservation Area apply only to public lands managed by the BLM.

There is an extensive area of Mojave Creosote Bush Scrub to the east and south of the survey area. It appears to provide suitable habitat for MGS, although there are no occurrence records and no evidence of any trapping attempts. To the north and northeast of the survey area is a wide strip of fallow agricultural land that does not provide MGS habitat. North of the survey area and east of SR-14 is a small patch of Mojave Creosote Bush Scrub. Vegetative cover here is sparse and there is very little plant diversity. At best, this area is marginal habitat for MGS.

To the west of SR-14, overlapping with a small portion of the survey area, a wide strip of Mojave Creosote Bush Scrub occurs on the alluvial fans reaching down from the mountains. This area is characterized by

vegetation and soil conditions that are suitable for MGS (Figure 5.3-3). The dominant shrub species are creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Because of disturbance from periodic surface water flows, desert senna (*Senna armata*) and cheesebush (*Hymenoclea salsola*) are also abundant. No winterfat (*Krascheninnikovia lanata*) or spiny hopsage (*Grayia spinosa*), two shrubs that provide important food resources for MGS (Leitner and Leitner, 1998), were observed. This relatively undisturbed habitat has moderately diverse vegetation that could provide adequate forage and cover for MGS. The habitat on this portion of the survey area (approximately 111.6 acres) appears suitable for the species, but is not of high quality.

The remainder of the survey area, including the entire area within the plant site boundary, is unsuitable as habitat for MGS. The survey area was used for irrigated agriculture some years ago and has since been abandoned. Much of the property (1,851.7 acres) is barren (Fallow Agricultural-Ruderal) and does not support any native vegetative cover. Other portions of the survey area contain patches of native allscale shrubs (Fallow Agricultural-Disturbed Atriplex Scrub) that have become established since agricultural operations ceased. In these patches, allscale makes up almost 100 percent of the low density existing shrub cover. The herbaceous layer is sparse and consists almost entirely of a few non-native species, including filaree (*Erodium cicutarum*). MGS occasionally consume *Atriplex* foliage and filaree seeds, but these plants do not provide the full range of food resources necessary for the species (Leitner and Leitner, 1998). The narrow strip of Mojave Desert Wash Scrub that runs through the center of the survey area does not provide suitable MGS habitat. The vegetation here is very open and sparse, plant diversity is low, there is little shrub cover, and forage plants utilized by MGS are almost entirely absent. In general, the wash vegetation community appears disturbed, with shrubs widely separated and damaged and extensive bare ground.

With the exception of the Mojave Creosote Bush Scrub areas on the western edge of the survey area, the area has no value as a movement corridor for the MGS. Although dispersing juveniles might attempt to enter from adjoining creosote bush habitat, the wide bands of barren fallow agricultural land would serve as a dispersal barrier. Studies in the Coso area of Inyo County have shown that a small playa acted as a barrier to the dispersal movements of radio-collared juveniles (Harris and Leitner, 2005). This species is assumed to be present in suitable habitat within the survey area west of SR 14, where the transmission facilities would be located.

American Peregrine Falcon. The American peregrine falcon is not known to breed in the vicinity of the Project survey area. One American peregrine falcon was detected on the survey area boundary, perched on a utility pole, on May 11, 2007, during WBO surveys (Figure 5.3-7). Because no large bodies of water or suitable breeding structures occur near the survey area and no other sightings of this species have been recorded in this area, this individual was likely a transient or at most may use the area in the vicinity of the survey area as a peripheral and occasional part of its home range.

**Nonlisted, Special Status Wildlife Species.** In addition to the federally listed and State-listed species discussed above, six CDFG SSC have the potential to occur within the survey area and surrounding one-mile buffer. Those species are the northern harrier, Western burrowing owl (WBO), California horned lark, Le Conte's thrasher, loggerhead shrike, and American badger. Results of focused surveys for WBO and American badger are presented below.

**Western Burrowing Owl.** The entire survey area and one-mile buffer were considered suitable WBO habitat, as assessed per Phase I of CBOC protocol surveys. During Phase II of the CBOC protocol surveys, a total of 27 burrows with WBO sign were identified within the survey area one-mile buffer. Fourteen burrows were detected within the survey area, including five burrows with recent WBO sign. Thirteen burrows with sign were detected within the one-mile buffer, including five burrows with recent WBO sign.

During Phase III of the CBOC protocol survey, at least six WBOs were detected, two of which were within the survey area (Figure 5.3-8). During the first Phase III survey, no WBOs were observed, and therefore Figure 5.3-8 displays the live WBO observations documented during Phase III surveys 2, 3, and 4. All WBOs detected were seen within 10 meters of a burrow with recent sign. Evidence of predation was observed at two of the locations where WBOs had been detected on earlier surveys, one within the survey area. In addition to the data collected during the protocol survey, a WBO was observed on September 4, 2007 during a groundwater pump test on the plant site.

**Other Nonlisted Special Status Wildlife Species.** Suitable habitat for northern harrier, loggerhead shrike, California horned lark, Le Conte's thrasher, and American badger occurs throughout the survey area. A pair of harriers was detected in the one-mile buffer northeast of the survey area during DT surveys (Figure 5.3-7). Loggerhead shrikes were observed frequently during biological surveys of the survey area (Figure 5.3-7). California horned larks were detected in flocks throughout the survey area in 2007 but were not mapped. Le Conte's thrasher was observed several times in the survey area (Figure 5.3-7). The American badger was not detected during surveys but has a moderate potential to occur in the survey area. This species is considered relatively common in native habitats of the area (Karl, 2007).

**Fish and Wildlife Species of Commercial or Recreational Value.** Areas of undeveloped open space in the Mojave Desert, such as the Project site, have the potential to support fish and wildlife species of commercial and/or recreational value to the general public. Examples may include lands used for legal hunting, fishing, and bird watching or wildlife viewing. Resources for sport fishing are not present on the Project site because the Project site lacks surface water. Additionally, the entire survey area east of SR-14 is private property and posted "No Trespassing". Finally, the site lacks water, mesic, areas, and riparian vegetation that might be of interest for bird and/or wildlife watching. Aside from the mourning dove, no game species were observed in the vicinity of the Project site. Therefore, due to lack of habitat, lack of access, and low probability of occurrence for species of interest, impacts to the Project site are not likely to affect fish and wildlife species of commercial or recreational value.

**Critical Habitat.** The survey area does not include any designated critical habitat for any special status plant or wildlife species.

**Wildlife Movement Corridors.** Wildlife movement corridors, also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another. A wildlife corridor study was not conducted as part of the BSEP since extensive, long-term species ecology, movement patterns, and dispersal behavior would be required to conclusively demonstrate if a particular site or feature of a site served as an important movement corridor.. This type of data is unavailable for most of the species occurring or potentially occurring in the survey area. However, drainages, ridgelines, and other natural and man-made linear features and barriers often serve as areas that wildlife routinely use to access essential natural resources. It is assumed that wildlife species would use such features for movement if they occurred within the survey area.

The vegetated wash within the eastern section for the plant site does not have the potential to serve as a wildlife movement corridor due to its prior use for agriculture and its limited vegetation. Additionally, an existing, somewhat degraded chicken-wire fence currently encompasses most of the plant site, providing a barrier to wildlife movement through the site. No other existing linear features occur within the plant site that would provide a corridor for wildlife movement.

### 5.3.3 Environmental Impacts

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct:** Any alteration, disturbance, or destruction of biological resources that would result from Project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species and/or their habitats.
- **Indirect:** As a result of Project-related activities, biological resources may also be affected in a manner that is not direct. Examples include elevated noise, dust, cooling tower drift and/or other air emissions, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants (weeds or other non-native species).
- **Permanent:** All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.
- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction, or removing vegetation for underground pipeline trenching activities and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems. Therefore, all such impacts in the survey area are considered permanent.

Significance criteria are defined in the general context of CEQA and the National Environmental Policy Act (NEPA). Potentially significant impacts to biological resources include, but are not limited to:

- Substantial adverse effects to plant species considered by the CNPS to be rare, threatened, or endangered in California (CNPS, 2007) or with strict habitat requirements and narrow distributions; substantial impact to a sensitive natural community (i.e., community that is especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies);
- Substantial adverse effects to wildlife species that are federally listed or State-listed or proposed to be listed; a substantial impact to wildlife species of special concern to CDFG, candidates for State listing, or animals fully protected in California;
- Substantial adverse effects on habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations; and

- Substantial adverse effect on important riparian habitats or wetlands and any other “Waters of the U.S.” or State jurisdictional waters.

### 5.3.3.1 Construction

Impacts to each biological resource due to construction activities are discussed in this section. When appropriate, direct and indirect impacts to biological resources are described separately.

#### Assumptions

Assumptions employed for the calculation of direct impacts to biological resources are described below.

**Solar Array, Access Roads, and Maintenance Facilities.** Approximately 2,012 acres of the BSEP survey area east of SR-14 will be permanently developed to accommodate the solar array field, power generating facilities, access roads, and maintenance facilities. The entire footprint of the solar array will be graded level with a slight slope and compacted. Laydown areas associated with construction of this facility will occur within the permanent impact footprint or within existing disturbed areas.

**Transmission Line Structures.** New conductor wires would transmit electrical power generated at the site to an interconnection point with the LADWP regional system west of SR-14. The conductor wires will be suspended on poles extending from the power block east of the highway and railroad tracks. Both of the transmission line options will run an estimated distance of 3.5 miles, approximately 1.6 miles of which will occur within the plant site.

Under Option 1, it is anticipated that 36 poles will be installed, 10 of which would be located in desert tortoise and potential Mohave ground squirrel habitat west of SR-14. For Option 2, a total of 36 poles would also be installed for the proposed transmission line, 17 of which would occur west of SR-14 within DT and MGS habitat (Table 5.3-7). Each pole location would require construction of a 50-foot by 50-foot pole pad. Pole height would range from 75 to 110 feet, depending on terrain and span length. Span length would range between 440 to 560 feet, averaging about 500 feet. Anticipated impacts associated with the transmission line structures required for each of the options are summarized in Table 5.3-7.

**New Switchyard.** Under transmission line Option 2, an electrical switchyard is proposed for interconnection with the existing LADWP transmission lines that touch the surveyed area west of SR-14. This switchyard will require a 1.7-acre pad within DT and MGS habitat.

**Transmission Line Access.** General vehicular access to either of the transmission line route options would be taken from SR-14 and existing dirt roads would be used wherever possible. Either transmission option will require a new transmission line access road for maintenance purposes (approximately 17,300 feet long by 14 feet), and new stub access roads (115 feet long by 12 feet for each pole). As stated above, under Option 1, a total of 10 transmission poles would be located within DT and MGS habitat. Option 2 would require 17 transmission poles within DT and MGS habitat.

**Rerouted Desert Wash.** The existing vegetated desert wash that crosses the eastern section of the plant site will be rerouted in a new, revegetated channel with an earthen bottom (see Figure 2-4). The new channel will run immediately outside of the southern and eastern security/tortoise exclusion fences of the

plant site, but inside the outer low-maintenance barbed-wire fence and will terminate northeast of the plant site where the existing wash currently disperses toward Koehn Lake. This new channel is designed to convey the same flow volume and energy currently conveyed by the wash. The new channel will be constructed entirely within the plant site's permanent impact area and would not result in additional permanent impacts.

**Table 5.3-7 Estimated Desert Tortoise and Mojave Ground Squirrel Potential Habitat Acreage West of SR-14 Potentially Impacted by Transmission Line Route Options 1 and 2**

Feature	Quantity	Impact Dimensions (per Feature)	Total Impact Area (Square Feet)	Total Impact Area (Acres)
<i>Option 1</i>				
Pole Pad Construction	10	50 feet x 50 feet	25,000	0.6
Pull Property	3	50 feet x 140 feet	21,000	0.5
Splice Property	1	95 feet x 200 feet	19,000	0.4
Spur Roads	10	12 feet x 115 feet	13,800	0.3
Access Road	1	14 feet x 10,032 feet	140,400	3.2
New Switchyard	0		0	0
<b>Total Option 1 Impact</b>			<b>207,100</b>	<b>5.0</b>
<i>Option 2</i>				
Pole Pad Construction	17	50 feet x 50 feet	42,500	1.0
Pull Property	3	50 feet x 140 feet	21,000	0.5
Splice Property	1	95 feet x 200 feet	19,000	0.4
Spur Roads	17	12 feet x 115 feet	23,460	0.5
Access Road	1	14 feet x 5,280 feet	73,920	1.7
New Switchyard	1		74,052	1.7
<b>Total Option 2 Impact</b>			<b>264,400</b>	<b>5.8</b>

**Temporary Impacts.** A natural gas pipeline will be constructed from a location west of California City and follow California City Boulevard, Neurialia Road, and an existing dirt road that accesses the eastern edge of the plant site. This approximately 17.6-mile pipeline includes approximately 1.3 miles within the plant site boundary; the offsite portions of the route are entirely within the disturbed and developed shoulders of existing roads and thus will avoid native habitat. Approximately 60 acres of already disturbed roadway shoulder will be temporarily disturbed for construction of the natural gas pipeline.

In addition to roads, a number of other areas associated with Project construction and operations must be cleared and graded. During construction of the transmission line, pull site work areas and splicing site work areas would be required. While these are typically considered temporary impacts, they were considered permanent in calculating mitigation for the Project due to the slow recovery of native communities in desert ecosystems. Anticipated impacts associated with temporary work areas are shown in Table 5.3-7.

### **Vegetation Communities**

**Direct Impacts.** Construction of the Project would not result in significant direct impacts to sensitive vegetation communities because no such communities occur in the survey area. All non-sensitive vegetation communities in the solar array area, areas associated with transmission structure footprints, access roads, and transmission line installation would be directly and permanently impacted (Table 5.3-8).

**Table 5.3-8 Anticipated Permanent and Temporary Impacts to Plant Communities**

<b>Vegetation Communities and Other Cover</b>	<b>Total Permanent Impact Acreage</b>	<b>Total Temporary Impact Acreage</b>	<b>Total Impact Acreage</b>
Mojave Creosote Bush Scrub			
Transmission Option 1	4.1	0.9	5.0
Transmission Option 2	4.9	0.9	5.8
Mojave Desert Wash Scrub	59.0	0.0	59.0
Developed	7.2	60.0	67.2
Fallow Agricultural-Ruderal	1,573.8	0.9	1,574.7
Fallow Agricultural-Disturbed Atriplex Scrub	371.9	0.0	371.9
Total acres (with Option 1)	2,016.0	61.8	2,077.8
Total acres (with Option 2)	2,016.8	61.8	2,078.6

**Indirect Impacts.** Based on review of literature and existing documents concerning the area surrounding the BSEP, construction of the Project would not result in significant indirect impacts to sensitive vegetation communities because there are no sensitive vegetation communities in the vicinity of the survey area. Potential indirect impacts to the vegetation communities surrounding the Project area would occur as a result of grading activities creating airborne dust and potential offsite sedimentation. Potential permanent, indirect impacts include the spreading of exotic species in native vegetation communities such as those in transmission line corridors, wildfires caused by new transmission wires destroying or disturbing native vegetation communities, and the alteration of drainage patterns. Because the Project design includes rerouting the desert wash that traverses the survey area by creating an open channel along the eastern side of the site that would direct flow to an existing drainage basin northeast of the site, potential indirect impacts to downstream vegetation communities would be minimized. However, potential wildfires and sitewide ground-disturbing activities could adversely affect vegetation communities by altering adjacent vegetation boundaries and creating disturbed areas that are more conducive to the invasion of exotic species. The introduction and invasion of exotic species could potentially reduce native population growth, dispersal, and recruitment. Project design will include efforts to avoid the increase in exotic vegetation, thereby reducing the impacts to surrounding vegetation communities to a level of insignificance. Potential temporary, indirect impacts resulting from grading include sedimentation and erosion. While detailed evaluation of these impacts will occur following the completion of a more refined Project layout, a Drainage, Erosion, and Sedimentation Control Plan (DESCP) and construction phase Storm Water Pollution Prevention Plan (SWPPP) will be prepared to comply with CEC and RWQCB requirements. The DESCP and SWPPP will identify the Project design features and Best Management Practices (BMPs) that will be used to effectively manage drainage-related issues (e.g., erosion and sedimentation) during construction grading.

### **State Jurisdictional Waters**

**Direct Impacts.** Approximately 13.7 acres of State jurisdictional waters that occur within the plant site would be directly affected by Project development; however, with implementation of the impact avoidance, minimization, and mitigation measures (e.g., rerouting the wash) outlined in Section 5.3.4 of this document, the Project's direct impacts on State jurisdictional waters would be reduced to a level of insignificance. The eastern dry desert wash extends approximately 8,150 linear feet across the survey area, and the unvegetated western dry wash extends approximately 6,200 feet across the survey area, with approximately 2,000 feet on the west side of the plant site. The area within the banks of the washes likely would be considered State jurisdictional waters.

**Indirect Impacts.** No significant indirect impact to State jurisdictional waters would occur as a result of Project-related activities because these effects would be reduced to insignificance by impact avoidance, minimization, and mitigation measures outlined in the mitigation section of this document. Potential indirect impacts to State jurisdictional waters surrounding the survey area would occur as a result of grading activities creating airborne dust and potentially offsite sedimentation. Potential permanent, indirect impacts include alteration of drainage patterns. Because the Project design includes rerouting the desert wash that traverses the survey area by creating an open channel revegetated with native vegetation along the eastern side of the site that would direct flows to an existing drainage basin northeast of the site, potential indirect impacts to downstream waters would be minimized.

### **Plant Species**

**Direct Impacts.** Potential permanent, direct impacts to special status plant species, if present, may arise from implementation of the proposed Project by permanent development of the solar array, power generation and support facilities, transmission structure locations, and access roads.

**Federally Listed and State-Listed Plant Species.** No federally listed or state-listed plants are considered to have the potential to occur within the survey area; therefore, no direct impacts to listed plant species would result from either Project construction or operation.

**Nonlisted, Special Status Plant Species.** Habitat conditions within the survey area create a moderate potential for Alkalai mariposa lily, Charlotte's phacelia, and creamy blazing star to occur within the Mojave Creosote Bush Scrub, Mojave Desert Wash Scrub, and Fallow Agricultural-Disturbed Atriplex Scrub vegetation communities (Figure 5.3-3). Red Rock tarplant and Red Rock poppy are considered to have a low potential to occur within the site. Due to low annual rainfall in 2007, conditions to adequately assess the site for these species were less than satisfactory, and therefore their absence from the site cannot be confirmed; however with implementation of the impact avoidance, minimization, and mitigation measures outlined in the Section 5.3.4, the Project's direct impacts on nonlisted, special status plant species, if any, would be reduced to a level of insignificance.

**Indirect Impacts.** Potential permanent, indirect impacts to special status plant species, if present, may arise from population fragmentation and introduction of nonnative weeds. Population fragmentation could affect pollinator activity and hence gene flow. Introduction and establishment of invasive weeds within, or adjacent to, special status plant populations can adversely affect native species by reducing growth and recruitment. Such impacts would be avoided through implementation of Project avoidance and minimization measures.

Potential temporary, indirect impacts could arise from runoff and sedimentation, erosion, fugitive dust, and unauthorized access by construction workers. Runoff, sedimentation, and erosion can adversely affect plant populations by damaging individuals or by altering site conditions sufficiently to favor other species that could competitively displace the special status species. Construction-generated fugitive dust can adversely affect plants by reducing the rates of metabolic processes such as photosynthesis and respiration. Unauthorized access by construction workers and their vehicles can trample and destroy individuals outside of, but immediately adjacent to, the proposed construction area. These impacts will be avoided, however, through implementation of Project avoidance and minimization measures.

Federally Listed and State-Listed Plant Species. Because no federally or State-listed plants have the potential to occur within the survey area, no indirect impacts to listed plant species would result from either Project construction or operation.

Nonlisted, Special Status Plant Species. As discussed above, habitat conditions within the survey area create a moderate potential for Alkalai mariposa lily, Charlotte's phacelia, and creamy blazing star to occur within the Mojave Creosote Bush Scrub, Mojave Desert Wash Scrub, and Fallow Agricultural-Disturbed Atriplex Scrub vegetation communities (Figure 5.3-3). Red Rock tarplant and Red Rock poppy are considered to have a low potential to occur within the site. Due to low annual rainfall in 2007, conditions to adequately assess the site for these species were less than satisfactory, but spring plant surveys will be conducted in 2008. With implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4, the Project's direct impacts on nonlisted, special status plant species, if any, would be reduced to a level of insignificance.

### **Wildlife Species**

***Direct Impacts.*** The proposed Project could potentially result in direct impacts to special status wildlife species. For example, direct impacts could result from mortality of wildlife by crushing or vehicle collisions during construction activities.

Federally Listed Wildlife Species – Desert Tortoise. No impacts to DT are expected within the plant site area due to lack of suitable habitat, although it is recognized that a low possibility exists that one or a few transient tortoises may be found in regrowth habitats adjacent to native habitat offsite. The vegetation regrowth community within the survey area should not be considered habitat that could support either maintenance or recovery of the DT population, even if one or a few tortoises are found on the site. Direct permanent and temporary impacts to DT could potentially occur as a result of the installation of an electrical substation facility and transmission structures, and from disturbance of 5.0 acres of habitat associated with transmission line construction under Option 1 and 5.8 acres under transmission line Option 2. Temporary direct impacts to DT could result from an increase in vehicle traffic while the Project is under construction, thereby increasing the potential for vehicle strikes if tortoises are attempting to cross roads near the survey area.

Project mitigation, especially site fencing and a preconstruction DT clearance, will minimize any potential impacts to DT as a result of Project activities. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's impacts on DT to a level of insignificance.

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State-Listed Wildlife Species - Desert Tortoise and Mohave Ground Squirrel. See above for discussion of impacts to the federally listed and state-listed DT.

No impacts to MGS are expected to occur within the plant site due to lack of suitable habitat. However, the development of a switchyard facility (Option 2 only), transmission line, and spur access roads in Mojave Creosote Bush Scrub west of SR-14 could potentially result in direct permanent and temporary impacts to 5.0 acres of potential MGS habitat under transmission Option 1 and 5.8 acres under Option 2. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 below will reduce the Project's impacts on MGS to a level of insignificance.

Nonlisted, Special Status Wildlife Species. Direct impacts to other nonlisted, special status wildlife species 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. Direct impacts to the WBO and other birds listed under the MBTA will be avoided by implementation of Project avoidance and minimization measures.

Direct impacts to WBO and other nonlisted special status wildlife species 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 transmission line and substation. On the basis of WBO survey data, the locations of the power generation and support facilities, transmission structures, access roads, and electrical substation three occupied burrows would be permanently impacted by the Project. Implementation of the impact avoidance, minimization, and mitigation measures outlined in the mitigation section of this document will reduce the Project's impacts on WBO and other nonlisted, special status wildlife species to a level of insignificance.

***Indirect Impacts.*** The Project could potentially result in temporary and permanent indirect impacts to special status wildlife species. These impacts would be reduced to insignificance by implementation of Project avoidance, minimization, and mitigation measures outlined in Section 5.3.4.. Temporary indirect impacts could result from dust accumulation on surrounding vegetation; increased ambient noise levels in adjacent plant communities; use of unnatural lighting during dawn, dusk, or nighttime construction; wildfires caused by new transmission wires destroying or disturbing habitat; accumulation of waste material in evaporation ponds; or changes in surface drainage patterns following precipitation events.

Dust accumulation on surrounding vegetation, increased ambient noise levels adjacent to construction areas, and wildfires could potentially lead to temporary, indirect impacts to special status avian species that may use the adjacent plant communities by disrupting their natural foraging patterns and destroying foraging habitat. If construction activities are conducted at night, the use of unnatural lighting could temporarily indirectly impact special status wildlife species adjacent to construction areas by increasing possible detection by predators. Accumulated waste material in evaporation ponds could adversely affect shorebirds that stop over and use the pond during migration. Groundwater at the plant site was tested for toxic pollutants such as selenium and concentrations were found to be below accepted thresholds. Evaporation pond water quality will be monitored during Project operations. Potential indirect impacts associated with changes in drainage patterns would be reduced to insignificance by implementation of the SWPPP and DESCP, which will include flood management procedures.

Permanent indirect impacts to special status wildlife species resulting from the Project could also include: 1) habitat fragmentation, where removal of habitat elements results in separation of formerly connected habitat patches; 2) 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; and 3) 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 less than significant due to the previously disturbed nature of the majority of the site, and the relatively small and discontinuous areas of native habitat that would be affected by the Project. The effects of potentially increased raptor predation on small animals and changes in surface drainage patterns on special status wildlife species are discussed further below.

Federally Listed Wildlife Species – Desert Tortoise. Indirect impacts to the DT could occur from increased common raven predation associated with the installation of a new evaporation pond and the introduction of new elevated perching sites (e.g., new transmission line towers). Biologists monitoring an onsite groundwater pump test in September 2007 noticed 15 to 20 common ravens using temporarily ponded water, an increase from two to five common ravens seen daily prior to the groundwater pump test. While this attraction is not within DT habitat, the movement of common ravens throughout the area and over potential DT habitat at the western edge of the survey area (e.g., between open water and transmission line perches) could increase the chances of a raven encountering and depredating a DT. Those impacts will be avoided or minimized, however, by implementation of a raven management plan.

Indirect impacts to the DT from potential deposition of sediment loads during heavy rain events and flooding downstream of the site, which could impact existing DT burrows outside of the survey area, would be minimized by the Project design (i.e., rerouting the desert wash and connecting to an offsite channel and grading and compacting the entire footprint of the solar array, thereby reducing onsite erosion). Similarly, indirect impacts to DT habitat by changes in drainage patterns potentially altering offsite vegetation communities would be minimized by the Project design. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's indirect impacts on DT to a level of insignificance.

State-Listed Wildlife Species – Desert Tortoise and Mohave Ground Squirrel. The potential indirect impacts on desert tortoise are discussed above. Indirect impacts to MGS could occur from increased raptor and common raven predation associated with the installation of a new evaporation pond in addition to elevated perching sites, including the tower structures, the transmission lines, and support structures, as discussed above for DT. Indirect impacts to MGS from potential deposition of sediment loads during heavy rain events and flooding downstream of the site, which could impact existing MGS habitat, would be minimized by the Project design (i.e., rerouting the desert wash and connecting to an offsite channel and grading and compacting the entire footprint of the solar array, thereby reducing onsite erosion). Similarly, indirect impacts to MGS habitat by changes in drainage patterns potentially altering offsite vegetation communities would be minimized by the Project design. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's indirect impacts on MGS to a level of insignificance.

Nonlisted, Special Status Wildlife Species. Indirect impacts could result from increased common raven and raptor predation associated with the installation of a new evaporation pond, in addition to new elevated perching sites, including the tower structures, the transmission lines, and support structures, as discussed

above for DT. Indirect impacts from potential deposition of sediment loads during heavy rain events and flooding downstream of the site, which could impact existing habitat outside of the survey area, would be minimized by the Project design (i.e., rerouting the desert wash and reconnecting the rerouted wash to its existing path north of the site with the same flow volumes and rates as at present; and grading and compacting the entire footprint of the solar array, thereby reducing onsite erosion). Similarly, indirect impacts to habitat by changes in drainage patterns potentially altering offsite vegetation communities would be minimized by the Project design. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's indirect impacts on nonlisted, special status wildlife species to a level of insignificance.

### **Wildlife Movement Corridors**

**Direct Impacts.** Construction of the Project would not result in significant direct impacts to wildlife movement corridors because no known wildlife movement corridors occur in the survey area.

**Indirect Impacts.** Based on examination of aerial photos and topographic maps of the Project vicinity, construction of the Project would not result in significant indirect impacts to wildlife movement corridors because no significant wildlife movement corridors occur in the immediate vicinity of the survey area (the 2,317-acre area within which the 2,012-acre plant site is located).

### **5.3.3.2 Operation**

Direct and indirect impacts on biological resources during the operation of the Project are discussed below.

### **Vegetation Communities**

**Direct Impacts.** Operation of the Project would not result in significant direct impacts to sensitive vegetation communities because no sensitive vegetation communities occur in the survey area.

**Indirect Impacts.** Operation of the Project would not result in significant indirect impacts to sensitive vegetation communities because there are no sensitive vegetation communities in the immediate vicinity of the survey area. The operations phase SWPPP and the DESCP will identify the Project design features and BMPs that will be used to effectively manage drainage-related issues (e.g., erosion and sedimentation) for long-term operations.

Furthermore, as shown in Section 5.2, Air Quality, the air emissions of dust, cooling tower drift and other pollutants will be quite small during operation of this Project, as a solar power plant only requires a small number of ancillary equipment items. For instance, the impacts of PM<sub>10</sub> emissions from the boilers, engine and cooling tower drift have been modeled to be at most 0.4 µg/m<sup>3</sup> on a daily basis and 0.04 µg/m<sup>3</sup> on an annual average basis along the Project's fence line. Cooling tower drift can be of concern due to salt deposition onto vegetation, which could adversely affect growth. However, salts from the cooling tower would only be a portion of these already negligible impacts, and hence the BSEP cooling tower would not result in an indirect impact to sensitive vegetation communities (even if they were present). Impacts from

other air emissions were likewise shown in Section 5.2 to be well below applicable ambient air quality health and secondary<sup>1</sup> standards during Project operations.

### **State Jurisdictional Waters**

Operation of the Project would not result in significant direct or indirect impacts to State jurisdictional waters because these effects would be reduced to insignificance by impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4.

### **Plant Species**

**Direct Impacts.** Operation of the Project would not result in significant direct or indirect impacts to nonlisted, special status plant species because these effects would be reduced to insignificance by impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4.

**Indirect Impacts.** Operation of the Project may result in indirect impacts to nonlisted, special status plant species through unauthorized access by workers. Unauthorized access by workers and their vehicles can trample and destroy individuals outside of, but immediately adjacent to, the proposed Project area. These impacts will be avoided, however, through implementation of Project avoidance and minimization measures.

### **Wildlife Species**

**Direct Impacts.** Direct impacts could result from mortality of wildlife by crushing or vehicle collisions during operation and maintenance activities. Project mitigation, especially site fencing, will minimize any potential impacts to DT as a result of Project activities. Implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's impacts on listed and special status wildlife species to a level of insignificance.

**Indirect Impacts.** Operation of the Project may result in impacts to special status wildlife species by destruction of habitat due to wildfires caused by new transmission wires, accumulation of waste material in evaporation ponds, and attraction of avian predators, such as common ravens that are known to prey on juvenile desert tortoises, by evaporation ponds and other Project components. Depending on constituent concentrations in evaporation ponds, accumulated waste material potentially could adversely affect shorebirds that stop over and use the pond during migration.

The waste constituent discharge concentrations have been determined for the evaporation ponds, and are summarized in Table 5.3-9. During ongoing coordination with the USFWS and CDFG, a request was made to address the potential adverse effects of selenium levels in the evaporation pond discharge water, on wildlife species (in particular, on migratory waterfowl). Measuring the levels at which adverse effects are observable in birds is highly variable, and depends on several factors, such as species, body weight, and

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<sup>1</sup> As stated in Table 5.2-6, National secondary standards have been set to protect "public welfare" which includes impacts to soils and vegetation. The National secondary standard for 24-hour PM<sub>10</sub> is 150 µg/m<sup>3</sup> in comparison to the 0.4 µg/m<sup>3</sup> maximum daily concentration due to the Project. Similarly, the National secondary standard for NO<sub>2</sub> is 100 µg/m<sup>3</sup> in comparison to the 0.01 µg/m<sup>3</sup> maximum annual modeled concentration from BSEP.

length of exposure, type of exposure (e.g., ingestion vs. dermal contact), the bioavailability of the compound (i.e., the ability of an organism to take up and store the compound), as well as the exposure concentration.

**Table 5.3-9 Waste Constituent Concentrations at Points within the Process and Discharge to the Evaporation Ponds (all values in mg/L or ppm)**

Component	Mean Well Water Concentration	Cooling Tower Blowdown 90% Demin, 10% Raw Water at 15 Cycles	Ion Exchange Regeneration with H <sub>2</sub> SO <sub>4</sub> and NaOH	Evaporation Pond Feed Concentration
Calcium (total)	47	141	538	369
Magnesium (total)	11	33	126	86
Sodium (total)	78	234	892	612
Potassium (total)	4.1	12.2	47	32
Iron (total)	0.047	0.135	0.538	0.366
Ammonia	0.038	0.120	0.435	0.301
Aluminum (total)	0.023	0.075	0.263	0.183
Zinc (total)	0.012	0.036	0.137	0.094
Boron (total)	0.18	0.540	2.059	1.411
Chloride	15.5	46.65	177	122
Sulfate	118	777.8	1350	1106
Nitrate	1.183	3.560	13.533	9.280
M-Alkalinity	207	142.1	2368	1419
HCO <sub>3</sub> (bicarbonate alkalinity)	257	204.2	147 <sup>(3)</sup>	141 <sup>(3)</sup>
Fluoride	0.459	1.380	5.251	3.600
Cyanide (total)	0.007	0.011	0.080	0.050
Silica	33.3	99.9	381	261
Silicon	15.7	24	180	113
Phosphate (total)	0.019	0.060	0.217	0.150
Phosphorous (total as P)	ND	0	0	0
Arsenic (total)	0.0035	0.005	0.040	0.025
Strontium (total)	0.78	1.170	8.923	5.617
Selenium (total)	0.00039	0.0006	0.0045	0.0028

**Table 5.3-9 Waste Constituent Concentrations at Points within the Process and Discharge to the Evaporation Ponds (all values in mg/L or ppm)**

Component	Mean Well Water Concentration	Cooling Tower Blowdown 90% Demin, 10% Raw Water at 15 Cycles	Ion Exchange Regeneration with H <sub>2</sub> SO <sub>4</sub> and NaOH	Evaporation Pond Feed Concentration
pH	8	7.70 <sup>2</sup>	6 – 9	6 - 9
Suspended Solids	0	0	----	----
Total Dissolved Solids	550 <sup>1</sup>	1590	8689	5662
98% Sulfuric Acid	0	332	1981	----
50% Sodium Hydroxide	0	0	417	----
<sup>1</sup> Use maximum of 3 wells at 470 ppm, 470 ppm and 550 ppm <sup>2</sup> Sulfuric acid addition to circulating water system to establish pH = 7.70 <sup>3</sup> Assume 95% CO <sub>2</sub> /HCO <sub>3</sub> removed by degasifier				

The U.S. Environmental Protection Agency (EPA) has published Ecological Soil Screening Levels (Eco-SSL) for selenium (2007). Although the screening levels are based on soil concentrations, the units of measure used are mg/kg, or parts per million (ppm), whereas the BSEP waste constituent concentrations are in units of mg/L (also equivalent to ppm). The Eco-SSL provides toxicology test results for bird species at a “no observable adverse effect level,” (NOAEL) and at a “lowest observable adverse effect level” (LOAEL). Based on the use of surrogate species (i.e., selecting migratory birds such as the mallard [*Anas platyrhynchos*] and black-crowned night heron [*Nycticorax nycticorax*] from the Eco-SSL list of target test species), the NOAEL ranged from 0.055 ppm to 4.16 ppm (for mallard in both test cases), while the LOAEL ranged from 0.11 ppm to 8.46 ppm (for mallard in both test cases). The waste constituent concentrations that have been calculated as being discharged into the evaporation pond are 0.0028 ppm for selenium, which would be approximately 20 times lower than the most sensitive NOAEL receptor response published by the EPA (2007). Therefore, it is not anticipated that the selenium concentrations in the evaporation pond would pose an adverse condition to migratory birds. Ongoing monitoring of the evaporation ponds, as described in Section 5.3.4, would track the waste constituent concentrations of any compound of concern.

Overall, implementation of the impact avoidance, minimization, and mitigation measures outlined in Section 5.3.4 will reduce the Project's indirect impacts on special status species to a level of insignificance.

### **Wildlife Corridors**

**Direct Impacts.** Construction of the Project would not result in significant direct impacts to wildlife movement corridors because no known wildlife movement corridors occur in the survey area.

**Indirect Impacts.** Based on examination of aerial photos and topographic maps of the Project vicinity, construction of the Project would not result in significant indirect impacts to wildlife movement corridors because no significant wildlife movement corridors occur in the immediate vicinity of the survey area.

### 5.3.3.3 Cumulative Impacts

Although BSEP impacts when considered individually may not be significant, the Project must also be considered in terms of its contribution, together with the impacts of other past, present, and future projects in the region, to the cumulative impacts on special status species habitat in the region. If the Project's incremental contribution to the loss of special status species habitat were to be substantial, then the Project may be considered to have significant cumulative impacts. The cumulative evaluation focuses on activities located within/near the Fremont Valley.

Only one other large development project, the Pine Tree Wind Development Project, is currently planned in the immediate vicinity of the BSEP. 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 BSEP. Although the Pine Tree project is in relatively close proximity to the BSEP, it is situated at a higher elevation, and will primarily impact different habitats than the BSEP. Additionally, the Pine Tree project obtained take authorization under their project-specific Biological Opinion and Section 2081 Incidental Take Permit, and have fully mitigated impacts to DT, MGS and WBO. As such, impacts associated with the BSEP do not contribute to a significant cumulative effect when added to the effects of the Pine Tree project.

An additional project within the region, the LADWP Barren Ridge-Castaic Transmission Project, is currently in the early stages of the environmental review process. This project proposes to build a new transmission line from the Barren Ridge Switching Station to the Castaic Power Plant near Santa Clarita in Los Angeles County. This new transmission line project would be located to the southwest of the BSEP, and would cross desert scrub communities that are of relatively higher quality than the small amount of desert scrub associated with the BSEP. Due to its proximity to the BSEP, it is assumed that the portions of the Barren Ridge-Castaic Transmission Project near the BSEP site 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 take authorization under their project-specific Biological Opinion and Section 2081 Incidental Take Permit, and have fully mitigated impacts to desert tortoise, MGS, and WBO. Therefore, it is anticipated that the Barren Ridge-Castaic Transmission Project would not contribute to a significant cumulative effect when added to the effects of the BSEP.

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 this area is not likely to further reduce the amount of available habitat for special status species such as desert tortoise, Mohave ground squirrel, and burrowing owl. With implementation of BSEP transmission line route Option 1, a small area of native habitat (5.0 acres) west of SR-14 would be permanently impacted by Project activities. BSEP 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 special status species will be mitigated by the requirement for the Project to acquire and permanently protect suitable habitat for these species offsite.

The CEC identifies a possible future concern over sufficient, suitable, and contiguous mitigation land for current and future projects in this area. However, the BSEP only requires a limited number of mitigation acres and therefore should not significantly contribute to this concern. Providing compensation in the form of permanently protected offsite mitigation acreage, combined with other mitigation measures described

below to minimize the effects of Project activities on biological resources, will reduce the Project's potential cumulative biological impacts to a level that is less than significant.

#### **5.3.4 Mitigation Measures**

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 the greatest extent feasible. Those measures will include:

- BIO-1:** All temporary and permanent impact areas will be surveyed for DT and WBO within 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.
- BIO-2:** The construction contractor(s)/crew(s) will be informed 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 BRMIMP. 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.
- BIO-3:** Construction crews and contractors will be responsible for working around 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.
- BIO-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.
- BIO-5:** New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area. 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 or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
- BIO-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.
- BIO-7:** BMPs will be employed to prevent loss of habitat 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.

- BIO-8:** Fueling of equipment will take place within existing paved roads and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary.
- BIO-9:** Construction activity will be monitored by a qualified biologist to ensure compliance with avoidance and minimization measures.
- BIO-10:** The project owner is supportive of funding a monitoring program to document potential nesting ravens. The details of the funding mechanism and monitoring will be coordinated with the USFWS, CDFG and CEC prior to initiation of the Project.
- BIO-11:** A BRMIMP will be created to comprehensively describe avoidance, minimization, and mitigation measures; document their implementation; and monitor their effectiveness.
- BIO-12:** The introduction of exotic plant species will be controlled by implementation of measures described in the BRMIMP.

#### 5.3.4.1 Construction

##### **Resource-specific Avoidance, Minimization, and Mitigation Compensation Measures**

Resource-specific impact avoidance, minimization, and mitigation measures for Project effects that were determined to be potentially significant are discussed below. Incorporation of these measures would reduce potentially significant measures to below a level of significance.

**Vegetation Communities.** No mitigation is required to compensate for nonsensitive vegetation that would be directly impacted by the Project (see below for mitigation required to compensate for impacts to the vegetation communities that are considered State jurisdictional waters or suitable habitat for listed species).

**Sensitive Vegetation Communities.** No sensitive vegetation communities would be permanently or temporarily impacted by Project-related activities; therefore, no mitigation is required.

**State Jurisdictional Waters.** Impacts to approximately 13.7 acres of State jurisdictional waters (onsite dry desert washes) would require review and approval by CDFG and mitigation developed in consultation with this agency. The onsite dry desert washes will be rerouted as part of the Project design. The eastern wash will be rerouted along the southern and eastern edge of the plant site, while the western wash will be rerouted through the plant site before connecting with the primary rerouted wash on the eastern edge of the plant site. Impacts to the onsite washes would be mitigated at a 1:1 ratio through revegetation of the rerouted wash on the southern and eastern edge of the plant site. Additionally, the existing portion of the western wash outside of the plant site, to the west of the railroad tracks, will be enhanced with suitable native plantings.

**Special Status Plants.** Mitigation for rare plants, if required, will be based on the results of spring 2008 surveys. Appropriate mitigation would be provided and will include avoidance, where possible, or other conservation measures.

**Special Status Wildlife.** Anticipated mitigation requirements for the Project’s permanent impacts to habitats occupied, or presumed occupied, by special status wildlife species (DT, MGS, and WBO) are outlined in Table 5.3-10. Two sets of potential mitigation requirements are shown in Table 5.3-10, based on the anticipated impacts associated with transmission line route Options 1 and 2. Mitigation for permanent impacts to these species is generally provided by acquiring and conserving an in-kind habitat of equal or greater value than the habitat impacted.

**Table 5.3-10 Anticipated Mitigation for Impacts to Potential Habitat for Special Status Wildlife Species**

Listed Species	Mitigation Ratio	Total Impact <sup>1</sup>	Total Mitigation Acreage
<b><i>With Transmission Line Option 1</i></b>			
Desert Tortoise	1:1	5.0	5.0
Mohave Ground Squirrel	2:1	5.0	10.0
Western Burrowing Owl	6.5 - 19.5:1 <sup>2</sup>	3 pairs	19.5 - 58.5
Total			29.5 – 68.5
<b><i>With Transmission Line Option 2</i></b>			
Desert Tortoise	1:1	5.8	5.8
Mohave Ground Squirrel	2:1	5.8	11.6
Western Burrowing Owl	6.5 - 19.5:1 <sup>2</sup>	3 pairs	19.5 - 58.5
Total			31.1 – 70.1
<sup>1</sup> The temporary impacts are considered permanent in this desert ecosystem.			
<sup>2</sup> Per CBOC/CDFG guidelines.			

Avoidance and minimization measures for temporary indirect impacts to habitat of special status wildlife species will be achieved through onsite monitoring of construction activities in areas with the potential to support these species.

Mitigation totals may be lower than 70.1 acres, depending on whether habitats suitable for these species overlap one another, and which transmission line option is selected. Additional discussion of the mitigation required for DT, MGS and WBO is presented below.

Desert Tortoise. Avoidance, minimization, and mitigation measures for the DT would include:

- DT-1:** Prior to the onset of construction, the entire plant site (east of the railroad tracks) will be fenced with a permanent tortoise-proof fence to keep tortoises in habitat adjacent to the site from entering the 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 1 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 tortoise from digging under the fence. Tortoise-proof gates will be established at all site entry points. Any utility corridors and tower

locations will be temporarily fenced to prevent tortoise 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 tortoises are harmed. Following installation, the fencing will be inspected monthly and during all major rainfall events. Any damage to the fencing will be repaired immediately.

- DT-2:** A clearance for any DTs that may be on the 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. A minimum of two clearance passes must be completed and these must coincide with heightened tortoise activity from late March through May and during October. This will maximize the probability of finding all tortoises. It is anticipated that no or very few tortoises will be found. Any tortoises found will be translocated to a location outside of the survey area using techniques approved by Agency Representatives. Translocation 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 tortoises will be translocated 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 translocate tortoises (i.e., past early April), then continued searches for tortoises would include temporarily affixing found tortoises with transmitters for ease of relocating them and translocating 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 tortoises will be removed from fenced construction zones to artificial burrows outside the temporary fencing. Tortoises 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 tortoises will be temporarily monitored to ensure that their behaviors resulting from translocation do not affect their survival.
- DT-4:** Following site clearance, a report will be prepared by the Authorized Biologist (see BIO-9) to document the clearance surveys, the capture and release locations of all tortoises found, individual tortoise data, and other relevant data. This report will be submitted to Agency Representatives.
- DT-5:** An Authorized Biologist (AB) and Biological Monitor(s) (BM) 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 tortoise protection measures. Work will proceed only after hazards to the DT are removed and the species is no longer at risk, or the individual has been moved from harm's way by the AB. The AB and BM will have in their possession a copy of all the compliance measures while work is being conducted on site.
- DT-6:** The proponent will submit the names and statement of qualifications of all proposed ABs and BMs to USFWS, CDFG and CEC (Agency Representatives) for review and approval at least 30 days prior to initiation of any tortoise 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 DTs when necessary. Biological monitors will ensure compliance

with the protection measures but will not be allowed to survey for or handle DTs. 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:** Personnel will utilize established roadways (paved or unpaved) in traveling to and from the survey area and also will utilize existing tracks onsite whenever possible. Cross-country vehicle and equipment use outside designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of DTs, a speed limit of 25 miles per hour will be established for travel within DT habitat.
- 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 site.
- DT-11:** As much as is feasible, parking and storage will occur within the tortoise 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.
- 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 right-of-way, 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 that water does not puddle for long periods of time and attract DTs, common ravens, and other wildlife to the 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 USFWS CDFG Field Offices. 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. Tortoises fatally injured as a result of Project-related activities will be submitted for necropsy as outlined in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoises (*Gopherus agassizii*) (Berry 2003). Tortoises with fewer major injuries will be transported to a nearby qualified veterinarian for treatment at the expense of the 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 worker awareness training, clearance/preactivity surveys, monitoring activities, and any observed DTs including injuries and fatalities.

In addition to the measures discussed above, the Project owner will compensate for impacts to DT habitat in the area west of the plant site potentially affected during construction activities related to either of the two transmission line options. This will be accomplished either by land acquisition acceptable to USFWS, CDFG, and CEC, or an assessed financial contribution calculated based on the final construction footprint. Direct permanent and temporary impacts to 5.0 acres (Option 1) or 5.8 acres (Option 2) of potential DT habitat would be mitigated at a 1:1 ratio (Table 5.3-10). Habitat conservation generally consists of the offsite purchase of in-kind habitat of equal or greater value than that impacted. Funding for the long-term management of the land preserved will also be required.

Mohave Ground Squirrel. As noted above, impacts to potential MGS habitat would require mitigation. On October 15, 2007, Dr. Leitner conducted a site evaluation of potential MGS habitat in the western portion of the survey area, primarily west of SR-14 where portions of both transmission line options would be constructed. He concluded that the habitat in this area is of moderate quality, and a mitigation ratio of 2:1 would be appropriate. The Project therefore proposes to compensate for the potential direct permanent and temporary loss of 5.0 acres (Option 1) or 5.8 acres (Option 2) of potential MGS habitat (see Table 5.3-10) at a ratio of 2:1. Funding for the short-term enhancement and long-term management of the compensation land also will be provided on a per acre basis. Because DT, MGS, and WBO typically co-occur within the same habitat type, and the rare plants with moderate potential to occur within the survey area also share the same habitat requirements, the Project intends to purchase compensation lands that also would support DT, MGS, WBO and these rare plants, to mitigate impacts to both wildlife species and special status plants (if any).

As with DT, to help avoid and minimize impacts to the species, a BM should be onsite during all construction activities in potential MGS habitat. Addressing potential MGS-related concerns will be part of the biological portion of the WEAP mentioned above, which will be implemented as part of the CEC-required BRMIMP. Trash and food items should be removed from the Project site daily and disposed of properly to avoid attracting ravens, a common predator of the MGS. Monthly and final compliance reports should be provided to CDFG and other applicable resource agencies documenting the effectiveness of mitigation measures and the level of take associated with the BSEP.

Western Burrowing Owl. Avoidance and minimization of impacts to WBO will consist of the following:

- 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 WBOs (may be combined with DT preconstruction surveys).
- WBO-2:** No disturbance will occur within 160 feet of occupied burrows during the non-breeding 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 CDFG verifies through noninvasive methods either that 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 owl.
- WBO-3:** WBOs within the temporary or permanent impact areas and a 160-foot buffer will be excluded from active burrows during the non-breeding 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, as per guidelines from the CBOC (1993) and CDFG Memorandum (1995). A minimum of 6.5 acres of foraging habitat for WBO will be preserved for each pair impacted. After burrows are confirmed to no longer be in use (one 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. WBOs 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 BRMIMP.
- WBO-6:** Trash and food items will be removed from the Project 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 CDFG and other applicable resource agencies documenting the effectiveness of mitigation measures and the level of take associated with the Project. Biological issues also will be covered in the ongoing compliance reporting required by the CEC.

The CBOC's mitigation guidelines used by CDFG recommend that mitigation for impacts to burrowing owls 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 CDFG mitigation guidelines recommend a ratio of 6.5 to 19.5 acres per pair of burrowing owls (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 CDFG. Three burrowing owls have been

documented to occur within the plant site in different areas, although one individual may have been depredated prior to the final survey. Assuming that each detected WBO is part of a mated pair and therefore the plant site supports three burrowing owl pairs, mitigation is anticipated to be 19.5 to 58.5 acres of suitable habitat at a location approved by CDFG. Funding for the long-term management of the land preserved would also be provided (on a per-acre-of-impact basis).

Other Special Status Wildlife Species. If construction is scheduled to occur during nesting season, a nesting bird survey (in addition to the WBO survey) will be conducted within permanent and temporary impact areas. If nesting birds, including but not limited to special status species, are detected in these areas, the nest will be flagged and no construction activity will take place near the nest until nesting is complete (nestlings have fledged or nest has failed) or the CDFG, USFWS, and the CEC agree that construction can proceed with the incorporation of agreed-to monitoring measures.

If American badger dens are discovered during DT or WBO preconstruction surveys, a one-way trap door will be installed to passively exclude the badger from the den. American badgers are known to use several dens in a wide area, frequently moving between dens. Therefore, all potential badger dens will be fitted with the one-way trap doors to encourage badgers to move offsite. After 48 hours post-installation, the den will be excavated and collapsed, following the same protocol as with WBO burrows. These dens will be collapsed prior to construction of the DT fence, to allow badgers the opportunity to move offsite without impediment. Alternatively, a qualified biologist will trap and remove badgers from occupied dens and translocate them off-site into appropriate habitat.

#### 5.3.4.2 Project Operations

General impact avoidance and minimization measures that would apply to Project operations are presented below.

- All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas.
- Fueling of equipment will take place within existing paved roads, and not within or adjacent to drainages or native desert habitats. Maintenance equipment will be checked for leaks prior to operation and repaired as necessary.
- The Project owner is supportive of funding a monitoring program to document potential nesting ravens. The details of the funding mechanism and monitoring will be coordinated with the USFWS prior to initiation of the Project.
- The Project's evaporation ponds have the potential to attract migratory birds. Therefore, evaporation ponds will be monitored, and the evaporation pond water will be tested periodically (e.g., for selenium) throughout the life of the solar plant.

#### 5.3.5 References

Berry, K.H., 2003. Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-roaming Desert Tortoises (*Gopherus agassizii*). Revised June 2003.

California Burrowing Owl Consortium (CBOC), 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April 1993.

California Department of Fish and Game (CDFG), 1995. Staff Report on Burrowing Owl Mitigation. Memorandum dated October 17, 1995.

CDFG, 2003. California Department of Fish and Game Wildlife Habitat Data Analysis Branch. The Vegetation Classification and Mapping Program- List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database. Available at <http://www.dfg.ca.gov/whdab/pdfs/natcomlist.pdf>. September.

CDFG, 2007. California Department of Fish and Game. RareFind 3 computer program. California Natural Diversity Database (CNDDDB) Search for Pine Tree Project Area. California Department of Fish and Game, State of California Resources Agency. Sacramento, California.

California Native Plant Society (CNPS), 2001. CNPS Botanical Survey Guidelines. Pages 38-40 in California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (D.P. Tibor, editor). Sixth edition. Special Publication No. 1, California Native Plant Society, Sacramento, 387 pp.

CNPS, 2007. Inventory of Rare and Endangered Plants of California, California Native Plant Society, Sacramento, California.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. U.S. Department of Interior. FWS/OBS 79/31, 1979.

EDAW, Inc. (EDAW), 2004. Biological Technical Report/Biological Assessment for the Pine Tree Wind Development Project, Kern County, California. Draft September 2004.

EDAW, 2007a. Project Beacon Botanical Survey Report, Kern County, California. August 2007.

EDAW, 2007b. Report Summarizing Results of the Proposed Project Beacon Desert Tortoise Presence/Absence Surveys. August 2007.

EDAW, 2007c. Report Summarizing Results of the Proposed Project Beacon Burrowing Owl Presence/Absence Surveys. August 2007.

Faull, M. R., 2004. Regional Endemism in the Northwestern Mojave Desert of California as Represented by Red Rock Tarplant (*Deinandra arida*). California State Parks, Mojave Desert Sector, 43779 North 15<sup>th</sup> Street West, Lancaster, California 93534. Oral Presentation. March.

Harris, J. H., and P. Leitner, 2005. Long-Distance Movements of Juvenile Mohave Ground Squirrels, *Spermophilus mohavensis*. Southwestern Naturalist, 50(2):188-196.

Holland, R., 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame Heritage Program, State of California Department of Fish and Game.

Karl, A., 2007. Personal communication with Lyndon Quon, regarding American Badger (*Taxidea Taxus*) Distribution within the Region.

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

Sawyer, J. O., and T. Keeler-Wolf, 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California.

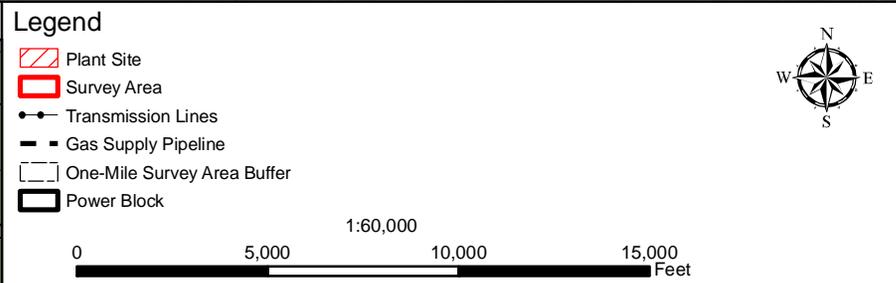
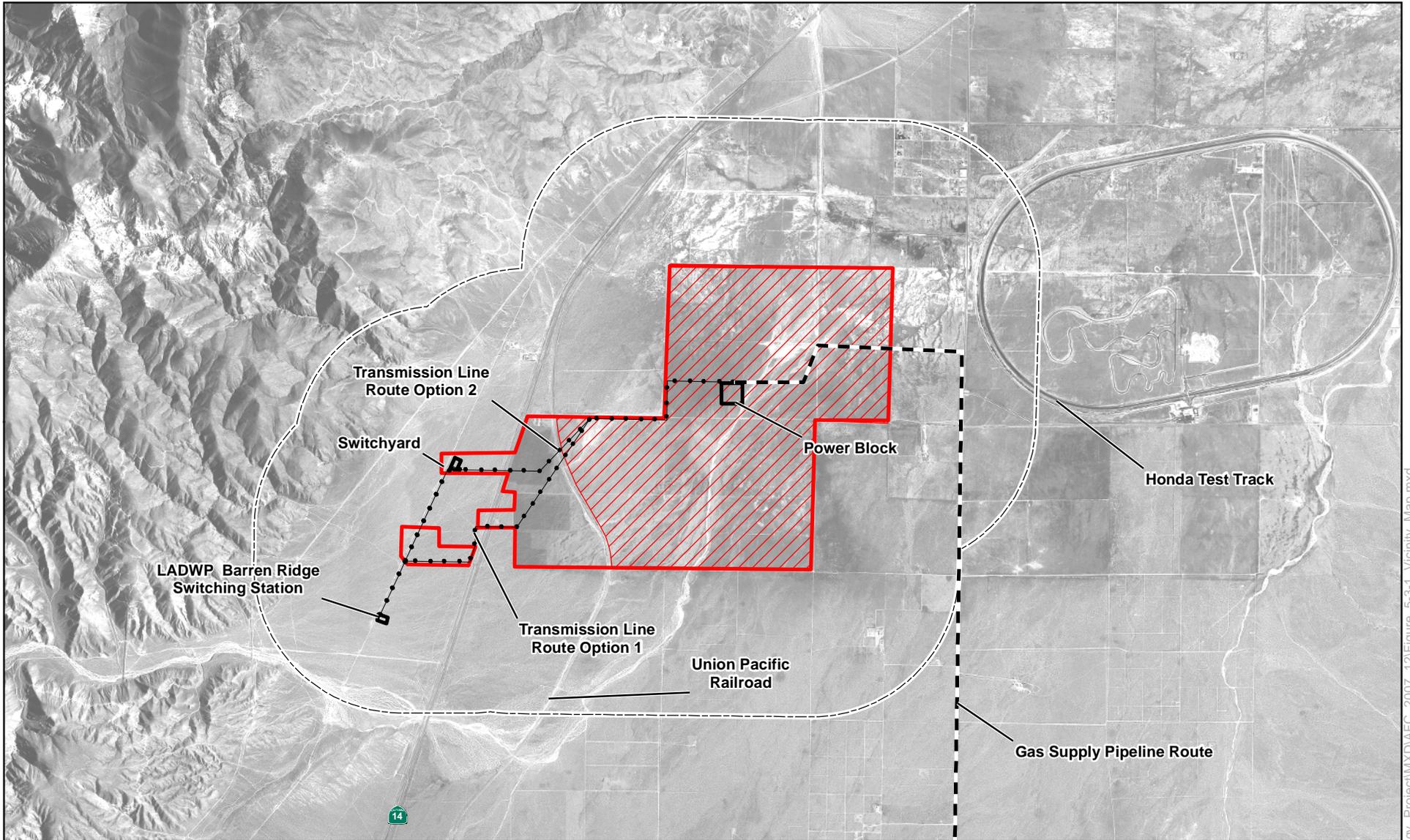
U.S. Bureau of Land Management, 2005. Final Environmental Impact Report and Statement for the West Mojave Plan. U.S. Bureau of Land Management, Moreno Valley, California.

U.S. Department of Agriculture, 2007. Natural Resources Conservation Service Web Soil Survey. Available at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

U.S. Environmental Protection Agency (EPA). 2007. Ecological Soil Screening Levels for Selenium. Interim Final. OSWER Directive 9285.7-72. Office of Solid Waste and Emergency Response. July.

U.S. Fish and Wildlife Service (USFWS), 1992. Field Survey Protocol for Any Non-Federal Action That May Occur within the Range of the Desert Tortoise.

USFWS, 2007. National Bald Eagle Management Guidelines. May 2007.



**Beacon Solar Energy Project**

**Figure 5.3-1**  
**Plant Site and Survey Area**

Source: EDAW 2007; TetraTech 2007; WorleyParsons 2007;

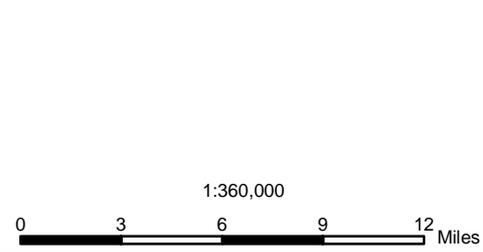
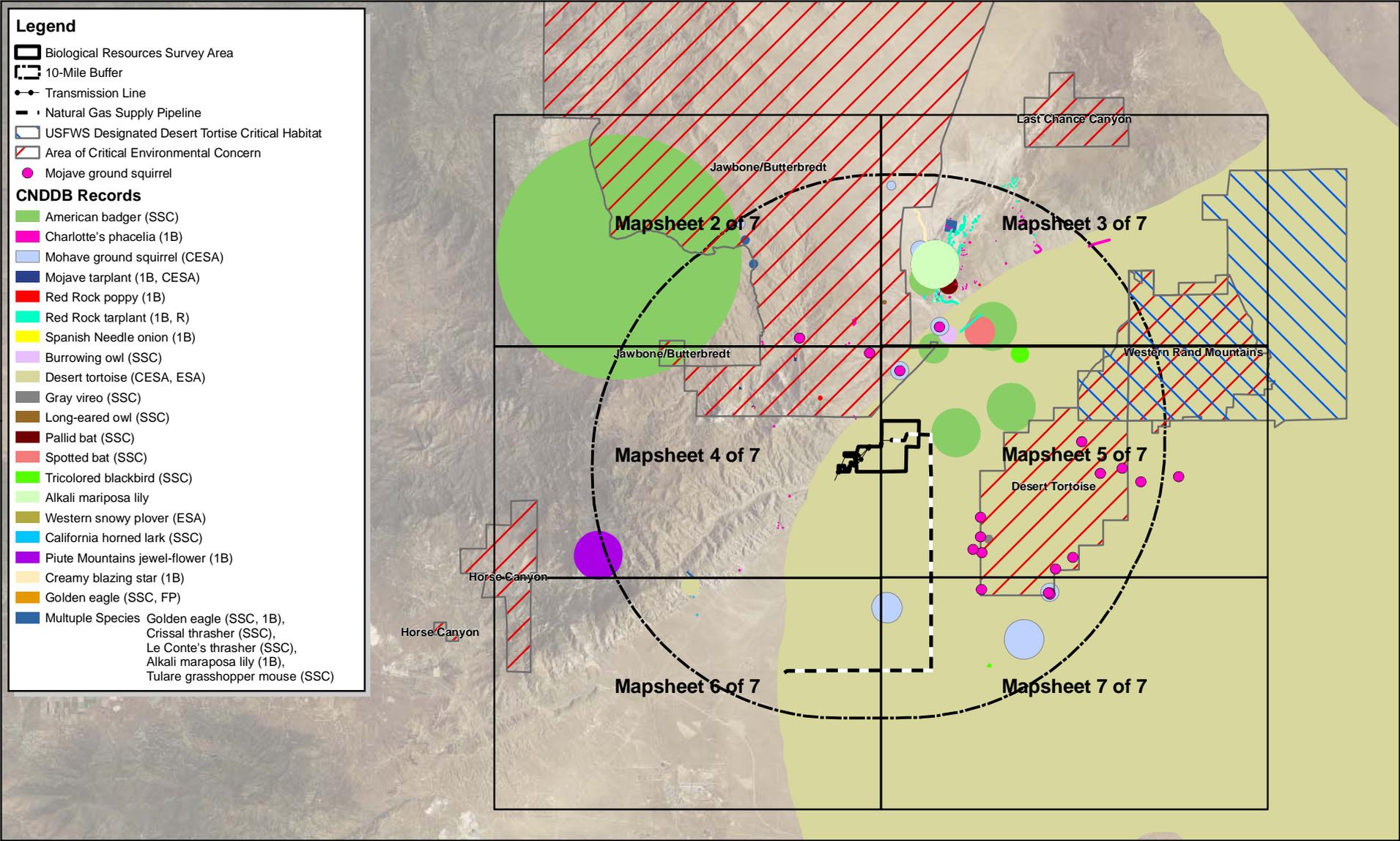
**Beacon Solar**

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Project: 10056-014  
Date: March 2008



**Beacon Solar Energy Project**

**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 1 of 7

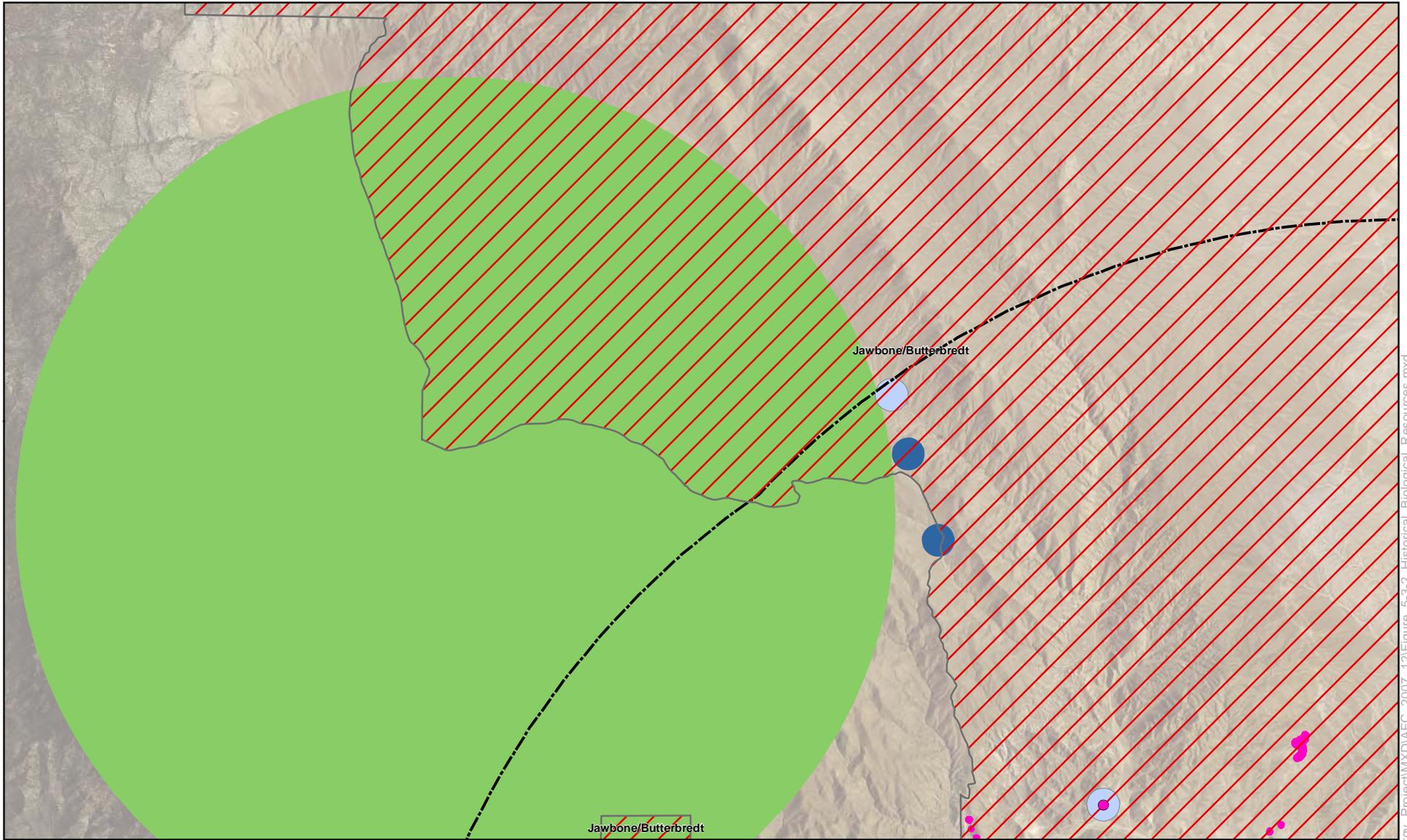
Source: NAIP 2005; EDAW 2007;  
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 Kern County 2007

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Project: 10056-014  
 Date: March 2008

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See Mapsheet 1 of 7 for Legend

A north arrow is positioned above a scale bar. The scale bar is marked from 0 to 4 miles and includes the text '1:100,000'.

**Beacon Solar Energy Project**

**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 2 of 7

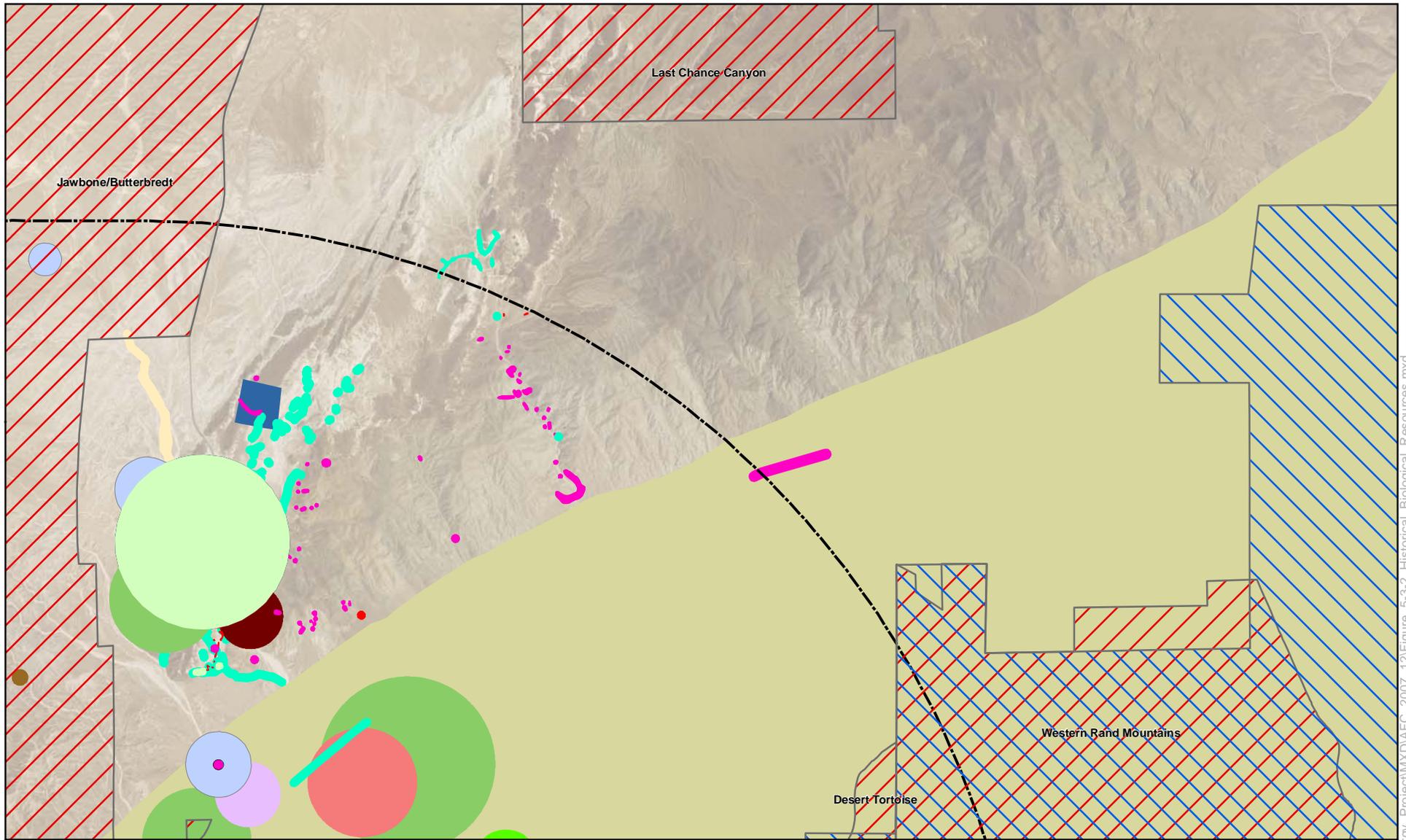
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Project: 10056-014  
 Date: March 2008

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See Mapsheet 1 of 7 for Legend

1:100,000

**Beacon Solar Energy Project**

**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 3 of 7

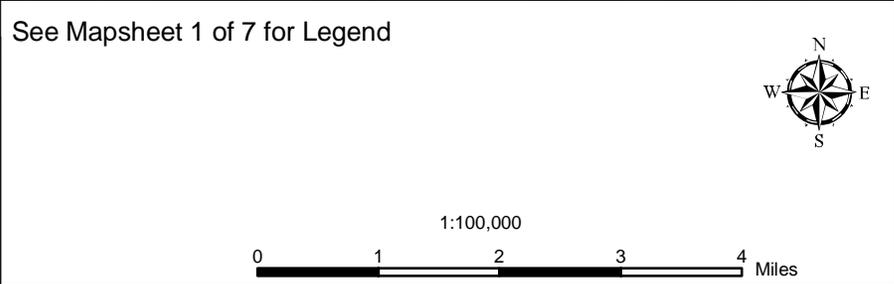
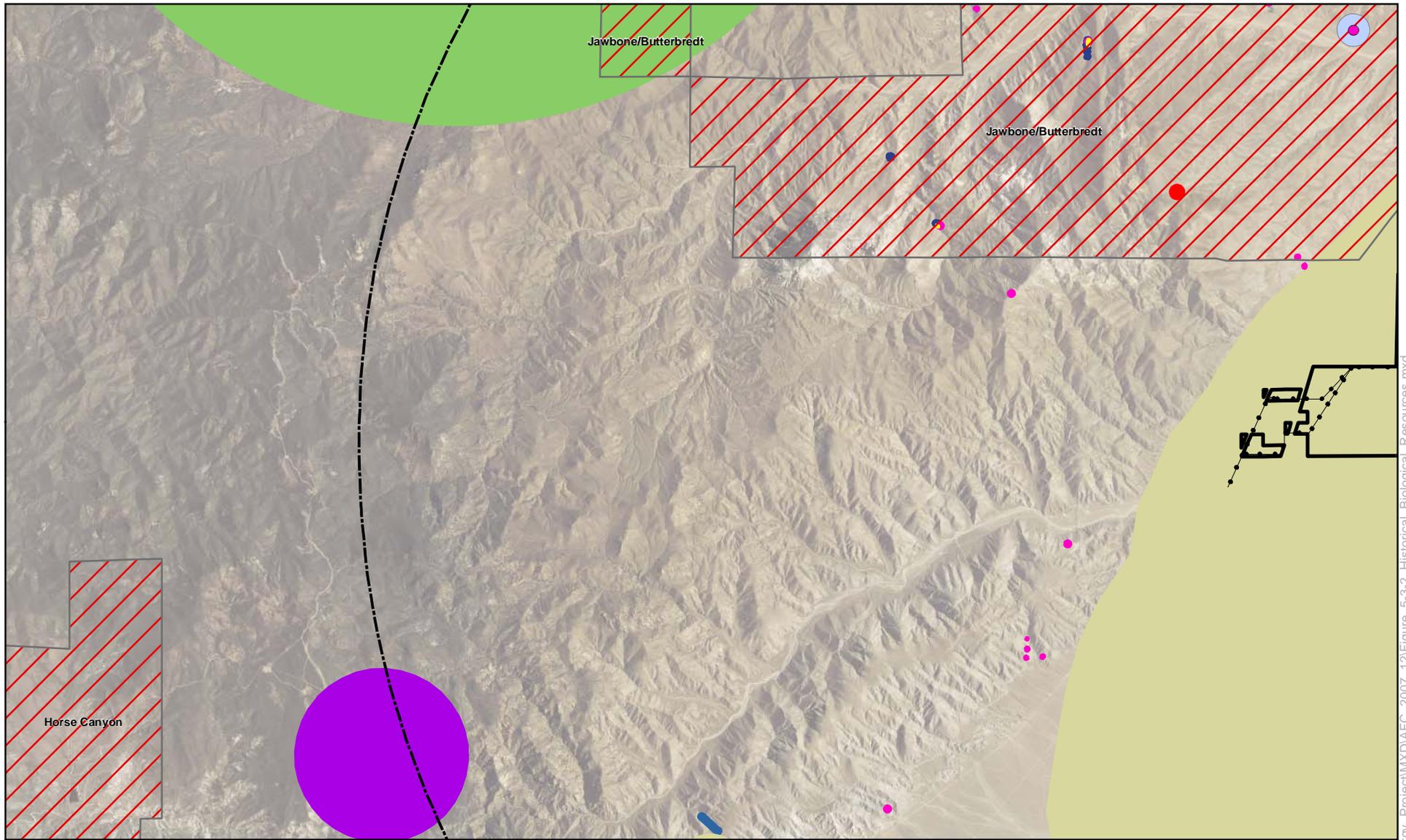
Source: NAIP 2005; EDAW 2007;  
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 Kern County 2007

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Project: 10056-014  
 Date: March 2008

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**Beacon Solar Energy Project**

**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 4 of 7

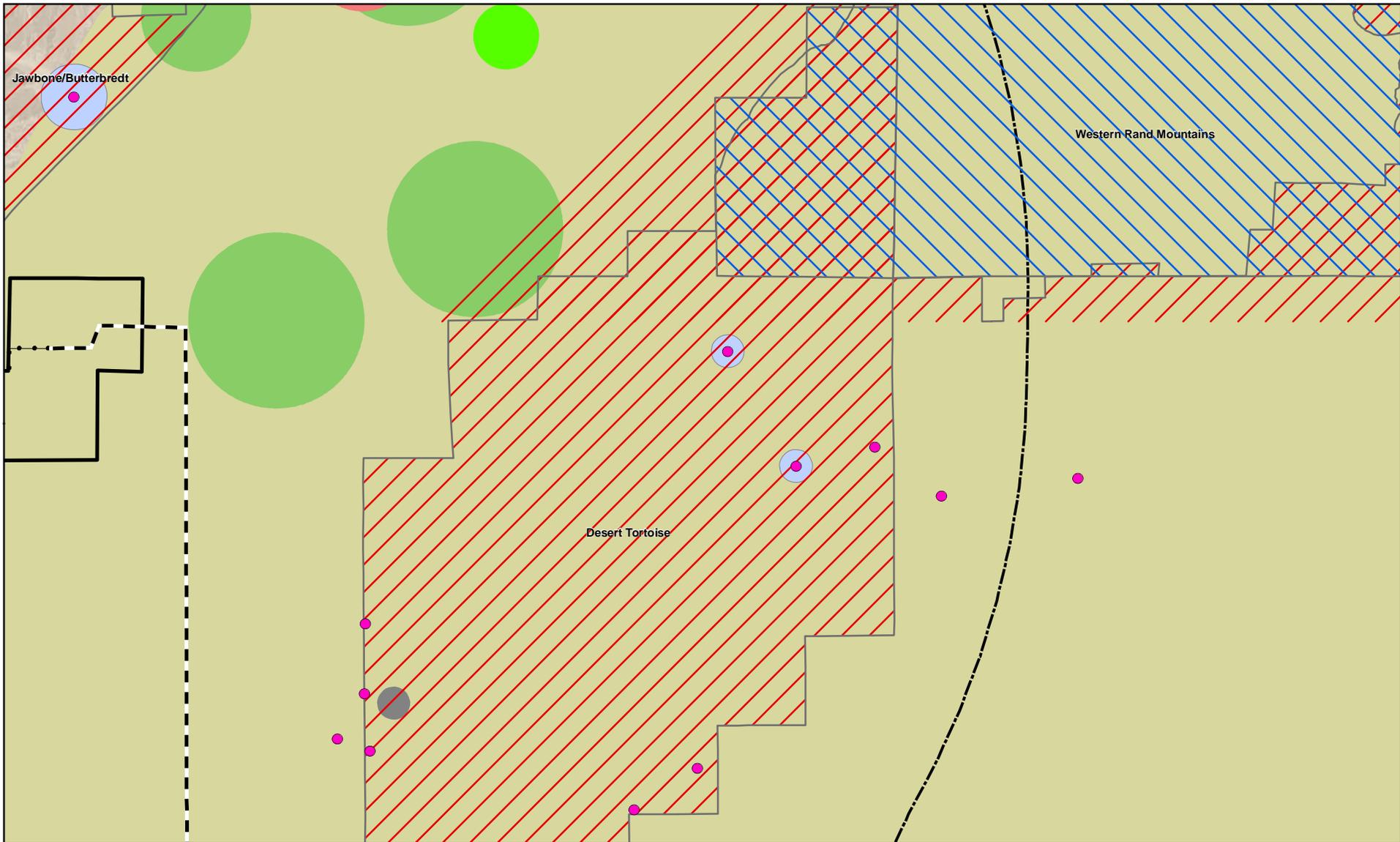
Source: NAIP 2005; EDAW 2007;  
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 Kern County 2007

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Project: 10056-014  
 Date: March 2008

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See Mapsheet 1 of 7 for Legend

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**Beacon Solar Energy Project**

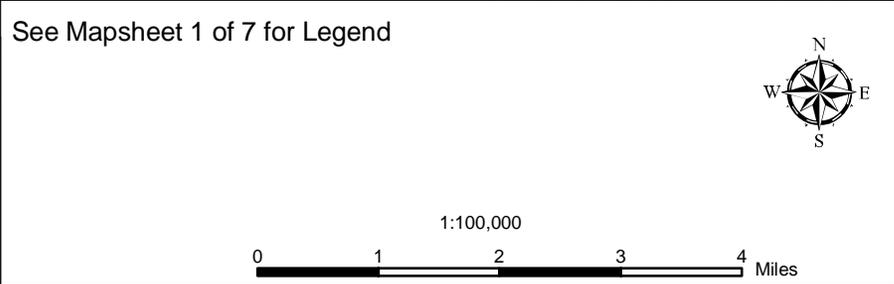
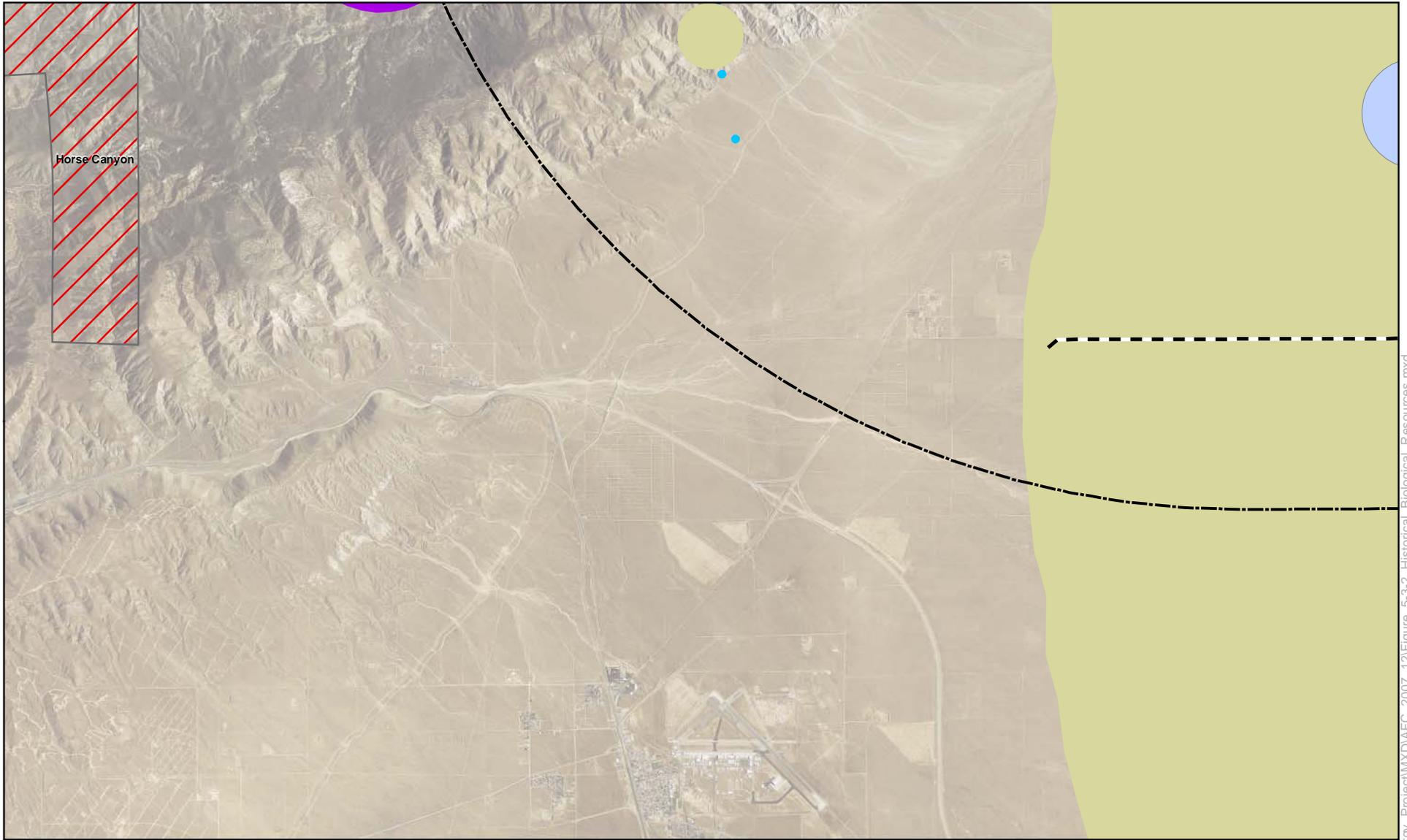
**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 5 of 7

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

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 Date: March 2008



**Beacon Solar Energy Project**

**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 6 of 7

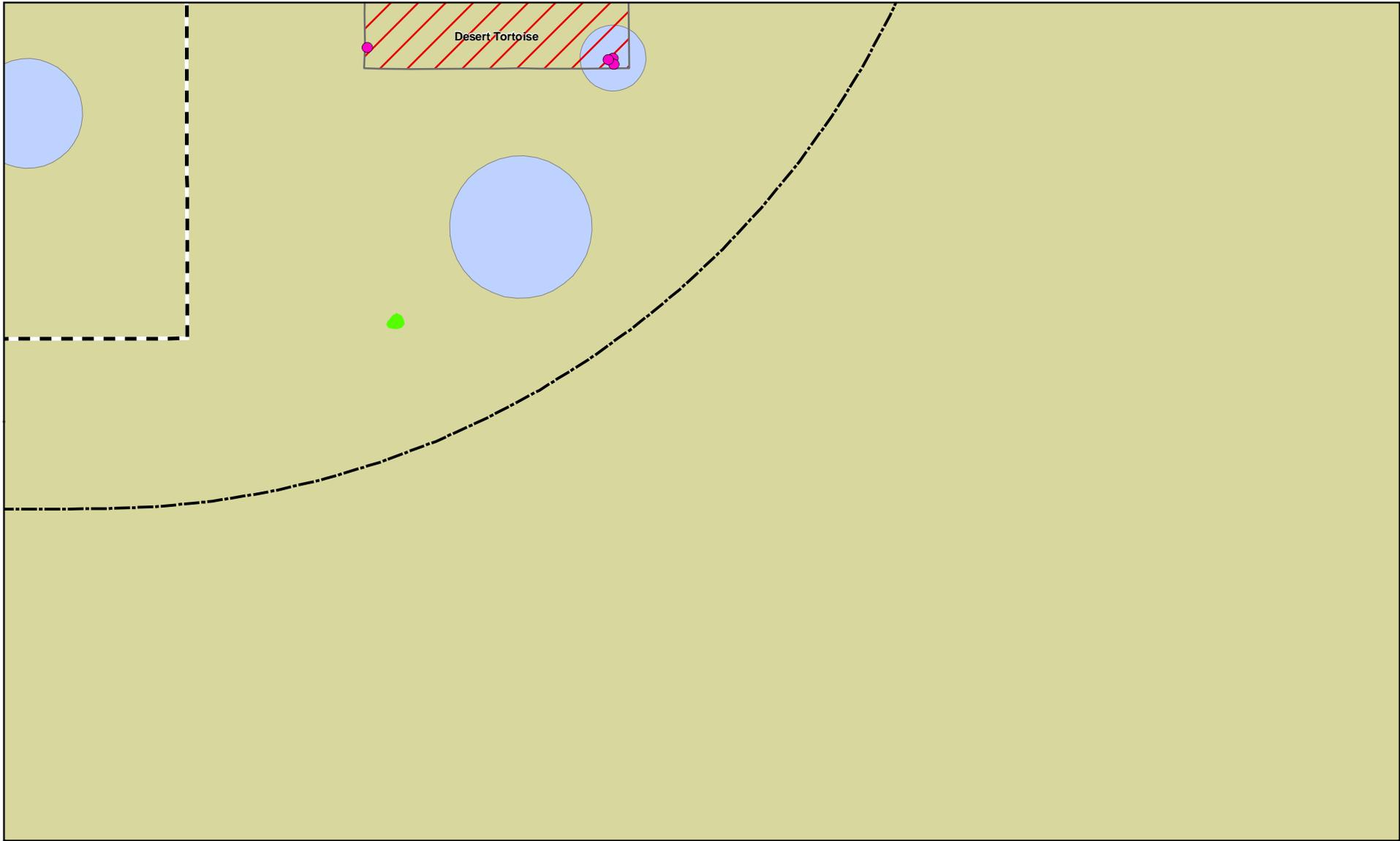
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ENSR | AECOM

Project: 10056-014  
 Date: March 2008

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See Mapsheet 1 of 7 for Legend

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**Beacon Solar Energy Project**

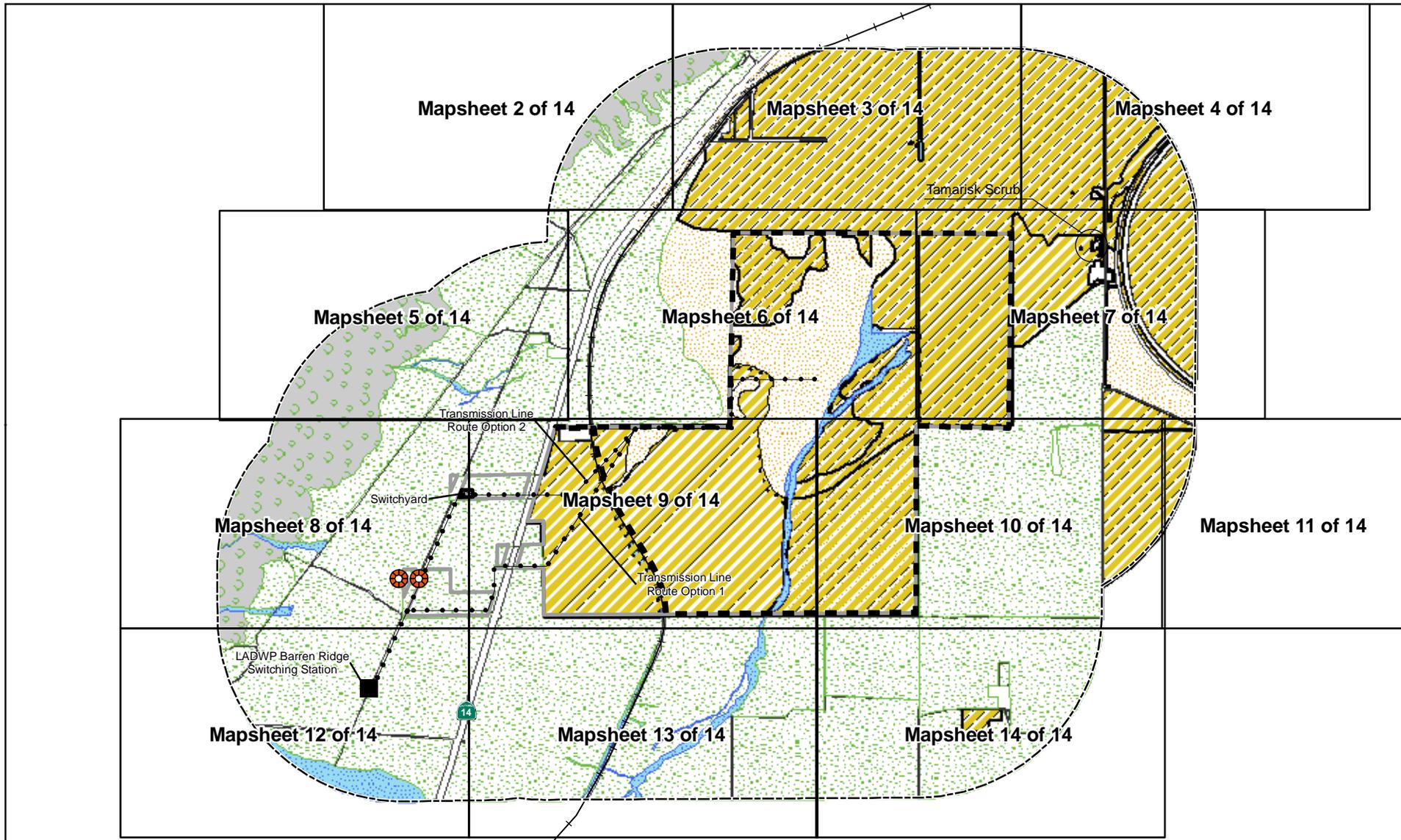
**Figure 5.3-2**  
**Historical Biological Resources**  
 Mapsheet 7 of 7

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

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 Date: March 2008



**Legend**

	Plant Site Boundary		Fallow Agricultural - Disturbed Atriplex Scrub
	Survey Area		Fallow Agricultural - Ruderal
	One-Mile Survey Area Buffer		Mojave Creosote Bush Scrub
	Railroad		Mojave Desert Wash Scrub
	Transmission Line		Mojave Mixed Woody Scrub
	Switchyard		Tamarisk Scrub
	Joshua Tree Locations		Developed

1:48,000

0 0.5 1 1.5 2 Miles

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 1 of 14

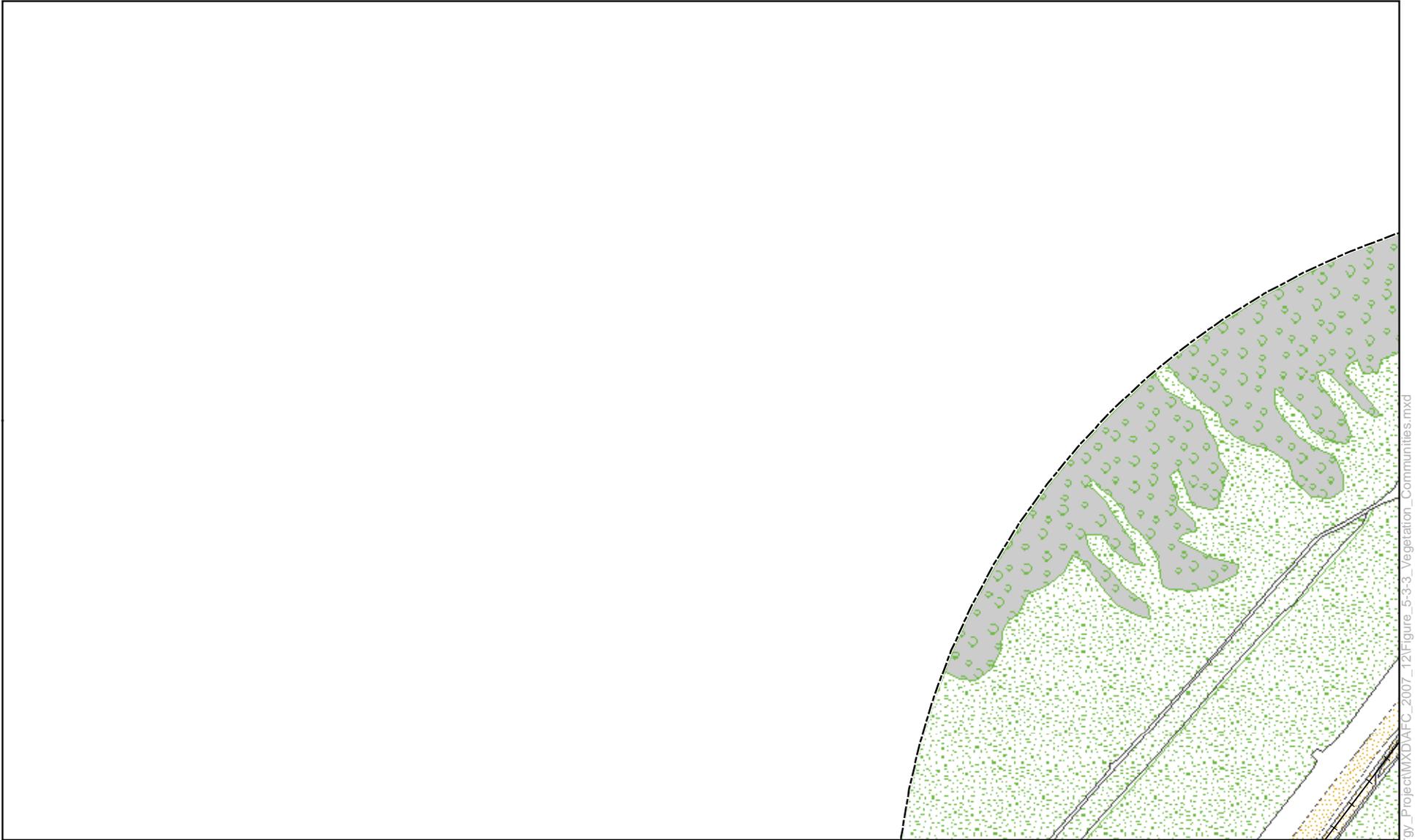
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 Kern County 2007

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Project: 10056-014  
 Date: March 2008

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**Legend**

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 2 of 14

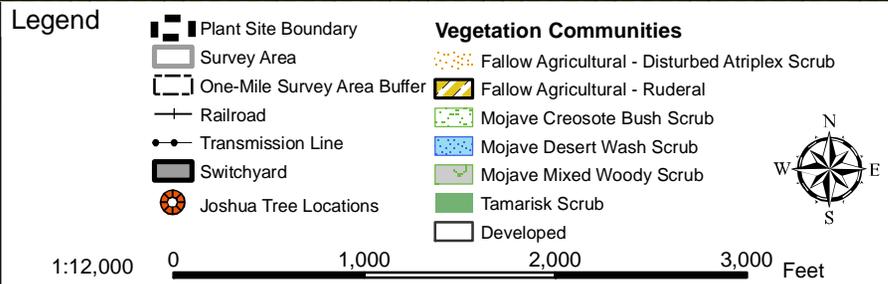
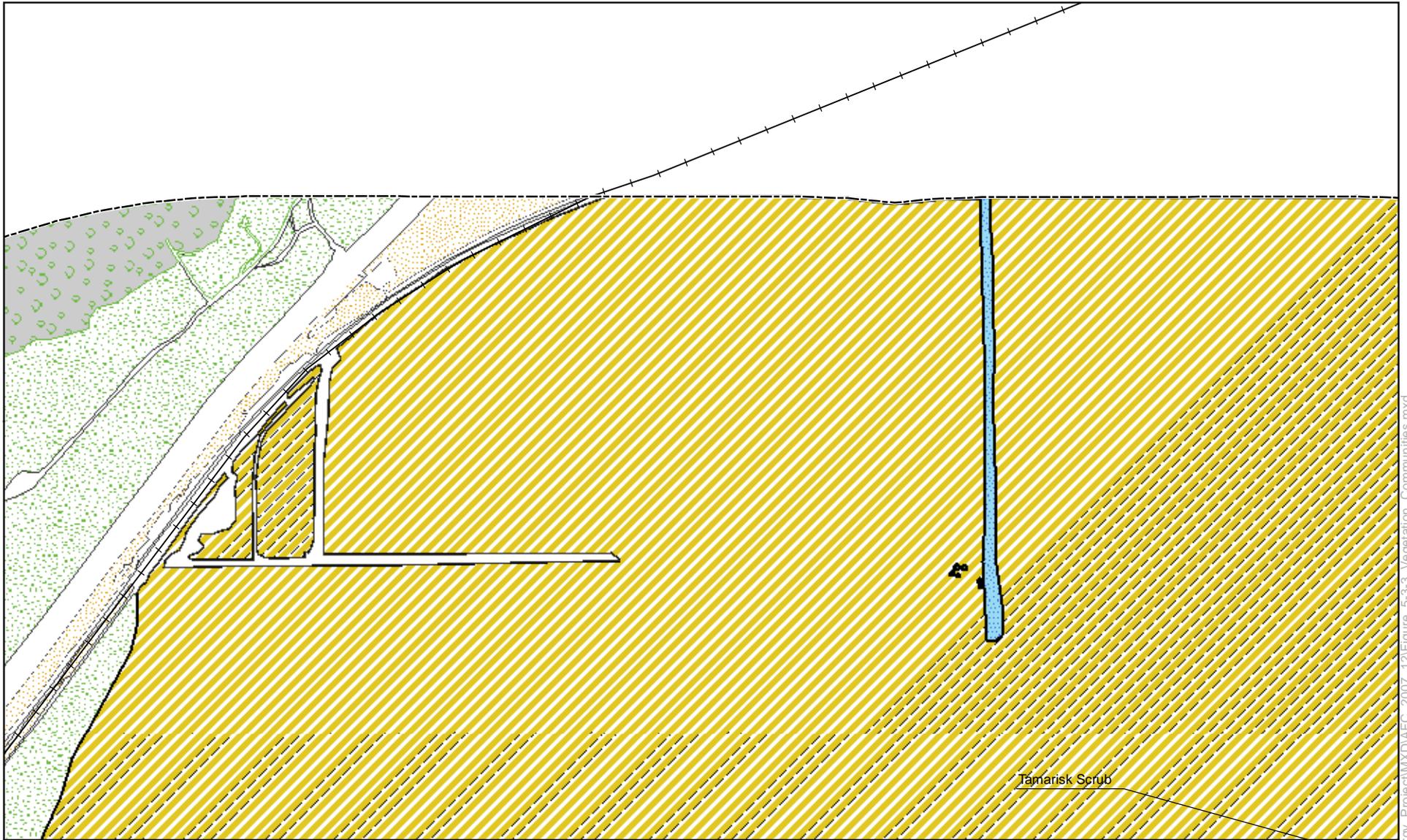
Source: NAIP 2005; EDAW 2007;  
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 Kern County 2007

**Beacon Solar**

ENSR | AECOM

Project: 10056-014  
 Date: March 2008

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**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 3 of 14

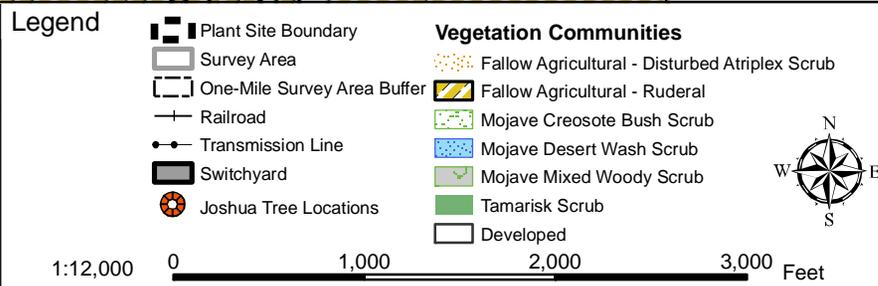
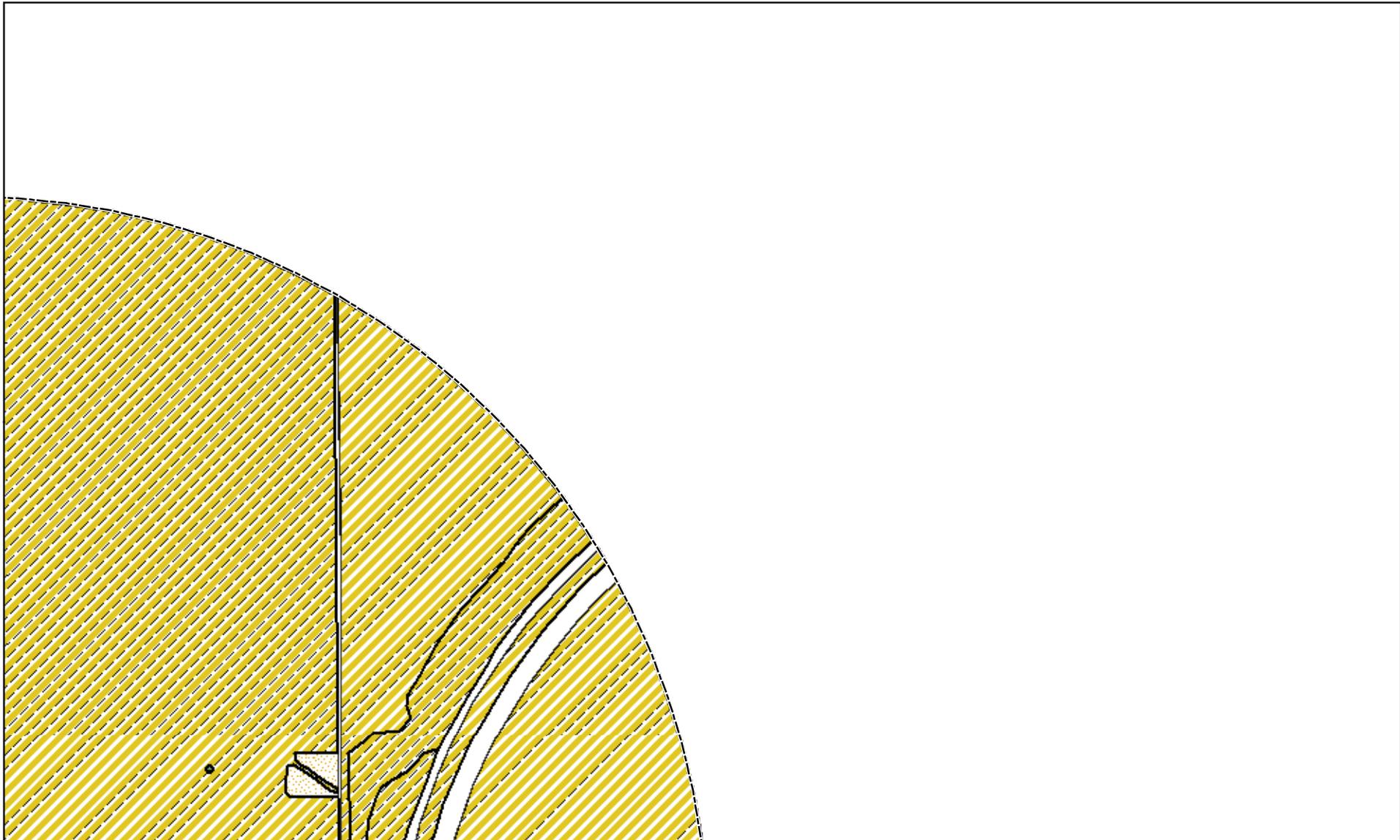
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 Kern County 2007

**Beacon Solar**

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Project: 10056-014  
 Date: March 2008

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**Beacon Solar Energy Project**

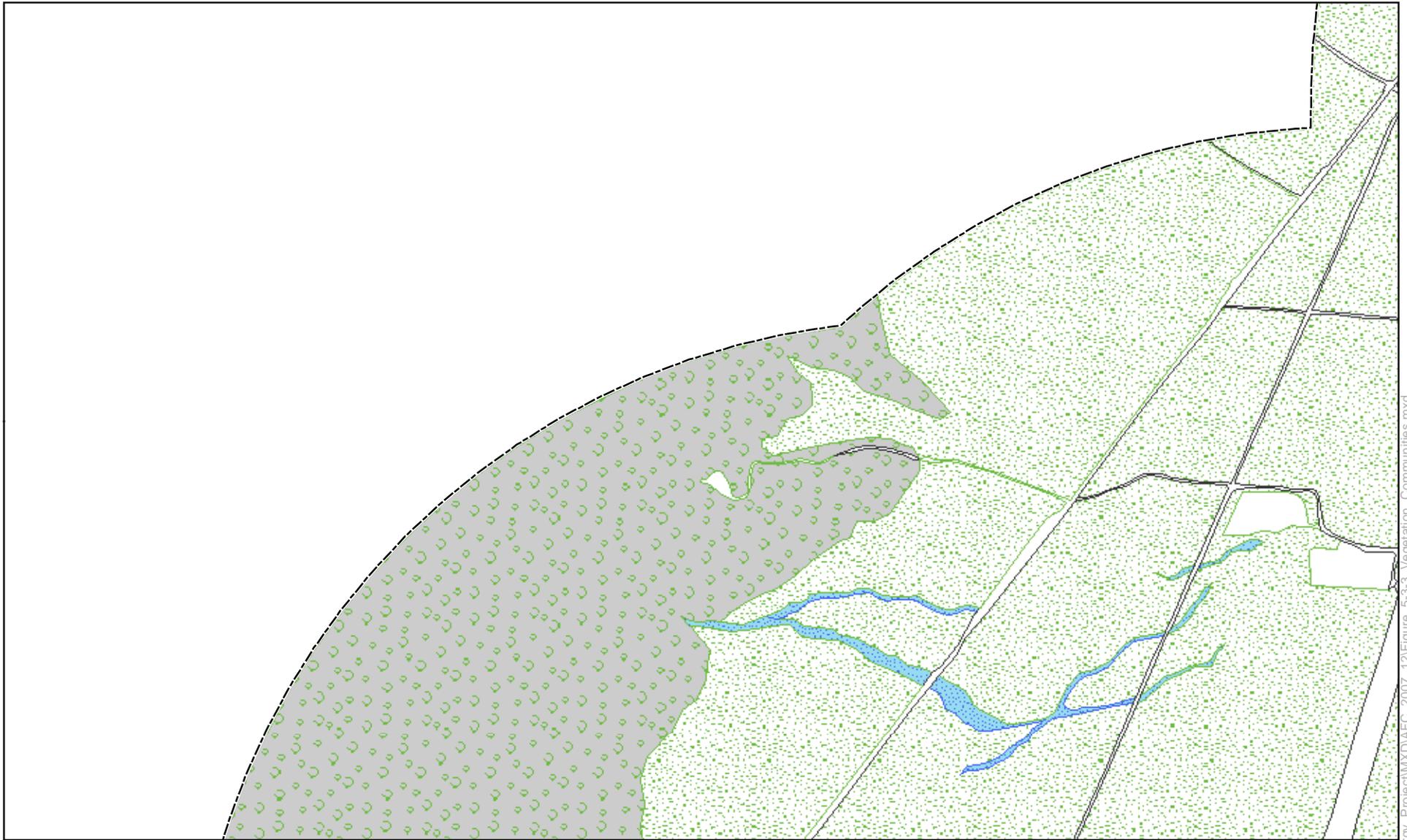
**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 4 of 14

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
 Date: March 2008



**Legend**

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
Mapsheet 5 of 14

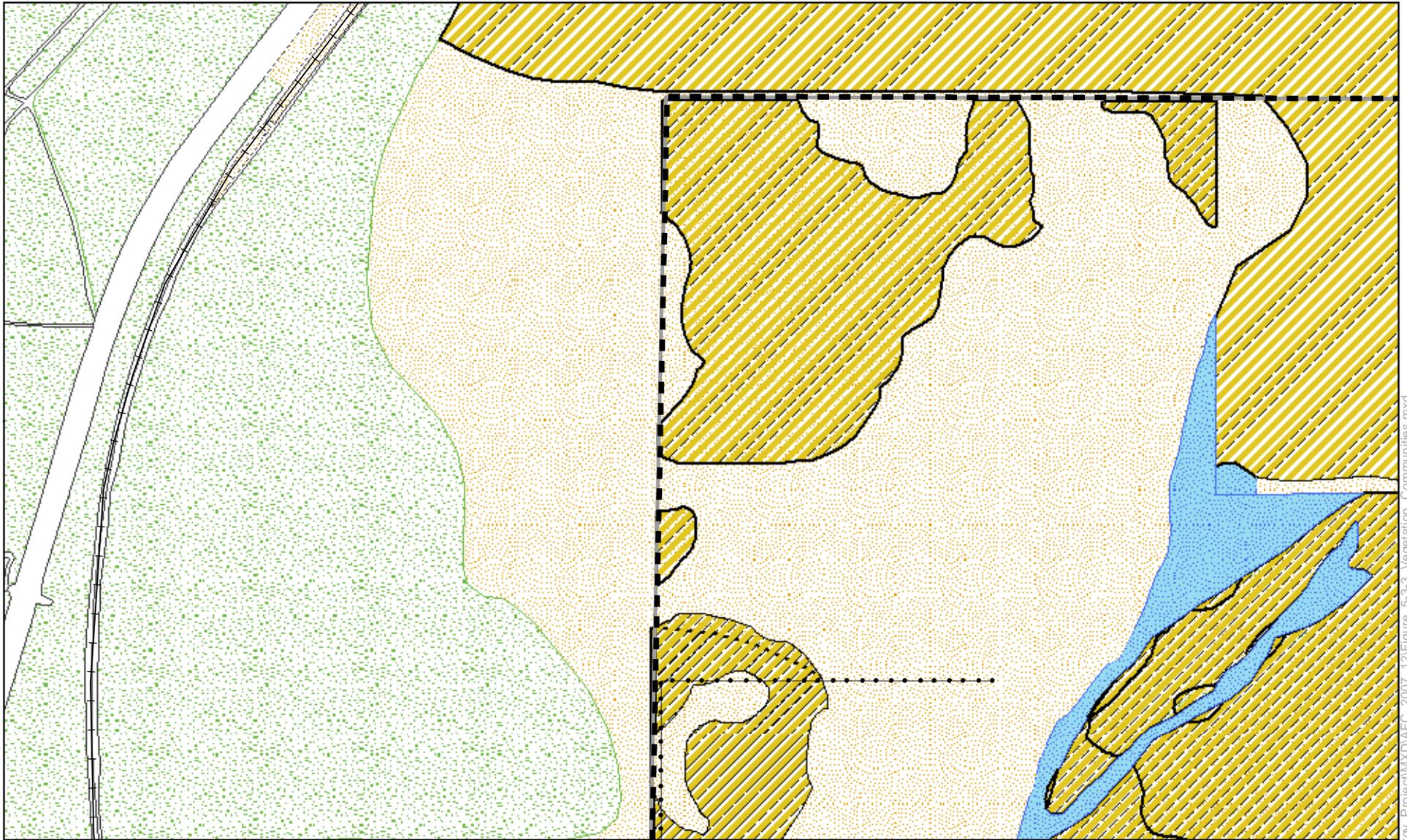
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Kern County 2007

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Project: 10056-014  
Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- One-Mile Survey Area Buffer
- Railroad
- Transmission Line
- Switchyard
- Joshua Tree Locations

**Vegetation Communities**

- Fallow Agricultural - Disturbed Atriplex Scrub
- Fallow Agricultural - Ruderal
- Mojave Creosote Bush Scrub
- Mojave Desert Wash Scrub
- Mojave Mixed Woody Scrub
- Tamarisk Scrub
- Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 6 of 14

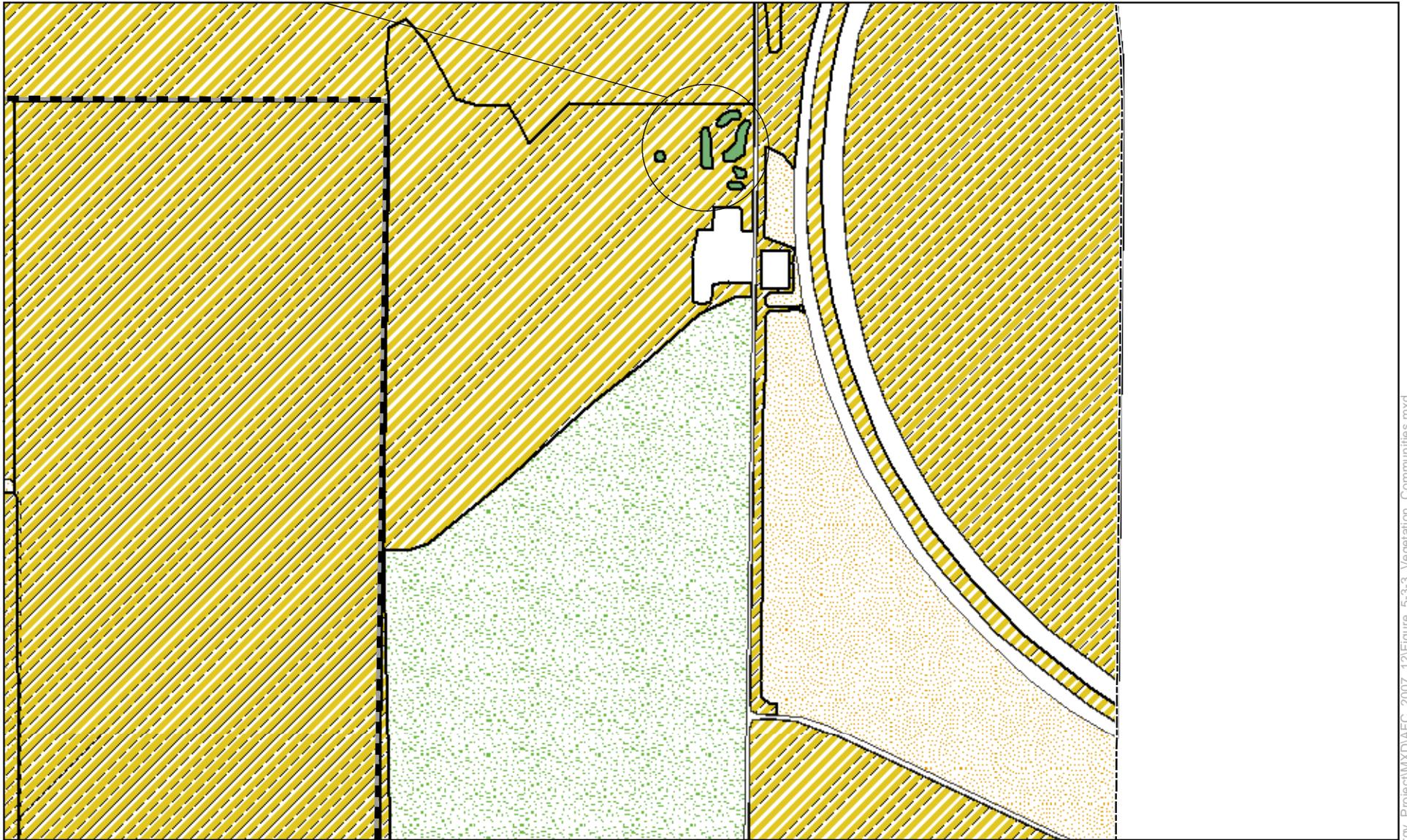
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 Kern County 2007

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- One-Mile Survey Area Buffer
- Railroad
- Transmission Line
- Switchyard
- Joshua Tree Locations

**Vegetation Communities**

- Fallow Agricultural - Disturbed Atriplex Scrub
- Fallow Agricultural - Ruderal
- Mojave Creosote Bush Scrub
- Mojave Desert Wash Scrub
- Mojave Mixed Woody Scrub
- Tamarisk Scrub
- Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

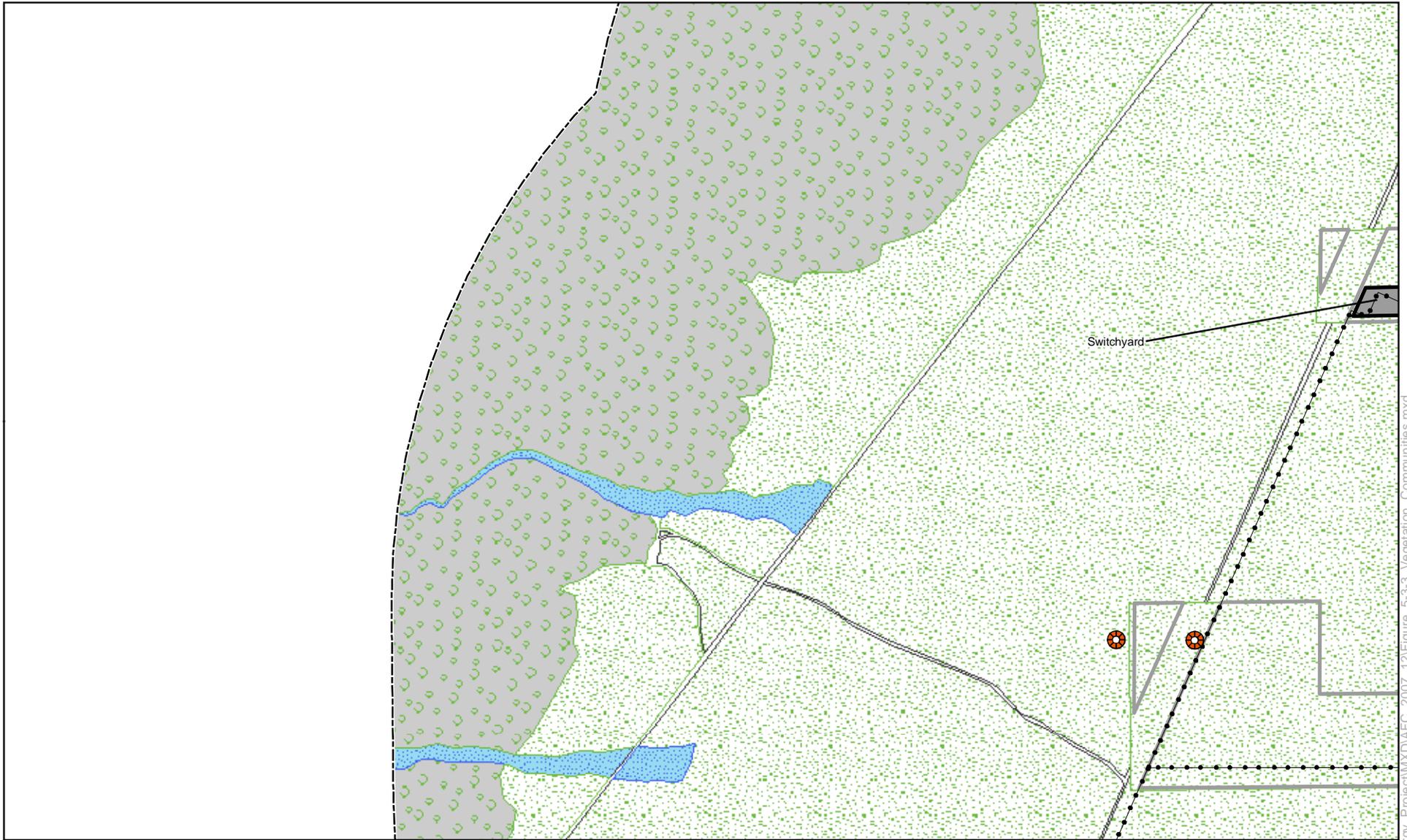
**Figure 5.3-3**  
**Vegetation Communities**  
Mapsheet 7 of 14

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008



**Legend**

Plant Site Boundary	Fallow Agricultural - Disturbed Atriplex Scrub
Survey Area	Fallow Agricultural - Ruderal
One-Mile Survey Area Buffer	Mojave Creosote Bush Scrub
Railroad	Mojave Desert Wash Scrub
Transmission Line	Mojave Mixed Woody Scrub
Switchyard	Tamarisk Scrub
Joshua Tree Locations	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3  
Vegetation Communities**  
Mapsheet 8 of 14

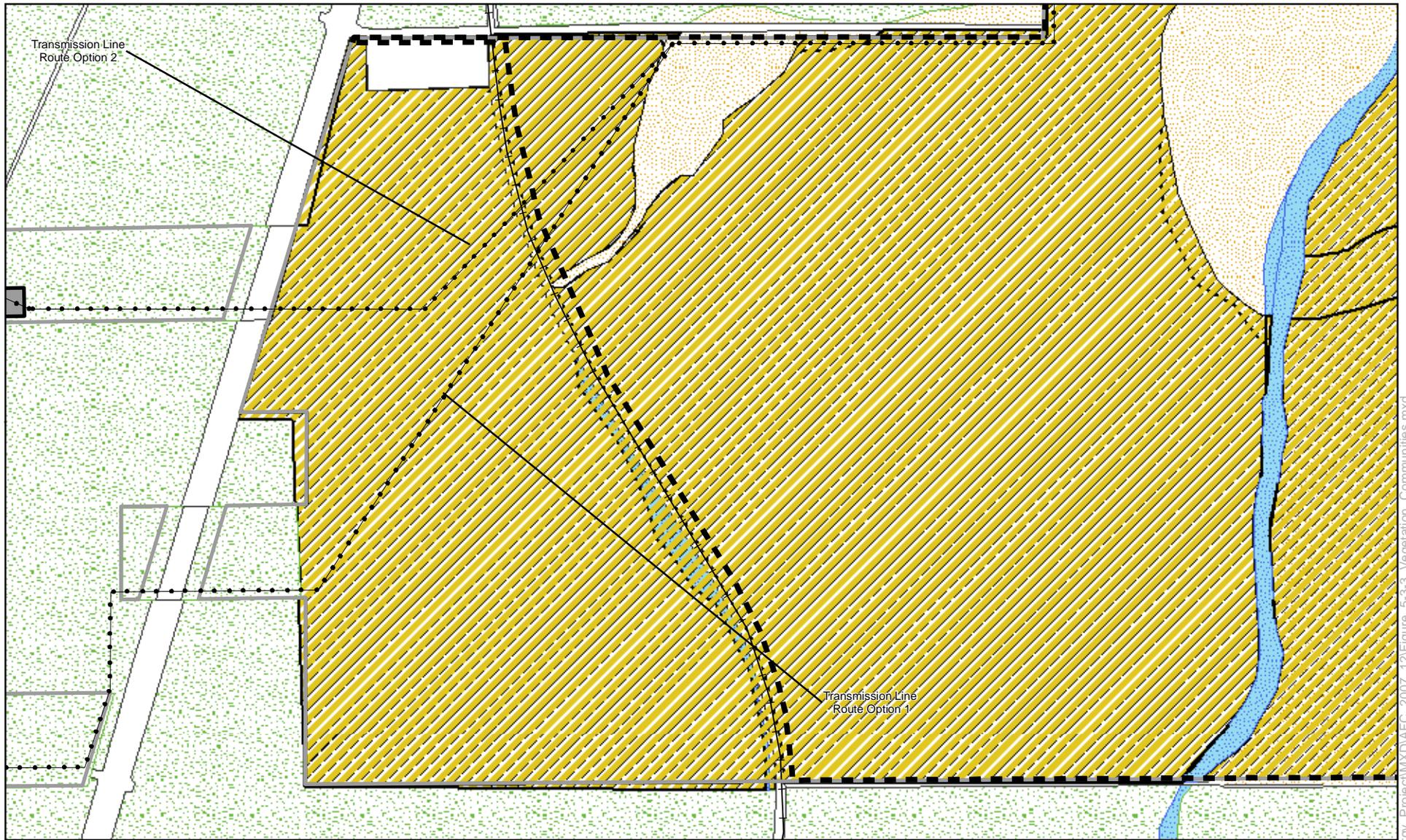
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*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

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**Legend**

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
Mapsheet 9 of 14

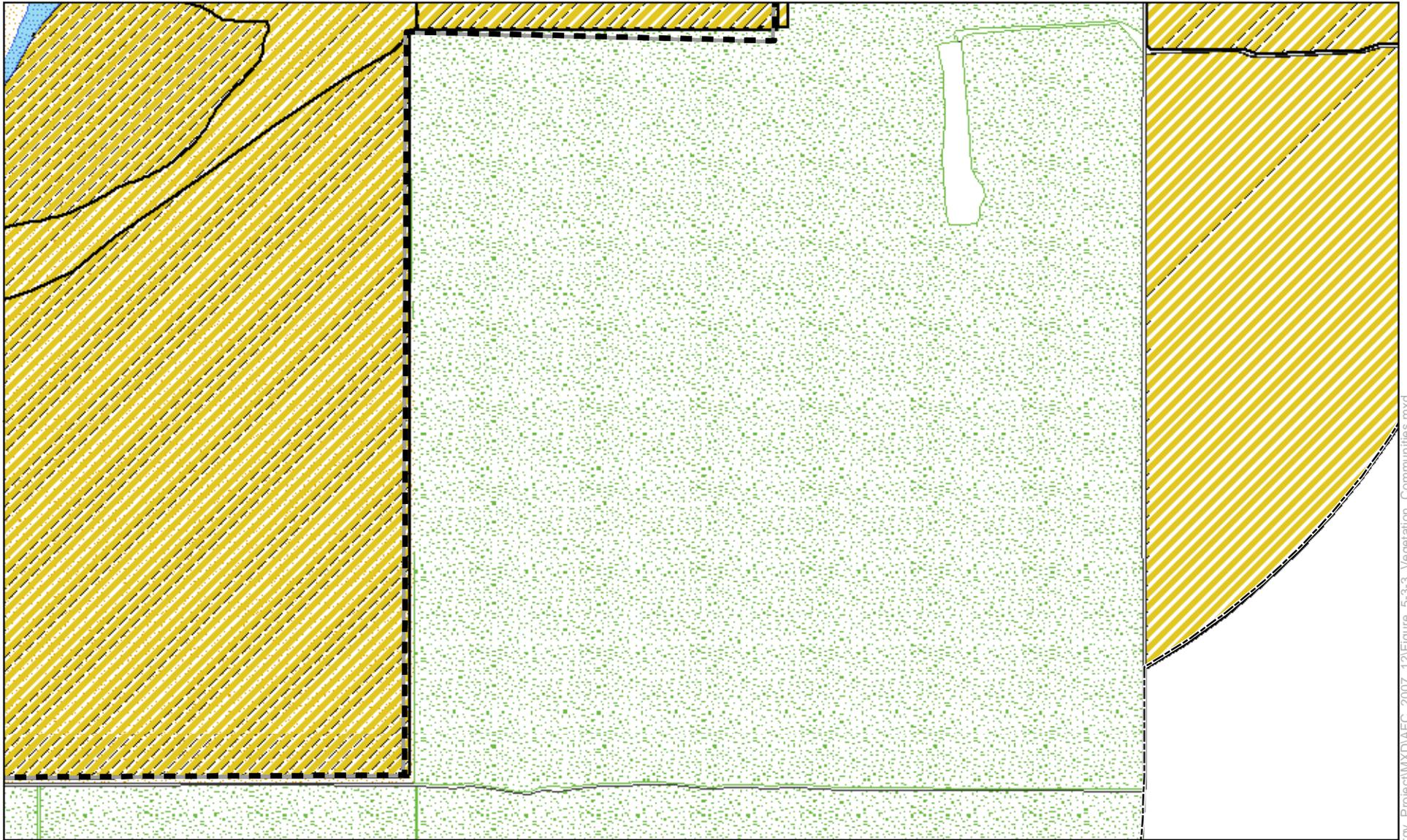
Source: NAIP 2005; EDAW 2007;  
TetraTech 2007; WorleyParsons 2007;  
Kern County 2007

*Beacon Solar*

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Project: 10056-014  
Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- One-Mile Survey Area Buffer
- Railroad
- Transmission Line
- Switchyard
- Joshua Tree Locations

**Vegetation Communities**

- Fallow Agricultural - Disturbed Atriplex Scrub
- Fallow Agricultural - Ruderal
- Mojave Creosote Bush Scrub
- Mojave Desert Wash Scrub
- Mojave Mixed Woody Scrub
- Tamarisk Scrub
- Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 10 of 14

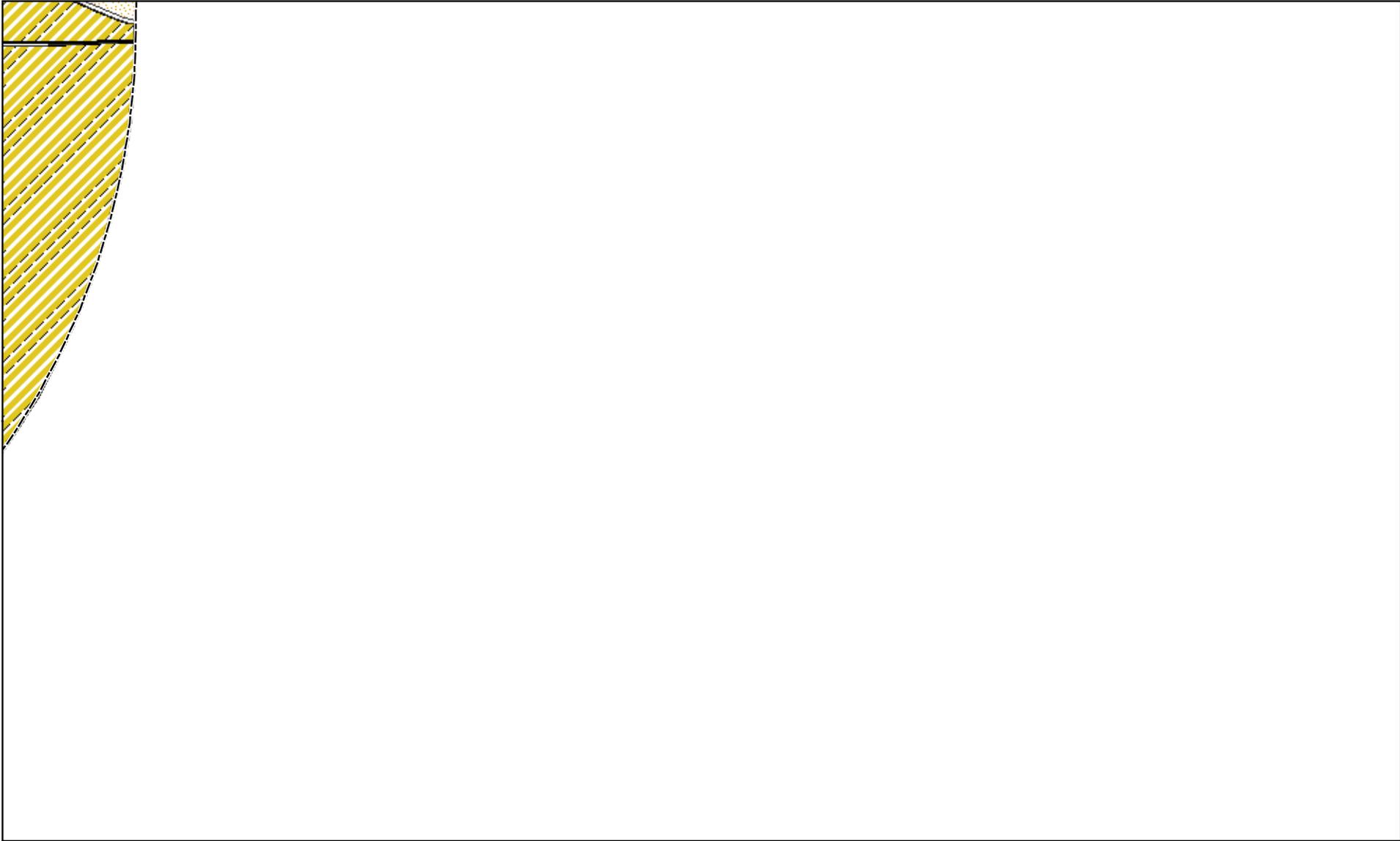
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 Kern County 2007

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008

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**Legend**

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

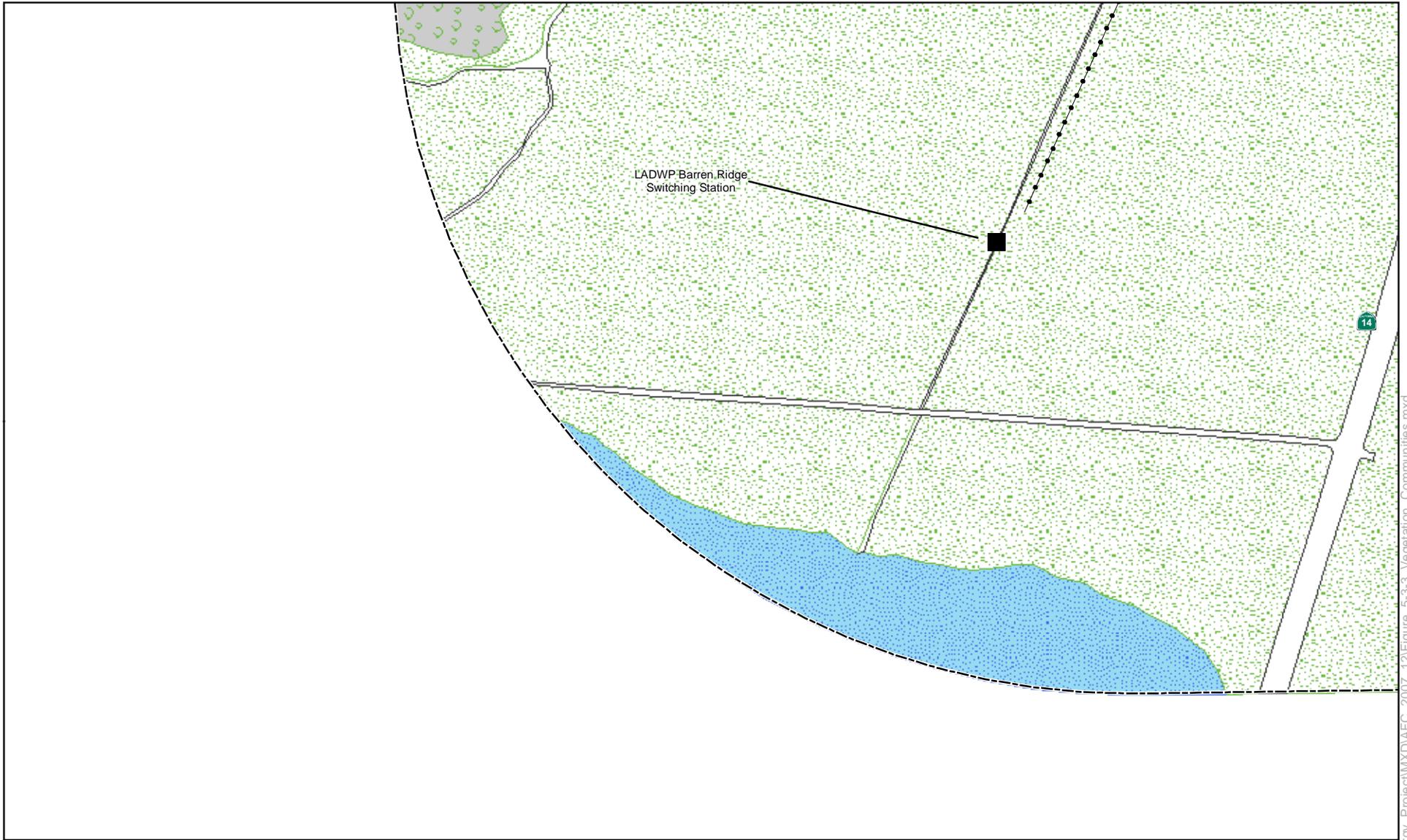
**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 11 of 14

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
 Date: March 2008



**Legend**

Plant Site Boundary	Fallow Agricultural - Disturbed Atriplex Scrub
Survey Area	Fallow Agricultural - Ruderal
One-Mile Survey Area Buffer	Mojave Creosote Bush Scrub
Railroad	Mojave Desert Wash Scrub
Transmission Line	Mojave Mixed Woody Scrub
Switchyard	Tamarisk Scrub
Joshua Tree Locations	Developed

1:12,000

**Beacon Solar Energy Project**

**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 12 of 14

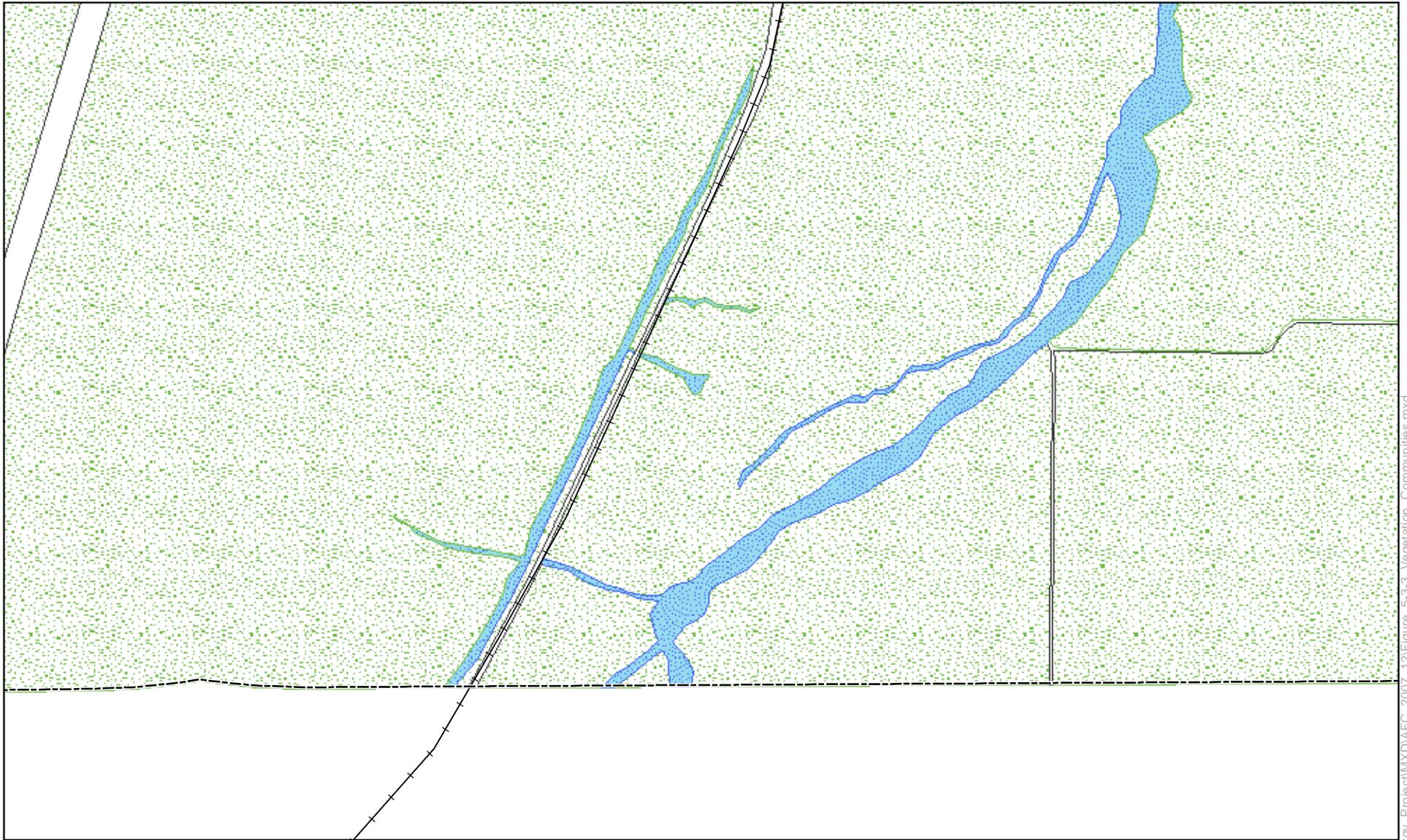
Source: NAIP 2005; EDAW 2007;  
 TetraTech 2007; WorleyParsons 2007;  
 Kern County 2007

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Project: 10056-014  
 Date: March 2008

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**Legend**

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

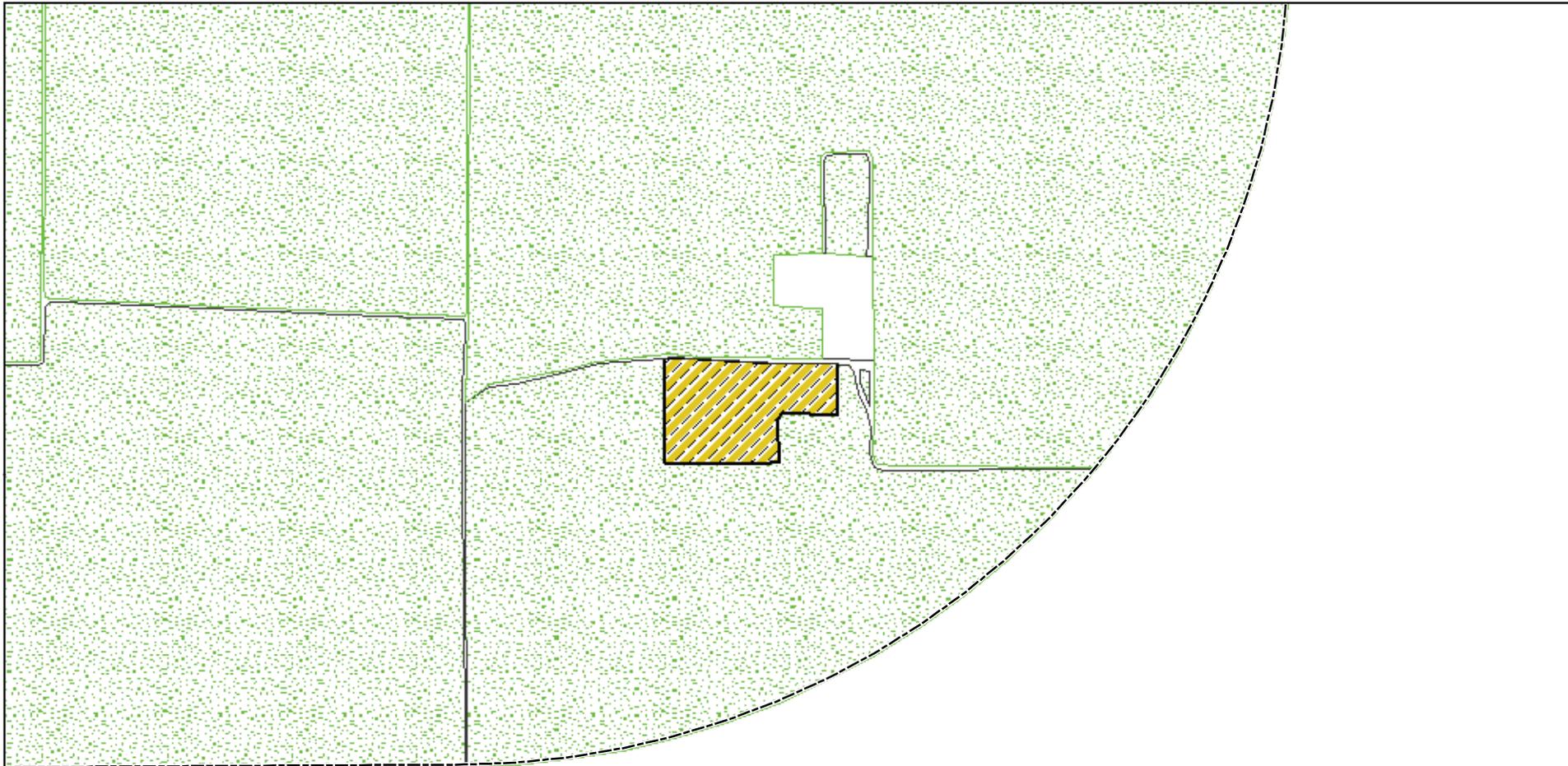
**Figure 5.3-3**  
**Vegetation Communities**  
 Mapsheet 13 of 14

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

*Beacon Solar*

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 Date: March 2008



### Legend

Plant Site Boundary	<b>Vegetation Communities</b>
Survey Area	Fallow Agricultural - Disturbed Atriplex Scrub
One-Mile Survey Area Buffer	Fallow Agricultural - Ruderal
Railroad	Mojave Creosote Bush Scrub
Transmission Line	Mojave Desert Wash Scrub
Switchyard	Mojave Mixed Woody Scrub
Joshua Tree Locations	Tamarisk Scrub
	Developed

1:12,000

0 1,000 2,000 3,000 Feet

### Beacon Solar Energy Project

## Figure 5.3-3

### Vegetation Communities

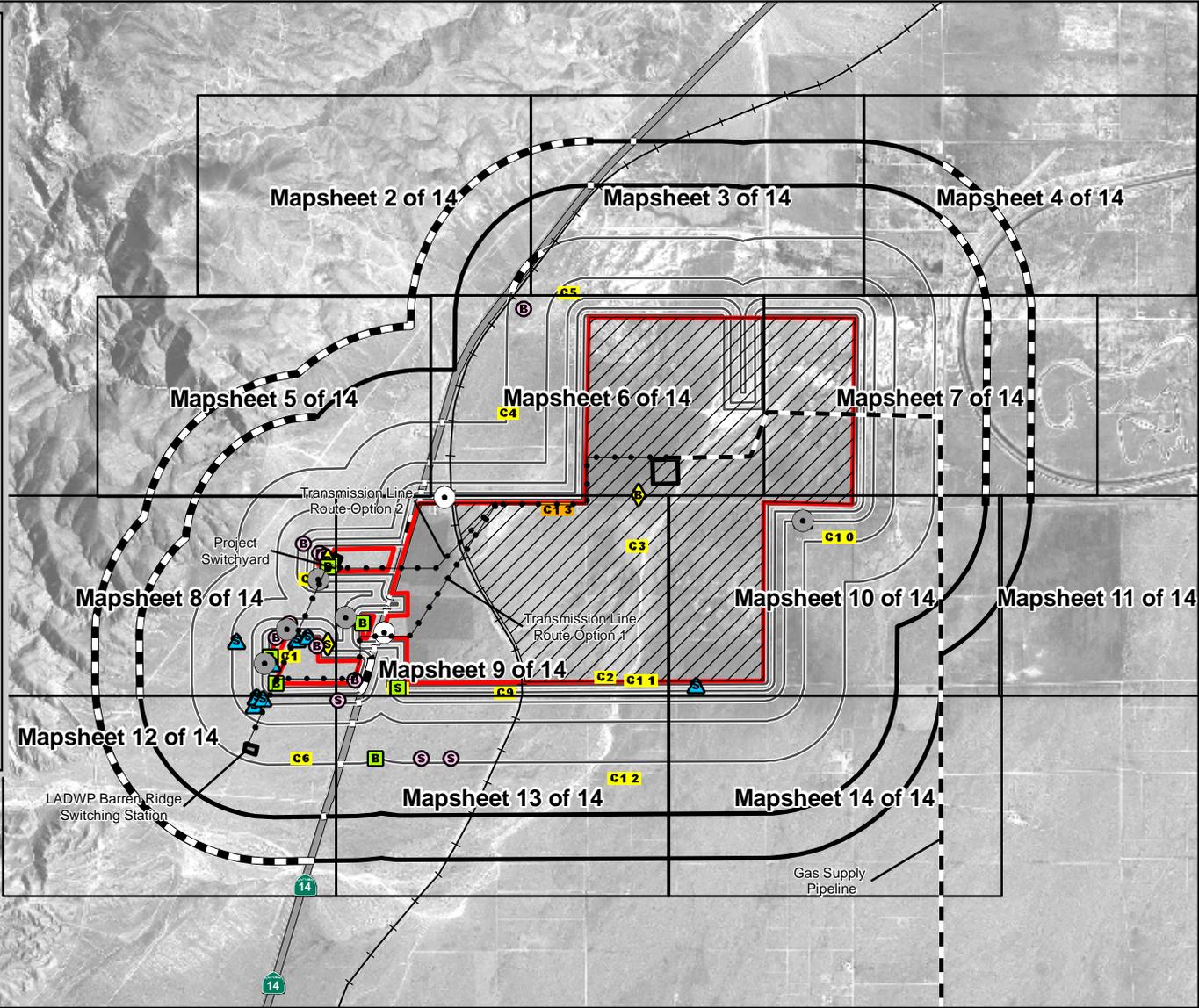
Mapsheet 14 of 14

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

Project: 10056-014  
Date: March 2008

**Legend**

- Gas Supply Pipeline
- ▨ Plant Site
- ▭ Survey Area
- Transmission Line
- Switchyard
- +— Railroad
- Zones of Influence
- ▭ CEC Draft Guidelines Recommended Transects
- ▭ Not Surveyed
- ▭ Power Block
- Desert Tortoise
- Desert Tortoise Observed during pump test monitoring
- Desert Tortoise Carcass (see table for details)
- Carcass
- Carcass Observed during pump test monitoring
- Desert Tortoise Burrow (arranged in ascending order of age)
- ▲ Class 1
- Class 2
- Class 3
- ◆ Class 5
- Desert Tortoise Scat (arranged in ascending order of age)
- ▲ Class TY2
- Class TY3
- Class NTY3
- ◆ Class NTY4



**Desert Tortoise Carcass Details**

C-1	Disarticulated bone fragments, >4 years TSD
C-2	Carapace bone fragments, immature; >4 years TSD
C-3	Juvenile MCL 60, <2 years TSD, intact except for hole in carapace (raven predation); in Salsola clump 80 m W of Wash
C-4	Disarticulated bone fragments, >4 years TSD
C-5	Plastron of adult MCL 240; >4 years TSD
C-6	Plastron bone fragments, MCL 115; >4 years TSD, 7 m off dirt road
C-7	Immature 150 mm; >4 years TSD; 1/3 carapace bones, whole plastron
C-8	Immature MCL 125; <1 year TSD, trauma, cracked bone
C-9	Adult male, >4 years TSD
C-10	Young adult disarticulated bone fragments, >4 years TSD
C-11	Immature size in carapace fragments and plastron bones = MCL 110, >4 years TSD
C-12	Adult male, trauma to carapace MCL ~ 208
C-13	Juvenile Intact except for hole in carapace (Raven predation)

Scale: 1:60,000  
0 5,000 10,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
**Mapsheets 1 of 14**

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

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Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-4\_Desert\_Tortoise\_Overview.mxd



See Mapsheet 1 of 14 for Legend

1:12,000

0 1,000 2,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
 Mapsheet 2 of 14

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

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Project: 10056-014  
 Date: March 2008

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See Mapsheet 1 of 14 for Legend

1:12,000

0 1,000 2,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
 Mapsheet 3 of 14

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

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008



See Mapsheet 1 of 14 for Legend

1:12,000

0 1,000 2,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
 Mapsheet 4 of 14

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

*Beacon Solar*

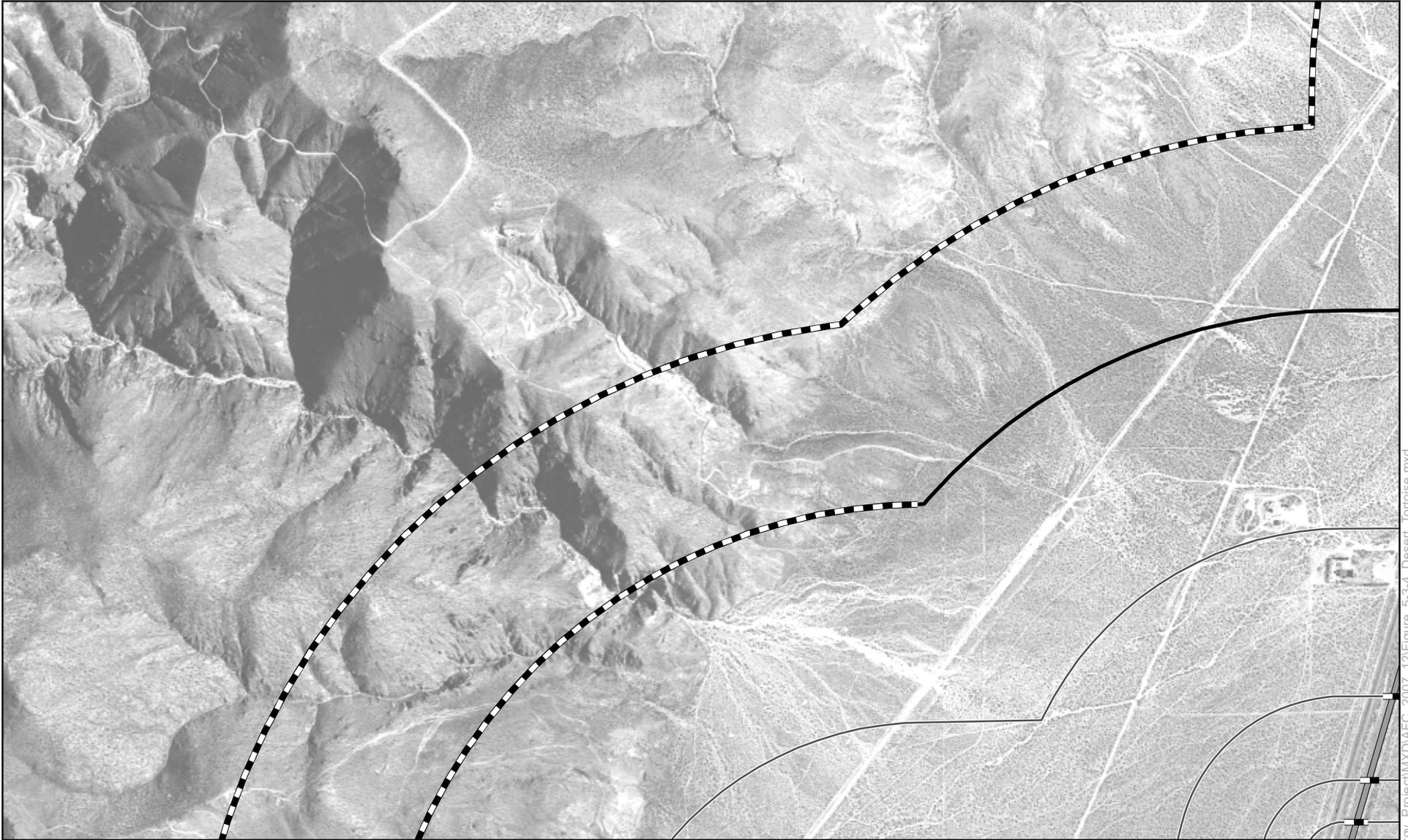
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ENSR | AECOM

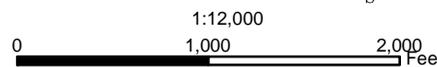
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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-4\_Desert\_Tortoise.mxd



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

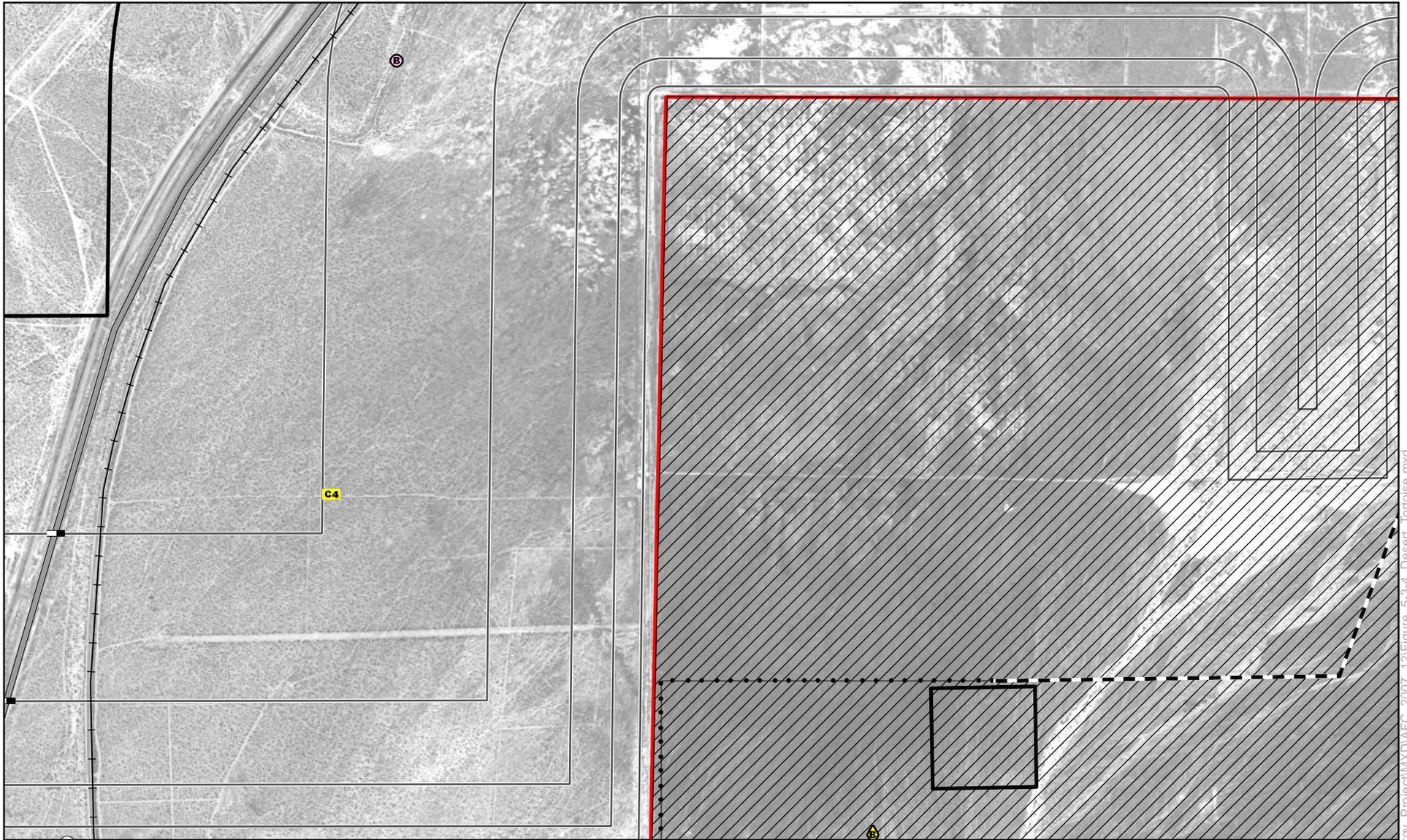
**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 5 of 14**

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

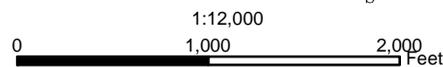
*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 6 of 14**

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

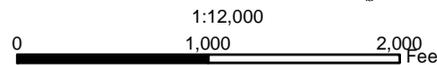
*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 7 of 14**

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

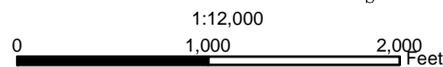
**Beacon Solar**

ENSR | AECOM

Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 8 of 14**

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend

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**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
 Mapsheet 9 of 14

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

*Beacon Solar*

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ENSR | AECOM

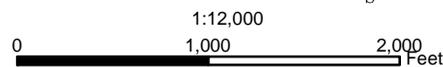
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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_t2\Figure\_5-3-4\_Desert\_Tortoise.mxd



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 10 of 14**

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

**Beacon Solar**

ENSR | AECOM

Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend

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**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
 Mapsheet 11 of 14

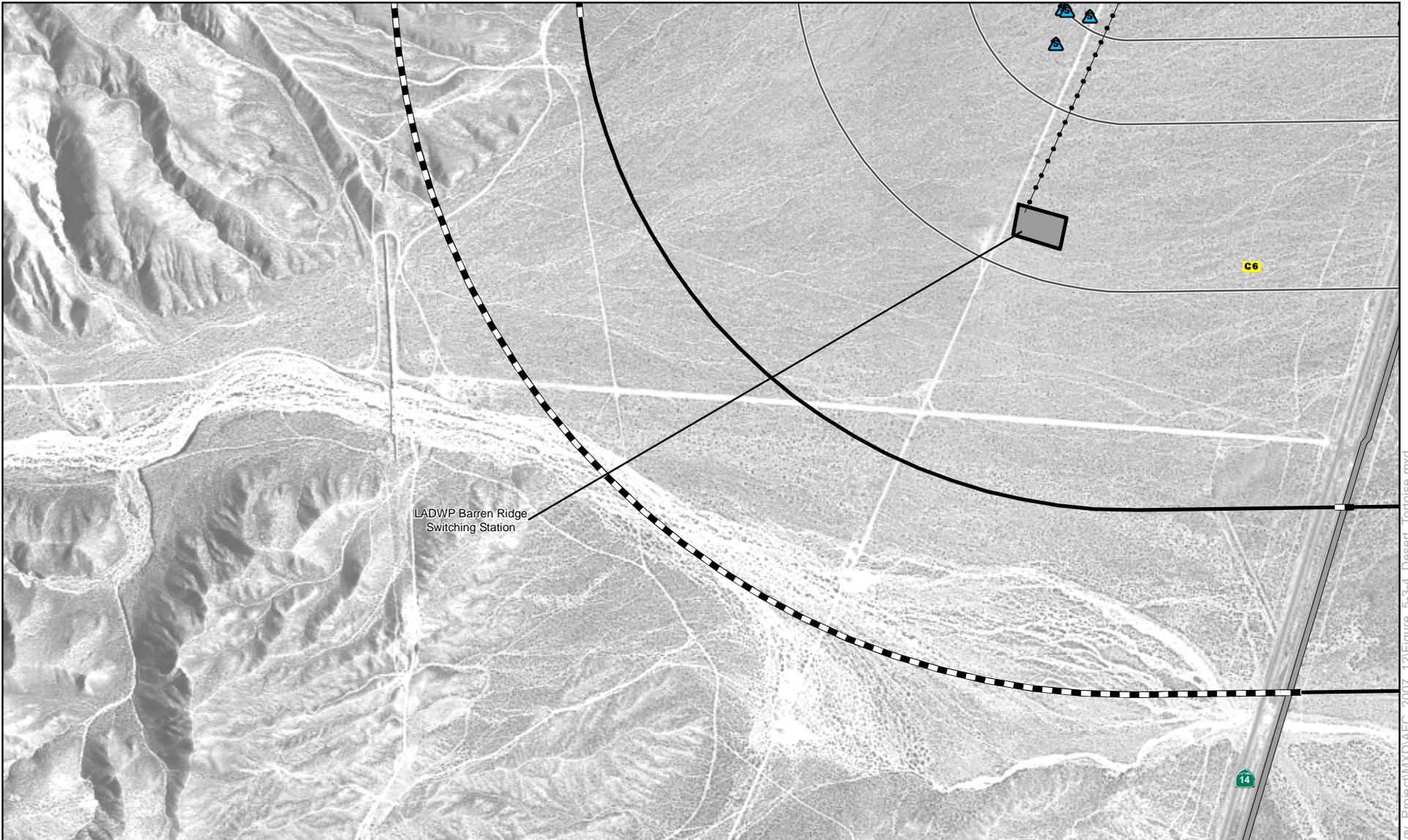
Source: NAIP 2005; EDAW 2007;  
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 CNDDDB 2007;

*Beacon Solar*

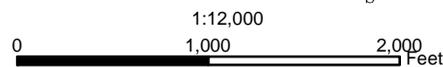
ENSR | AECOM

Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-4\_Desert\_Tortoise.mxd



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

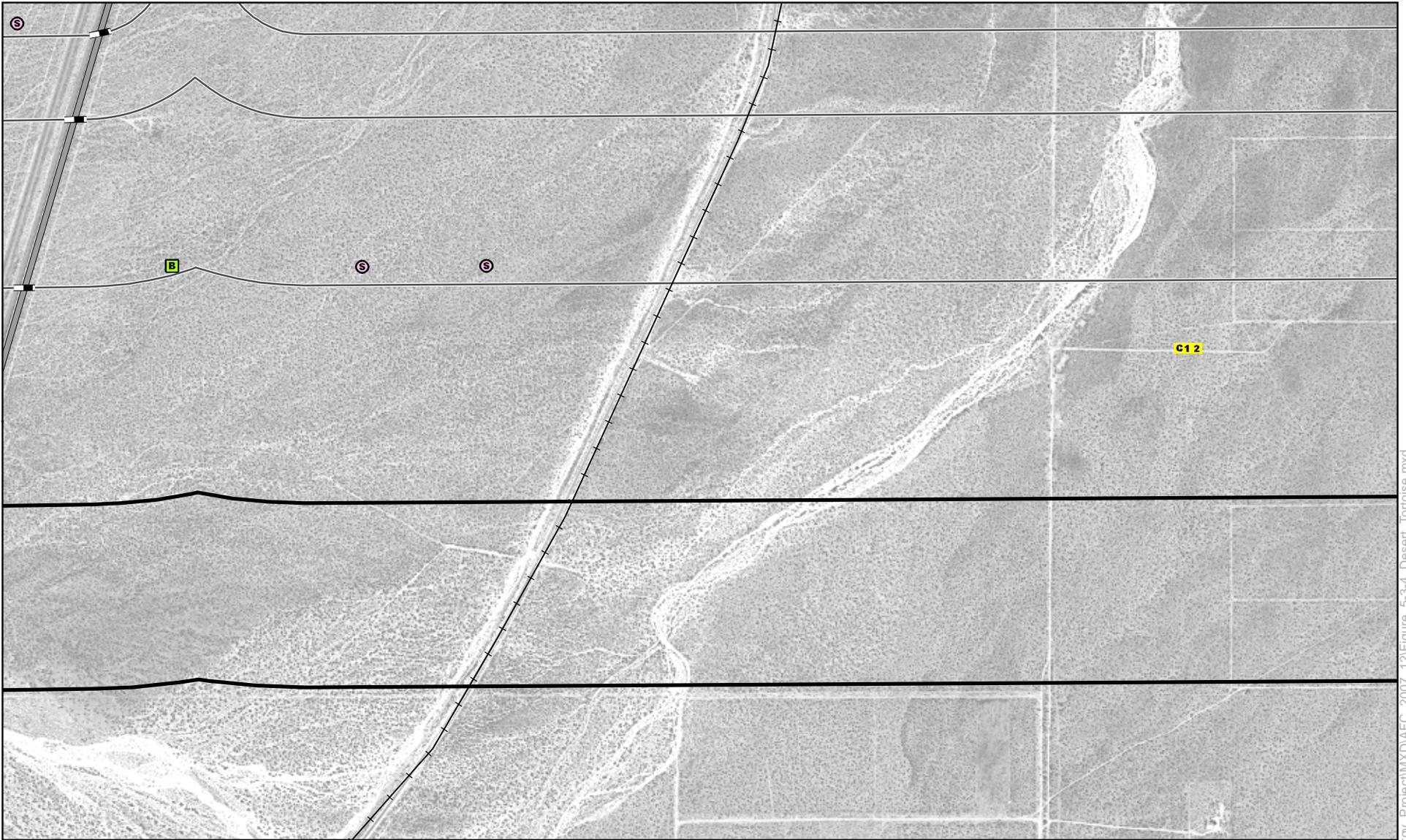
**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 12 of 14**

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

*Beacon Solar*

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Project: 10056-014  
Date: March 2008



See Mapsheet 1 of 14 for Legend

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0 1,000 2,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-4**  
**Desert Tortoise and Sign**  
Mapsheet 13 of 14

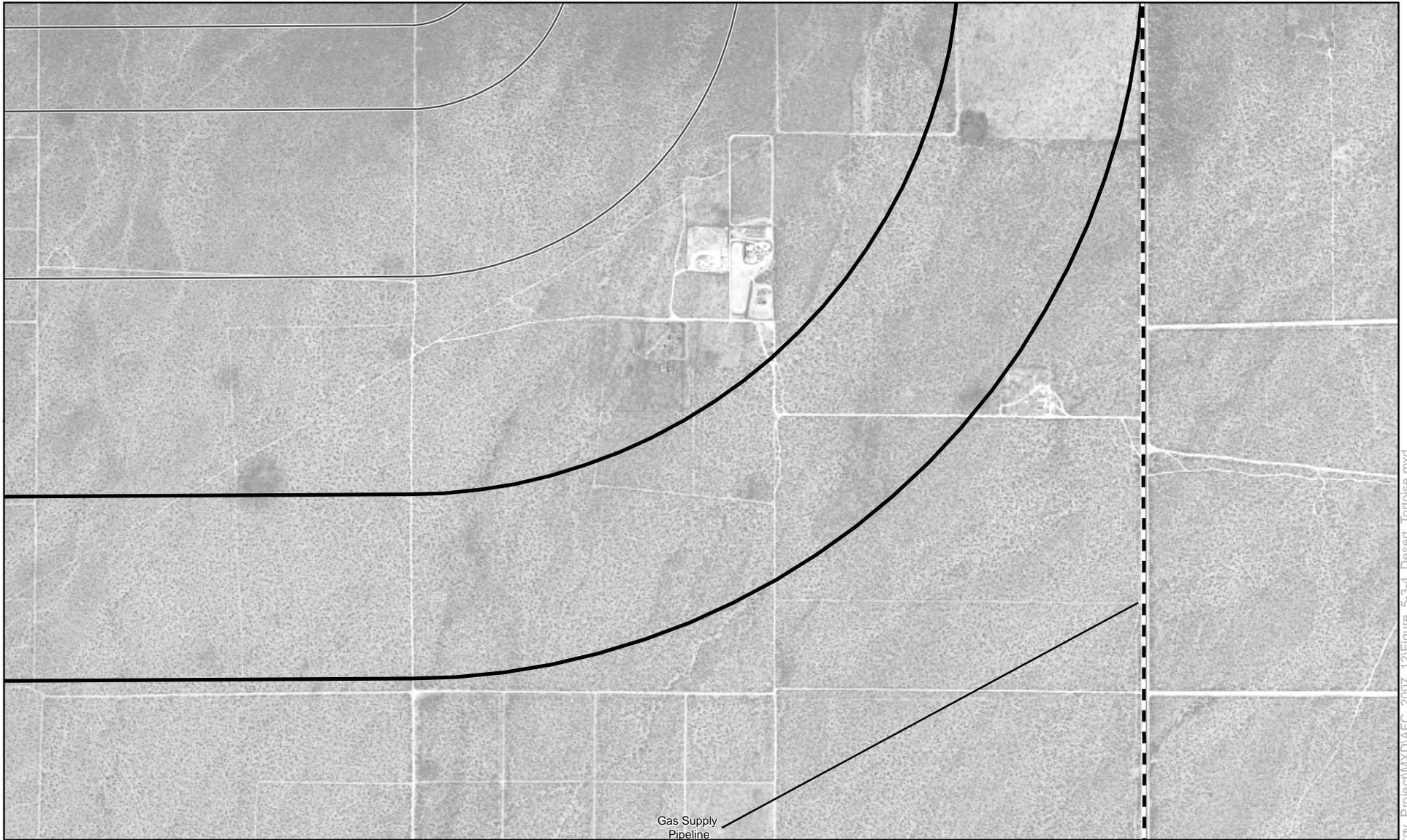
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CNDDB 2007;

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

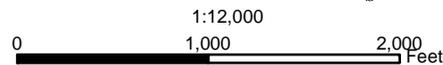
Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-4\_Desert\_Tortoise.mxd



Gas Supply Pipeline



See Mapsheet 1 of 14 for Legend



**Beacon Solar Energy Project**

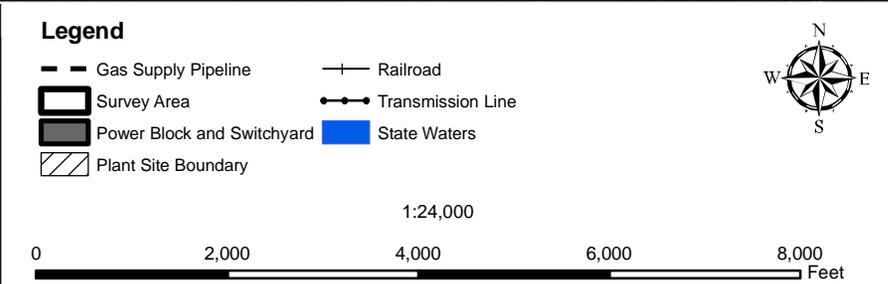
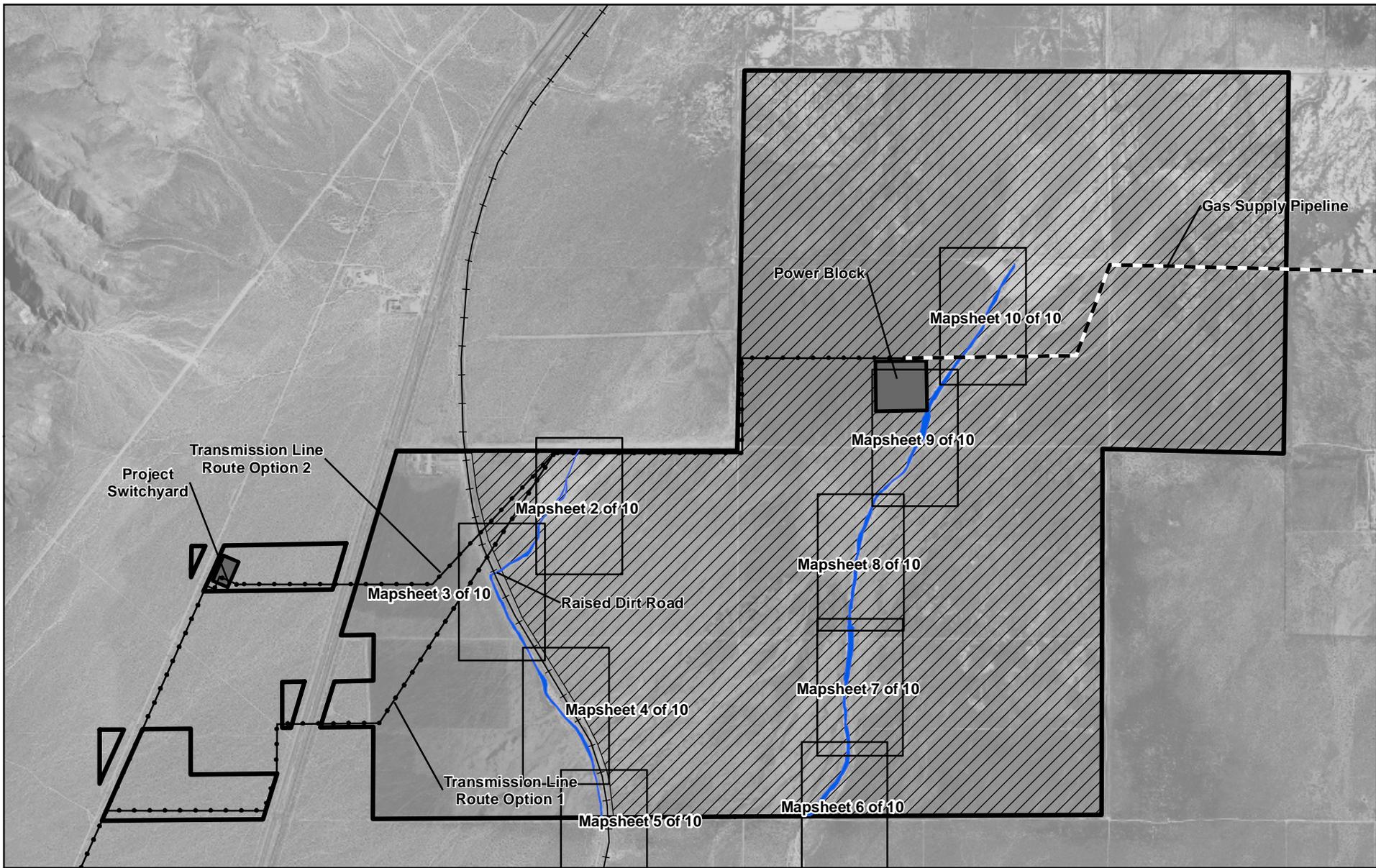
**Figure 5.3-4  
Desert Tortoise and Sign  
Mapsheet 14 of 14**

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 1 of 10

Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

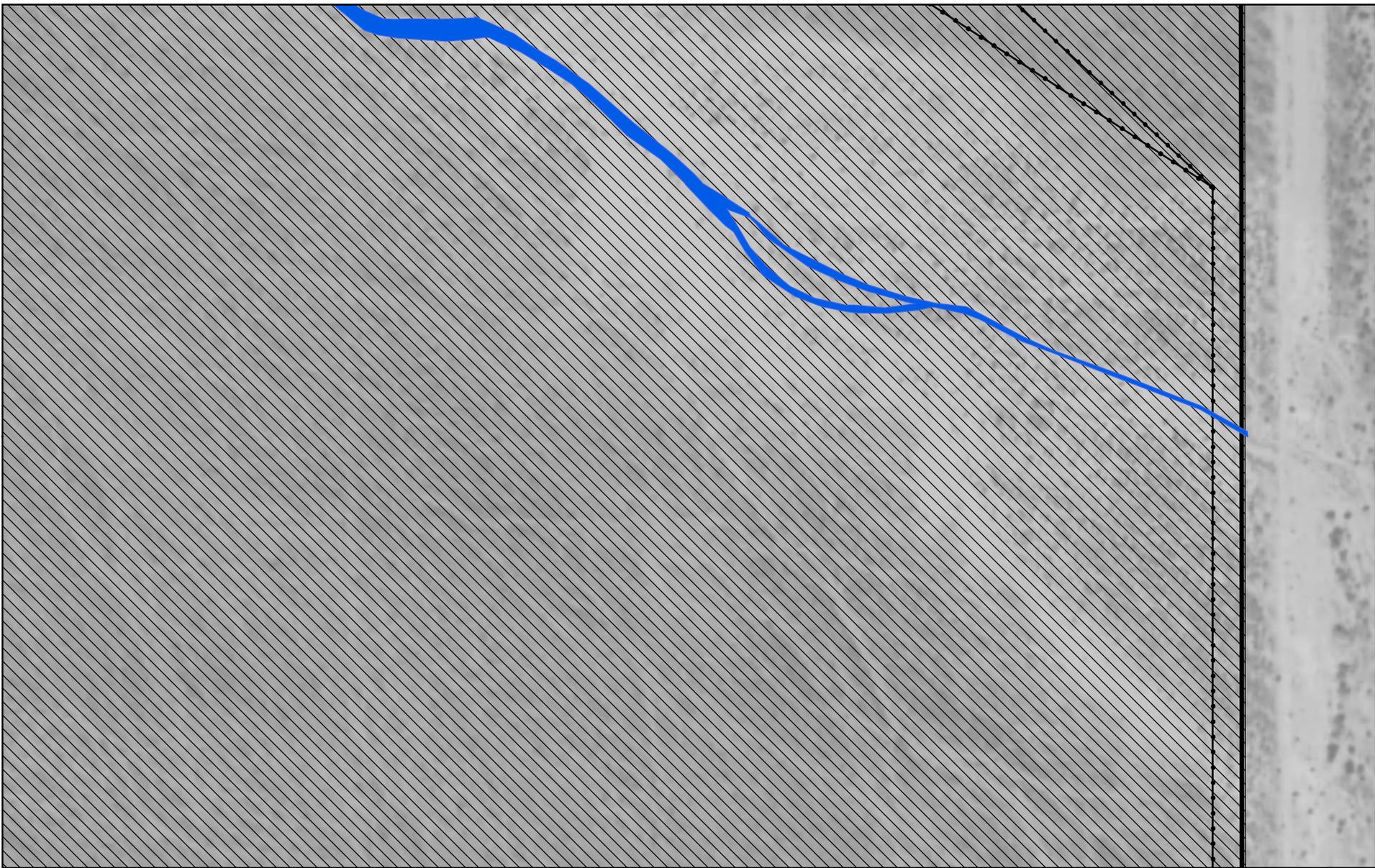
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ENSR | AECOM

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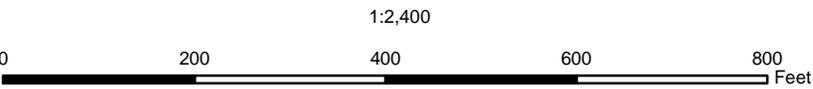
Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-5\_State\_Waters\_Overview.mxd



**Legend**

-  Gas Supply Pipeline
-  Railroad
-  Survey Area
-  Transmission Line
-  Power Block and Switchyard
-  State Waters
-  Plant Site Boundary



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 2 of 10

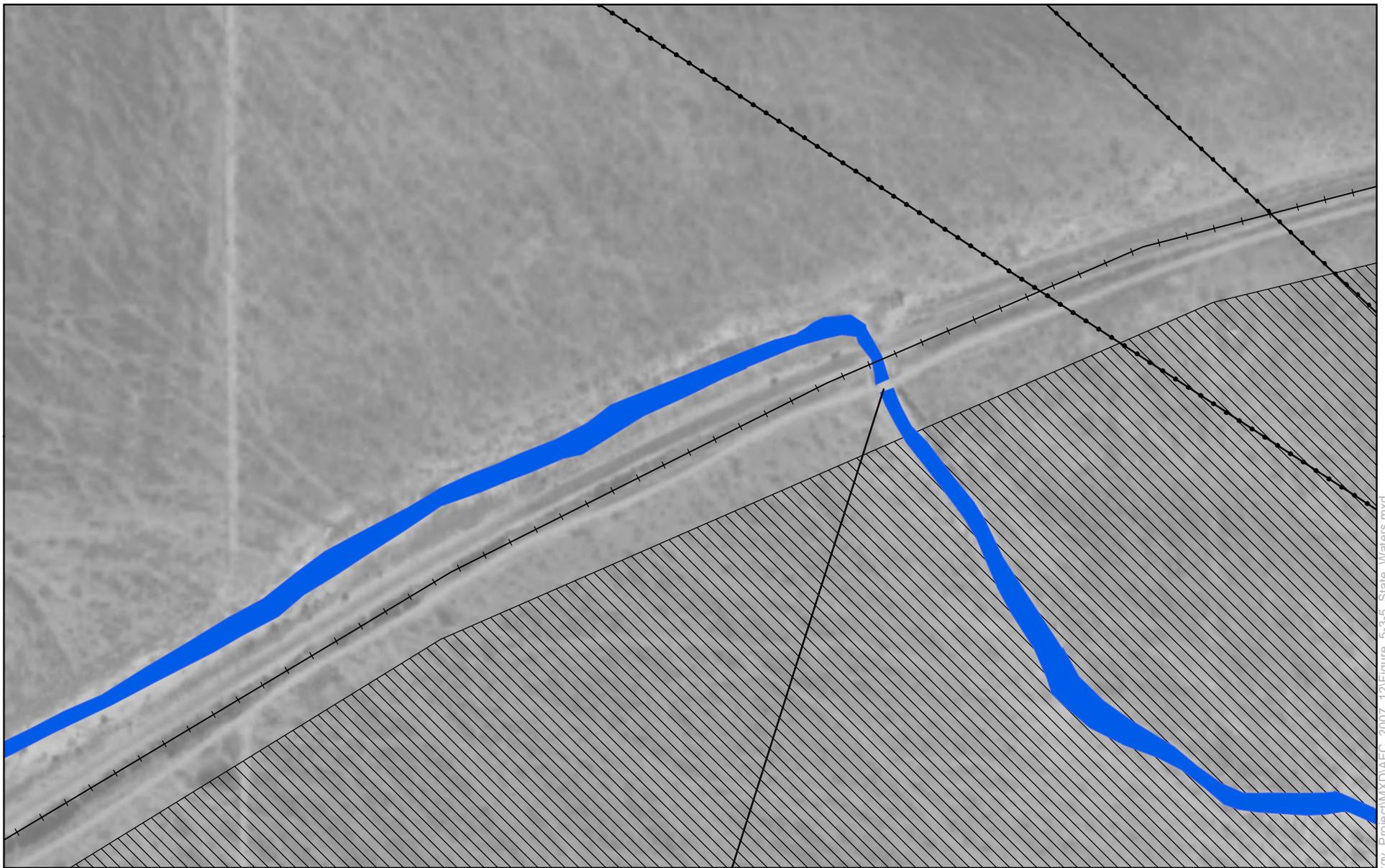
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*Beacon Solar*

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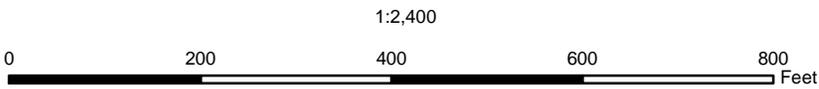
Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_t2\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

- Gas Supply Pipeline
- Railroad
- Survey Area
- Transmission Line
- Power Block and Switchyard
- State Waters
- Plant Site Boundary



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 3 of 10

Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

- Gas Supply Pipeline
- Railroad
- Survey Area
- Transmission Line
- Power Block and Switchyard
- State Waters
- Plant Site Boundary



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**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 4 of 10

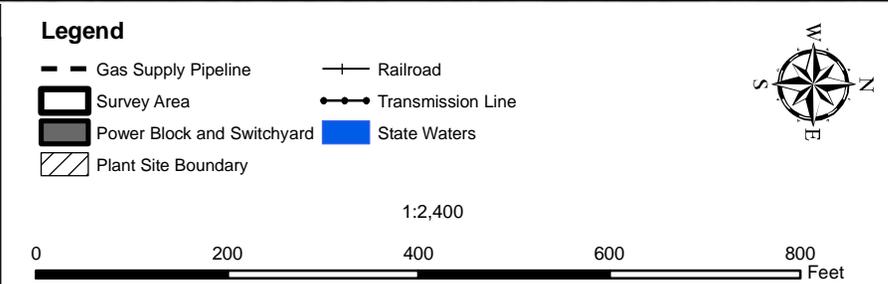
Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

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Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 5 of 10

Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

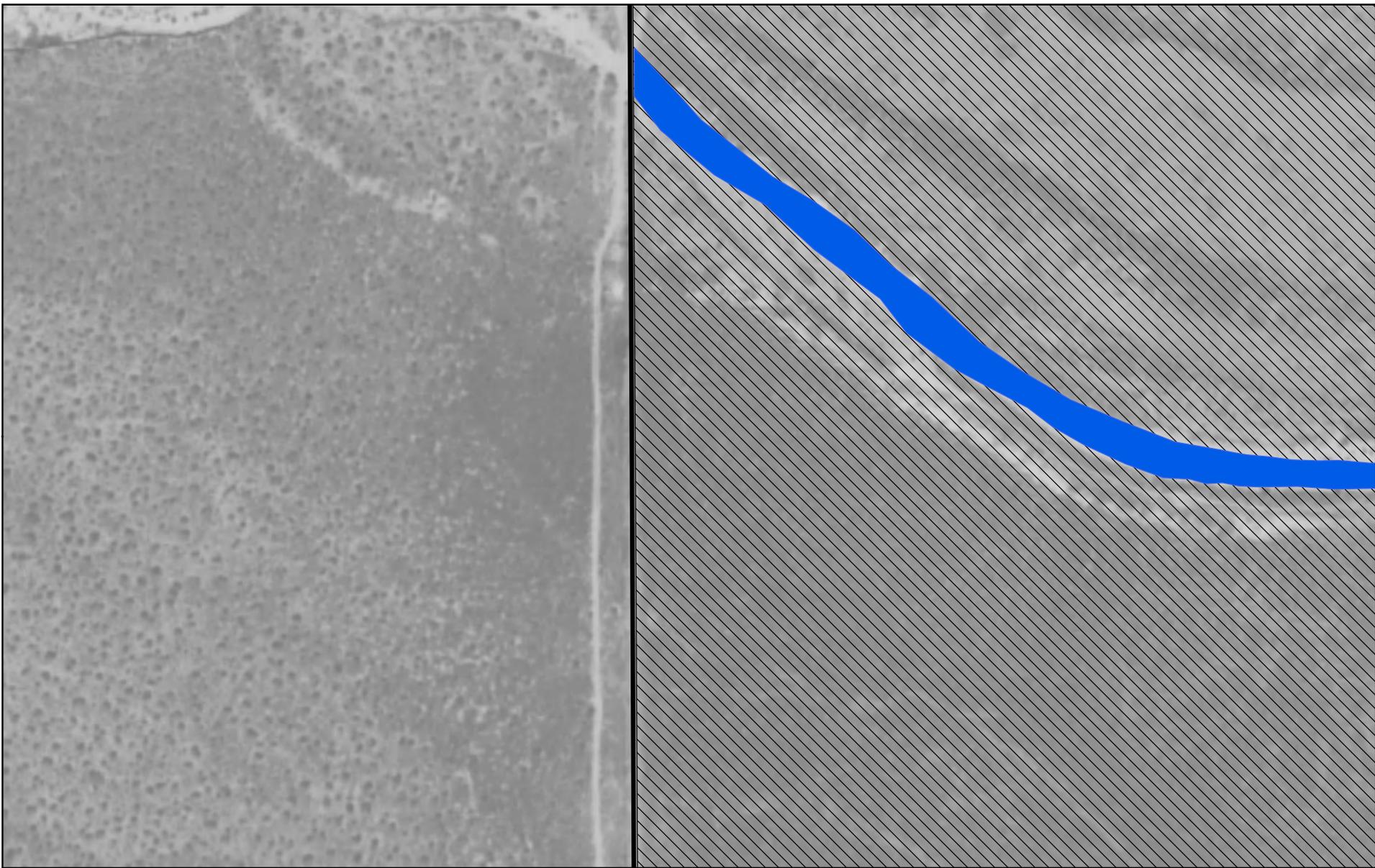
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ENSR | AECOM

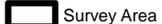
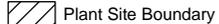
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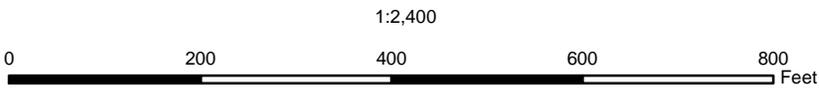
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Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

-  Gas Supply Pipeline
-  Railroad
-  Survey Area
-  Power Block and Switchyard
-  State Waters
-  Plant Site Boundary
-  Transmission Line



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 6 of 10

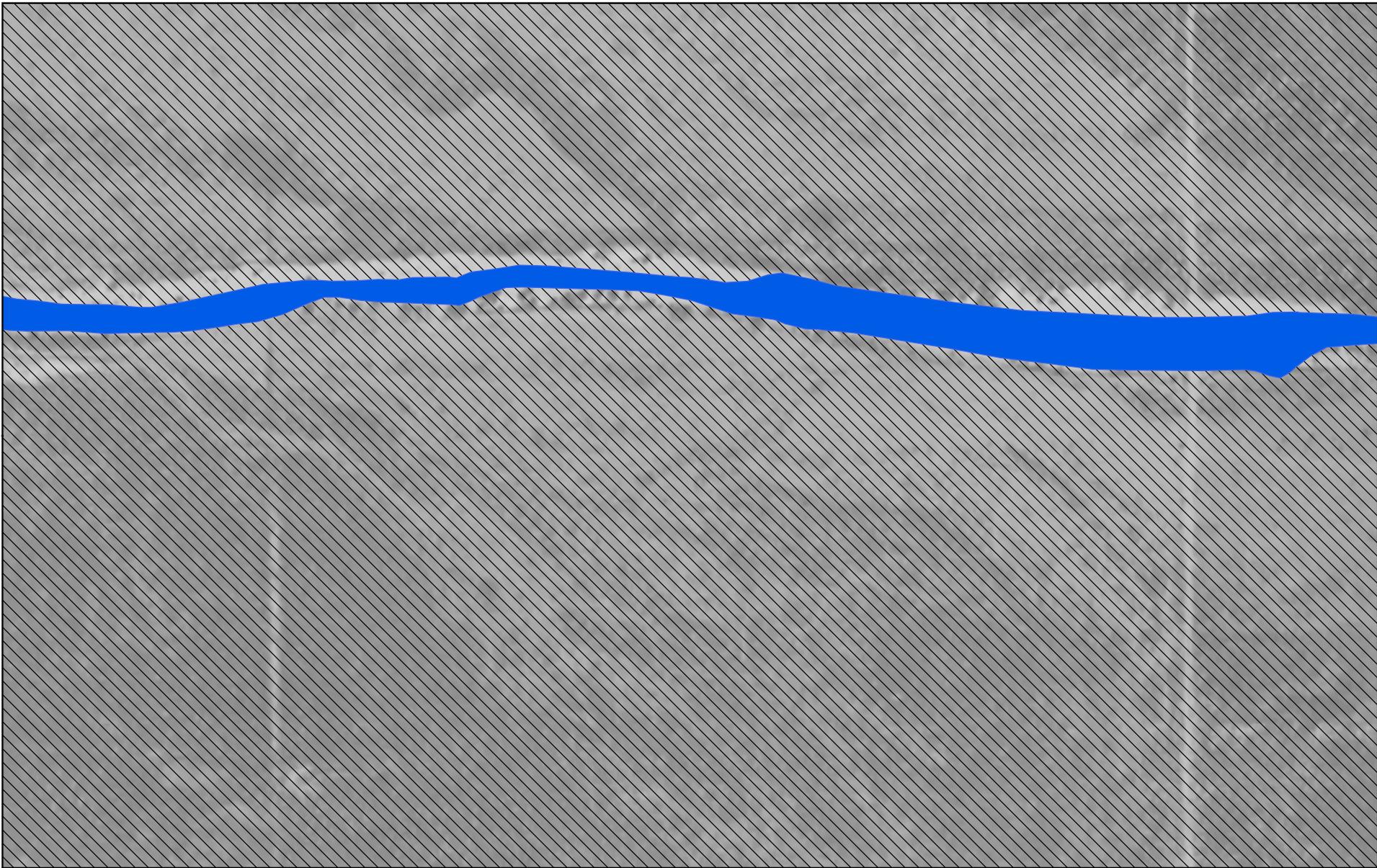
Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

ENSR | AECOM

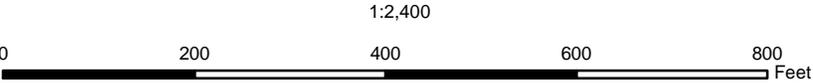
Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

- Gas Supply Pipeline
- Railroad
- Survey Area
- Transmission Line
- Power Block and Switchyard
- State Waters
- Plant Site Boundary



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheets 7 of 10

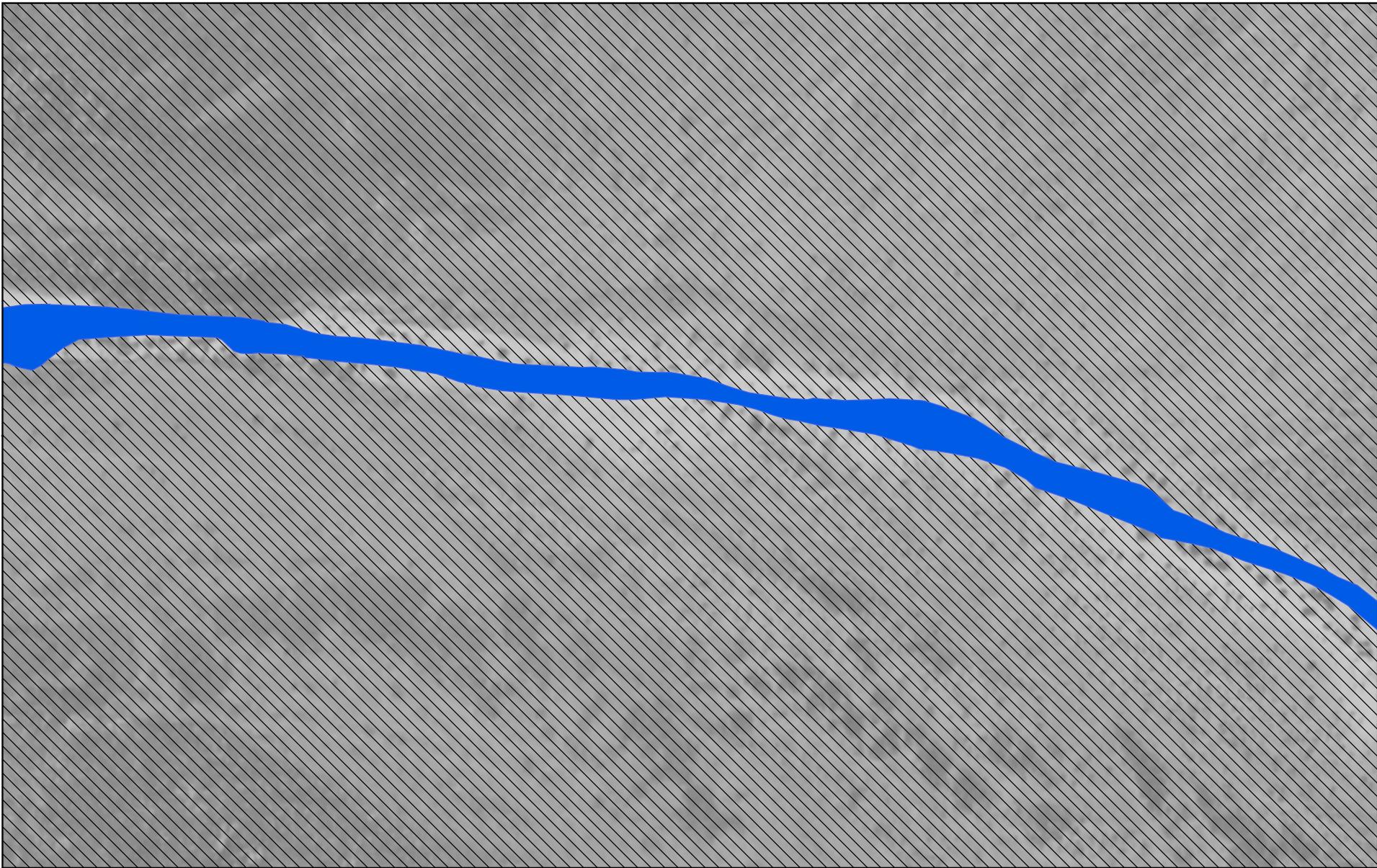
Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

ENSR | AECOM

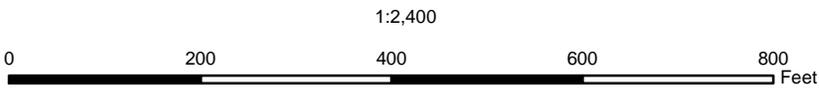
Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

- Gas Supply Pipeline
- Railroad
- Survey Area
- Transmission Line
- Power Block and Switchyard
- State Waters
- Plant Site Boundary



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 8 of 10

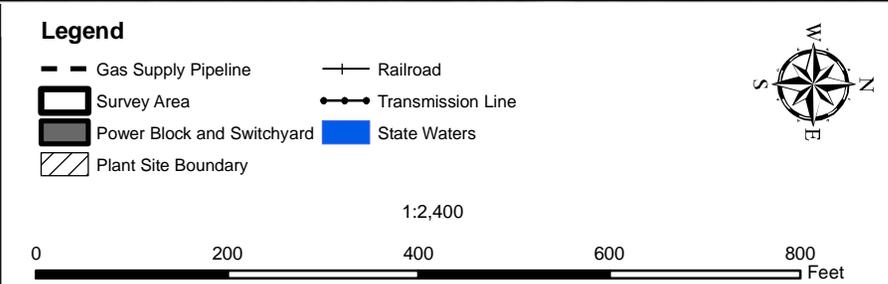
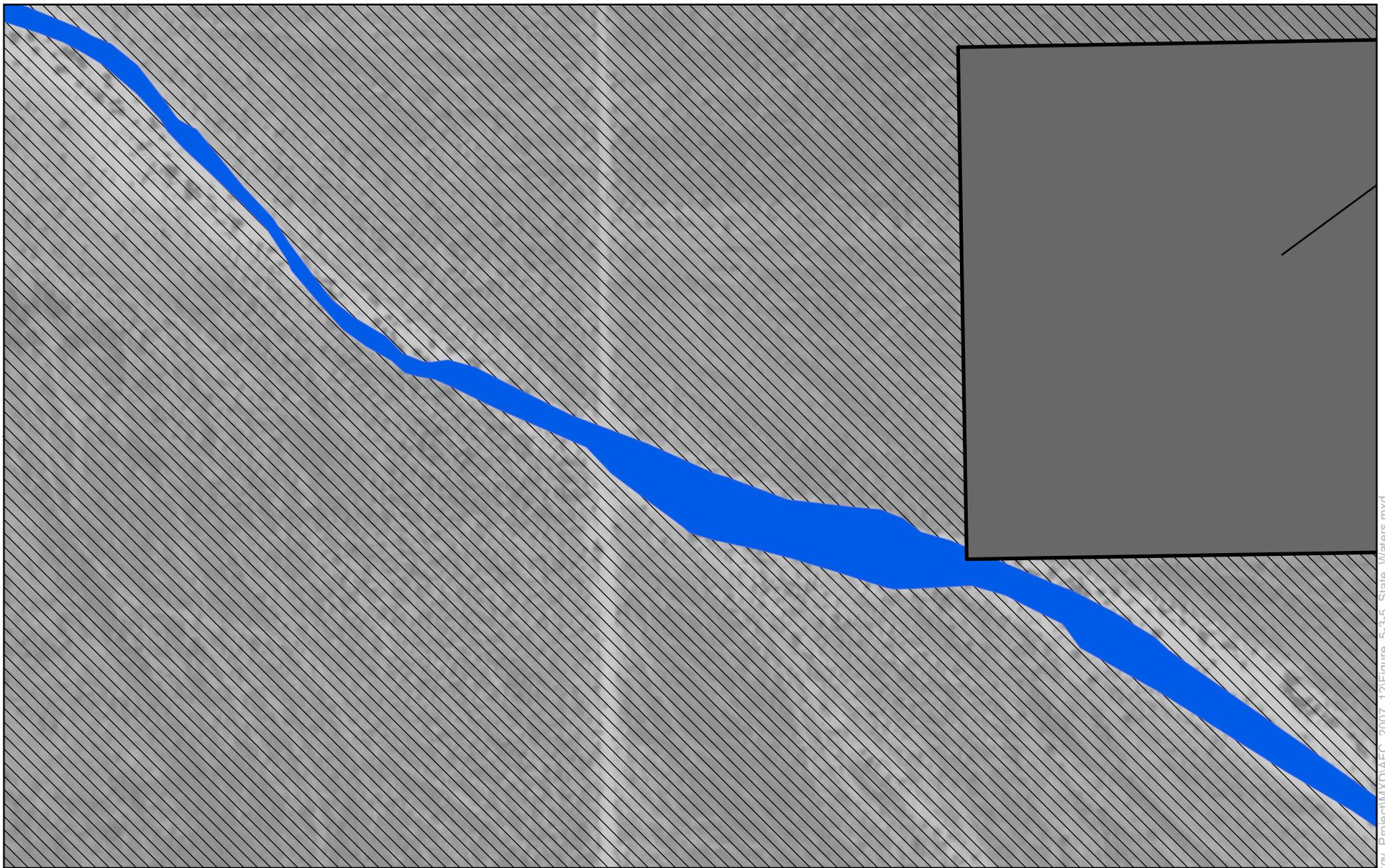
Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 9 of 10

Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

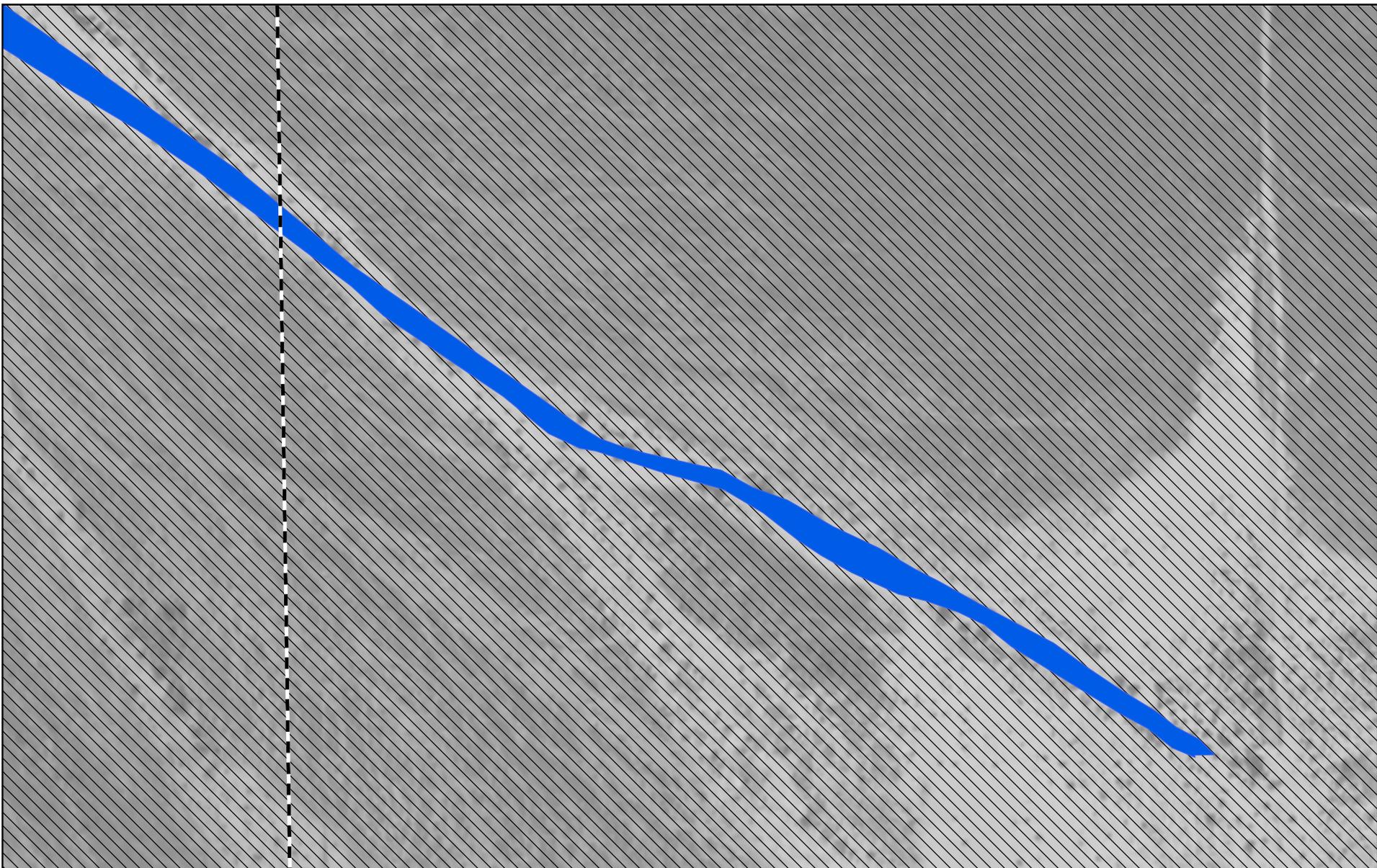
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Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



**Legend**

- Gas Supply Pipeline
- Railroad
- Survey Area
- Power Block and Switchyard
- State Waters
- Plant Site Boundary
- Transmission Line



**Beacon Solar Energy Project**

**Figure 5.3-5  
State Waters**  
Mapsheet 10 of 10

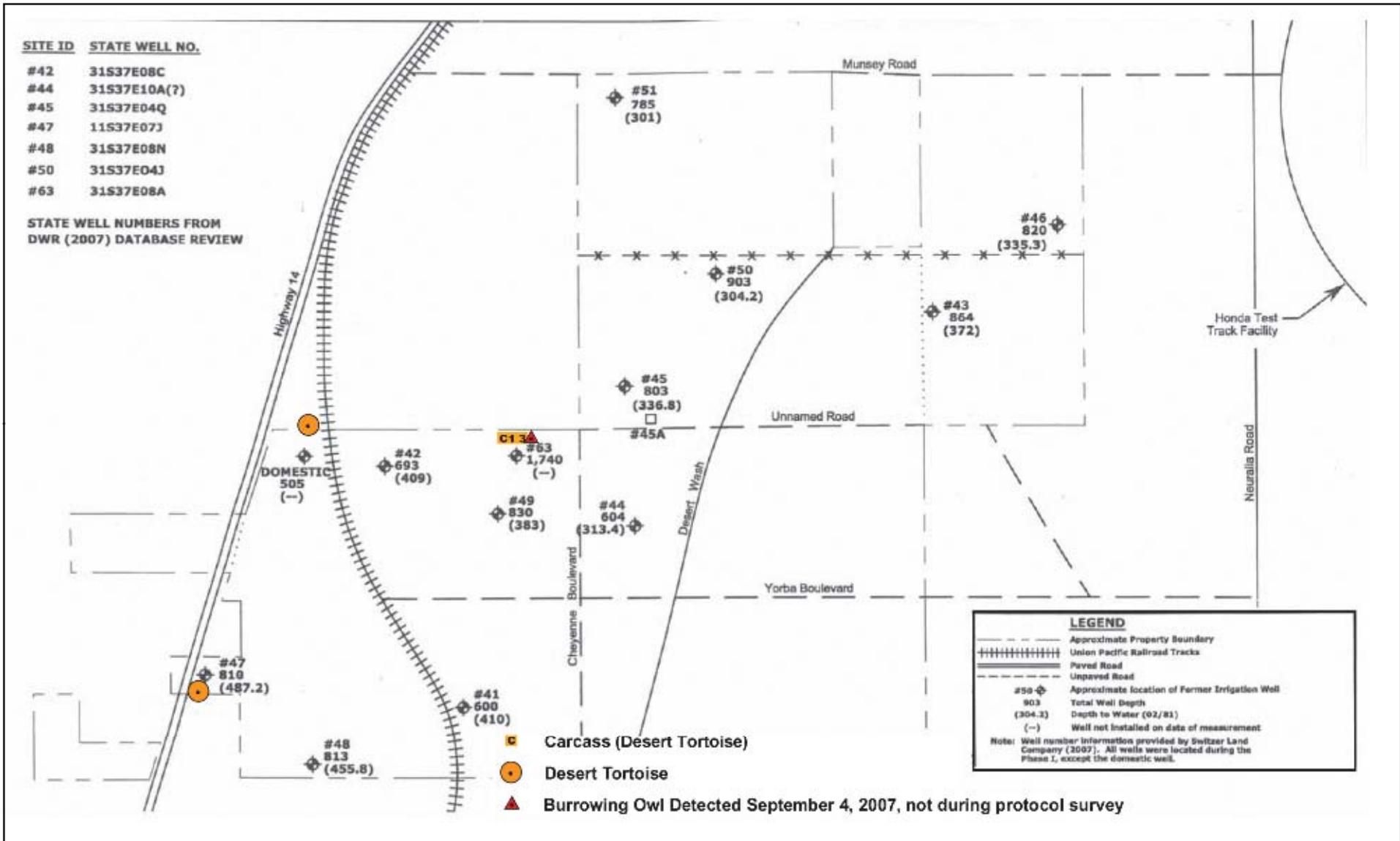
Source: NAIP 2005; EDAW 2007; WhorleyParsons 2007

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-5\_State\_Waters.mxd



### Beacon Solar Energy Project

### Figure 5.3-6 Incidental Special Status Species Observations During Onsite Pumping Tests

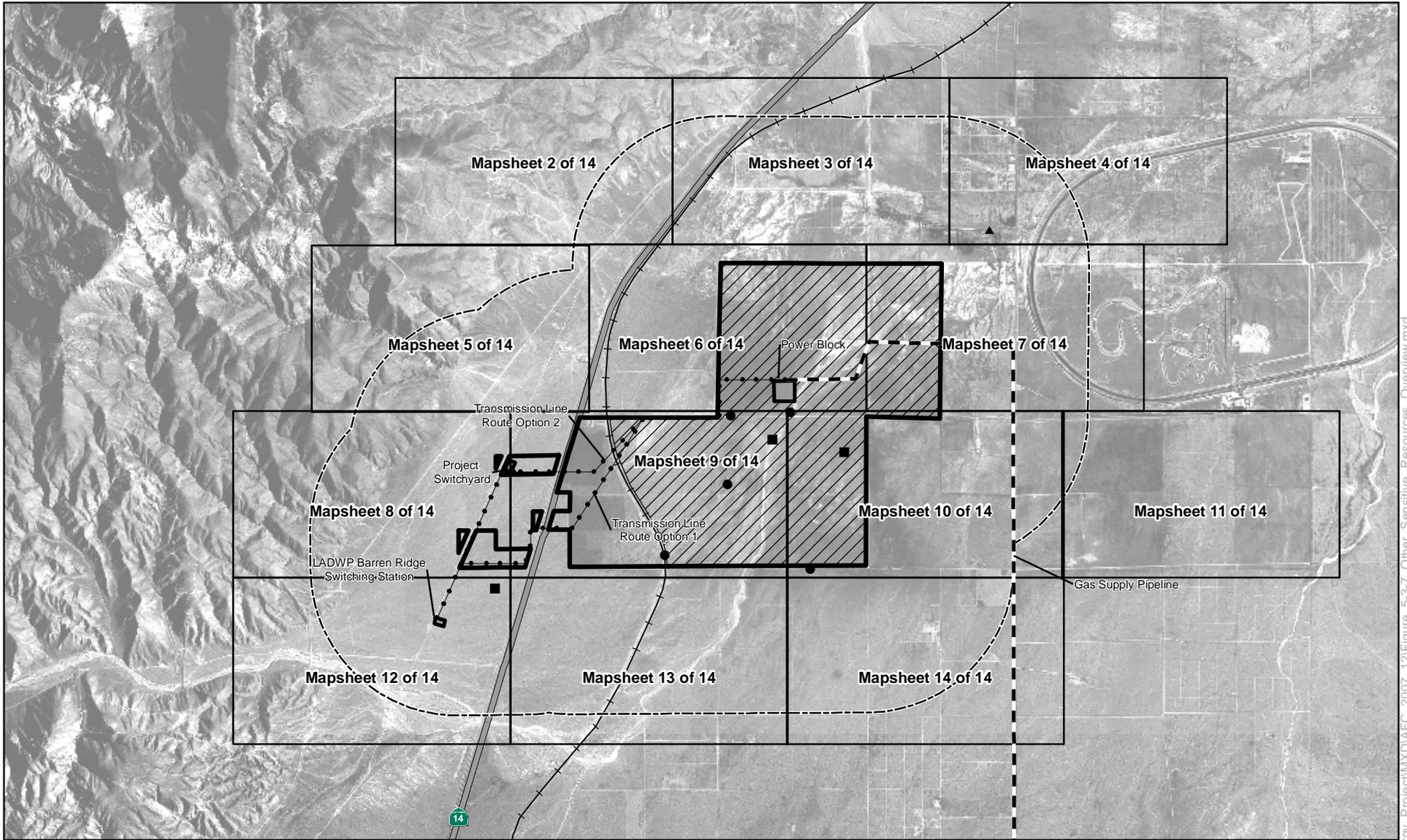
*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Not to Scale

Source: NAIP 2005;  
WorleyParsons 2007;



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

1:60,000

0      5,000      10,000      15,000  
Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 1 of 14

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

*Beacon Solar*

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ENSR | AECOM

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Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-7\_Other\_Sensitive\_Resources\_Overview.mxd



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)	
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)	
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)	
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)	
Power Block and Switchyard		
Transmission Line		
Railroad		

Scale: 1:12,000  
0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 2 of 14

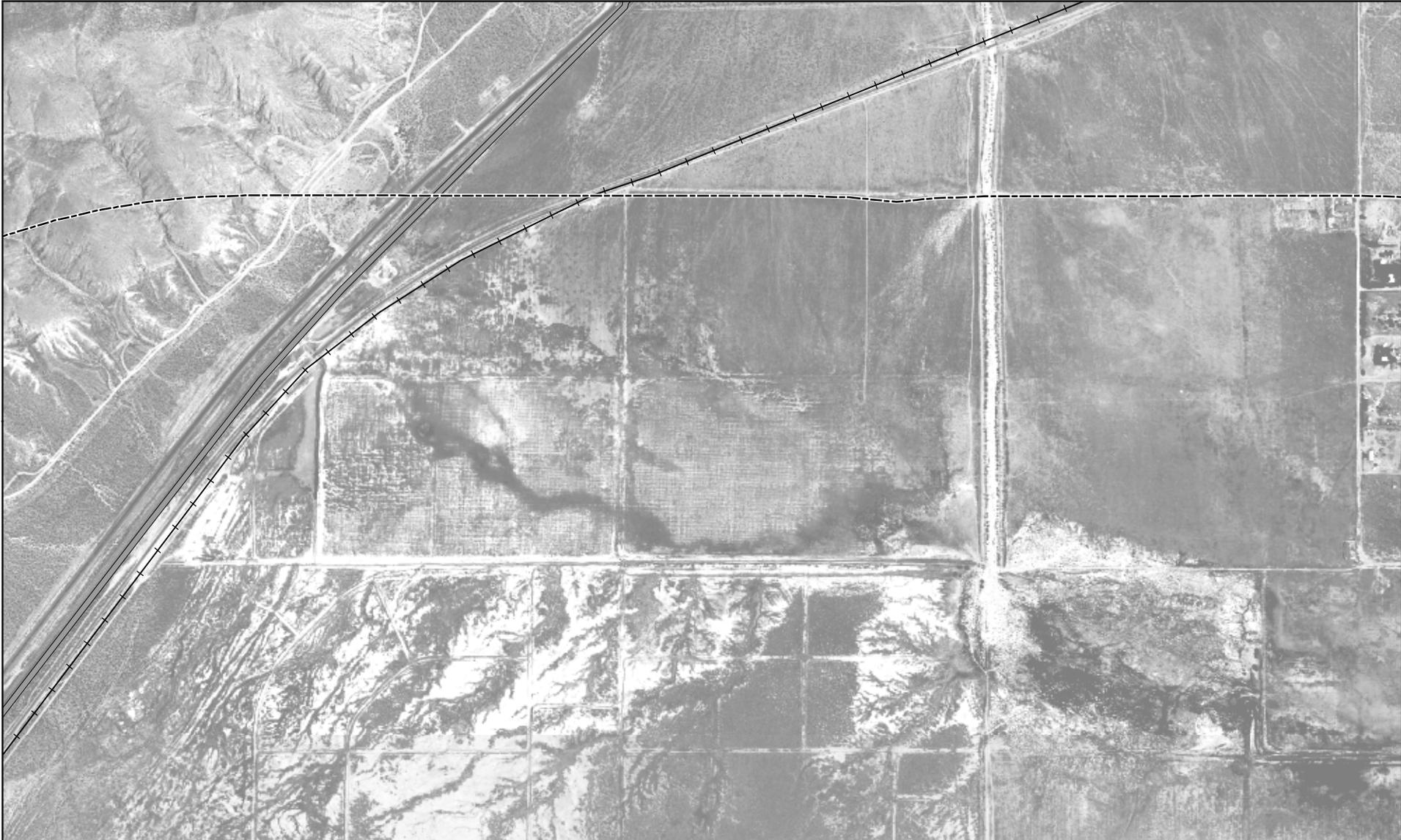
Source: TetraTech 2007; Kern County 2007; USGS 2007; CNDDDB 2007; Peggy Wood 2007; EDAW 2007; WorleyParsons 2007; NAIP 2005

**Beacon Solar**

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-7\_Other\_Sensitive\_Resources.mxd



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 3 of 14

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



Project: 10056-014  
Date: March 2008



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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S

1:12,000

0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
 Mapsheet 4 of 14

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



Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-7\_Other\_Sensitive\_Resources.mxd



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)	
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)	
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)	
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)	
Power Block and Switchyard		
Transmission Line		
Railroad		

Scale: 1:12,000  
 0 1,000 2,000 3,000 Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
 Mapsheet 5 of 14

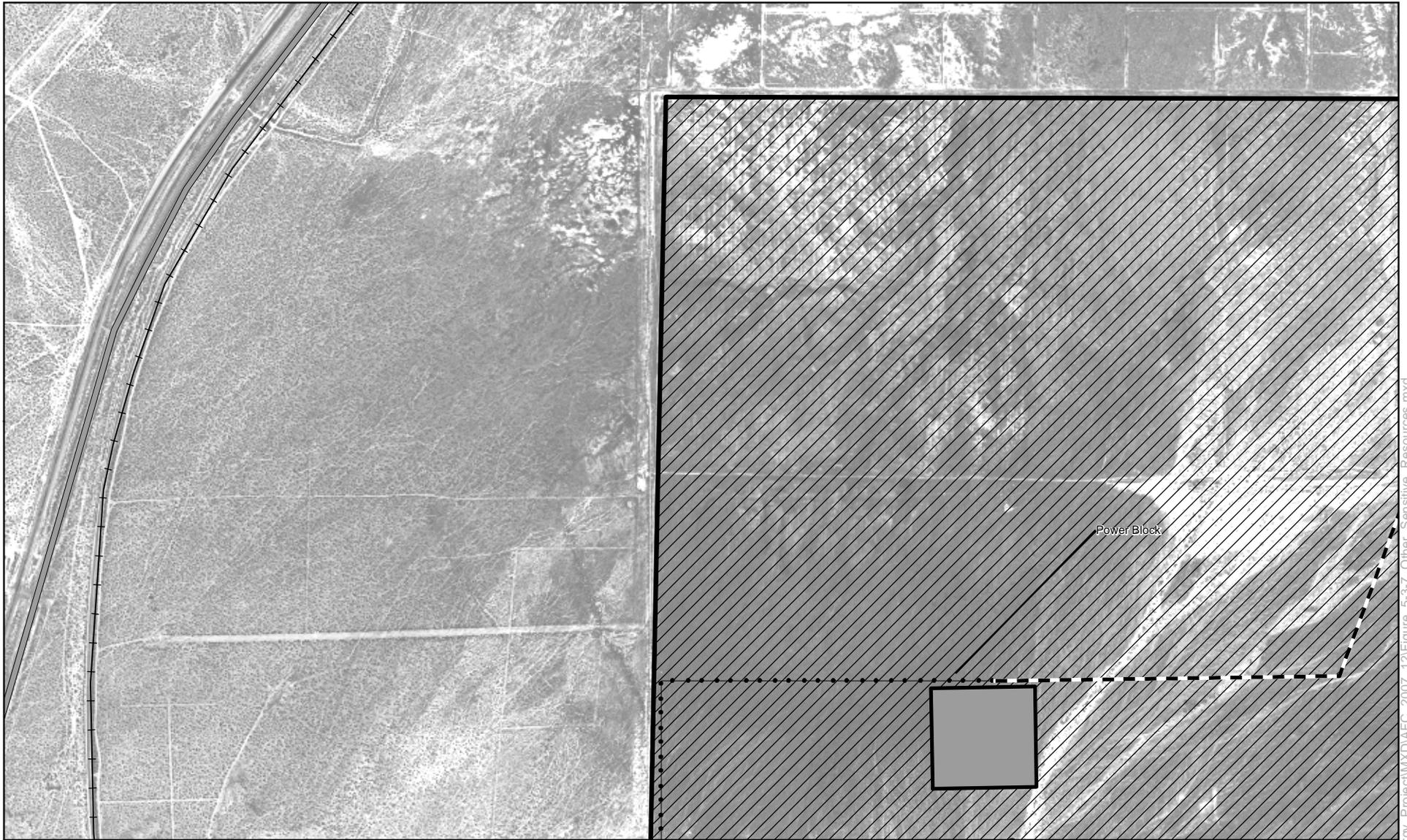
Source: TetraTech 2007; Kern County 2007; USGS 2007; CNDDDB 2007; Peggy Wood 2007; EDAW 2007; WorleyParsons 2007; NAIP 2005

**Beacon Solar**

ENSR | AECOM

Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-7\_Other\_Sensitive\_Resources.mxd



**Legend**

- Plant Site Boundary
- Survey Area
- Gas Supply Pipeline
- One-Mile Survey Area Buffer
- Power Block and Switchyard
- Transmission Line
- Railroad
- Northern Harrier (2) (CDFG Species of Special Concern)
- Le Conte's Thrasher (CDFG Species of Special Concern)
- Loggerhead Shrike (CDFG Species of Special Concern)
- Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)

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W —+— E  
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0      1,000      2,000      3,000  
Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 6 of 14

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

*Beacon Solar*

ENSR | AECOM

Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-7\_Other\_Sensitive\_Resources.mxd



**Legend**

- Plant Site Boundary
- Survey Area
- Gas Supply Pipeline
- One-Mile Survey Area Buffer
- Power Block and Switchyard
- Transmission Line
- Railroad
- Northern Harrier (2) (CDFG Species of Special Concern)
- Le Conte's Thrasher (CDFG Species of Special Concern)
- Loggerhead Shrike (CDFG Species of Special Concern)
- Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)

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0      1,000      2,000      3,000  
Feet

**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 7 of 14

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

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Project: 10056-014  
Date: March 2008



**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 8 of 14

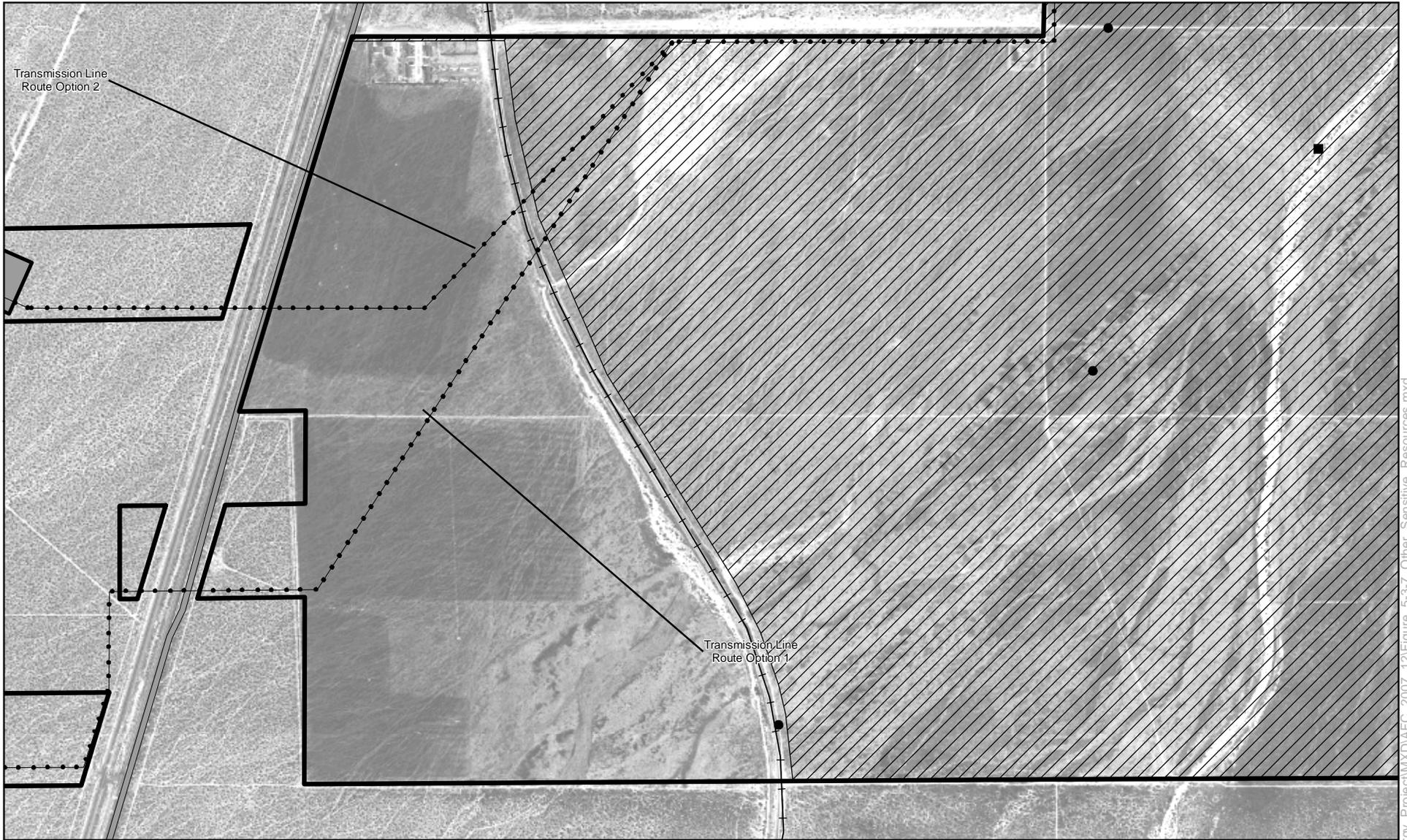
Source: TetraTech 2007; Kern County 2007; USGS 2007; CNDDDB 2007; Peggy Wood 2007; EDAW 2007; WorleyParsons 2007; NAIP 2005

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Project: 10056-014  
Date: March 2008

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**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 9 of 14

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

*Beacon Solar*

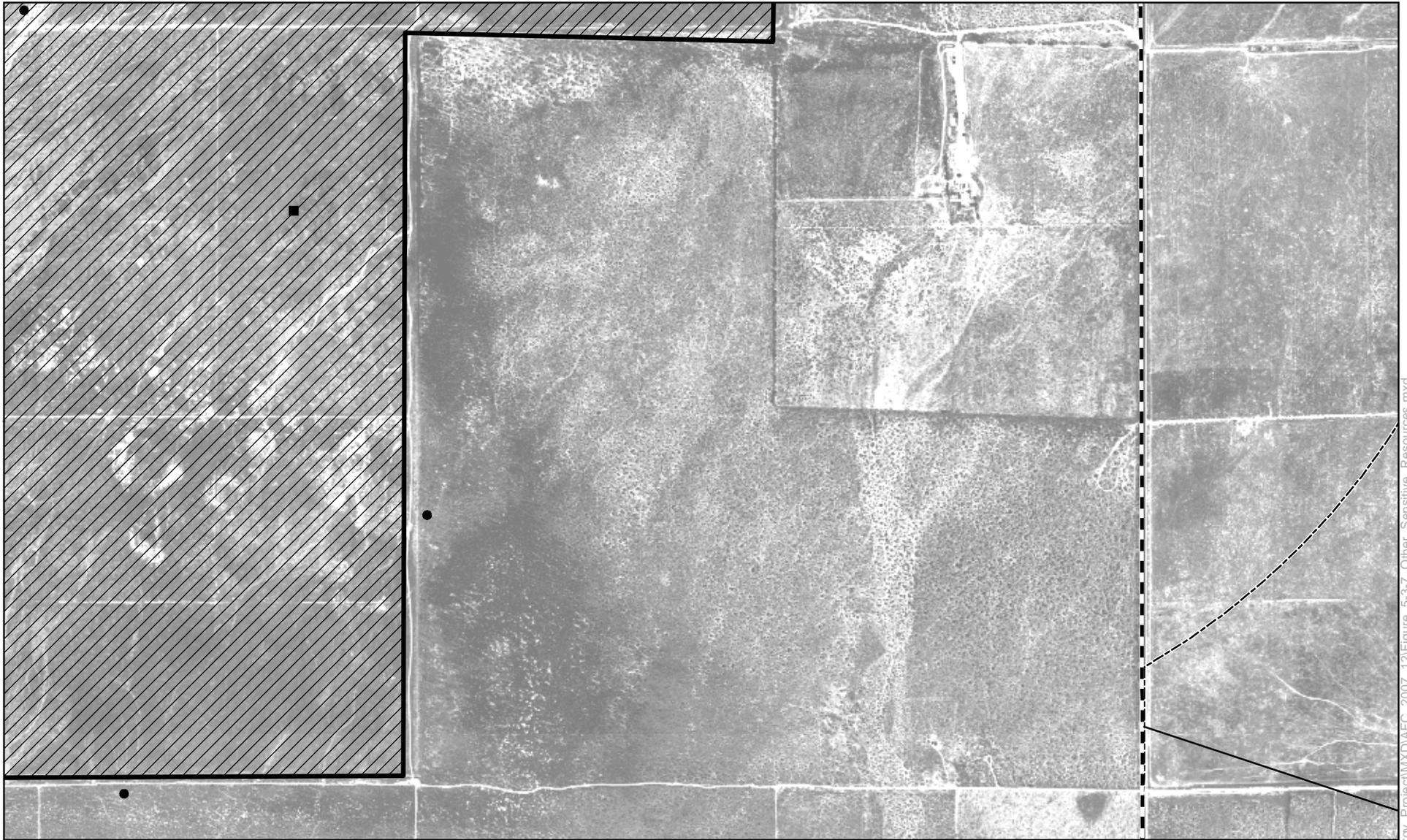
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Project: 10056-014  
Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- Gas Supply Pipeline
- One-Mile Survey Area Buffer
- Power Block and Switchyard
- Transmission Line
- Railroad
- Northern Harrier (2) (CDFG Species of Special Concern)
- Le Conte's Thrasher (CDFG Species of Special Concern)
- Loggerhead Shrike (CDFG Species of Special Concern)
- Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
 Mapsheet 10 of 14

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

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Project: 10056-014  
 Date: March 2008

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**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
 Mapsheet 11 of 14

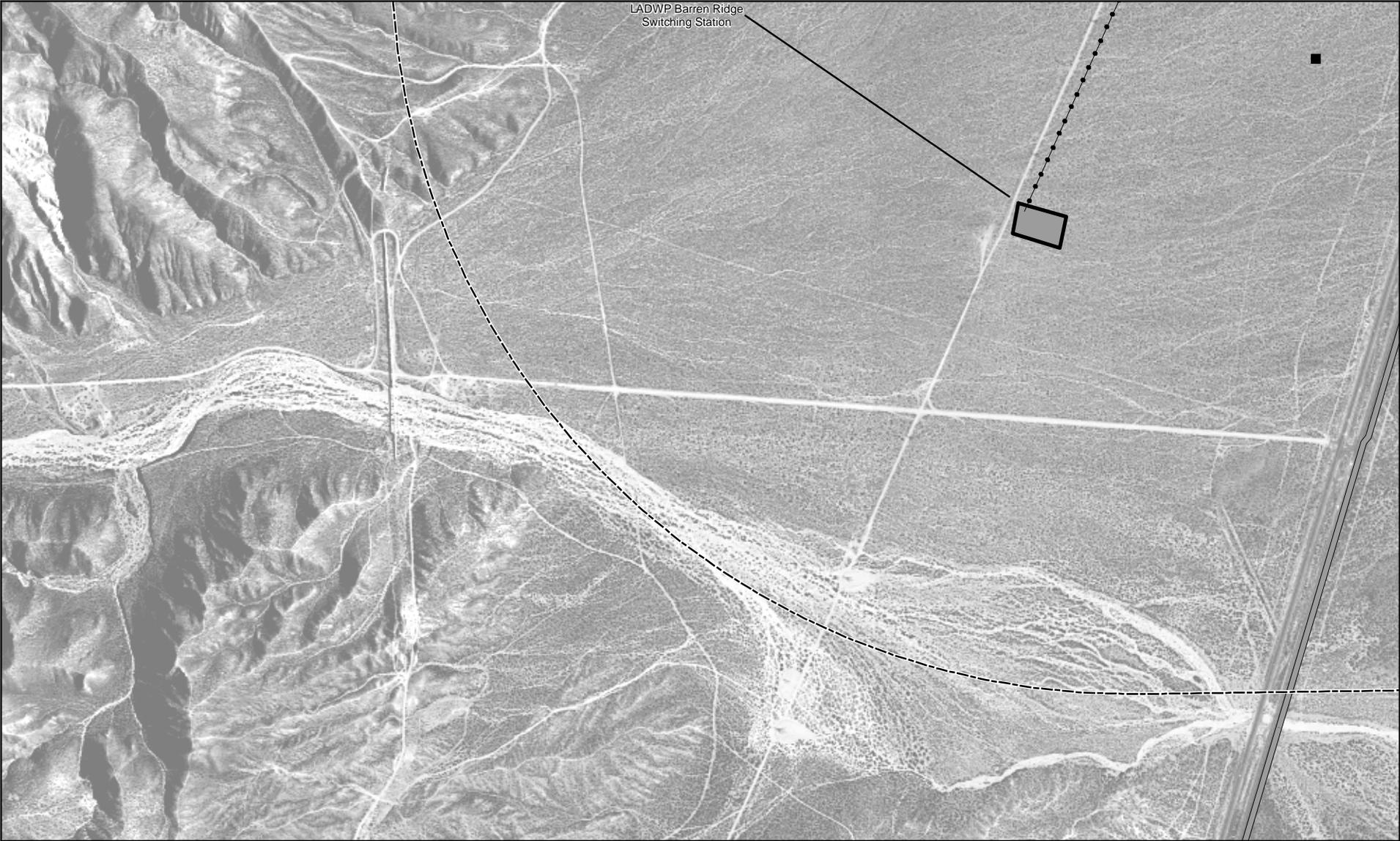
Source: TetraTech 2007; Kern County 2007; USGS 2007; CNDDDB 2007; Peggy Wood 2007; EDAW 2007; WorleyParsons 2007; NAIP 2005

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Project: 10056-014  
 Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- Gas Supply Pipeline
- One-Mile Survey Area Buffer
- Power Block and Switchyard
- Transmission Line
- Railroad
- Northern Harrier (2) (CDFG Species of Special Concern)
- Le Conte's Thrasher (CDFG Species of Special Concern)
- Loggerhead Shrike (CDFG Species of Special Concern)
- Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 12 of 14

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

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Project: 10056-014  
Date: March 2008

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**Legend**

Plant Site Boundary	Northern Harrier (2) (CDFG Species of Special Concern)
Survey Area	Le Conte's Thrasher (CDFG Species of Special Concern)
Gas Supply Pipeline	Loggerhead Shrike (CDFG Species of Special Concern)
One-Mile Survey Area Buffer	Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)
Power Block and Switchyard	
Transmission Line	
Railroad	

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**Beacon Solar Energy Project**

**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
 Mapsheet 13 of 14

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

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Project: 10056-014  
 Date: March 2008

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**Legend**

- Plant Site Boundary
- Survey Area
- Gas Supply Pipeline
- One-Mile Survey Area Buffer
- Power Block and Switchyard
- Transmission Line
- Railroad
- Northern Harrier (2) (CDFG Species of Special Concern)
- Le Conte's Thrasher (CDFG Species of Special Concern)
- Loggerhead Shrike (CDFG Species of Special Concern)
- Peregrine Falcon (CDFG Endangered and CDFG Fully Protected)

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**Beacon Solar Energy Project**

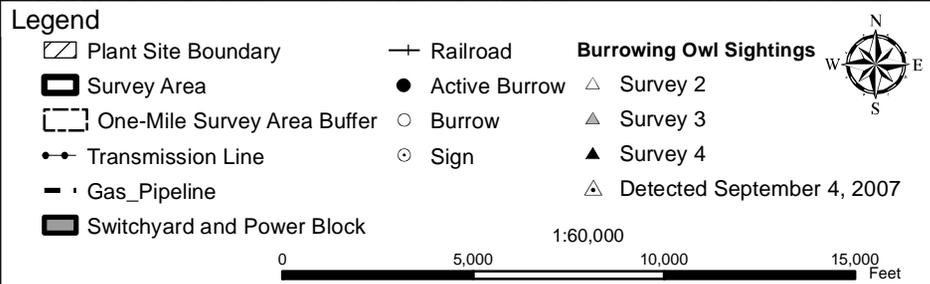
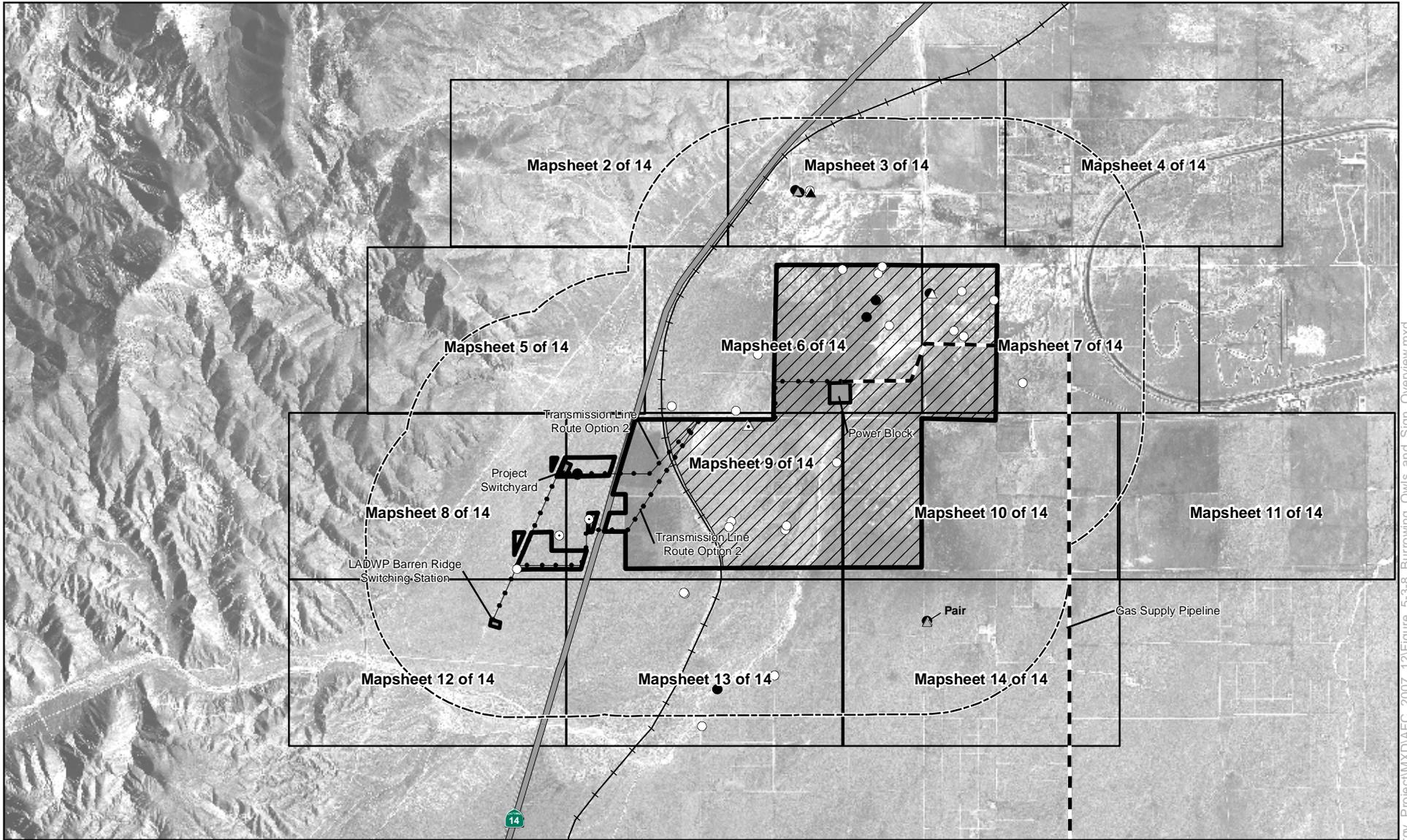
**Figure 5.3-7**  
**Other Special Status**  
**Biological Resources Observed**  
Mapsheet 14 of 14

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

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Project: 10056-014  
Date: March 2008



**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 1 of 14

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

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign\_Overview.mxd



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
Mapsheet 2 of 14

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

*Beacon Solar*

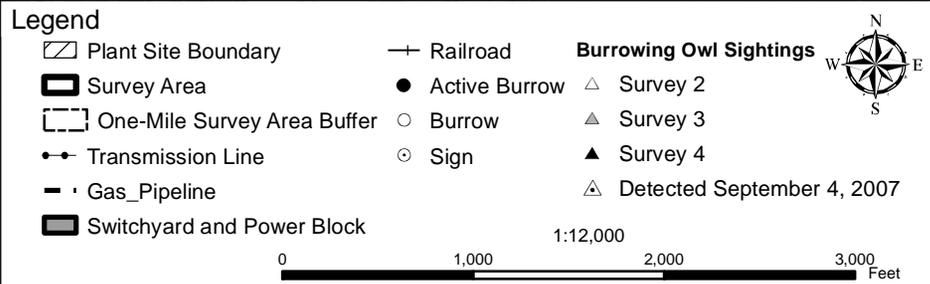
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Project: 10056-014  
Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd



**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 3 of 14

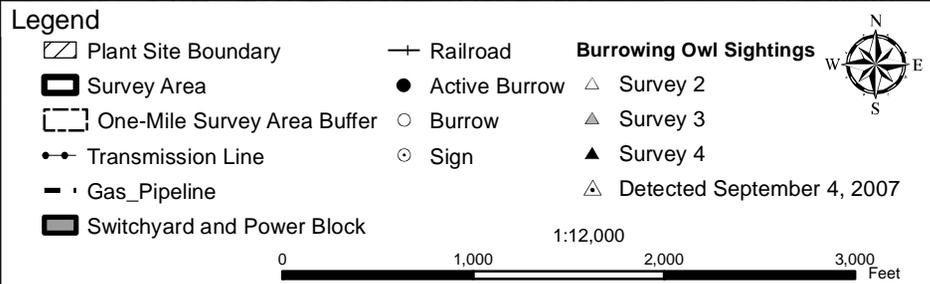
Source: NAIP 2005; EDAW 2007; TetraTech 2007; WorleyParsons 2007; Kern County 2007

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 4 of 14

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

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Project: 10056-014  
 Date: March 2008



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 5 of 14

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

*Beacon Solar*

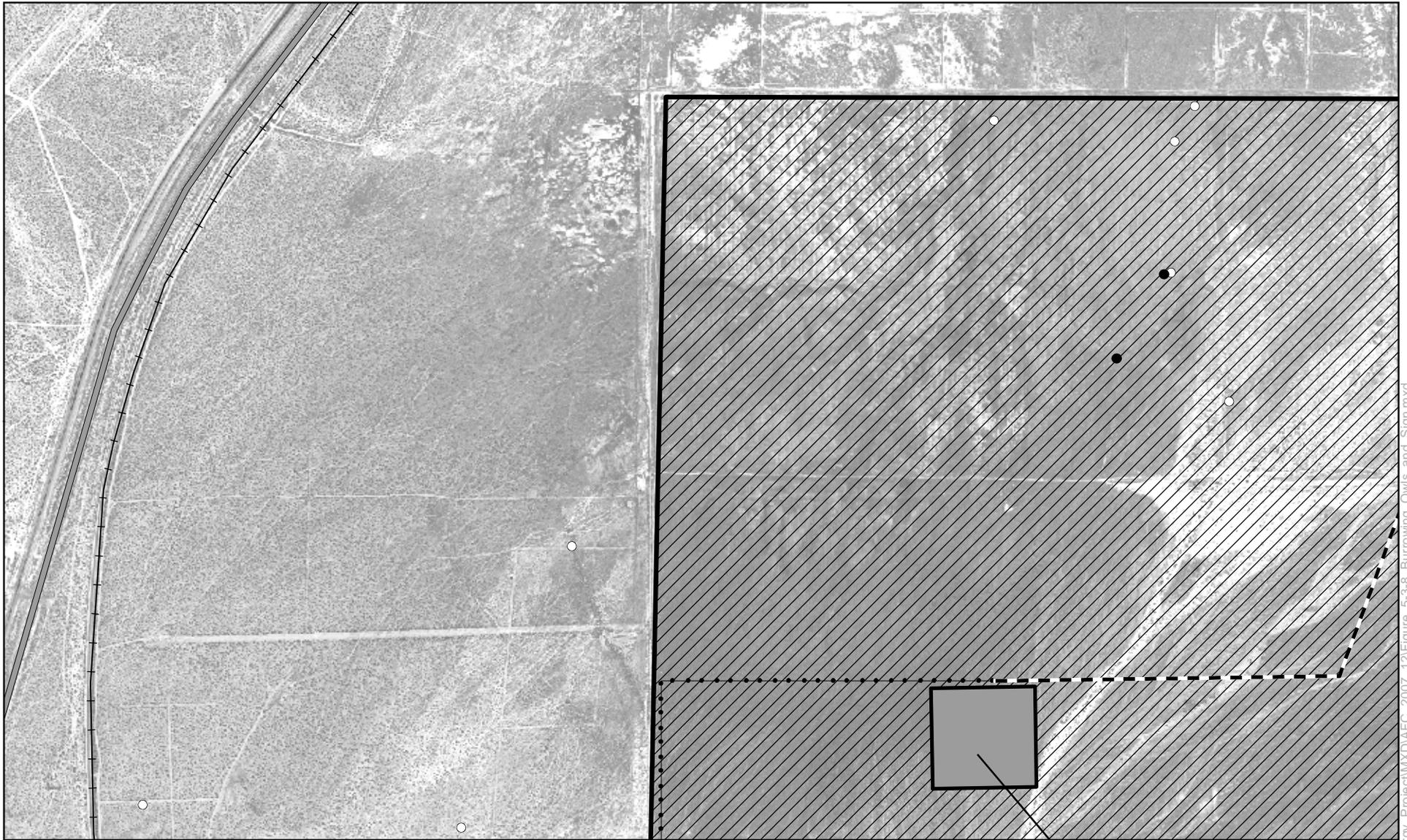
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Project: 10056-014  
 Date: March 2008

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**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas_Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 6 of 14

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

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 7 of 14

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

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 8 of 14

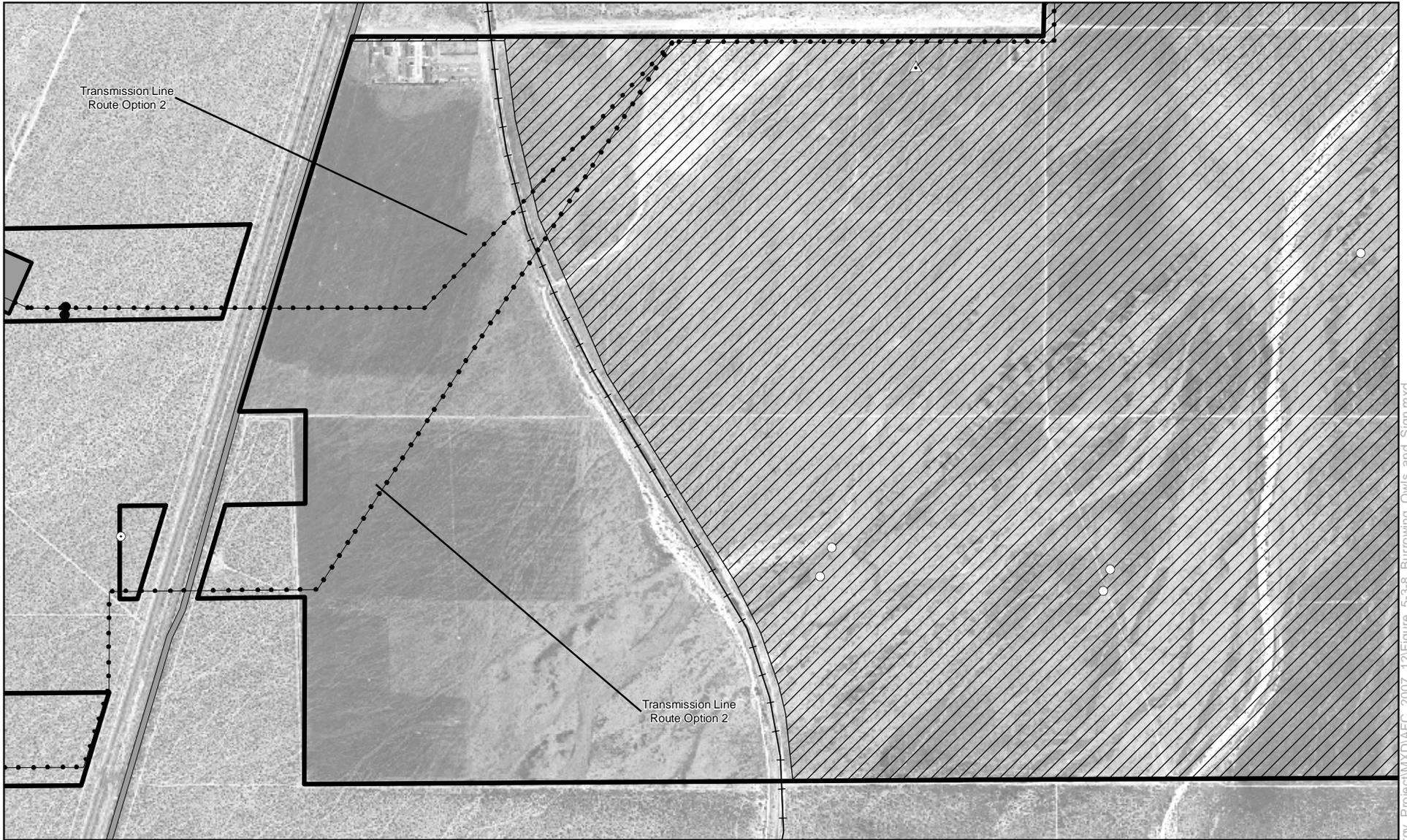
Source: NAIP 2005; EDAW 2007; TetraTech 2007; WorleyParsons 2007; Kern County 2007

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
Mapsheet 9 of 14

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

*Beacon Solar*

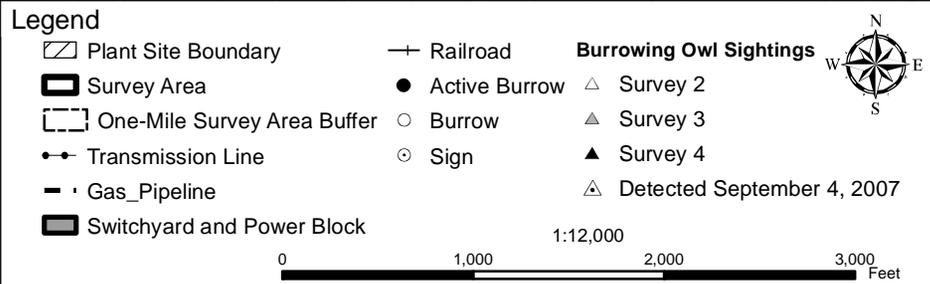
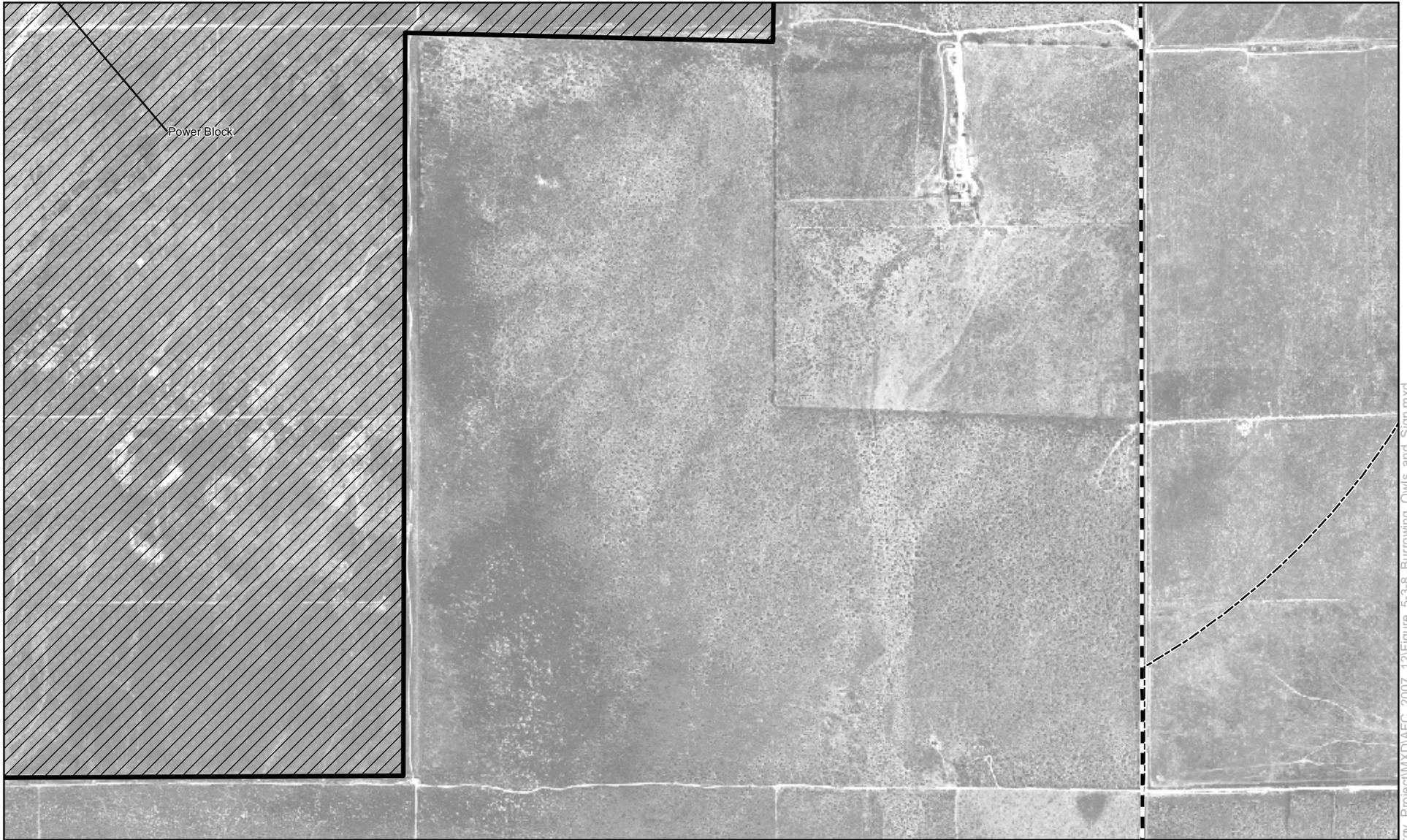
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Project: 10056-014  
Date: March 2008

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 10 of 14

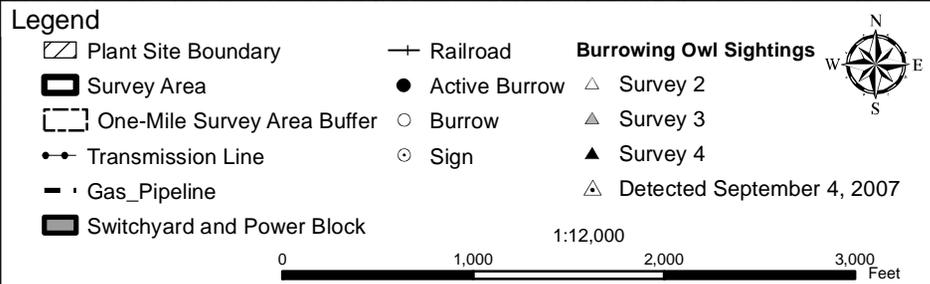
Source: NAIP 2005; EDAW 2007; TetraTech 2007; WorleyParsons 2007; Kern County 2007

*Beacon Solar*

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd



**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 11 of 14

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

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXDAFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd





**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 13 of 14

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

*Beacon Solar*

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 Date: March 2008



**Legend**

Plant Site Boundary	Railroad	<b>Burrowing Owl Sightings</b>
Survey Area	Active Burrow	Survey 2
One-Mile Survey Area Buffer	Burrow	Survey 3
Transmission Line	Sign	Survey 4
Gas Pipeline		Detected September 4, 2007
Switchyard and Power Block		

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**Beacon Solar Energy Project**

**Figure 5.3-8**  
**Burrowing Owls and Sign**  
 Mapsheet 14 of 14

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

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Project: 10056-014  
 Date: March 2008

Y:\Projects\FPL\Beacon\_Solar\_Energy\_Project\MXD\AFC\_2007\_12\Figure\_5-3-8\_Burrowing\_Owls\_and\_Sign.mxd