Appendix D

Biological Resources Technical Studies

AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

Memorandum

Date: January 13, 2014

To: Mr. Ray Bransfield, USFWS

Cc: Peter Godfrey, BLM
Kim Marsden, BLM
Marisa Mitchell, Recurrent Energy

From: AECOM Staff

Subject: Golden Eagle (*Aquila chrysaetos*) Analysis for the Recurrent Energy Cinco Project, Kern County, California

Recurrent Energy (RE) (the Applicant) is proposing to construct the RE Cinco Project (Solar Facility Project), a nominal 60-megawatt commercial electric-power-generating project using photovoltaic (PV) technology, and a generation tie line connecting to the Los Angeles Department of Water and Power (LADWP) Barren Ridge substation (Gen-tie Project). These two projects are collectively referred to as the Projects and where they are located is known as the Project site. This document addresses the potential impacts to golden eagle (*Aquila chrysaetos*), a State of California fully protected species, from construction, operation, and decommissioning of the Projects. No golden eagle surveys were conducted for the Projects; however, golden eagle surveys were conducted in 2011 for the nearby Beacon PV project (CH2M Hill 2011), and those results are included in this analysis. Permission was received from LADWP to use the data from the Beacon PV project (now owned by LADWP) for the purposes of this analysis.

Project Location

The Projects would be located in unincorporated southeastern Kern County, approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct. The 500-acre solar facility development area is located on one 594-acre privately owned parcel, which consists entirely of vacant land. The parcel is bisected by State Route (SR) 14, which also provides access to the parcel. Other features consist of a LADWP transmission corridor easement extending through the northeast corner of the parcel north and west of the solar facility development area, and Phillips Road, which extends through the southeast portion of the parcel and south and east of the solar facility development area.

Project Description

The Solar Facility Project involves development of an independent solar PV power-generating facility near the towns of California City and Mojave within Kern County,

California. The Solar Facility Project includes installation of solar PV panels and associated facilities, including a substation within the 500-acre development area; equipment pads; interior access roads; perimeter fencing; and construction storage, staging, and laydown areas. The Gen-tie Project would include a 230-kV transmission line and supporting features, including a maintenance access road, spur roads, and pull and splice sites.

The Gen-tie Project would be constructed within a right-of-way (ROW) on land owned by the federal government and administered by the Bureau of Land Management (BLM). Use of the federal land would involve issuance of a ROW grant to the Applicant by BLM.

The total Solar Facility Project disturbance area would be 500 acres, with approximately 94 acres left undeveloped, including the area east of SR-14, the small northwestern area west of the existing LADWP transmission corridor easement, and the riparian extent of the major drainage on the west edge of the property.

The separate Gen-tie Project impact acreage will depend on the configuration selected, but is estimated to include approximately 1.9 acres of permanent impacts and 9.8 acres of temporary impact based on the current conceptual design (see discussion below).

The Solar Facility Project would consist of the following components: (1) a solar field of PV panels mounted on steel and aluminum structures, (2) an electrical collection system that would aggregates the output from the PV panels and convert the electricity from direct current (DC) to alternating current (AC) via inverters, (3) a substation where the electrical output would be combined and its voltage increased by transformers, and (4) internal infrastructure such as roads, fences, and an operations and maintenance building.

The Gen-tie Project would be constructed predominantly on federally owned land administered by BLM, and would convey power from the solar project to the local power grid via a generation tie-line that would connect to the LADWP Barren Ridge Substation located approximately 1.75 miles from the Project site. The Gen-tie Project would consist of monopoles, access roads, and pull/splice sites. Lattice structures may be used on either side of Pine Tree Canyon Wash in place of monopoles to facilitate spanning the wash at a lower height and avoiding impacts to jurisdictional waters. This would also reduce the number of poles. The 150-foot-wide ROW for the Gen-tie Project would be approximately 1.9 miles long and encompass approximately 36.3 acres. The Gen-tie Project would consist of approximately 11 poles, with an average span of 400 feet between poles to accommodate structures and conductors and 2 lattice structures. All components associated with the Gen-tie Project would be located within the proposed 150-foot-wide ROW.

Survey Methodology

Four 1-day raptor surveys were conducted in May 2011 by biologists with Rincon Consultants to identify special status raptors, such as golden eagles, that may occur within the Project site and a 1-mile buffer (Rincon Consultants 2011). Surveys included a visual inspection of all potential nesting areas (e.g. towers, cliffs, Joshua trees). Biologists also

surveyed for soaring individuals within the Project site and a 1-mile buffer. The entire Project site and buffer area were searched each visit with a focus in areas with the highest potential for raptors (e.g. cliffs, ridgelines, towers).

Golden eagle nest surveys were conducted June 2 through June 7, 2011, by CH2M HILL biologists for the Beacon PV project (CH2M HILL 2011). The project site for the Beacon PV project is located a few miles northeast of the Project site along SR-14. Golden eagle surveys included a 10-mile radius aerial survey of all potential golden eagle nesting areas (cliffs, trees, transmission towers, etc.) around the Beacon PV project. This 10-mile radius encompasses the Project site. Aerial surveys conducted for the Beacon PV project followed the U.S. Fish and Wildlife Service (USFWS) Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010).

Golden eagle nest surveys were conducted by aerial survey over 252,304 acres to look for new golden eagle nests and to verify the location and status of known golden eagle nests based on data from BLM. The details of the golden eagle nest survey methodology are documented in the CH2M HILL 2011 survey report, and summarized below.

Nest locations were recorded using resource-grade Trimble Geo XT handheld global positioning system (GPS) units; a Robinson 44 helicopter was used to conduct surveys. The survey area included the Beacon PV project site and a 10-mile radius. Map grids, each measuring approximately 5 by 4 miles, were established and overlaid over the survey map to assist with the aerial survey effort.

Transects between 0.25 and 0.5 mile apart were flown across each map grid, with greater focus in areas of suitable golden eagle nesting habitat and structures (rock outcrops, cliffs, large trees, transmission line towers). When a nest was located, the biologist recorded nest attribute data, including species, nest type, nest status, nest condition, nest height, substrate, substrate height, nest aspect, and GPS accuracy.

Results

No golden eagles were observed during the May 2011 raptor surveys of the Project site (Rincon Consultants 2011). The closest golden eagle nesting location as of spring and summer 2011 was approximately 3.5 miles to the north of the northern terminus of the Gen-tie Project, where it enters the LADWP Barren Ridge Substation (Figure 1). This location had three nests on a cliff located a few hundred feet from each other, all of which were recorded as inactive in 2011. The closest active golden eagle nest in 2011 was approximately 5 miles to the west of the Project site (CH2M HILL nest ID 31 or BLM Nest ID 4 in CH2M HILL 2011). This golden eagle nest was recorded as having two fledgling golden eagles in June 2011. This nest was located on a cliff approximately 200 feet above ground level, with a north aspect within Pine Tree Canyon. Since this nest site is west of the Project site with a north aspect and surrounding mountainous terrain, it is not possible for golden eagles to see the Project site from the nest location. The nest is on a north-facing aspect and located at an elevation of approximately 4,050 feet. There is a ridgeline between the

golden eagle nest and the Project site that is approximately 4,180 feet; therefore, it is not possible for a golden eagle at the nest location to see the Project site. In addition, noise attenuation from construction at this distance, and with the intervening topography, would be such that eagles located at this nest site would not hear noise generated at the Project site. There are additional active and inactive golden nests located farther away (more than 5 miles from the Project site), which are detailed in the CH2M HILL 2011 report and shown on Figure 2. Per USFWS Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010), aerial surveys including a 10-mile radius buffer around project sites are suggested. Additional nests within the 10-mile radius buffer are historically known based on data from the USFWS, BLM, and some of the nests were found by CH2M HILL during aerial surveys for the Beacon PV project (CH2M HILL 2011).

Discussion

Golden eagles are known to prey upon a variety of mammalian and avian species, as well as feed on carrion. One of the primary prey species for golden eagles throughout much of their range is black-tailed jackrabbits (*Lepus californicus*) (Kochert et al. 2002), which inhabit creosote bush (*Larrea tridentata*) scrub within the Mojave Desert. The primary vegetation community within the Project site is creosote bush scrub. Golden eagles forage over vast amounts of area depending on prey availability, and home ranges may extend from approximately 8.5 to 12.7 square miles during the breeding season (Kochert et al. 2002). Given the large amount of potential foraging area around the Project site, 500 acres is a relatively small portion. The surrounding habitat is mature creosote bush scrub where golden eagles would still be able to forage.

No golden eagles were observed within the Project site or on the nearby Beacon PV project site during surveys; however, they may occasionally forage within the Project site. The closest recorded active nest as of 2011 was approximately 5 miles west within Pine Tree Canyon with a north aspect. This nest location is unlikely to be negatively affected by project construction or operation due to the project distance, lack of direct line of sight, and mountainous terrain between the nest and the Project site.

The Solar Facility Project would use PV technology to create electricity; there is no need for evaporation ponds or other ponded water features that may attract wildlife species that golden eagles might prey on. The primary potential impacts to golden eagle would occur through an increase in available perching structures in the form of 13 new utility poles/towers within the Gen-tie Project. The attraction of utility poles to golden eagles would be a risk, as electrocutions are a leading cause of eagle mortality. However, this risk can be managed and minimized by constructing utility poles and towers according to Avian Power Line Interaction Committee (APLIC) construction standards (APLIC 2012), which would minimize the risk of electrocution. The monopole structures would not support nesting for golden eagles. The two lattice structures, if used to cross Pine Tree Creek Wash, would be designed/fitted to prevent golden eagles from nesting. In addition, electrical lines associated with the solar field would either be underground or designed in accordance with APLIC standards and made visible to minimize the potential for golden eagles to collide with those

structures. Additionally the Gen-tie Project will be collocated within a BLM 368 corridor near two other high-voltage transmission lines. The location of the line adjacent to existing transmission lines would only marginally add to the risk of collision/electrocution from current baseline conditions.

In conclusion, due to the small size of the Project in comparision to the large amount of available golden eagle foraging habitat, the colocation of the Gen-tie Project within an exisiting transmission corridor, compliance with APLIC standards, and the intervening topography in relation to the nearest potentially active nest site, the Project is not likely to result in take of golden eagles.

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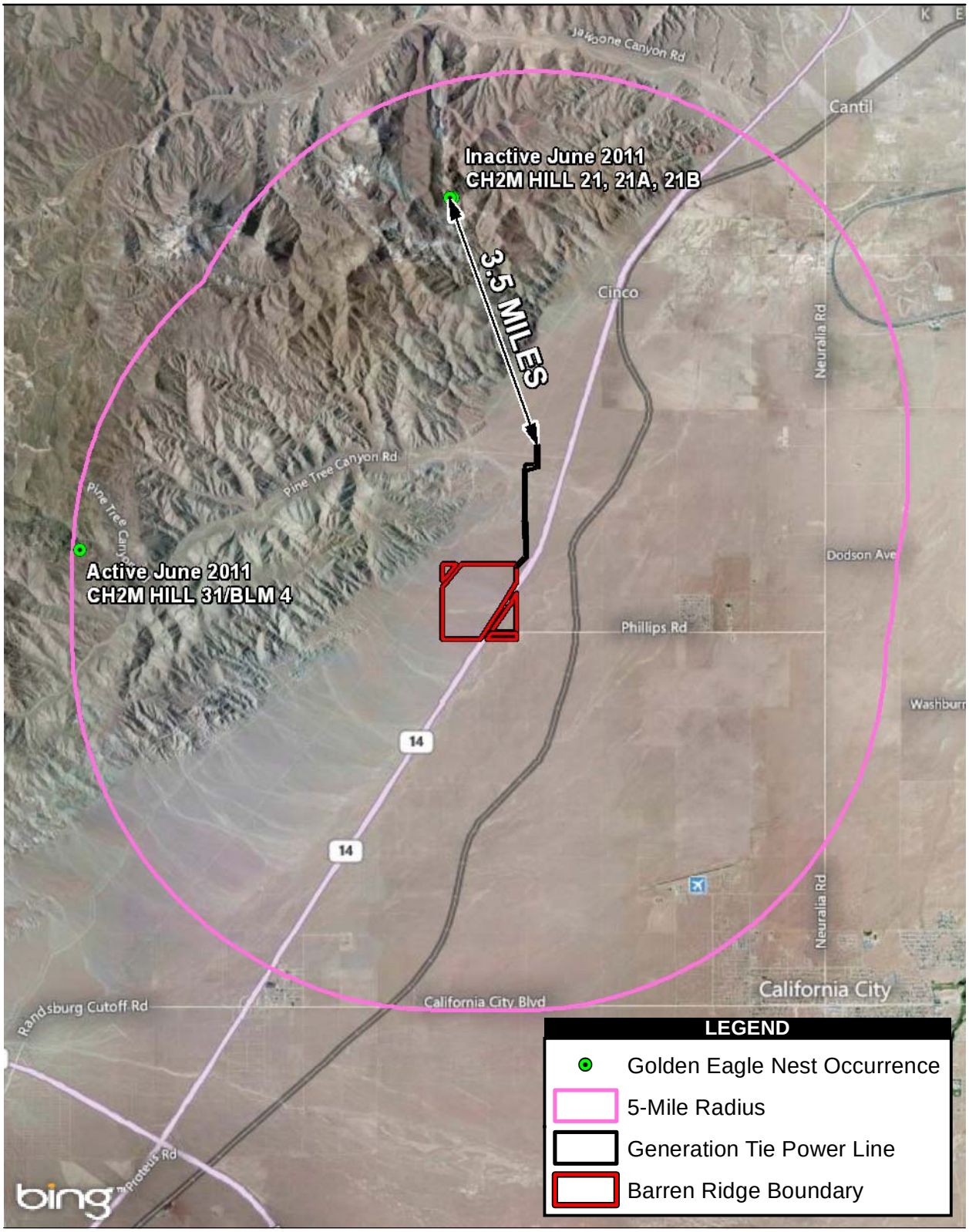
Attachments

Figure 1 – Regional Golden Eagle Nest Occurrences 5-mile Radius
Figure 2 – Regional Golden Eagle Nest Occurrences 10-mile Radius



Source: RE Barren Ridge Solar One 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom © Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © AND © 2013 Nokia © AND

2 1 0 2 Miles

Scale: 1 = 126,720; 1 inch = 2 miles

Figure 1
Regional Golden Eagle Nest Occurrences 5-mile Radius

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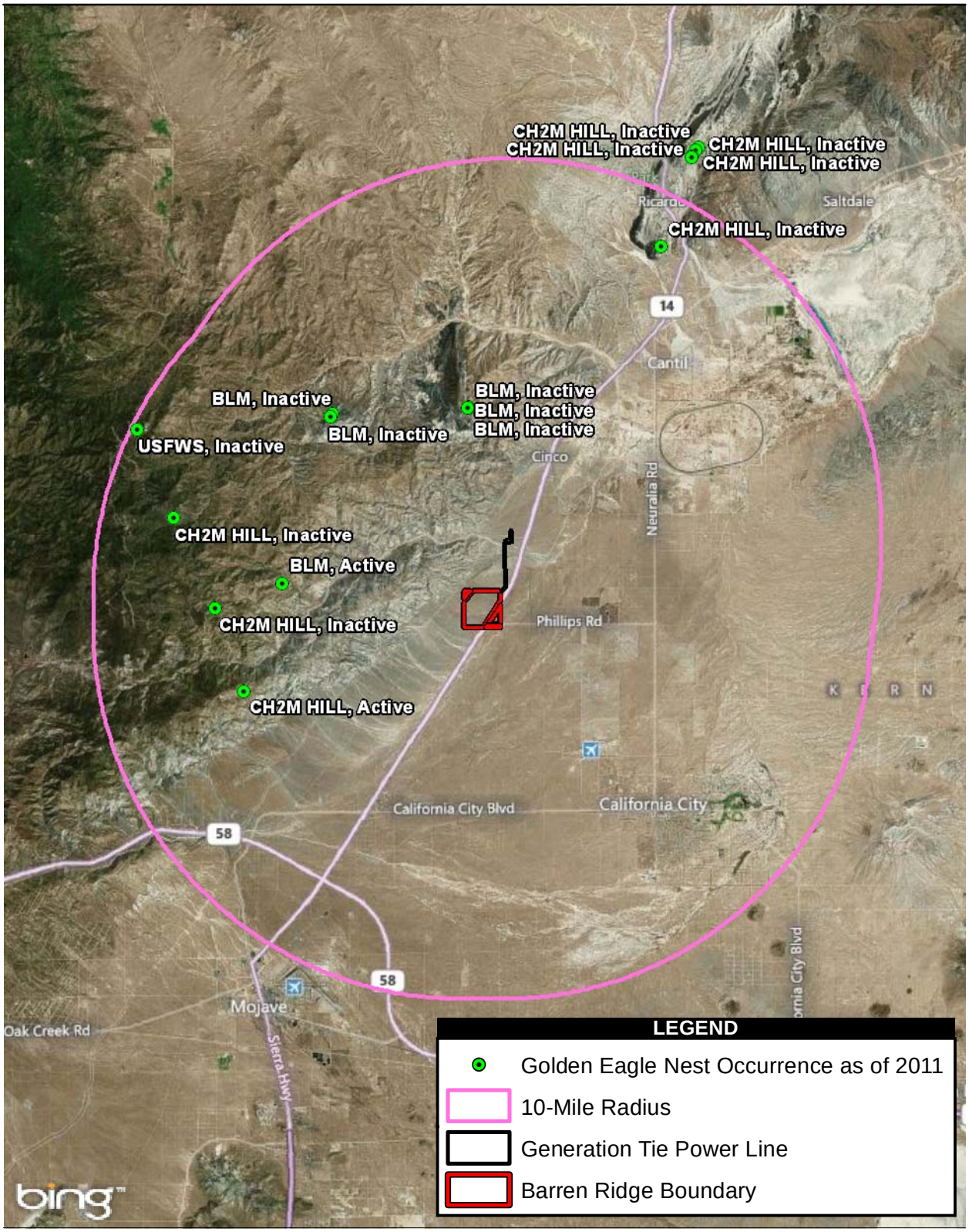

Source: RE Barren Ridge Solar One 2013; © Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © AND © 2012 MapData Sciences Pty Ltd, PSMA © 2012 Zenrin
Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom

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Scale: 1 = 126,720; 1 inch = 2 miles

Figure 2

Regional Golden Eagle Nest Occurrences 10-mile Radius

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AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

April 8, 2014

Marisa Mitchell
Recurrent Energy
300 California Street, 8th Floor
San Francisco, California 94104

Subject: Report Summarizing Results of the RE Cinco Generation Tie-Line Project: Alternative 2 Preferred Alignment

Dear Ms. Mitchell:

This letter summarizes the results of the Alternative 2 Preferred Alignment gen-tie line (study area) of the RE Cinco Project (Project) habitat assessment conducted by AECOM Technology Corporation (AECOM). AECOM conducted this habitat assessment on behalf of Recurrent Energy in support of environmental documentation required by the Bureau of Land Management.

Project Description

The Project is located in unincorporated southeastern Kern County, approximately 6.5 miles northwest of the town of California City, approximately 12 miles northeast of the town of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct (Figure 1). The Project includes development of a 230-kilovolt generation tie (gen-tie) line extending northeast from the RE Cinco photovoltaic solar electrical generation facility (separate project) to the Los Angeles Department of Water and Power (LADWP) Barren Ridge Switching Station located approximately 2 miles north from the solar site. The gen-tie line includes a 150-foot right-of-way (ROW) corridor; transmission towers and associated spur roads and necessary 450-foot pull site radii would be place within this ROW corridor. All impacts associated with construction would occur within those areas (Figure 2). Access for the construction and operation of the gen-tie line would be from the existing LADWP maintenance road located west of the proposed alignment. The habitat assessment survey area included the a 2.1-mile-long corridor in addition to a 75-foot buffer of the entire corridor and all areas between the preferred alignment and the existing LADWP maintenance road south of the Pine Tree Canyon Wash (Figure 2).

Survey Area

Topography of the study area is moderately sloping (2% to 15% slopes), with elevation approximately 2,399 to 2,613 feet above mean sea level. A dry wash traverses the study area from the northwest to the southeast. Disturbed areas associated with human off-highway vehicle use, target shooting, and grazing are minimal but present throughout the study area.

Background Information

Desert tortoise (Mojave population) (*Gopherus agassizii*) Status

Desert tortoise (DT) habitat is found in a variety of dry habitats, from flats and slopes dominated by creosote (*Larrea tridentata*) in lower elevations to rocky slopes at higher elevations. DT habitat in higher elevations is typically characterized by blackbrush (*Coleogyne ramosissima*) and juniper (*Juniperus* spp.). The presence of friable soils allows for burrow excavation. Burrows are essential to the natural history of DT to provide cover from predators, nesting places, and refuge from extreme temperatures. Opportunistic use of other types of cover, such as rock cracks and overhangs, can also be utilized. The DT is most active April through May and September through October, primarily feeding on annual herbaceous vegetation, but also perennial grasses and woody vegetation. Nonnative species such as grasses and redstem filaree are also utilized.

The DT ranges from southern California east through southern Nevada and southeastern Utah, south through western Arizona and into northern Mexico. The U.S. Fish and Wildlife Service (USFWS) identifies the listed population as all DT north and west of the Colorado River, which includes all of California. In California, DT is found in the Mojave and Colorado Desert regions, from eastern Inyo County south through eastern Kern County.

Western burrowing owl (*Athene cunicularia hypugaea*) Status

Western burrowing owl (WBO) habitat consists of annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974; California Burrowing Owl Consortium [CBOC] 1993). Suitable WBO habitat may also include trees and shrubs if the canopy covers less than 30% of the ground surface. Burrows are the essential component of WBO habitat and both natural and artificial burrows provide protection, shelter, and nests for WBO. WBO typically use burrows made by mammals, such as ground squirrels or badgers, but may also use man-made structures, such as cement culverts, riprap, cement asphalt or wood debris piles, or openings beneath cement or asphalt pavement. WBO may use a site for migratory stopovers, or year-round for breeding and foraging. Suitable habitat is considered occupied if there is an observation of at least one WBO, or WBO sign including molted feathers, cast pellets, prey remains, eggshell fragments, or feces around a burrow. WBO tend to exhibit high site fidelity, reusing the same site year after year.

WBO in California are generally nonmigratory and occur mostly in the Central and Imperial Valleys, primarily in agricultural areas. Small, scattered populations occur in the Mojave Desert.

Mojave Ground Squirrel (*Xerospermophilus mojavensis*) Habitat Status

Mojave ground squirrel (MGS) occur in a variety of desert scrub habitats, including creosote bush scrub, Joshua tree (*Yucca brevifolia*) woodland, and saltbush scrub (*Atriplex* spp.) communities. The MGS is distinguished from the more common sympatric antelope ground squirrel (*Ammospermophilus leucurus*) by the absence of stripes or spots. MGS species is

active during spring and summer months and spends most of the year (approximately 7 months) aestivating below ground (Leitner 2008). Their diet consists of seeds and vegetative parts of desert plants, such as creosote, winter fat (*Krascheninnikovia lanata*), spiny hop-sage (*Grayia spinosa*), saltbush, golden linanthus (*Linanthus aureus*), Mediterranean grass (*Schismus arabicus*), and box-thorn (*Lycium andersonii*) (Best 1995).

The MGS occurs in the Mojave Desert, in parts of Inyo, Kern, Los Angeles and San Bernardino Counties. Gustafson (1993) describes the species' range limits as Olancha (northwest), Avawatz Mountains (northeast), Palmdale (southwest), and Lucerne Valley (southeast).

Golden Eagle/Raptors Habitat Status

The golden eagle (*Aquila chrysaetos*) nests on cliffs and in canyons and large trees in open habitats. They prey on mammals in open scrub habitat and grasslands. They have wingspans up to 7 feet, and begin breeding in Southern California in January. Nest building and egg laying occur during February and March, and hatching and raising young until fledge occur April through June. This species occurs throughout the United States and is resident in Kern County.

Survey Methodology

A habitat assessment of the study area was conducted by AECOM biologists March 4 and 5, 2014. The habitat assessment intended to assess the existing habitat and vegetation of the survey area. The biologists evaluated the survey area for suitable habitat for sensitive plant and animal species (DT, WBO, MGS and raptors), and sensitive plant communities. AECOM biologists used meandering transects focusing on visual signs for biological resources for all sensitive species. These resources include tracks, burrows, scat, pellets, owl splash, carcasses, rare plants, etc. All data was recorded with a Global Positioning System Garmin 60 CSx.

For the purposes of this report, plant species are considered sensitive if they are (1) listed or proposed for listing by state or federal agencies as threatened or endangered; (2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001); or (3) considered rare, endangered, or threatened by the State of California or other local conservation organizations or specialists. Noteworthy plant species are considered those on List 3 (more information about the plant distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. CNPS is a statewide resource conservation organization that has developed an inventory of California's sensitive plant species. The CNPS Listing is sanctioned by the California Department of Fish and Wildlife (previously California Department of Fish and Game [CDFG]) and essentially serves as an early warning list of potential candidate species for threatened or endangered status.

Survey methods for special status plant species are based on the following resources: *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Species* (USFWS 2000); *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG 2009a); and *CNPS Botanical Survey Guidelines* (CNPS 2001).

Results

Vegetation Communities and Rare Plants

The Project study area is dominated by creosote bush scrub community (Figure 3). Creosote represented the most common shrub within the community. Associated shrubs and subshrubs include white burr sage (*Ambrosia dumosa*), cheesebush (*Ambrosia salsola*), Nevada ephedra (*Ephedra viridis*), Mojave indigo bush (*Psorothamnos arborescens*), California buckwheat (*Eriogonum fascisulatum* var. *polifolium*), scale broom (*Lepidospartum squamatum*), and spiny senna (*Senna armata*). Common herbaceous vegetation includes California poppy (*Eschscholzia minutiflora*), cryptantha (*Cryptantha* sp.), desert chicory (Rafinesquia neomexicana), desert dandelion (*Malacothrix glabrata*), and goldfields (*Lasthenia glabrata*).

Small portions of the survey area, located within the wash, were identified as southern alluvial fan scrub, creosote wash scrub, and desert saltbush scrub. Southern alluvial fan scrub is a wash-specific community with the association of scale broom. Associated shrubs and subshrubs were bladderpod (*Peritoma arborea*), cheesebush, and all-scale saltbush (*Atriplex polycarpa*). Saltbush scrub is dominated by all-scale saltbush, with subshrubs of box-thorn present.

Frequently occurring weed species present in all communities include redstem filaree (*Erodium cicutarium*) and Mediterranean grass. A list of all plant species found during surveys is available in Appendix A.

No special-status plants were detected during surveys. Phenology of sensitive annuals was not conducive to detection or to a determination of presence or absence on-site. A list of the potentially occurring special-status plant species is available in Appendix B.

Wildlife

Very few suitable WBO burrows or other features suitable for WBO occupation were identified in the study area. One WBO was observed during surveys, but no occupied burrow was identified in the vicinity of this occurrence. The owl flew to an unknown location following identification. Further, no whitewash, bone fragments, pellets, feathers, etc. were observed at other burrows suitable for WBO occupation.

Table 1 describes sensitive biological resources detected within the study area. Locations of the sensitive-species occurrences are depicted in Figure 4. All additional wildlife observations are listed in Appendix C

One live DT was found in proximity to a Class 1 (occupied) burrow. The male DT appeared healthy, had a long gular and visible chin gland, and was 250 millimeters in length. No visible shell damage was observed, though some shell wear was visible near the tail. A photo of this DT is shown in Figure 5. In addition, DT scat was observed at two locations in the study area. The scat was Class 3, with a compact feel and no sheen present. One Class 5 disarticulated carcass was found scattered over a 3-meter radius.

Table 1
Waypoints, Latitude/Longitude, and Notes of Potential Burrows and Sign

Type of Sign	Easting	Northing	Notes
Burrow 1	0404124	3899179	Class 1 DT burrow, fresh DT tracks, DT scat
WBO Live	0404152	3899196	Live WBO flushed; not seen again; no associated burrow
Carcass	0403948	3899139	Class 5 disarticulated DT carcass
DT Live	0404116	3899186	Male DT, 250 millimeters, healthy appearance
Burrow 2	0404024	3899208	Class 2 DT burrow with DT scat
DT Scat	0403726	3899214	Class 3 DT scat (3), compact, no sheen
DT Scat	0404048	3899076	Class 3 DT scat (2), compact, no sheen
Burrow 3	0402411	3897169	Class 5 DT burrow

Table 2 describes the dates, pertinent survey information, and any species or sign detected during the habitat assessment. Copies of field data sheets are provided in Appendix D.

Table 2
Dates, Times, Personnel, Weather Conditions, and Observations for Habitat Surveys

Survey #	Date	Time	Personnel	Weather	Observations
1	03/04/2014	0900-1600	Matt Kedziora Shelly Dayman	Start: 55 degrees Fahrenheit (°F), 100% clouds, wind 10 miles per hour (mph) End: 62°F, 80% clouds, wind 5 mph	One live DT and one live WBO, burrows, DT scat, carcass; no sensitive plant species seen
2	03/05/2014	0700-1300	Matt Kedziora Phil Brylski	Start: 48°F, 40% clouds, wind none End: 72°F, 45% clouds, wind none	One burrow; no sensitive plant species seen

Discussion

The Alternative 2 Preferred Alignment gen-tie line study area provides suitable habitat for DT, and DT was observed within the survey area. One occupied DT burrow, additional burrows suitable for DT use, and DT sign (scat and carcasses) were observed. Construction activities in the survey area may result in encounters with DT individuals and loss of suitable DT habitat.

The Alternative 2 Preferred Alignment gen-tie line study area includes suitable foraging habitat for WBO. One WBO was observed foraging, but no burrows with sign or occupied

burrows were identified. Construction in the study area may result in loss of suitable WBO foraging habitat.

No trapping of MGS was conducted in the study area. Based on the presence of suitable habitat and the historic range and occurrences of the species in the immediate vicinity, MGS are presumed to occupy the survey area. Construction in the survey area will result in loss of suitable MGS habitat.

The Alternative 2 Preferred Alignment gen-tie line study area provides suitable foraging habitat for golden eagles and other raptors. Further, the Tehachapi Mountains, located to the west and north of the survey area, provide suitable nesting habitat. No special-status raptors were observed foraging or flying over or adjacent to the survey area during field surveys. Due to the ample availability of nesting and foraging habitat in the region, construction activities are not expected to directly affect or result in an incremental take of special-status raptors in the survey area. A separate golden eagle memo was prepared by AECOM to document information available on golden eagle presence in the area (AECOM 2013).

Although some perennial shrub species were blooming at the time of survey and evidence of some past flooding in numerous washes was present across the site, no sensitive plant species were found during the survey.

Certification Statement

Qualified AECOM biologists who conducted habitat assessment for the Project certify that the information in this survey report fully and accurately represents the work performed by AECOM biologists. If you have any questions or require additional information, feel free to contact me at (619) 233-1454.

Sincerely,

Jennifer Guigliano
Project Director

Attachments: Figure 1 – Regional Map
Figure 2 – Vicinity Map
Figure 3 – Vegetation Communities
Figure 4 – Biological Resources
Figure 5 – Desert Tortoise Found in Study Area
Appendix A – Observed Plant Species during Habitat Assessment
Appendix B – Potentially Occurring Special-Status Plant Species
Appendix C – Wildlife Species Detected during Habitat Assessment
Appendix D – Field Data Sheets

Literature Cited

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FIGURES

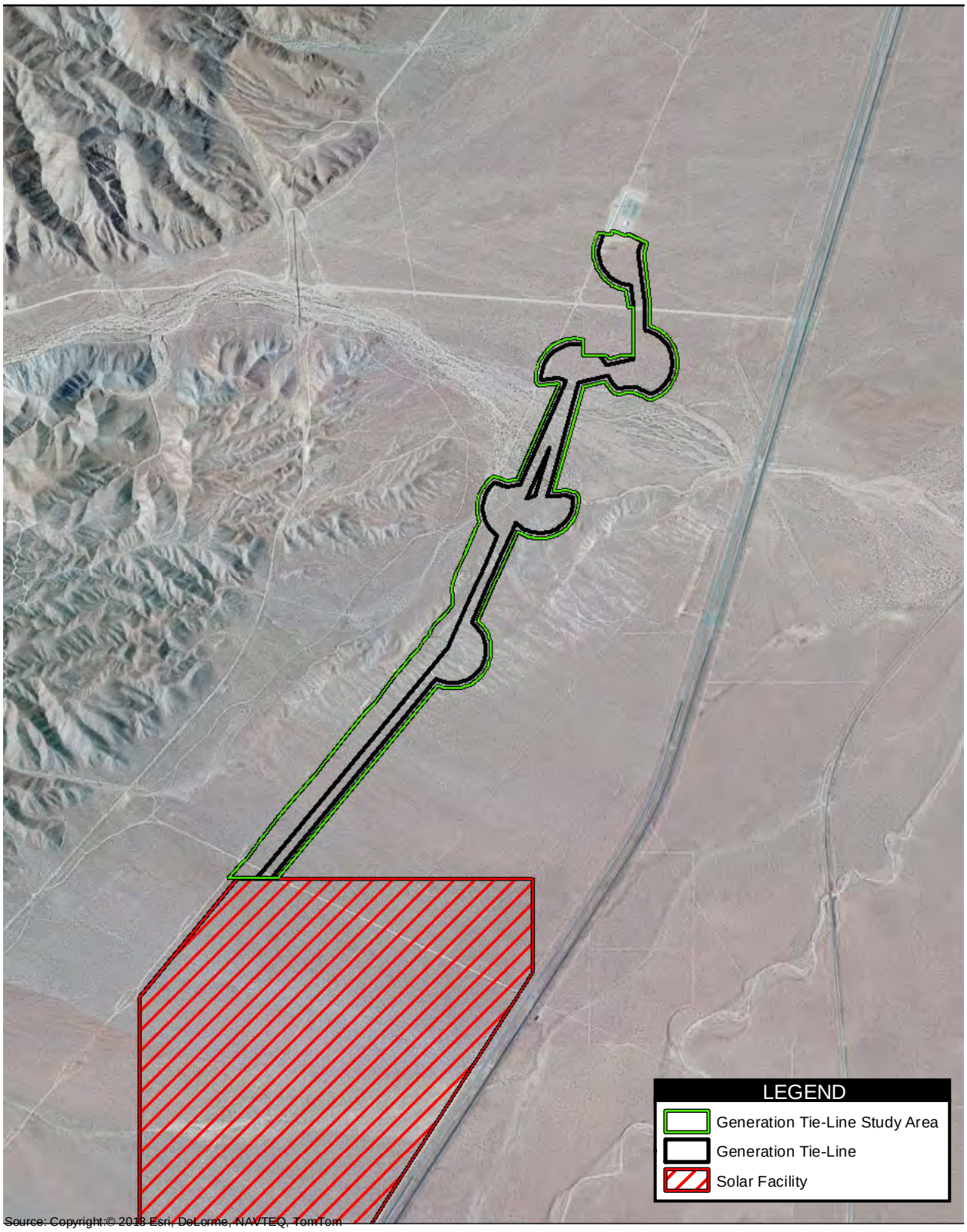
Source: RE Cinco 2013; Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

6 3 0 6 Miles

Scale: 1 = 380,160; 1 inch = 6 mile(s)

Figure 1
Regional Map

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\HabitatAssessment\Cinco_HA_Regional.mxd, 3/25/2014, steinb



Source: Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community: RE Cinco 2013

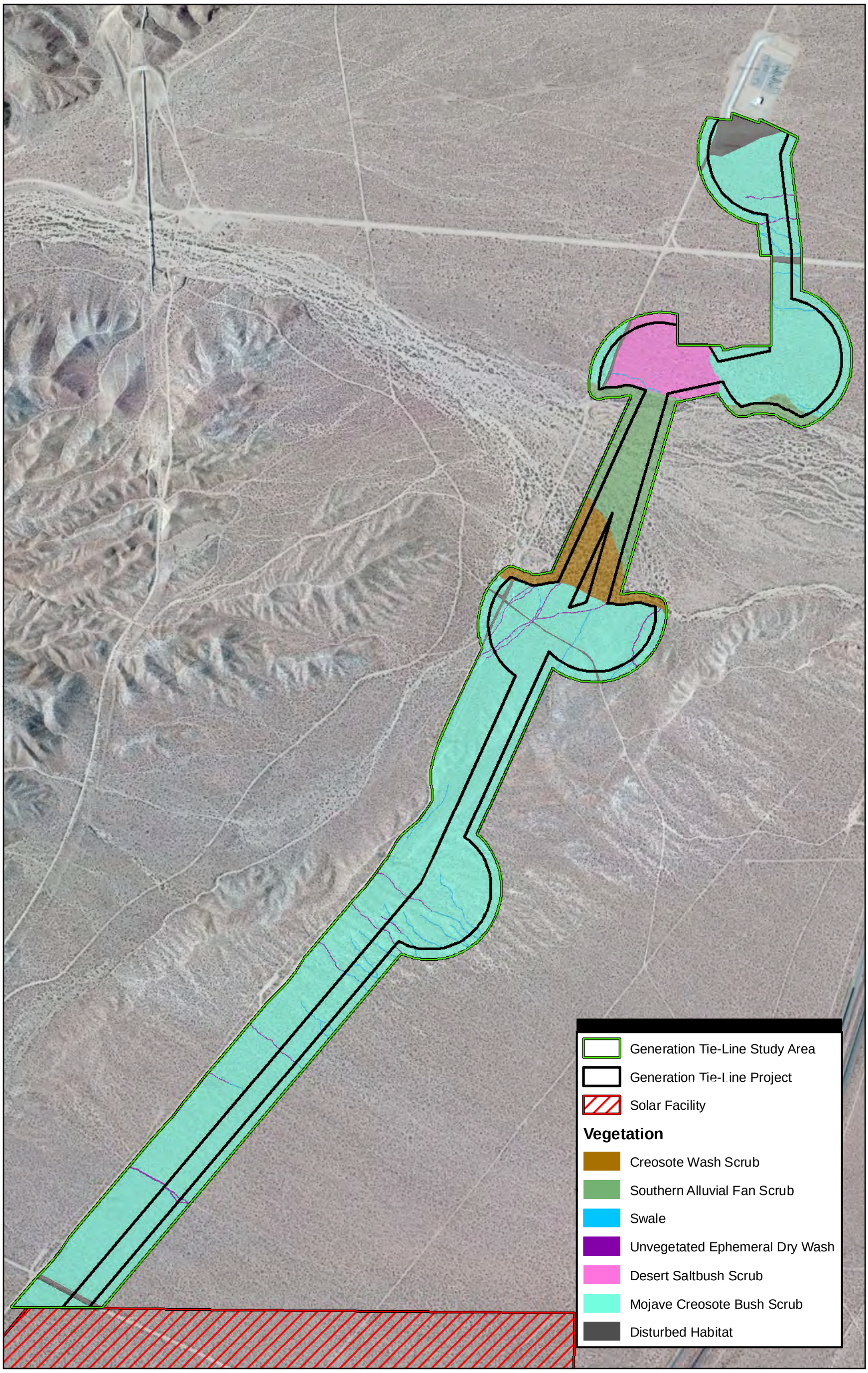
2,000 1,000 0 2,000 Feet

Scale 1:24,000; 1 inch = 2,000 feet

Figure 2
Vicinity Map

RE Cinco Generation Tie-Line Project - Habitat Assessment

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\HabitatAssessment\Cinco_HA_Vicinity.mxd, 3/25/2014, steinb



700 350 0 700 Feet

Scale: 1:8,400; 1 inch = 700 feet

Figure 3
Vegetation Communities

Source: AECOM 2013; RE Cinco 2013; Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

RE Cinco Generation Tie-Line Project - Habitat Assessment

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\HabitatAssessment\Cinco_HA_Veg.mxd, 3/25/2014, steinb

700 350 0 700 Feet

Scale: 1:8,400; 1 inch = 700 feet

Figure 4
Biological Resources

Source: AECOM 2013; RE Cinco 2013; Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

RE Cinco Generation Tie-Line Project - Habitat Assessment

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\HabitatAssessment\Cinco_HA_BioResources.mxd, 3/25/2014, steinb

Figure 5
Desert Tortoise Found in Study Area

APPENDIX A

OBSERVED PLANT SPECIES DURING HABITAT ASSESSMENT

Appendix A
Observed Plant Species
During Habitat Assessment

Family	Scientific Name	Common Name
AGAVACEAE	**Hesperoyucca whipplei**	
	Yucca brevifolia	JOSHUA TREE
ASTERACEAE	**Ambrosia acanthicarpa**	ANNUAL BUR-SAGE
	Ambrosia dumosa	WHITE BUR-SAGE
	Ambrosia salsola	COMMON BURROBRUSH, CHEESEBUSH
	Ambrosia salsola var. salsola	
	Calycoseris parryi	YELLOW TACK-STEM
	Chaenactis xantiana	FLESHY PINCUSHION
	Encelia farinosa	BRITTLEBUSH
	Ericameria teretifolia	GREEN or ROUND-LEAF RABBITBRUSH
	Eriophyllum ambiguum	
	Eriophyllum wallacei	WALLACE'S WOOLLY DAISY
	Lasthenia gracilis	COMMON GOLDFIELDS
	Lepidospartum squamatum	
	Leptosyne bigelovii	
	Logfia depressa	HIERBA LIMPIA
	Malacothrix coulteri	SNAKE'S-HEAD
	Malacothrix glabrata	DESERT DANDELION
	Rafinesquia neomexicana	DESERT CHICORY
	Stephanomeria pauciflora	WIRE-LETTUCE
BORAGINACEAE	**Amsinckia tessellata var. tessellata**	DESERT FIDDLENECK
	Cryptantha angustifolia	NARROW-LEAVED CRYPTANTHA
	Cryptantha micrantha var. micrantha	RED-ROOT CRYPTANTHA
	Cryptantha nevadensis var. rigida	RIGID CRYPTANTHA
	Cryptantha pterocarya var. pterocarya	WINGED-NUT CRYPTANTHA
	Eucrypta micrantha	
	Pectocarya heterocarpa	MIXED-NUT PECTOCARYA
	Pectocarya linearis subsp. ferocula	NARROW-TOOTHED PECTOCARYA
	Pectocarya penicillata	NORTHERN PECTOCARYA
	Phacelia crenulata var. crenulata	
	Phacelia distans	
	Phacelia fremontii	
	Pholistoma membranaceum	
	Plagiobothrys arizonicus	ARIZONA POPCORNFLOWER
BRASSICACEAE	**Brassica tournefortii**	
	Caulanthus lasiophyllus	CALIFORNIA MUSTARD
	Descurainia pinnata	
	Descurainia pinnata subsp. brachycarpa	

Family	Scientific Name	Common Name
	Descurainia pinnata subsp. glabra	
	Lepidium flavum	
	Lepidium fremontii	
	Tropidocarpum gracile	
CACTACEAE	**Cylindropuntia echinocarpa**	SILVER or GOLDEN CHOLLA
CHENOPODIACEAE	**Atriplex polycarpa**	ALLSCALE SALTBUSH
	Krascheninnikovia lanata	WINTER FAT
CLEOMACEAE	**Peritoma arborea var. angustata**	
EPHEDRACEAE	**Ephedra viridis**	GREEN EPHEDRA
FABACEAE	**Acmispon strigosus**	
	Psorothamnus arborescens var. arborescens	
	Senna armata	SPINY SENNA
GERANIACEAE	**Erodium cicutarium**	REDSTEM FILAREE
LAMIACEAE	**Salvia columbariae**	CHIA
	Scutellaria mexicana	BLADDER-SAGE
LOASACEAE	**Mentzelia albicaulis**	
	Mentzelia obscura	
MALVACEAE	**Eremalche exilis**	WHITE MALLOW
	Sphaeralcea ambigua var. ambigua	APRICOT MALLOW
MONTIACEAE	**Calyptridium monandrum**	
NYCTAGINACEAE	**Mirabilis laevis var. villosa**	
ONAGRACEAE	**Camissonia campestris subsp. campestris**	
	Chylismia claviformis ssp. claviformis	
PAPAVERACEAE	**Eschscholzia californica**	CALIFORNIA POPPY
	Eschscholzia minutiflora	
POACEAE	**Bromus madritensis ssp. madritensis**	FOXTAIL CHESS, MADRID BROME
	Bromus madritensis ssp. rubens	RED BROME
	Bromus tectorum	CHEAT GRASS, DOWNY CHESS
	Schismus barbatus	
POLEMONIACEAE	**Gilia brecciarum ssp. brecciarum**	
	Gilia stellata	STAR GILIA
	Gilia transmontana	TRANSMONTANE GILIA
POLYGONACEAE	**Chorizanthe brevicornu var. brevicornu**	BRITTLE SPINEFLOWER
	Chorizanthe watsonii	WATSON'S SPINEFLOWER
	Eriogonum gracillimum	
	Eriogonum fasciculatum var. polifolium	MOJAVE DESERT CALIFORNIA BUCKWHEAT
	Eriogonum pusillum	YELLOW TURBANS (Group 2)
SOLANACEAE	**Lycium cooperi**	
THEMIDACEAE	**Dichelostemma capitatum ssp. capitatum**	
ZYGOPHYLLACEAE	**Larrea tridentata**	

APPENDIX B

POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

Appendix B
Potentially Occurring
Special-Status Plant Species

Species	Sensitivity Status	Natural History	Potential Occurrence Status
Spanish needle onion (*Allium shevockii)*	CNPS List 1B.3	Perennial bulbiferous herb. It occurs in rocky areas in pinyon and juniper woodland and upper montane coniferous forest. Flowers May to June.	Low potential for occurrence due to lack of suitable woodland and forest habitat.
Alkali mariposa lily (*Calochortus striatus*)	CNPS List 1B.2	Herbaceous perennial geophyte with large pink, radially striped flowers. It occurs in alkali seeps and seasonally moist locations. Flowers April to June.	Low potential for occurrence due to lack of suitable alkali seep habitat.
Kern County evening primrose (*Camissonia kernensis ssp.* kernensis)	CNPS List 4.3	Annual herb on sandy, gravelly, granitic soils. Found in chaparral, Joshua tree woodland, and pinyon and juniper woodlands. Flowers March to May.	Low potential for occurrence due to lack of suitable woodland or chaparral habitat.
White pygmy-poppy (*Canbya candida)*	CNPS 4.2	Annual herb on sandy and gravelly soils. Found in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodlands. Flowers March to June.	High potential to occur in desert scrub habitat on-site.
Mohave paintbrush (*Castilleja plagiotoma)*	CNPS List 4.3	Perennial herb (hemiparasitic) found in great basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland. Flowers April – June.	Moderate potential to occur in desert scrub in the alluvial washes on-site.
Death Valley sandmat (*Chamaesyce vallis-mortae)*	CNPS List 4.2	Perennial herb found in sandy or gravelly soils in Mojavean desert scrub. Flowers May to October.	High potential to occur on-site in desert scrub.
Mojave spineflower (*Chorizanthe spinosa*)	CNPS List 4.2	Small ephemeral annual on sandy and gravelly soils. Sometimes in alkaline areas, chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas. Flowers April to June.	Moderate potential to occur in desert scrub habitat on-site.
Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora)*	CNPS List 4.2	Annual herb often found in sandy, sometimes rocky slopes or roadsides. Prefers chaparral, cismontane woodland, great basin scrub, and valley and foothill grassland. Flowers May to June.	Moderate potential to occur in sandy or rocky soils in desert scrub habitat on-site.

Species	Sensitivity Status	Natural History	Potential Occurrence Status
Streambank spring beauty (*Claytonia parviflora* ssp. *grandiflora)*	CNPS List 4.2	Annual herb found in rocky soils in cismontane woodland habitat. Flowers February to May.	Low potential to occur on-site due to lack of cismontane woodland habitat.
Desert springparsley (*Cymopteris deserticola*)	CNPS List 1B.2	Low growing herbaceous perennial with silvery parsley like leaves and a ball shaped inflorescence. Found in sandy soils in Joshua tree woodland and Mojavean desert scrub. Flowers March to May.	High potential to occur in the desert scrub on-site.
Red Rock tarplant (*Deinandra arida*)	State Threatened July1982 CNPS List 1B.2	Annual herb found in clay and volcanic tuff in Mojavean desert scrub. Flowers April to November.	Moderate potential to occur in the rocky desert scrub and wash habitats on-site.
Mohave tarplant (*Deinandra mohavensis*)	State Endangered Aug 1981 CNPS List 1B.3	Annual in vernally moist and alkali areas in drainages. Flowers July to October.	Moderate to low potential to occur in the washes on-site. No vernally moist spring habitat is present on-site.
Recurved larkspur (*Delphinium recurvatum*)	CNPS List 1B.2	Slender herbaceous perennial to nearly 3 feet tall with delicate pale blue flowers growing in deeper fine soil with grasses and herbs. Flowers March to June	Low potential to occur on-site due to lack of grasslands.
Limestone dudleya (*Dudleya abramsii* ssp. *calcicola)*	CNPS List 4.3	Perennial succulent herb found in carbonate soils in chaparral and pinyon and juniper woodland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Tracy's eriastrum (*Eriastrum tracyi)*	State Rare CNPS List 3.2	Annual herb found in chaparral and cismontane woodland. Flowers May to July.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Mohave woolly sunflower (*Eriophyllum mohavense*)	CNPS List 1B.2	Small ephemeral annual on sandy and gravelly soil in Mojavean desert scrub, chenopod scrub and playas. Flowers March to May.	Moderate potential to occur on-site in desert scrub habitat.
Kern buckwheat (Eriogonum kennedyi var. pinicola)	CNPS List 1B.1	Perennial herb 2 to 6 inches tall in open places on clay soil. Found in chaparral and pinyon and juniper woodland. Flowers May to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Red Rock Canyon monkeyflower (*Erythranthe rhodopetra)*	CNPS List 1.B.2	Annual herb found in sandy, canyon washes and Mojavean desert scrub. Flowers March to April.	High potential to occur on-site in Pine Tree Canyon wash and moderate potential in smaller washes on-site.
Red Rock poppy (*Eschscholzia minutiflora ssp. twisselmannii)*	CNPS List 1B.2	Yellow flowered annual about a foot or more tall that occurs on volcanic tuff material. Flowers March to May.	Moderate potential to occur on-site in soils with volcanic tuff.
Pale-yellow layia (*Layia heterotricha)*	CNPS List 1B.1	Annual herb found in alkaline or clay soils in	Low potential to occur on-site due to the lack of

Species	Sensitivity Status	Natural History	Potential Occurrence Status
		cismontane woodland, pinyon and juniper woodland and grasslands.	woodlands, coastal scrub, and grassland.
Sage-like Loeflingia *(Loeflingia squarrosa* var. *artemisiarum*)	CNPS List 2B.2	Minute annual with spine tipped leaves on sandy soil and dunes. Jepson Manual does not recognize variety but CNPS does. Flowers April to May.	Moderate potential to occur in sandy soils.
Solitary blazing star (*Mentzelia eremophila)*	CNPS List 4.2	Annual herb found in Mojavean desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.
Creamy blazing star (*Mentzelia tridentata*)	CNPS List 1B.3	Annual with somewhat thick dark green leaves and cream colored flowers on coarse rock gravel. Found in Mojavean desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.
Tehachapi monardella (*Monardella linoides* ssp. *oblonga)*	CNPS List 1B.3	Perennial rhizomatous herb found in lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest. Flowers June to August.	Low potential to occur on-site due to lack of woodland and forest habitat.
Large-flowered nemacladus (*Nemacladus secundiflorus* var. *secundiflorus)*	CNPS List 4.3	Annual herb found in gravelly openings in chaparral and valley and foothill grassland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and grassland habitats.
Bakersfield cactus (*Opuntia basilaris* var. *treleasei)*	CNPS List 1B.1	Perennial stem succulent. Found in sandy or gravelly areas of chenopod scrub, cismontane woodland, and valley and foothill grassland.	Moderate potential to occur on-site in desert scrub habitat.
Fragile pentachaeta (*Pentachaeta fragilis)*	CNPS List 4.3	Annual herb found in foothill woodlands. Flowers March to June.	Low potential to occur on-site due to lack of woodland habitat.
Adobe yampah (*Perideridia pringlei)*	CNPS List 4.3	Perennial herb found in chaparral and foothill woodland. Flowers April to June.	Low potential to occur on-site due to lack of woodland and chaparral habitat.
Hubby's phacelia (*Phacelia hubbyi)*	CNPS List 4.2	Annual herb found on gravelly or rocky slopes in chaparral or coastal scrub. Flowers April to June.	Low potential to occur on-site due to lack of coastal scrub and chaparral habitat.
Charlotte's Phacelia (*Phacelia nashiana*)	CNPS List 1B.2	Low growing annual with somewhat thick leaves and deep blue flowers growing on gravelly and talus slopes. Flowers March to June.	Moderate potential to occur on-site. Known from the general vicinity of the site and its surroundings
Mojave fish-hook cactus (*Sclerocactus polyancistrus)*	CNPS List 4.2	Perennial stem succulent found in Mojave desert scrub and pinyon and juniper woodland.	Moderate potential to occur on-site in desert scrub.

APPENDIX C

WILDLIFE SPECIES DETECTED DURING HABITAT ASSESSMENT

Appendix C

Wildlife Species Detected During Habitat Assessment

Scientific Names	Common Names
Reptiles and Amphibians	
Order Testudines	
Family Emydidae	
Gopherus agassizii	desert tortoise
Birds	
Order Acciptriformes	
Family Cathartidae	
Cathartes aura	turkey vulture
Order Strigiformes	
Family Strigidae	
Athene cunicularia hypogea	burrowing owl
Order Passeriformes	
Family Corvidae	
Corvus corax	common raven
Family Alaudidae	
Eremophila alpestris actia	California horned lark
Family Emberizidae	
Amphispiza belli	sage sparrow
Zonotrichia leucophrys	white-crowned sparrow
Family Hirundinidae	
Zonotrichia leucophrys	barn swallow
Mammals	
Order Lagomorpha	
Family Leporidae	
Lepus californicus	black-tailed jackrabbit

APPENDIX D

FIELD DATA SHEETS

WILDLIFE SURVEY DATA SHEET

Project: RE Cinco **Location:** Preferred alt gen-tie **Date:** 3/4/14

GPS Unit	Surveyor(s)	GPS Unit	Surveyor(s)
GARMN6	MKE, SDA		

	Time	Temp (°F)	Wind (mph)	Precip.	Cloud Cover (%)
Start	0900	55	10	0	100
End	1600	62	5	0	80

Potential Burrows or Nests:

Burrow or Nest ID (GPS IDENT Code*)	GPS Easting	GPS Northing	Species Present (Circle)	Burrow complex?[1]	Burrow Dimension H x W x D (in.)	Burrow Suitable for (Circle) and Status[1] (Circle):	Sign Present (Circle) WW=whitewash, Pell=Pellets, Feath=feathers, Claw=claw marks, Trk=tracks, Car=carcass, Oth=other	Description and Comments, **Note Class of any DT sign**
WDBSD001	0404124	3899179	WBO AB DKF DT ? Nest None Other	Y (N) NA	10x18x unk	WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	class 1 - fresh DT tracks 2 scat (1 eroded 1 w/ sheet but compact) -2 pellets outside but unlikely for WBO w/ veg overhand (NO SUN)
WBLMK001	0404152	3899196	WBO AB DKF DT Nest None Other	Y (N) NA	NA	WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	live WBO flushed, no burrow nearby
WDCMK002	0403948	3899139	WBO AB DKF DT Nest None Other	Y (N) NA	NA	WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	class 5 disarticulated and scattered.
WDLMK003	0404116	3899186	WBO AB DKF DT Nest None Other	Y (N) NA	NA	WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	250 mm male, long gular visible chin glands appears healthy, no shell damage but some wear large tail.

Incidental Species Observations/Notes:

Barn swallow, WCSP, black-tailed jackrabbit, CORA, TUVU

*IDENT Code: the unique 8-digit code that identifies the individual burrow or burrow complex within the project site (e.g., GBBSD001). See last page for nomenclature and codes.

[1]**Burrow Status: A = Active** (occupancy is confirmed by visual detection of species or sign indicates recent use), **PA = Potentially Active** (species occupancy not confirmed, but sign indicates possible use), **S Suitable** (no evidence of recent use by species, but burrow is suitable), **NS = Not Suitable** (burrow not suitable for this species), **Inact** = inactive nest present.

WILDLIFE SURVEY DATA SHEET

Project: RE Cinco **Location:** preferred Alt gentle **Date:** 3/4/14

GPS Unit	Surveyor(s)	GPS Unit	Surveyor(s)
GARMIN	MKE SDA		

	Time	Temp (°F)	Wind (mph)	Precip.	Cloud Cover (%)
Start	0900	55	10	0	100
End	1600	62	5	0	80

Potential Burrows or Nests:

Burrow or Nest ID (GPS IDENT Code*)	GPS Easting	GPS Northing	Species Present (Circle)	Burrow complex?[1]	Burrow Dimension H x W x D (in.)	Burrow Suitable for (Circle) and Status[1] (Circle):	Sign Present (Circle) WW=whitewash, Pell=Pellets, Feath=feathers, Claw=claw marks, Trk=tracks, Car=carcass, Oth=other	Description and Comments, **Note Class of any DT sign**
WDBMK004	0404024	3899208	WBO AB DKF DT Nest None Other	Y N NA	4x8x unk	WBO - A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	shit ton of scat - filled class 3 scat compact, no sheen class 2 burrow.
WDSSD002	0403726	3899214	WBO AB DKF DT Nest None Other	Y N NA		WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	3 pieces compact, no sheen class 3
WDSSD003	0404048	3899076	WBO AB DKF DT Nest None Other	Y N NA		WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	2 pieces compact no sheen class 3
			WBO AB DKF DT Nest None Other	Y N NA		WBO – A, PA, S, NS AB – A, PA, S, NS DKF – A, PA, S, NS DT – A, PA, S, NS Nest – A, PA, Inact N/A Other	WBO – WW Pell Feath Trk Oth AB – Claw Trk, Scat, Carc, Oth DKF – Claw Trk Scat Carc Oth DT – Trk Scat Car Egg shell, Oth Nest - Eggs, Chicks, Oth None Other	

Incidental Species Observations/Notes:

***IDENT Code:** the unique 8-digit code that identifies the individual burrow or burrow complex within the project site (e.g., GBBSD001). See last page for nomenclature and codes.

[1]**Burrow Status: A = Active** (occupancy is confirmed by visual detection of species or sign indicates recent use), **PA = Potentially Active** (species occupancy not confirmed, but sign indicates possible use), **S = Suitable** (no evidence of recent use by species, but burrow is suitable), **NS = Not Suitable** (burrow not suitable for this species), **Inact** = inactive nest present.

WILDLIFE SURVEY DATA SHEET

Project: RE Cinco **Location:** PREFERED ALT GEN TIE **Date:** 2/5/14 Page 1 of 1

GPS Unit	Surveyor(s)	GPS Unit	Surveyor(s)
GARMIN 6	MIKE		

	Time	Temp (°F)	Wind (mph)	Precip.	Cloud Cover (%)
Start	0630	48	0	0	40
End	1230	72	0	0	45

Potential Burrows or Nests:

Burrow or Nest ID (GPS IDENT Code*)	GPS Easting	GPS Northing	Species Present (Circle)	Burrow complex?[1]	Burrow Dimension H x W x D (in.)	Burrow Suitable for (Circle) and Status[1] (Circle):	Sign Present (Circle) WW=whitewash, Pell=Pellets, Feath=feathers, Claw=claw marks, Trk=tracks, Car=carcass, Oth=other	Description and Comments, **Note Class of any DT sign**
WMAMK005	0402411	3897169	WBO	Y (N) NA	5x5x unk	WBO – A, PA, (S) NS	WBO – WW Pell Feath Trk Oth	OLD (white) SCAT ON APRON, BUT MUCH TOO SMALL for den. May have been filled in over time
			AB			AB – A, PA, S, (NS)	AB – Claw Trk, Scat, Carc, Oth	
			DKF			DKF – A, PA, (S) NS	DKF – Claw Trk (Scat) Carc Oth	
			DT			DT – A, PA (S) NS	DT – Trk Scat Car Egg shell, Oth	
			Nest			Nest – A, PA, Inact	Nest - Eggs, Chicks, Oth	
			(None)			N/A	(None)	
			Other			Other	Other	
			WBO	Y N NA		WBO – A, PA, S, NS	WBO – WW Pell Feath Trk Oth	
			AB			AB – A, PA, S, NS	AB – Claw Trk, Scat, Carc, Oth	
			DKF			DKF – A, PA, S, NS	DKF – Claw Trk Scat Carc Oth	
			DT			DT – A, PA, S, NS	DT – Trk Scat Car Egg shell, Oth	
			Nest			Nest – A, PA, Inact	Nest - Eggs, Chicks, Oth	
			None			N/A	None	
			Other			Other	Other	
			WBO	Y N NA		WBO – A, PA, S, NS	WBO – WW Pell Feath Trk Oth	
			AB			AB – A, PA, S, NS	AB – Claw Trk, Scat, Carc, Oth	
			DKF			DKF – A, PA, S, NS	DKF – Claw Trk Scat Carc Oth	
			DT			DT – A, PA, S, NS	DT – Trk Scat Car Egg shell, Oth	
			Nest			Nest – A, PA, Inact	Nest - Eggs, Chicks, Oth	
			None			N/A	None	
			Other			Other	Other	
			WBO	Y N NA		WBO – A, PA, S, NS	WBO – WW Pell Feath Trk Oth	
			AB			AB – A, PA, S, NS	AB – Claw Trk, Scat, Carc, Oth	
			DKF			DKF – A, PA, S, NS	DKF – Claw Trk Scat Carc Oth	
			DT			DT – A, PA, S, NS	DT – Trk Scat Car Egg shell, Oth	
			Nest			Nest – A, PA, Inact	Nest - Eggs, Chicks, Oth	
			None			N/A	None	
			Other			Other	Other	

Incidental Species Observations/Notes:

SAG S, HOLA, CORA

***IDENT Code:** the unique 8-digit code that identifies the individual burrow or burrow complex within the project site (e.g., GBBSD001). See last page for nomenclature and codes.

[1]**Burrow Status: A = Active** (occupancy is confirmed by visual detection of species or sign indicates recent use), **PA = Potentially Active** (species occupancy not confirmed, but sign indicates possible use), **S = Suitable** (no evidence of recent use by species, but burrow is suitable), **NS = Not Suitable** (burrow not suitable for this species), Inact = inactive nest present.

AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

August 27, 2014

Marisa Mitchell
300 California Street, 7th Floor
San Francisco, California 94104

Subject: Rare Plant Survey Report for the RE Cinco Solar Project, Kern County

Dear Ms. Mitchell:

AECOM has prepared this rare plant survey letter report to document the results of the focused special-status plant species surveys on the RE Cinco project site.

The project area is located on vacant undisturbed lands in Eastern Kern County. The site is located approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8-mile south of the Los Angeles Aqueduct (Figure 1). The biological survey area associated with the project includes a 100-foot buffer beyond the proposed impact footprint (Figure 2). A list of the special-status plant species that were identified as having some potential to occur within the project area is included as Attachment A.

The RE Cinco Solar Project (Project) includes installation of a 60-megawatt (MW) solar photovoltaic (PV) power-generating facility (Solar Facility) and an associated new 230 kilovolt (kV) generator intertie transmission line (Gen-tie Line) (Figure 3). The Solar Facility will be located on 500 acres of a 594-acre private parcel, and the Gen-tie Line will be located within a 2.0-mile-long right-of-way (ROW) across lands owned by a combination of the Los Angeles Department of Water and Power (LADWP), private land owners, and the federal government, the latter managed by the U.S. Bureau of Land Management (BLM) (Figure 1). Figure 2 depicts the boundary enclosed by fencing, the site layout, the parcel boundary of the lands controlled by RE Barren Ridge I, LLC and the action area.

The project site elevation ranges from 2,420 to 2,670 feet above mean sea level (msl). Existing land uses adjacent to the project site consist predominantly of vacant/undeveloped land. The BLM 368 utility corridor is located west of the site, running generally north to south.

For the purposes of this report, plant species are considered sensitive if they are (1) listed or proposed for listing by state or federal agencies as threatened or endangered; (2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2010); or (3) considered rare, endangered, or threatened by the state of California (2007) or other local conservation organizations or specialists. Noteworthy plant species are considered to be those on List 3 (more information about the plant distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. The CNPS is a statewide resource conservation

organization that has developed an inventory of California's sensitive plant species. The CNPS Listing is sanctioned by the California Department of Fish and Wildlife (CDFW) and essentially serves as an early warning list of potential candidate species for threatened or endangered status.

Methods

Rare plant surveys were conducted by AECOM botanists during the various blooming periods for targeted species including fall 2013, early spring 2014, and late spring 2014. Previous surveys and reports from the project area were also reviewed and incorporated into this letter report, including a field reconnaissance survey (Rincon 2011a) and Supplemental Biological Results (Rincon 2011b).

A Fall focused rare plant survey was conducted on October 21, 22, and 23, 2013 after summer/fall rains by AECOM botanists, Bonnie Hendricks, Fred Sproul, and Lance Woolley. Although several perennial shrub species were blooming at the time of survey and evidence of substantial flooding in numerous washes was present across the site, the rain received during the summer/fall season of 2013 was not sufficient for a significant response from the annual plants. Early Spring focused rare plant surveys were conducted for the site on March 3, 4, 5, 11, 12, and 13 in 2014 by AECOM botanists Erin Bergman, Bonnie Hendricks, Fred Sproul, and Lance Woolley. Late spring focused rare plant surveys were conducted for the site on June 12 and 13 by Bonnie Hendricks and Matthew Kedziora.

AECOM botanists visited known localities of potential rare plants within the area, including CNDDB previously recorded locales for Red Rock tarplant *(Deinandra arida)* and Mohave tarplant *(Deinandra mohavensis)* both state-listed species. A search was conducted for the known reference populations of these-late spring to fall blooming species to determine their blooming status at the time of the fall survey 2013 and again in late spring 2014.

Survey methods for special status plant species are based on the following resources: 1) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000); Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2009); and California Native Plant Society (CNPS) Botanical Survey Guidelines (CNPS 2001).

During the fall survey period, AECOM botanists surveyed for special-status plant species that have potential to occur within or near the survey areas. The fall and late spring survey efforts focused on the desert dry wash, swale, and alluvial fan scrub habitats where the state-listed tarplant species had a potential to occur.

The surveys covered the RE Barren Ridge property west of SR-14 (500-acre project area), Areas not to be developed in the northwest and southeast portions of the parcel (94 acres) and a 100-foot buffer area immediately surrounding the project, and the generation tie line right-of-way and a 75-foot buffer of that corridor. The survey of the buffer zone is intended to

adequately address any potential indirect effects of the proposed projects on existing vegetation communities or special-status plants.

The surveys were conducted using transects spaced approximately 30 meters apart, or as dictated by visibility on the ground to ensure visual coverage of the project footprint. Surveys were also conducted within the buffer area; however, the survey effort within these areas was reduced as compared to the project footprint, including meandering transects of varying widths within areas of suitable habitat (i.e., intuitive controlled [Whiteaker 1999]) and a focus on areas of the buffer with historically documented occurrences of special-status plant species. Field data collected for special-status plant species occurrences includes habitat type, location (Universal Transverse Mercator [UTM] coordinates), number of plants, onsite population extent, observed phenology(ies), possible threats to the population, associated plant species, and other ecological data as determined to be relevant.

Results

The project area is situated on a gently sloping landscape containing loose, sandy soil. It supports Mohave creosote bush scrub, desert alluvial wash scrub, and desert saltbush scrub vegetation communities (Figure 4). Some of the most dominant plant species on-site include creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa)*. These species uniformly covered the survey area. Common spring annual plants included bristly fiddleneck (*Amsinckia tessellata),* fleshy pincushion (*Chaenactis xantiana*), desert chicory (*Rafinesquia neomexicana*), common goldfields (*Lasthenia gracilis*), rancher's fiddleneck (*Amsinckia menziesii* var*. intermedia*), Bigelow's coreopsis (*Coreopsis bigelovii*), woolly daisy (*Eriophyllum wallacei*), desert dandelion (*Malacothrix glabrata*)*,* white fiesta flower (*Pholistoma membranaceum*)*,* and chia (*Salvia columbariae*)*,* among others.

Rare Plant Surveys

Although most herbaceous ephemeral plant species had already completed their blooming cycle during the 2013 fall rare plant surveys, perennials were still detectable at this time and several shrub species were blooming. Numerous native annual plant species were blooming during the early spring surveys and fewer in late spring. Rare plant species that had a potential to occur on site were the focus of these surveys and are listed in Attachment A with their sensitivity status, habitat requirements, blooming period, and potential to occur onsite.

No special status plant species were detected in the Project Area during fall, early spring, and late spring focused surveys. A complete floral inventory of plant species was compiled based on the focused surveys and keying out of all unknown species in the proposed Solar Facility (Attachment B.1) and Gen-Tie Line (Attachment B.2).

Mohave tarplant, a state-listed endangered species, was detected in mid-October at a known reference location off-site in Short Canyon. Approximately 200 Mohave tarplant individuals were detected at the Short Canyon reference location in a spring-fed meadow; however, these individuals had finished blooming and were brown and desiccated at that time. Therefore, it was determined that the phenology of these two species during the fall

2013 survey period was not conducive to detection at that time or to a determination of presence or absence on-site. Spring 2014 surveys were timed to target these two species in addition to the other potentially occurring special status plant species.

Red Rock tarplant was also the subject of focused searches for reference populations to determine optimal timing for rare plant surveys. Despite focused searches in mid-October by AECOM botanists this state-listed endangered species was not located. There was evidence of recent flooding throughout the wash system at the reference site, which could have removed any late-blooming plants that may have emerged. A search in late spring at another reference site in Red Rock Canyon finally verified the presence and blooming status of Red Rock tarplant. Specifically, on May 29, 2014 David Charlton visited a known reference population area in Red Rock Canyon and looked for sites with favorable habitat; seeps adjacent to springs. No moist soil was observed but a single individual was observed. This plant was much smaller than normal but contained two flowers. This finding verified that, if plants germinated this year for either species, they should be easily identified by the flowers through early June.

As with the fall and early spring surveys, no special status plant species were detected in the Project Area during the late spring focused searches for State-endangered tarplant species.

Vegetation Communities

In accordance with the vegetation classification system presented in Sawyer and Keeler-Wolf (1995), upland vegetation communities present within the Project Area include Mojave creosote bush scrub and desert saltbush scrub. In addition, the Project Area contains four types of aquatic features delineated as state jurisdictional waters (AECOM 2011; AECOM 2012; AECOM 2014). Aquatic-related habitats have been classified according to both the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). State waters on-site consist of unvegetated swales within the upland habitat, unvegetated ephemeral dry wash, creosote wash scrub, and southern alluvial fan scrub (xeric riparian habitat) associated with drainages on the Project Area. Vegetation communities within the action area are shown in Figure 4.

<u>Mojave Creosote Bush Scrub</u>

This floristic association corresponds to Mojave creosote bush scrub (Holland 1986) and is the equivalent of the creosote bush – white burr sage association described by Sawyer and Keeler-Wolf (1995). Mojave creosote bush scrub occurs throughout the Project Area and is dominated by creosote bush and white bur-sage. Less common associated shrubs and subshrubs are Nevada ephedra (*Ephedra nevadensis*), California buckwheat (*Eriogonum fasciculatum* var. *poliofolium*), cheesebush (*Hymenoclea salsola*), winterfat (*Krascheninnikovia lanata*), and Anderson's desert thorn (*Lycium andersonii*). Cacti present include Wiggins' cholla (*Cylindropuntia echinocarpa*). Common herbaceous plants include

fiddleneck (*Amsinckia* sp.), filaree (*Erodium* sp.), chia (*Saliva columbariae*), and angled stem buckwheat.

Creosote Wash Scrub

Creosote wash scrub is a wash dependent community identical in floral composition to Mojave creosote bush scrub (see above). This community occurs only where Mojave creosote bush scrub is present in an alluvial fan or ephemeral stream. Vegetation in this community is frequently larger and more robust than the associated non-wash dependent community.

Southern Alluvial Fan Scrub

In the Project Area, this vegetation is indicated by a dominance of scale-broom (*Lepidospartum squamatum*) and occasionally Mojave indigo bush (*Psorothamnus arborescens*), allscale saltbrush (*Atriplex polycarpa*), and creosote bush. Southern alluvial fan scrub is a wash dependent vegetation community and it occurs within (or presents) the jurisdictional lateral extent for state waters. The extent of state waters represented by southern alluvial fan scrub was delineated within the ephemeral wash features including locations with the association of scale-broom. This is usually at the head of the ephemeral dry wash banks and/or where scale-broom becomes approximately one percent or less of absolute cover, and/or the ephemeral dry wash becomes unvegetated (e.g., supporting approximately 5 percent or less absolute cover of mixed saltbush scrub/Mojave creosote bush scrub). Within the Gen-tie Line corridor, the Pine Creek wash supports areas of southern alluvial fan scrub abutting and between unvegetated ephemeral dry wash channels.

Desert Saltbush Scrub

Desert Saltbush Scrub occurs in an upland area where Allscale (*Atriplex polycarpa*) becomes co-dominant with adjoining Mojave Creosote Bush Scrub. This plant association compares closely with the Holland plant community described as Sierra-Tehachapi Saltbush Scrub (36310) but includes Creosote Bush and White Bur-Sage (1986).

Unvegetated Ephemeral Dry Wash

The unvegetated ephemeral dry wash within the Project Area primarily does not support wash-dependent vegetation and is generally barren. Within this category, there are generally no sporadic occurrences of scale-broom or other wash-dependent species individuals. The unvegetated ephemeral dry washes occurring within the Project Area are generally linear; however, the southeast ephemeral dry wash does present some sinuosity. The largest unvegetated ephemeral dry wash does abate into the landscape within the Project Area and forms into an unvegetated swale complex at its eastern terminus. The unvegetated ephemeral dry wash features within the gen-tie alignment are entirely within the Pine Creek wash. This wash presents significant sinuosity, though it narrows where its course passes under SR-14.

Unvegetated Swales

The unvegetated swale features occurring within the project site are mostly interspersed with mixed saltbush scrub and Mojave creosote bush scrub and represent the smaller drainage features that have little vegetation mostly due to periodic inundation and scouring. The unvegetated swales occurring within the project site and the Gen tie-line exist as multiple linear features forming a significant component of a larger drainage network. The swale features range from approximately 1 to 5 feet in width and collectively compose limited braided series of drainages within the project site. They are generally interspersed on the southern two thirds of the Solar Facility and the northern quarter of the Gen Tie-Line where the flow from Pine Tree Canyon traversed the area.

Invasive, Nonnative Species

A few invasive or nonnative plant species are present on-site. Mediterranean grass (*Schismus barbatus*) and redstem filaree (*Erodium cicutarium*) were observed throughout the survey area, as well as red brome (*Bromus madritensis)* less commonly. Sahara mustard (*Brassica tournefortii*) and cheat grass (*Bromus tectorum)* were observed in a man-made drainage ditch parallel to SR-14 at the eastern edge of the Solar Facility.

Noteworthy Features

Creosote bush (*Larrea tridentata*) clones were observed during surveys. Clones are formed when a plant grows from a central point and expands outward while the center wood eventually dies and decays leaving a hollow center and the surrounding stems continue to expand outward. As the years pass, the ring expands at the rate that the stems of the plant expand in diameter. Measures of one Creosote bush clone in Lucern Valley in the Mojave Desert indicates that it is 11,700 years old, potentially representing the original colonizers of the desert at the end of the pluvial periods in California associated with the global glacial activity (Vasek 1980).

Creosote bush clonal rings occur on the project site in the northern third of the generation tie-line alignment along a zone from northwest to southeast. Sizes range from moderately small (seven by eight feet) to relatively large including up to roughly 42 feet by 22 feet in size, which may represent several thousand years of growth.

Joshua tree (*Yucca brevifolia)* occurs sporadically in the project vicinity and three small individuals were detected within the Gen Tie-Line right-of way area, but would not be impacted by project development as the gen-tie structures would span Pine Tree Canyon Wash (Figure 5).

Discussion

No special-status plant species were located during the focused rare plant surveys of the Project Area, and thus no impacts to sensitive plant species are anticipated as a result of project construction. Several large creosote rings would be impacted by implementation of the project.

A number of incidental observations were made of sensitive wildlife species during the rare plant surveys. These include desert tortoise (one live, one dead), western burrowing owl (burrow with pellets), and desert kit fox observations of the animals and their sign (burrows, scat, and/or tracks). Bobcat scat and coyote scat were also detected within the Project Area. These observations were recorded with GPS and are displayed on Figure 5.

Please feel free to contact me with any questions or further clarification.

Sincerely,

Bonnie J. Hendricks
Senior Ecologist

Attachments:

Figure 1 – Regional Location Map
Figure 2 – Species Survey Area
Figure 3 – Proposed Project Elements
Figure 4 – Vegetation Communities Occurring within the Biological Survey Area
Figure 5 – Incidental Wildlife Species and Plant Occurrences Observed within the Biological Survey Area
Attachment A – Potentially Occurring Special-Status Plant Species
Attachment B.1 – Floral Species Detected in Proposed Solar Facility
Attachment B.2 – Floral Species Detected in Proposed Gen Tie-Line

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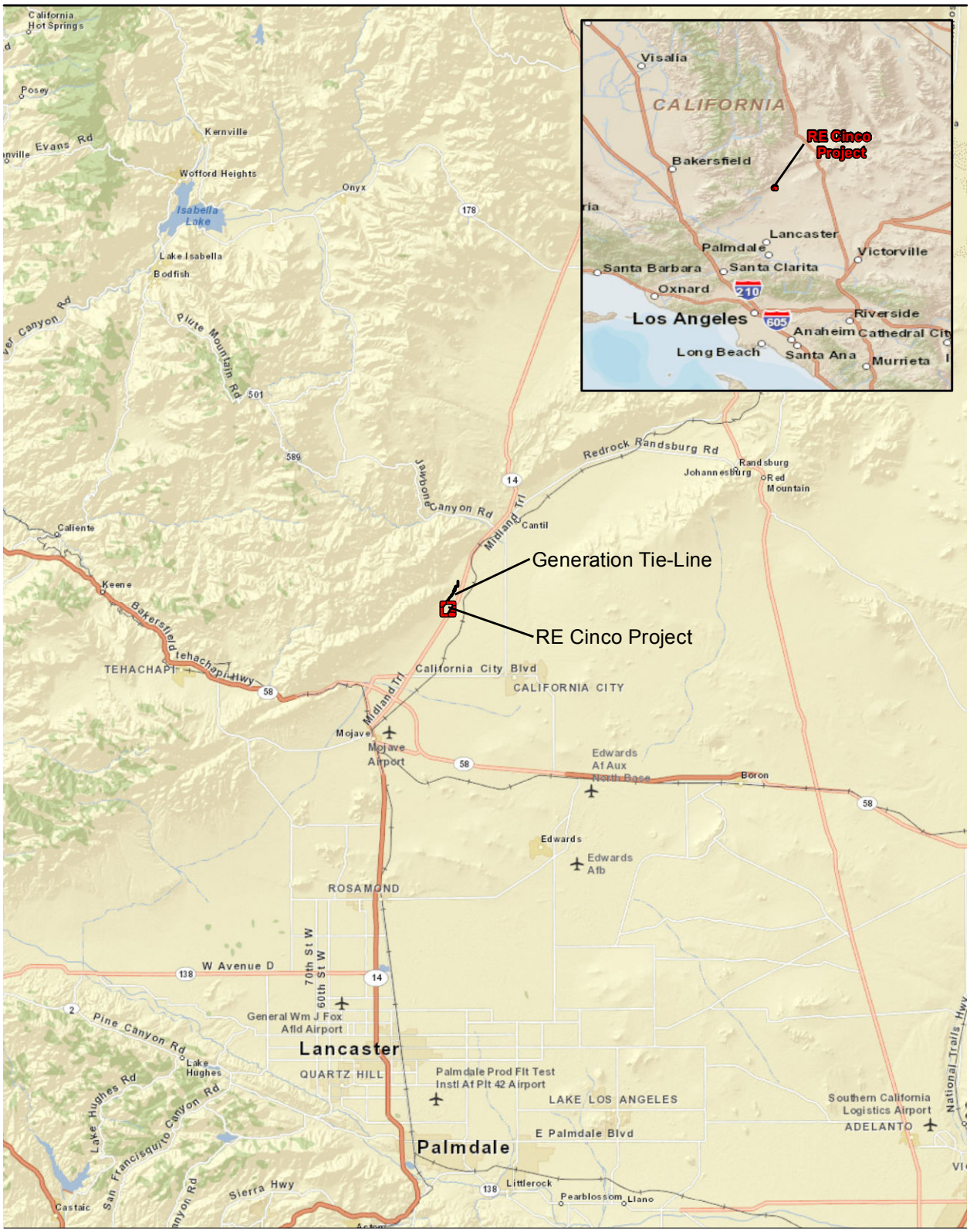
FIGURES



Source: RE Cinco 2013; AECOM 2013; Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

12 6 0 12 Miles

Scale: 1 = 760,320; 1 inch = 12 miles

Figure 1
Regional Location Map

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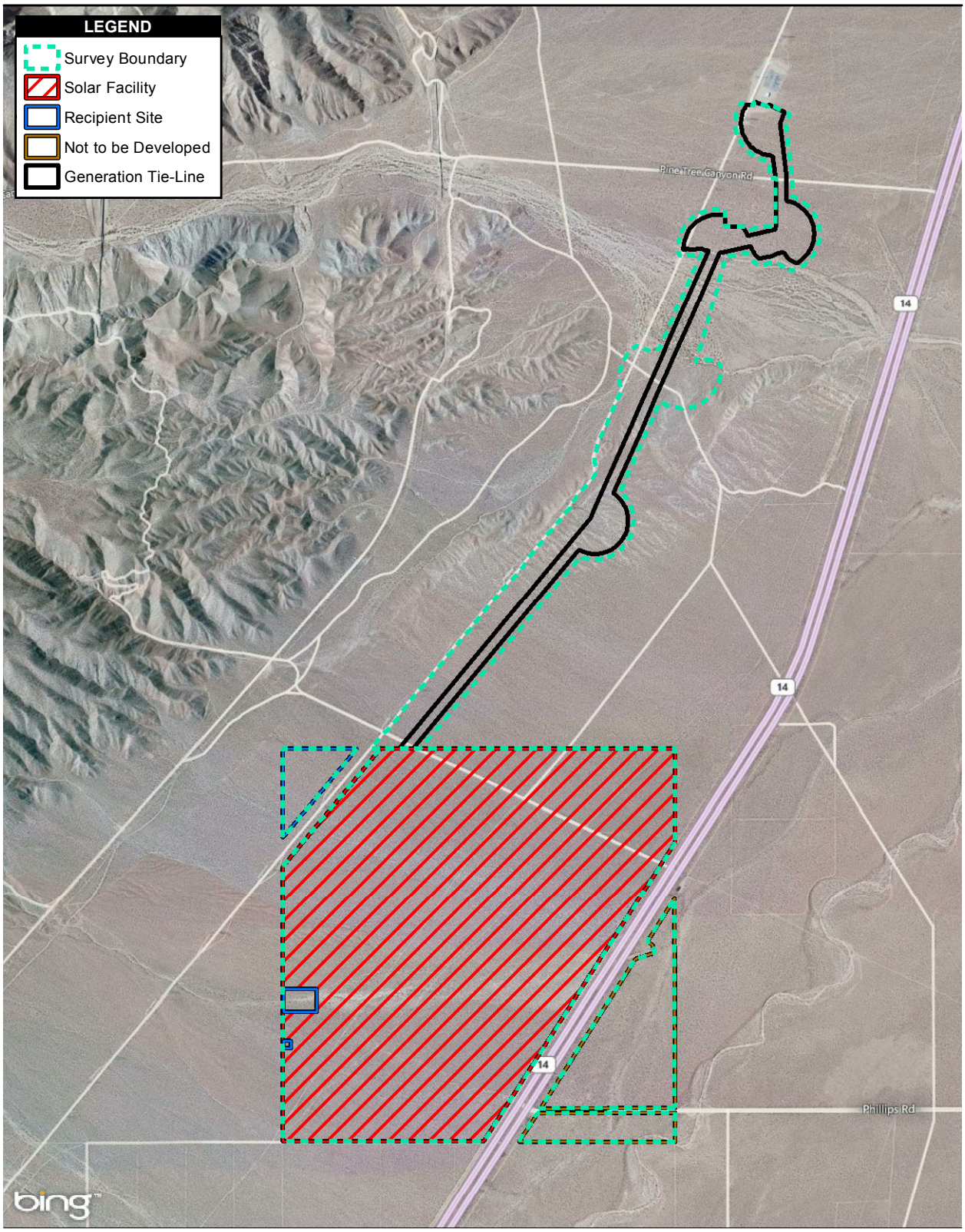

Source: Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND ; RE Cinco 2013; AECOM 2013

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Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 2
Species Survey Area

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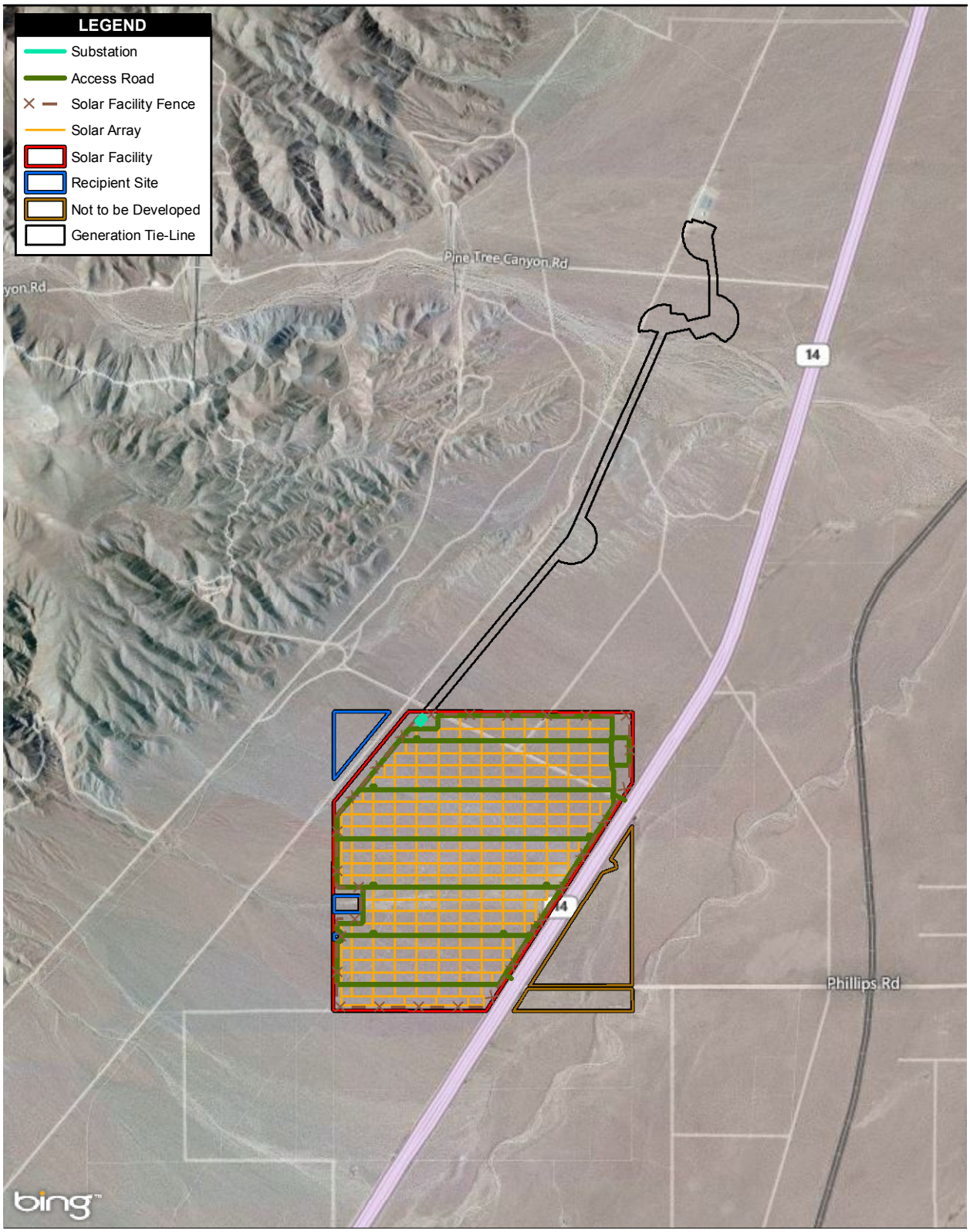

Source: Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND ; RE Cinco 2013

0.5 0.25 0 0.5 Miles

Scale: 1 = 31,680; 1 inch = 0.5 miles

Figure 3
Proposed Project Elements

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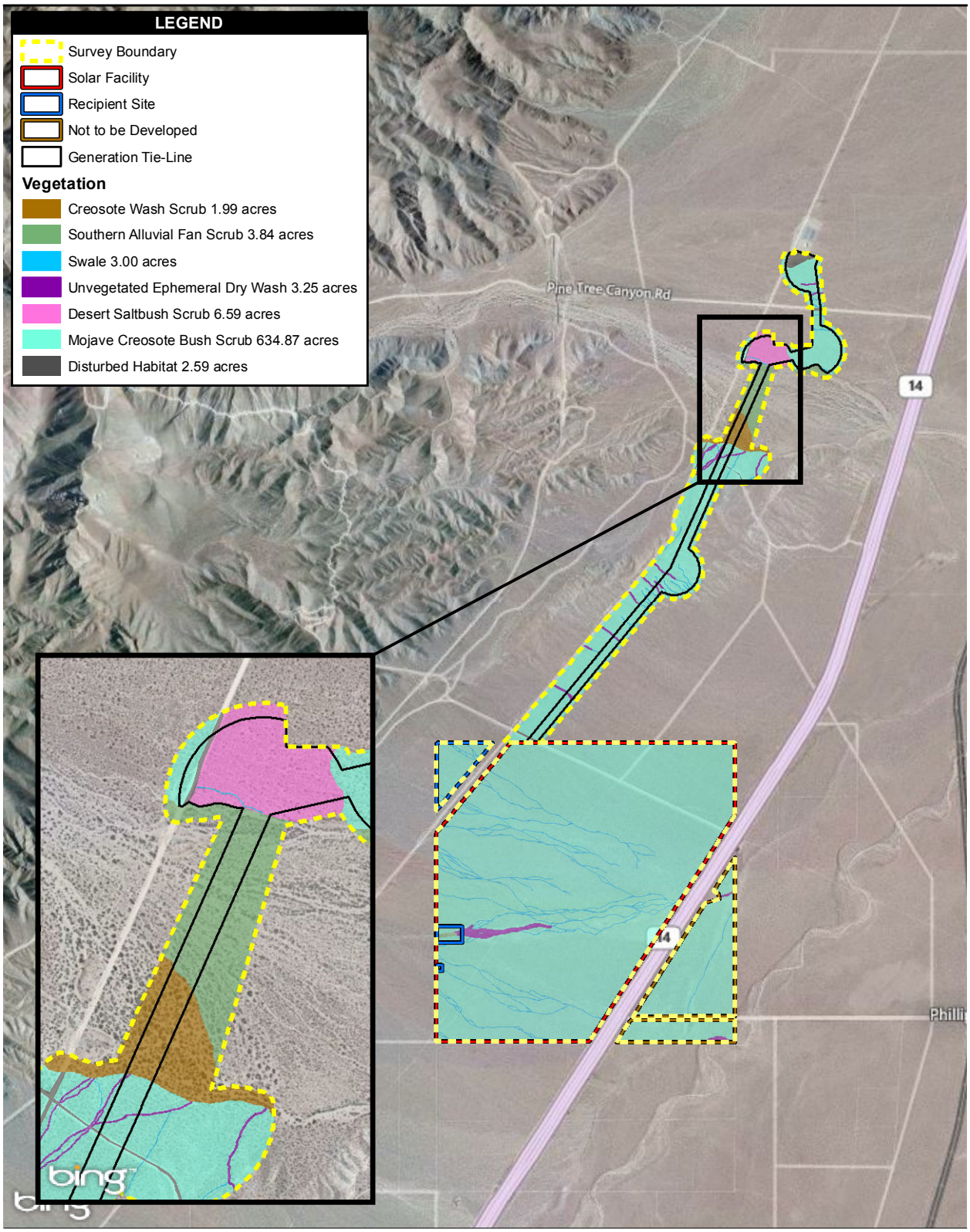

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Scale: 1 = 31,680; 1 inch = 0.5 miles

Figure 4
Vegetation Communities

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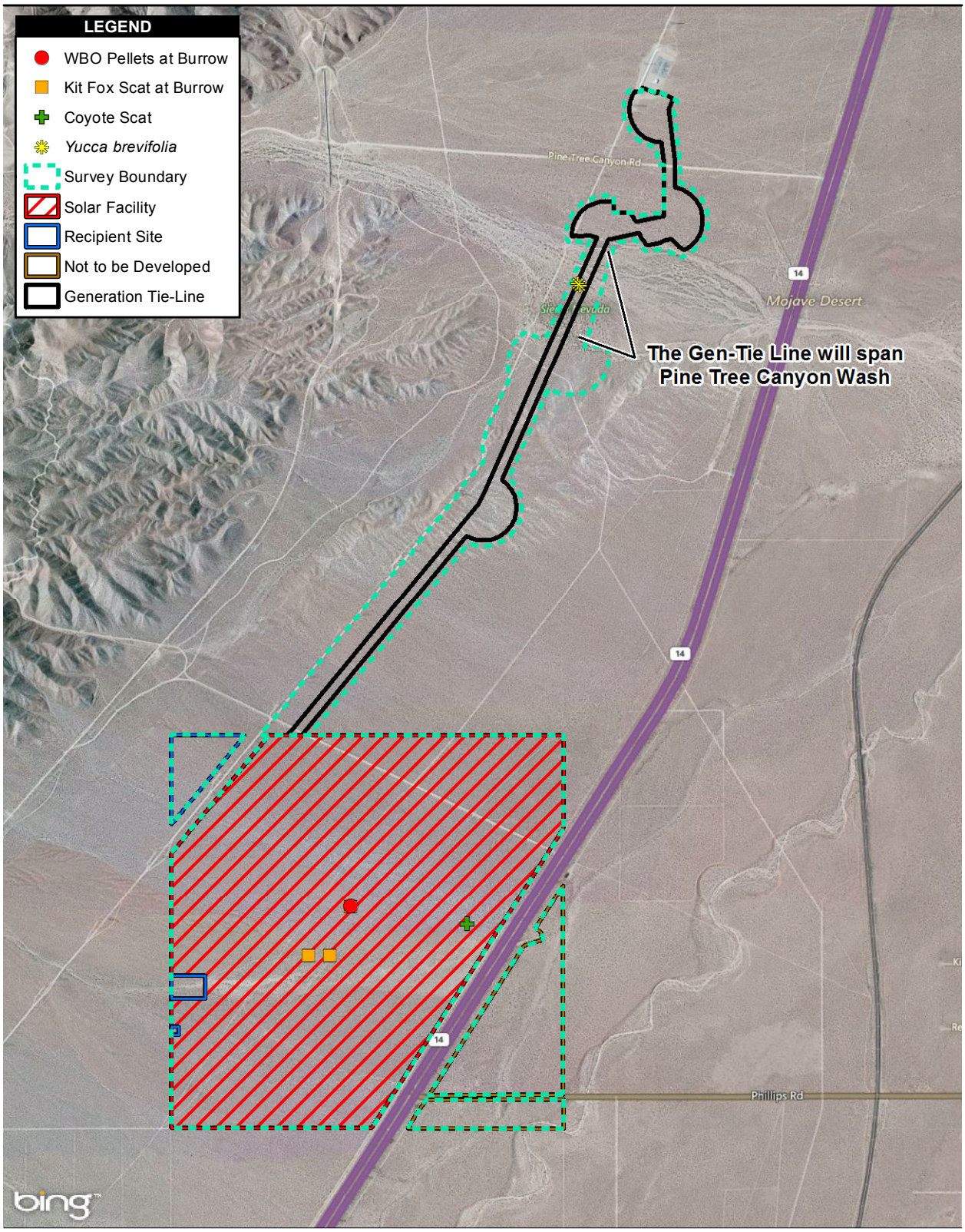

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Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 5
Species Observations

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ATTACHMENT A

POTENTIALLY OCCURRING SPECIAL STATUS PLANT SPECIES

Attachment A
Sensitive Plant Species with Potential to Occur on the RE Cinco Proposed Solar Facility or Gen Tie-Line

Species	Sensitivity Status	Natural History	Potential Occurrence Status
Spanish needle onion (*Allium shevockii)*	CNPS List 1B.3	Perennial bulbiferous herb. It occurs in rocky areas in pinyon and juniper woodland and upper montane coniferous forest. Flowers May to June.	Low potential for occurrence due to lack of suitable woodland and forest habitat.
Alkali mariposa lily (*Calochortus striatus*)	CNPS List 1B.2	Herbaceous perennial geophyte with large pink, radially striped flowers. It occurs in alkali seeps and seasonally moist locations. Flowers April to June.	Low potential for occurrence due to lack of suitable alkali seep habitat.
Kern County evening primrose (*Camissonia kernensis ssp.* kernensis)	CNPS List 4.3	Annual herb on sandy, gravelly, granitic soils. Found in chaparral, Joshua tree woodland, and pinyon and juniper woodlands. Flowers March to May.	Low potential for occurrence due to lack of suitable woodland or chaparral habitat.
White pygmy-poppy (*Canbya candida)*	CNPS 4.2	Annual herb on sandy and gravelly soils. Found in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodlands. Flowers March to June.	Moderate potential to occur in desert scrub habitat on-site.
Mohave paintbrush (*Castilleja plagiotoma)*	CNPS List 4.3	Perennial herb (hemiparasitic) found in great basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland. Flowers April – June.	Moderate potential to occur in desert scrub in the alluvial washes on-site.
Death Valley sandmat (*Chamaesyce vallis-mortae)*	CNPS List 4.2	Perennial herb found in sandy or gravelly soils in Mojavean desert scrub. Flowers May to October.	Moderate potential to occur on-site in desert scrub.
Mojave spineflower (*Chorizanthe spinosa*)	CNPS List 4.2	Small ephemeral annual on sandy and gravelly soils. Sometimes in alkaline areas, chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas. Flowers April to June.	Moderate potential to occur in desert scrub habitat on-site.
Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora)*	CNPS List 4.2	Annual herb often found in sandy, sometimes rocky slopes or roadsides. Prefers chaparral, cismontane woodland, great basin scrub, and valley and foothill grassland. Flowers May to June.	Moderate potential to occur in sandy or rocky soils in desert scrub habitat on-site.

Species	Sensitivity Status	Natural History	Potential Occurrence Status
Streambank spring beauty (*Claytonia parviflora* ssp. *grandiflora)*	CNPS List 4.2	Annual herb found in rocky soils in cismontane woodland habitat. Flowers February to May.	Low potential to occur on-site due to lack of cismontane woodland habitat.
Desert springparsley (*Cymopteris deserticola*)	CNPS List 1B.2	Low growing herbaceous perennial with silvery parsley like leaves and a ball shaped inflorescence. Found in sandy soils in Joshua tree woodland and Mojavean desert scrub. Flowers March to May.	Low potential to occur in the desert scrub on-site.
Red Rock tarplant (*Deinandra arida*)	State Threatened July1982 CNPS List 1B.2	Annual herb found in clay and volcanic tuff in Mojavean desert scrub. Flowers April to November.	Moderate potential to occur in the rocky desert scrub and wash habitats on-site.
Mohave tarplant (*Deinandra mohavensis*)	State Endangered Aug 1981 CNPS List 1B.3	Annual in vernally moist and alkali areas in drainages. Flowers July to October.	Moderate to low potential to occur in the washes on-site. No vernally moist spring habitat is present on-site.
Recurved larkspur (*Delphinium recurvatum*)	CNPS List 1B.2	Slender herbaceous perennial to nearly 3 feet tall with delicate pale blue flowers growing in deeper fine soil with grasses and herbs. Flowers March to June	Low potential to occur on-site due to lack of grasslands.
Limestone dudleya (*Dudleya abramsii* ssp. *calcicola)*	CNPS List 4.3	Perennial succulent herb found in carbonate soils in chaparral and pinyon and juniper woodland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Tracy's eriastrum (*Eriastrum tracyi)*	State Rare CNPS List 3.2	Annual herb found in chaparral and cismontane woodland. Flowers May to July.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Mohave woolly sunflower (*Eriophyllum mohavense*)	CNPS List 1B.2	Small ephemeral annual on sandy and gravelly soil in Mojavean desert scrub, chenopod scrub and playas. Flowers March to May.	Moderate potential to occur on-site in desert scrub habitat.
Kern buckwheat (Eriogonum kennedyi var. pinicola)	CNPS List 1B.1	Perennial herb 2 to 6 inches tall in open places on clay soil. Found in chaparral and pinyon and juniper woodland. Flowers May to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Red Rock Canyon monkeyflower (*Erythranthe rhodopetra)*	CNPS List 1.B.2	Annual herb found in sandy, canyon washes and Mojavean desert scrub. Flowers March to April.	Moderate potential to occur on-site in Pine Tree Canyon wash and moderate potential in smaller washes on-site.
Red Rock poppy (*Eschscholzia minutiflora ssp. twisselmannii)*	CNPS List 1B.2	Yellow flowered annual about a foot or more tall that occurs on volcanic tuff material. Flowers March to May.	Moderate potential to occur on-site in soils with volcanic tuff.
Pale-yellow layia (*Layia heterotricha)*	CNPS List 1B.1	Annual herb found in alkaline or clay soils in	Low potential to occur on-site due to the lack of

Species	Sensitivity Status	Natural History	Potential Occurrence Status
		cismontane woodland, pinyon and juniper woodland and grasslands.	woodlands, coastal scrub, and grassland.
Sage-like Loeflingia *(Loeflingia squarrosa* var. *artemisiarum*)	CNPS List 2B.2	Minute annual with spine tipped leaves on sandy soil and dunes. Jepson Manual does not recognize variety but CNPS does. Flowers April to May.	Moderate potential to occur in sandy soils.
Solitary blazing star (*Mentzelia eremophila)*	CNPS List 4.2	Annual herb found in Mojavean desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.
Creamy blazing star (*Mentzelia tridentata*)	CNPS List 1B.3	Annual with somewhat thick dark green leaves and cream colored flowers on coarse rock gravel. Found in Mojavean desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.
Tehachapi monardella (*Monardella linoides* ssp. *oblonga)*	CNPS List 1B.3	Perennial rhizomatous herb found in lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest. Flowers June to August.	Low potential to occur on-site due to lack of woodland and forest habitat.
Large-flowered nemacladus (*Nemacladus secundiflorus* var. *secundiflorus)*	CNPS List 4.3	Annual herb found in gravelly openings in chaparral and valley and foothill grassland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and grassland habitats.
Bakersfield cactus (*Opuntia basilaris* var. *treleasei)*	CNPS List 1B.1	Perennial stem succulent. Found in sandy or gravelly areas of chenopod scrub, cismontane woodland, and valley and foothill grassland.	Moderate potential to occur on-site in desert scrub habitat.
Fragile pentachaeta (*Pentachaeta fragilis)*	CNPS List 4.3	Annual herb found in foothill woodlands. Flowers March to June.	Low potential to occur on-site due to lack of woodland habitat.
Adobe yampah (*Perideridia pringlei)*	CNPS List 4.3	Perennial herb found in chaparral and foothill woodland. Flowers April to June.	Low potential to occur on-site due to lack of woodland and chaparral habitat.
Hubby's phacelia (*Phacelia hubbyi)*	CNPS List 4.2	Annual herb found on gravelly or rocky slopes in chaparral or coastal scrub. Flowers April to June.	Low potential to occur on-site due to lack of coastal scrub and chaparral habitat.
Charlotte's Phacelia (*Phacelia nashiana*)	CNPS List 1B.2	Low growing annual with somewhat thick leaves and deep blue flowers growing on gravelly and talus slopes. Flowers March to June.	Moderate potential to occur on-site. Known from the general vicinity of the site and its surroundings
Mojave fish-hook cactus (*Sclerocactus polyancistrus)*	CNPS List 4.2	Perennial stem succulent found in Mojave desert scrub and pinyon and juniper woodland.	Moderate potential to occur on-site in desert scrub.

ATTACHEMENT B

FLORAL SPECIES DETECTED DURING PROJECT SURVEYS

Attachment B.1 Plant Species Observed within the RE Cinco Proposed Solar Facility

Scientific Name	Common Name
EUDICOTS	
Ambrosia dumosa	White bur-sage
Ambrosia salsola var. salsola	Common burrobrush, cheesebush
Amsinckia intermedia	Common fiddleneck
Amsinckia tessellata	Desert fiddleneck
Brassica tournefortii	Sahara mustard
Calycoseris parryi	Yellow tack-stem
Camassonia claviformis	Brown-eyed primrose
Chaenactis xantiana	Fleshy pincushion
Chorizanthe brevicornu var. brevicornu	Brittle spineflower
Chorizanthe sp.	Spineflower
Chorizanthe spinosa	Mojave spineflower
Chorizanthe watsonii	Watson's spineflower
Cryptantha micrantha var. micrantha	Red-root cryptantha
Cryptantha nevadensis var. rigida	Rigid cryptantha
Cylindropuntia echinocarpa	Silver or golden cholla
Descurainia pinnata	Western tansy mustard
Eremalche exilis	White mallow
Ericameria teretifolia	Green or round-leaf rabbitbrush
Eriogonum fasciculatum var. polifolium	Mojave desert california buckwheat
Eriogonum pusillum	Yellow turbans (group 2)
Eriogonum sp.	Buckwheat
Eriophyllum ambiguum var. paleaceum	Annual woolly sunflower
Erodium cicutarium	Redstem filaree
Eschscholzia minutiflora	Pygmy poppy
Eucrypta micrantha	Desert eucrypta
Gilia brecciarum subsp. brecciarum	Nevada gilia
Gilia scopulorum	Rock gilia
Gilia stellata	Star gilia
Gilia transmontana	Transmontane gilia
Guillenia lasiophylla	California mustard
Larrea tridentata	Creosote bush
Lasthenia gracilis	Common goldfields
Lepidium fremontii	Desert allysum
Lepidium sp.	Peppergrass
Lepidospartum squamatum	Scale broom
Leptosyne bigelovii	Bigelow coreopsis
Lupinus sp.	Lupine
Lycium cooperi	Cooper’s box thorn
Malacothrix coulteri	Snake's-head
Malacothrix glabrata	Desert dandelion
Mentzelia sp.	Mentzelia
Mirabilis laevis var. villosa	Wishbone bush

Pectocarya heterocarpa	Mixed-nut pectocarya
Phacelia distans	Common phacelia, wild heliotrope
Pholistoma membranaceum	White fiesta flower
Plagiobothrys arizonicus	Arizona popcornflower
Psorothamnus arborescens var. arborescens	Johnson's indigobush
Scutellaria mexicana	Bladder-sage
Senna armata	Spiny senna
Sphaeralcea ambigua var. ambigua	Apricot mallow
Stephanomeria pauciflora	Wire-lettuce
Tropidocarpum gracile	Dobie pod
GYMNOSPERMS	
Ephedra viridis	Green ephedra
MONOCOTS	
Bromus madritensis subsp. madritensis	Foxtail chess, madrid brome
Bromus tectorum	Cheat grass, downy chess
Dichelostemma capitatum subsp. capitatum	Blue dicks, wild hyacinth
Hesperoyucca whiplei	Our Lord's candle
Schismus barbatus	Mediterranean grass
Yucca brevifolia	Joshua tree

Attachment B.2 Plant Species Observed within the RE Cinco Proposed Gen Tie-Line

Scientific Name	Common Name
EUDICOTS	
Acmispon strigosus	Strigose lotus
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia dumosa	White bur-sage
Ambrosia salsola	Common burrobrush, cheesebush
Amsinckia tessellata var. tessellata	Desert fiddleneck
Amsinckia menziesii	Small-flowered fiddleneck
Atriplex polycarpa	Allscale saltbush
Calycoseris parryi	Yellow tack-stem
Calyptridium monandrum	Common pussypaws
Camissonia campestris subsp. campestris	Mohave suncup
Caulanthus lasiophyllus	California mustard
Chaenactis xantiana	Fleshy pincushion
Chorizanthe brevicornu var. brevicornu	Brittle spineflower
Chorizanthe spinosa	Mojave spineflower
Chorizanthe watsonii	Watson's spineflower
Chylismia claviformis subsp. claviformis	Brown-eyed primrose
Cryptantha angustifolia	Narrow-leaved cryptantha
Cryptantha micrantha var. micrantha	Red-root cryptantha
Cryptantha nevadensis var. rigida	Rigid cryptantha
Cryptantha pterocarya var. pterocarya	Winged-nut cryptantha
Cryptantha sp.	Cryptantha
Cylindropuntia echinocarpa	Silver or golden cholla
Descurainia pinnata	Western tansy mustard
Encelia farinosa	Brittlebush
Eremalche exilis	White mallow
Eriogonum pusillum	Yellow turbans
Eriophyllum wallacei	Wallace's woolly daisy
Erodium cicutarium	Redstem filaree
Eschscholzia californica	California poppy
Eschscholzia minutiflora	Pygmy poppy
Eucrypta micrantha	Desert eucrypta
Gilia brecciarum subsp. brecciarum	Nevada gilia
Gilia stellata	Star gilia
Gilia transmontana	Transmontane gilia
Krascheninnikovia lanata	Winter fat
Larrea tridentata	Creosote bush
Lasthenia gracilis	Common goldfields
Lepidium fremontii	Desert allysum
Lepidospartum squamatum	Scale broom
Leptosyne bigelovii	Bigelow coreopsis
Logfia depressa	Hierba limpia
Lupinus sp.	Lupine

Lycium cooperi	Cooper’s box thorn
Malacothrix coulteri	Snake's-head
Malacothrix glabrata	Desert dandelion
Mentzelia albicaulis	Small-flowered blazing star
Mentzelia obscura	Pacific blazing star
Mirabilis laevis var. villosa	Wishbone bush
Nemacaulis denudata	Cotton heads, woolly heads
Pectocarya linearis subsp. ferocula	Narrow-toothed pectocarya
Pectocarya penicillata	Northern pectocarya
Peritoma arborea var. angustata	Bladder pod
Phacelia crenulata var. crenulata	Cleft-leaf wild heliotrope
Phacelia distans	Common phacelia, wild heliotrope
Phacelia fremontii	Fremont’s phacelia
Plagiobothrys arizonicus	Arizona popcornflower
Psorothamnus arborescens var. arborescens	Johnson’s indigobush
Rafinesquia neomexicana	Desert chicory
Salvia columbariae	Chia
Scutellaria mexicana	Bladder-sage
Senna armata	Spiny senna
Sphaeralcea ambigua var. ambigua	Apricot mallow
Stephanomeria pauciflora	Wire-lettuce
Tropidocarpum gracile	Dobie pod
GYMNOSPERMS	
Ephedra viridis	Green ephedra
MONOCOTS	
Bromus madritensis subsp. madritensis	Foxtail chess, madrid brome
Bromus madritensis subsp. rubens	Red brome
Dichelostemma capitatum subsp. capitatum	Blue dicks, wild hyacinth
Hesperoyucca whipplei	Our Lord’s candle
Schismus barbatus	Mediterranean grass
Yucca brevifolia	Joshua tree

AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

May 27, 2011

Aaron Allen, PhD., North Coast Branch Chief
U.S. Army Corps of Engineers
2151 Alessandro Drive, Suite 110
Ventura, CA 93001

Re: RE Barren Ridge 1 Photovoltaic Electrical Generation Facilities Jurisdictional Delineation Letter Report and Request for an Approved Jurisdictional Determination

Dear Dr. Allen:

Introduction

This jurisdictional delineation letter report (JDLR) discusses the type and amount of potentially regulated aquatic resources occurring within the approximate 588-acre project survey area (the project survey area is also synonymous with the delineation survey area and the limits of the proposed development and construction) for the RE Barren Ridge 1 Photovoltaic Solar Electrical Generation Facilities project (project), which is proposed by Recurrent Energy, LLC.

As part of the environmental review process, this JDLR summarizes the latest federal and state guidance and methodologies employed in conducting a formal delineation for jurisdictional waters of the U.S. and State of California (state); the results of the fieldwork; and the amount, type, and location of the formally delineated potential jurisdictional waters occurring within the project area.

Summary

Based on the results of the formal field delineation within the project survey area it has been determined that there are 0.0[1,2] acres of potential jurisdictional waters of the U.S.[3,4] and

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[1] All acreages are rounded to the nearest hundredth (which may account for minor rounding error).

[2] Final acreages of jurisdictional waters of the U.S. are based on the jurisdictional determination (JD) process per the March 30, 2007, *The U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*; the June 5, 2007, Approved JD Form; the June 5, 2007, Joint Guidance Memorandum; the December 2, 2008, Guidance Memorandum; and Regulatory Guidance Letter (RGL) 08-02 (if RGL 08-02 is deemed applicable and appropriate [i.e., the permit applicant or other "affected party" can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead] for a jurisdictional determination of this formal jurisdictional delineation).

[3] Final acreages of jurisdictional waters of the U.S. are based on the JD process per the March 30, 2007, *The U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*; the June 5, 2007, Approved JD Form; the June 5, 2007, Joint Guidance Memorandum; the December 2, 2008, Guidance Memorandum; and RGL 08-02 (if RGL 08-02 is deemed applicable and appropriate [i.e., the permit applicant or other "affected party" can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead] for nonbinding written indication that there may be waters of the U.S., including wetlands, on a parcel or indications of the approximate location[s] of waters of the U.S. or wetlands on a parcel). Jurisdictional waters of the U.S. are relevant to the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Boards (RWQCBs), and the California Department of Fish and Game (CDFG) regulatory permitting, if applicable.

approximately 6.62 acres of potential jurisdictional waters of the state, exclusively.[5,6] Of these approximately 6.62 acres of potential jurisdictional waters of the state occurring within the survey area, approximately 0.65 acre is composed of alluvial fan scrub, approximately 3.21 acres are composed of unvegetated ephemeral dry wash, and approximately 2.76 acres are composed of unvegetated swale.

Purpose of Formal Jurisdictional Delineation

The purpose of performing a formal jurisdictional delineation is to identify the absence or presence (with their types, location, boundaries, and acreages) of potential jurisdictional waters of the U.S. and state (including wetlands) occurring within the project area. Once the presence or absence of potential jurisdictional waters is identified through this formal delineation, the results of this JDLR will be verified by the requisite federal and state agencies (e.g., the U.S. Army Corps of Engineers [USACE], the California Department of Fish and Game [CDFG], and the Regional Water Quality Control Board [RWQCB]) of which these resource agencies will assert their regulatory administration over.[7] This JDR is intended to support and provide agency documentation in the process of obtaining the following:

- Jurisdictional determination (JD) of "Geographic Isolation" (e.g., nonjurisdictional waters of the U.S.) or, if required, authorization under Section 404 of the Clean Water Act (CWA) (as regulated by USACE and the U.S. Environmental Protection Agency [USEPA]) (as applicable).[8]
- Certification of compliance under Section 401 of the CWA, (as regulated by the RWQCB [as applicable]).[9]
- Issuance of Waste Discharge Requirements (WDRs) or waiver under Article 4 of the 1969 Porter-Cologne Water Quality Act (Porter-Cologne) (as regulated by the RWQCB [as applicable]).[10]

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[4] Jurisdictional waters of the U.S. are under the purview of USACE, with oversight by the U.S. Environmental Protection Agency (USEPA), and the RWQCB (Lahontan Region 6). Jurisdictional waters of the U.S. include jurisdictional waters of the state. Federal and state jurisdictions do overlap but would remain distinct for regulatory administration and permitting purposes.

[5] Relevant to CDFG and RWQCB permitting only.

[6] Jurisdictional waters of the state are under the purview of CDFG), and the RWQCB. State jurisdictions often exceed, in lateral extent and area, federal jurisdiction. Therefore, jurisdictional waters of the state include jurisdictional waters of the U.S. (as applicable). Although federal and state jurisdictions do overlap, they would remain distinct for regulatory administration and permitting purposes.

[7] Verification of the presence or absence of federal waters by USACE will be based on the findings outlined and presented in this JDLR and the Approved JD process (see below).

[8] 40 Code of Federal Regulations (CFR) Part 230 (provided USACE determines that some or all of these delineated aquatic features occurring within the survey area present a significant nexus with the Pacific Ocean and are thus under federal jurisdiction as administered by USACE [which is anticipated not to be the case]).

[9] Maintaining water quality standards under the Clean Water Act (CWA) Section 401 would only apply to this project if it has been determined by USACE that some or all of these delineated waters occurring within the survey area are jurisdictional waters of the U.S. and that a discharge of waste would occur to or within jurisdictional waters of the U.S. If the USACE/USEPA determines that there are no jurisdictional waters of the U.S. occurring within the project area, then California Water Code Section 13000 *et seq.* (Porter-Cologne) would apply to any "discharge of waste" into state waters (see Discussion Section, below).

- California Fish and Game Code (CFGC) Chapter 6 Section 1600 *et seq.* (as regulated by the CDFG [as applicable[11]]).

Project Location

The RE Barren Ridge 1 project site is located within the southeastern portion of Kern County, California, approximately 7 miles northwest of California City, California (Figures 1 and 2; all figures addressed herein are located in Attachment A). The southeastern portion of the project site is bisected by State Route 14 (SR-14), a transmission corridor easement that extends through the northwest corner of the site. Multiple service roads and trails, including Phillips Road (which is a compacted dirt service road), traverse throughout the project area (Figure 3).

Project Environmental Setting

The project site is located in Antelope Valley. The climate in this region is characterized by an arid environment with low humidity and rainfall, strong fluctuations in daily temperatures, hot summers and cold winters, and generally clear skies. Wind is also a strong feature of this climatic regime, with dry winds in excess of 25 miles per hour in the late winter and early spring. The climatological station closest to the RE Barren Ridge 1 project site that monitors temperature and precipitation is the Mojave Station (COOP ID: 045756)[12] The mean annual temperatures at the Mojave Station range from a minimum of 49.9 degrees Fahrenheit (°F) to a maximum of 75.8°F. Mean annual rainfall at the Mojave Station is approximately 5.93 inches (WRCC 2011).

The dominant floristic association within the project survey area corresponds to Mojave creosote bush scrub (Holland Code 34100 [Holland 1986]) or the creosote bush-white burr sage scrub Shrubland Alliance (Sawyer and Keeler-Wolf 2008). Small restricted stands of southern alluvial fan scrub[13] (Holland Code 63330 [Holland 1986]) or the scale broom scrub Shrubland Alliance (Sawyer and Keeler-Wolf 2008) occur within the small ephemeral washes located at the westernmost portion and southeasternmost portion of the project survey area (Figure 4).

The two soil series occurring within the project survey area (Arizo Gravelly Loamy Sand and Cajon Loamy Sand) are within the entisol soil order (Figure 5). Entisols are geologically young soils primarily originating from sediments and alluvium that show little alteration of the parent material from which they were derived, and that exhibit little pedogenesis (soil formation process) (Brady 1990). Since entisols are primarily associated with fluvial processes and deposition (and to a lesser extent aeolian deposition), they are by nature dynamic and do not have the ability to develop buried soil horizons, which in turn contribute

[10] If it is determined by USACE that no federal waters occur within the survey area or if no impact (discharge of dredge or fill) would occur to jurisdictional waters of the U.S. as a result of the proposed project.
[11] California Code of Regulations (CCR) Title 14, Division 1.
[12] The Mojave Station is located approximately 11.5 miles south of the project area located at 35.04917/-118.16194 (Decimal Degrees) (WRCC 2011).
[13] The southern alluvial fan scrub occurring within the project survey area also closely corresponds to Mojave desert wash scrub (Holland Code 63700 [Holland 1986]).

to in situ development of redoximorphic features when conditions are hydric over the appropriate temporal frame (NRCS 2011a; NRCS 2011b; USDA 1970).

The project area is located within the central-northern portion of the approximately 3,366-square-mile Antelope-Fremont Valleys Watershed (Hydrologic Unit Code: 18090206) and is located within the RWQCB Lahontan Region South Basin (RWQCB Region 6), the approximately 909-square-mile Fremont Hydrologic Unit (625.00) and the approximately 719-square-mile Koehn Hydrologic Area (625.40). There is no hydrologic subarea (Figure 6). There are no water bodies occurring within the project area that are listed on the CWA 303(d) List (impaired water bodies) (RWQCB 2011b).[14]

Elevation at the project survey area ranges between approximately 2,700 feet above sea level (asl) along the western portion to approximately 2,400 feet asl along the eastern portion. Topography is generally moderately sloping (ranging between 2% to 15% slopes) and undulating, with an eastern aspect. Based upon nearby elevation changes, located at the southeast extent of the Piute Mountains, an approximately 4,200-foot-high mountain feature called “Barren Ridge” creates an acute topographical divide. Through seasonal rainfall inputs this divide supports semideveloped limited ephemeral dry washes and swale features, which traverse the project survey area.

Specifically, within the project survey area, ephemeral washes are located within the central-west and southeastern portions. The central-west ephemeral wash flows from west to east prior to transforming into swale features. These swales cross under SR-14 via culverts and eventually form a confluence, through unnamed ephemeral tributaries, with the Pine Tree Creek dry wash (which is also an ephemeral wash tributary to Koehn Dry Lake [see below]) (USGS 2011a, 2011b). The southeast wash also forms a confluence with the Pine Tree Creek dry wash. The swales and swale complexes primarily occupy the western portion of the project survey area and flow from west to east and primarily abate into the landscape within the project survey area.[15]

Project Description

The proposed project consists of the development of a photovoltaic (PV) solar electrical generation facility. The facility would include PV panels mounted on steel and aluminum structures; solar substations; equipment pads; and associated infrastructure such as access roads, fencing, and tie-ins to adjacent power lines.

[14] Section 303 of the CWA requires states (and tribes) to adopt water quality standards for all surface waters of the U.S. Additionally, Section 303 of the CWA requires states to identify and make a list of surface water bodies that are polluted (impaired). This list is referred to as the " 303(d) List of Water Quality Limited Segments" (SWRCB 2011).

[15] The confluence of the swales with Pine Tree Creek Wash and the abatement of swales into the landscape were confirmed by field delineation and groundtruthing efforts and conforms to the National Hydrography Dataset (NHD) (USGS 2011a) and USGS mapping Survey (USGS) Mojave NE Quadrangle (1973) (USGS 2011b).

Regulatory Framework

Aquatic environments/habitats occurring within California are regulated under the following federal and state laws:

Federal Regulations

USACE

Pursuant to Section 404 of the CWA, USACE is authorized to regulate any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations (CFR) Part 328 (Definitions). USACE, with oversight by USEPA, has the principal authority to issue CWA Section 404 Permits.

Pursuant to Section 401 of the CWA, the RWQCB certifies that any discharge into jurisdictional waters of the U.S. will comply with state water quality standards. The RWQCB, as delegated by USEPA, has the principal authority to issue a CWA Section 401 water quality certification or waiver.

State Regulations

CDFG

Pursuant to CFGC Section 1600 *et seq.* of the CDFG regulates activities of an applicant's project that would *substantially* alter the flow, bed, channel, or bank of streams or lakes unless certain conditions outlined by CDFG are met by the applicant. The limits of CDFG jurisdiction are defined in CFGC Section 1600 *et seq.* as the "bed, channel, or bank of any river, stream,[16] or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit."[17] However, in practice, CDFG usually extends its jurisdictional limit and assertion to the top of a bank of a stream, the bank of a lake, or outer edge of the riparian vegetation, whichever is wider.

For desert aquatic features, CDFG provides specific guidance concerning their regulatory administration in California Code of Regulations Title 14 Section 720 (Designation of Waters of Department Interest), which states:

> For the purpose of implementing Sections 1601 and 1603 of the Fish and Game Code which requires submission to the department of general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, governmental agency, state or local, and any public utility, of any

[16] The California Code of Regulations (Title 14 CCR 1.72) defines a stream as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

[17] This also includes the habitat upon which they depend on for continued viability (California Fish and Game Code Division 5, Chapter 1, Section 45, and Division 2, Chapter 1, Section 711.2[a], respectively).

> project which will divert, obstruct or change the natural flow or bed of any river, stream or lake designated by the department, or will use material from the streambeds designated by the department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds *which may have intermittent flows of water*, are hereby designated for such purpose (italics added).

RWQCB

Pursuant to Section 13000 *et seq.* of the California Water Code (CWC) (the 1969 Porter-Cologne), the RWQCB is authorized to regulate any activity that would result in discharges of waste and fill material into waters of the state, including "isolated" waters and wetlands. Waters of the state include any surface or groundwater within the boundaries of the state (CWC Section 13050[e]). Porter-Cologne authorizes the State Water Resources Control Board (SWRCB) to adopt, review, and revise policies for all waters of the state and directs the RWQCB to develop regional Basin Plans. CWC Section 13170 also authorizes the SWRCB to adopt water quality control plans on its own initiative. The Water Quality Control Plan for the Lahontan Region (North and South Basins (RWQCB Region 6) (1995, as amended RWQCB 2011a) is designed to preserve and enhance the quality of water resources. The purpose of the plan is to designate beneficial uses of the surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives within RWQCB Region 6.

Jurisdictional Delineation Methodology

<u>Presurvey Investigations</u>

Prior to conducting the field delineation for potential jurisdictional waters of the U.S. and state (including wetlands), AECOM ecologist Joshua Zinn reviewed recent biological reports, historical land use of the project area, local and regional climactic data, and areas with topographical configurations and vegetative signatures occurring within the project area that may suggest the potential or presence of jurisdictional waters of the U.S. and state at the time of the field survey. This information was evaluated by consulting the following available sources:

- Biological Resource Assessment RE Kern County Desert Solar (Rincon 2011)
- 7.5-minute U.S. Geological Survey (USGS) Mojave NE Quadrangle (1973)
- National Hydrography Dataset (NHD) (USGS 2011a)
- 2010 Aerial Maps of the project area (U.S. Department of Agriculture [USDA] National Agriculture Imagery Program [NAIP]) (USDA 2010)
- National Wetlands Inventory (NWI) Interactive Wetlands Mapper (USFWS 2011)
- California Environmental Resources Evaluation System, California Wetlands Information System Wetland Databases and Inventories (CERES 2011)

- Information Center for the Environment (ICE) (U.C. Davis 2011a)
- NRCS Soils Website (NRCS 2011a)
- Natural Resource Conservation Service Web Soil Survey (NRCS 2011b)
- California Soil Resource Lab (U.C. Davis 2011b)
- Soil Survey of the Antelope Valley Area, California, (USDA 1970)
- California Watershed Portal (Cal/EPA 2011)
- California Watershed Network (CWN 2011)
- Office of Water Programs, Water Quality Planning Tool (CSUS 2011)
- Digital Watershed (USEPA 2011)
- Western Regional Climate Center (WRCC 2011)
- National Weather Service Climate Office (NOAA 2011)

Field Survey for Waters of the U.S.

On April 8, 2011, AECOM ecologist Joshua Zinn conducted a field survey and formal jurisdictional delineation of potentially regulated waters (including wetlands) within the project area.

All acquired field data were obtained by recording the presence (including extents, types, and boundaries) of potential jurisdictional waters using a Trimble XH subfoot accuracy handheld Global Positioning System (GPS) unit. All acquired field data were submitted to AECOM San Diego's geographic information systems (GIS) specialists for post-field processing. Post-field analysis, utilizing Trimble GPS Analyst (Version 2.1) GIS software, to code, define, designate, and edit all acquired GPS field data representing potential jurisdictional waters occurring within the project area, was conducted in tandem by an AECOM GIS specialist and the ecologist who performed the fieldwork.

The formal jurisdictional delineation and assessment of potentially regulated waters (including wetlands) were conducted within the project area and delineated pursuant to the guidance and criteria outlined in and in accordance with the following:

- 33 CFR 328 (Definition of Waters of the United States)
- Regulatory Guidance Letters (RGL) 88-06 and RGL 05-05
- The *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987)

- The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (2008 Regional Supplement) (Environmental Laboratory 2008)[18]
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (OHWM Manual) (USACE 2008)[19]
- *Distribution of Ordinary High Water Mark (OHWM) Indicators and Their Reliability in Identifying the Limits of "Waters of the United States" in Arid Southwestern Channels* (USACE 2006)
- *Review and Synopsis of Natural and Human Controls on Fluvial Channel Processes in the Arid West* (USACE 2007a)

It was determined through a pre-field survey, field reconnaissance, the formal delineation efforts, and post-field assessment, that the project area does not support hydrophytic vegetation or wetland hydrology. Therefore, the project survey area presents the potential for the presence of, at a minimum, one type of potentially federally regulated water, warranting the formal field delineation/assessment effort utilizing all relevant guidance and procedural documents (see above) for field indicators of all potential nonwetland waters of the U.S. (e.g., drainage features) and to define and identify the jurisdictional lateral extent of the ordinary high water mark (OHWM).[20]

OHWM indicators were used to delineate the lateral jurisdictional extent of potential nonwetland waters of the U.S. Lateral jurisdictional limits were established for all drainage features/channels occurring within the project survey area in conjunction with field verification for a determination of the OHWM, which provides an acceptable estimate for the lateral jurisdictional limits. The OHWM of the drainage features/channels was identified on the basis of the following:

- Water marks within their respective channel banks established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the banks;
- Scour and shelving, local deposition, distinct and indistinct terraces, and changes in the character of soil;
- The presence of developed longitudinal bars within channel margins;

[18] It should be noted that the OHWM Manual and 2008 Regional Supplement are guidance documents for delineating waters in the form of wetlands only. The portion of the delineated project area containing aquatic features utilized 2008 Supplement Data Forms to document the presence/absence of wetland but not the presence of *jurisdictional waters* in the form of wetland and/or ordinary high water mark (OHWM) or "other waters" of the U.S.

[19] Datasheets from this field delineation manual were used as guidance documents for this delineation and are not included in this Jurisdictional Delineation Report.

[20] 33 CFR 328.3(e); RGL 88-06; RGL 05-05; and USACE OHWM field manuals (USACE 2006; 2007a; 2008).

- Type, abundance, and relative age of vegetation and/or destruction of terrestrial vegetation, and the presence and absence of litter and debris within the ephemeral channels;
- Ephemeral channel configuration, estimated streamflow behavior, and other subtle geomorphic evidence indicative of regular flow levels;
- Consideration of precipitation patterns and lack of consistent flow;
- Geomorphic OHWM indicators (e.g., surface relief, cobblebars, benches, crested ripples, particle size distribution, mudcracks, gravel sheets, desert pavement, and dunes); and
- Pattern and location of relictual channels and discontinuous drainage features.

The criteria for frequency and duration of the OHWM have not been defined under the CWA or under any guidance from USACE for field delineators; therefore, identifiable field indicators and characteristics of OHWM, best professional judgment, interpretation of 33 CFR 328.3(e), and appropriate RGLs were applied to determine the potential jurisdictional extent of OHWM within the project survey area. Fluvial channels occurring within the arid western region of the U.S. have recently been described as “ordinary” when they typically correspond to a 5- to 8-year event and typically have an active floodplain with sparse vegetation cover, shifts in soil texture, and occasional alignment with distinctive bed and bank features (USACE 2007a). However, modeling has shown that slightly larger events (5- to 10-year recurrence) may be necessary to engage the active floodplain in arid systems (USACE 2006).

OHWM and the limits of jurisdiction are discussed in the preamble to the USACE November 13, 1986, Final Rule, Regulatory Programs of the Corps of Engineers, Federal Register Volume 51, No. 219, page 41217, which discusses the proper interpretation of 33 CFR Part 328.4 (c)(1) as follows:

> Section 328.4: *Limits of Jurisdiction.* Section 328.4 (c)(1) defines the lateral limit of jurisdiction in nontidal waters as the OHWM provided that the jurisdiction is not extended by the presence of wetlands. Therefore, it should be concluded that in the absence of wetlands the upstream limit of Corps jurisdiction also stops when the OHWM is no longer perceptible.

In addition, RGL 88-06, issued June 27, 1988, discussed the OHWM as follows:

> OHWM: The OHWM is the physical evidence (shelving, debris lines, etc.) established by normal fluctuations of water level. For rivers and streams, the

> OHWM is meant to mark the within-channel high flows, not the average annual flood elevation that generally extends beyond the channel.[21]

RGL 05-05, issued December 7, 2005, discusses the field practice and practicability of identifying, determining, and applying the OHWM for nontidal waters under Section 404 of the CWA (and under Sections 9 and 10 of the Rivers and Harbors Act of 1899), and states the following:

> Where the physical characteristics are inconclusive, misleading, unreliable, or otherwise not evident, districts may determine OHWM by using other appropriate means that consider the characteristics of the surrounding areas, provided those other means are reliable.[22] Such other reliable methods that may be indicative of the OHWM include, but are not limited to, lake and stream gage data, elevation data, spillway height, flood predictions, historic records of water flow, and statistical evidence.

Many stream channels in arid regions are dry for much of the year and, at times, may lack hydrology indicators entirely or exhibit relic OHWM features from exceptional hydrological events. RGL 05-05 further states the following:

> When making OHWM determinations, districts should be careful to look at characteristics associated with ordinary high water events, which occur on a regular or frequent basis. Evidence resulting from extraordinary events, including major flooding and storm surges, is not indicative of OHWM. For instance, a litter or wrack line resulting from a 200-year flood event would in most cases not be considered evidence of an OHWM.

Jurisdictional Determination for Potential Waters of the U.S.

All waters delineated within the project area are considered as “Geographicallly Isolated” waters (e.g., potential nonjurisdictional waters of the U.S. [including final acreages and types]).[23] Prior to an Approved or Preliminary JD performed by USACE (with potential oversight by USEPA depending on the relationship of the delineated feature toward traditionally navigable waters [TNW]). The final JD may remove portions of delineated waters from being considered as jurisdictional and/or may include additional waters not initially considered as jurisdictional during the field delineation (and, thus, not included in this JDLR).

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[21] Following RGL 05-06 (Expired RGLs). Unless superseded by specific provisions of subsequently issued regulations or RGLs, the guidance provided in RGLs generally remains valid after the expiration date as discussed in the Federal Register (FR) notice on RGLs of March 22, 1999, FR Vol. 64, No. 54, page 13783.

[22] In some cases, the physical characteristics may be misleading and would not be reliable for determining the OHWM. For example, water levels or flows may be manipulated by human intervention for power generation or water supply. For such cases, districts should consider using other appropriate means to determine the OHWM (RGL 05-05).

[23] 33 CFR 328.3(a)(3).

Determining whether the delineated nonwetland waters occurring within the project site are in fact nonjurisdictional and outside the regulatory administration of USACE, including the final acreages and types of jurisdictional waters occurring within the project area, is primarily based on the procedural changes and guidance outlined by the following:

a. The June 5, 2007, USACE/USEPA Memorandum Re: Jurisdiction Following the U.S. Supreme Court Decision In *Rapanos v. United States* on the interpretation of the *Rapanos* Supreme Court case for making a Jurisdictional Determination (JD) for waters of the U.S. (including wetlands) (USEPA/USACE).[24,25] This memorandum provides guidance to USEPA and USACE on implementing the *Rapanos* Supreme Court decision.

b. The June 5, 2007, USEPA/USACE Memorandum for the Field: Coordination on JDs under the CWA in light of *SWANCC* and *Rapanos* Supreme Court decisions.[26] This memorandum outlined procedures that replace the coordination procedures contained in the January 2003 USEPA/USACE guidance implementing the *SWANCC* decision (but leaves the remainder of that guidance unaffected) and articulates new coordination procedures for JDs affected by *Rapanos* (USEPA/USACE).[27]

c. The May 5, 2007, *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE 2007b) and the Approved JD Form.

d. The June 5, 2007, USACE RGL 07-01. Practices for Documenting Jurisdiction under CWA Section 404 (and Rivers and Harbors Act CWA Sections 9 & 10) This RGL provides coordination requirements for Approved JDs and outlines a consistent approach for making, documenting, and approving JDs in a timely manner by USACE. This RGL also outlines the differences between Approved JDs and Preliminary JDs.

e. The January 28, 2008, Coordination Memorandum. This memorandum outlined the process for coordinating JDs with USEPA and USACE.

f. The June 26, 2008, USACE RGL 08-02. This RGL primarily explains the goals of a Preliminary JD and differences between Approved JDs and Preliminary JDs. This RGL provides guidance on when an Approved JD is required and when a landowner, permit applicant, or other "affected party" can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead. [28,29] This RGL also outlines

[24] "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*" (June 5, 2007).
[25] 126 S. Ct 2208 (2006). This case was consolidated with *Carabell v. United States*.
[26] "Memorandum for Director of Civil Works and US EPA Regional Administrators" (June 5, 2007).
[27] "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*" (June 5, 2007).
[28] Generally, approved JDs should be used to support individual permit applications, but applicants should be made aware of their option to elect to use a Preliminary JD wherever applicants feel doing so is in their best interest (RGL 08-02 [paragraph 4(h)]).
[29] RGL 08-02 (paragraph 4) outlines that Preliminary JDs cannot be appealed.

that it is the goal of USACE that every JD requested by an affected party should be completed within 60 calendar days of receiving the request.[30]

g. The December 2, 2008, USACE Guidance Memorandum Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States* and *Carabell v. United States*. This guidance incorporates revisions to the USEPA/USACE Memorandum originally issued on June 6, 2007, after careful consideration of public comments received and based on the agencies' experience in implementing the *Rapanos* decision.

h. The December 2, 2008, USACE Response to Comments "Clean Water Act Jurisdiction Following the Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* Guidance" issued June 5, 2007.

i. The December 2, 2008, USACE Questions and Answers Regarding the Revised *Rapanos & Carabell* Guidance.

As of this writing, this jurisdictional delineation presents 0.0 acre of potential jurisdictional waters of the U.S. The final acreages of jurisdictional waters of the U.S., delineated within the project survey area will be based on the JD process per the USACE/USEPA Guidance and procedure for *Rapanos* (see above). For this particular jurisdictional delineation, the formal procedure for obtaining a JD (for a formal determination by the USACE/USEPA of nonjurisdictional waters [e.g., Geographically Isolated waters]) requires the submittal of a completed Approved JD, following federal guidance, as applicable, to the USACE (Los Angeles District, South Coast Branch) (Attachment B).[31]

Based on the results of the delineation and federal guidance outlined above, this JDLR was prepared to provide support to USACE in making a formal determination of all waters delineated within the project survey area that are determined to be isolated waters and thus not regulated by USACE for the following reasons:

1. All ephemeral washes delineated within the project survey area eventually form a confluence with the Pine Tree Creek dry wash, which is a tributary to Koehn Dry Lake. Koehn Dry Lake has been determined by USACE to be an isolated nonjurisdictional water of the U.S. (Attachment C).

2. Abatement into the landscape and the lack of hydrological connectivity of the ephemeral washes into a Relatively Permanent Waterway (RPW) and the lack of hydrological connectivity of the ephemeral washes into a RPW connected by storm drains or culverts.

3. The lack of hydrological connectivity (presenting a significant nexus [SNX] to any TNW) for washes occurring within the disturbance area.

[30] RGL 08-02 (paragraphs 4[a] and 5[a])
[31] The USACE district engineer retains the discretion to use an Approved JD in any other circumstance where he or she determines that it is appropriate given the facts of the particular case (RGL 08-02 [4][c]).

4. The evaluation of the ephemeral washes not presenting an SNX to a TNW includes the volume, duration, and frequency of the flow of water to a TNW.
5. Examination of the flow characteristics and functions of ephemeral washes (which do not support adjacent wetlands) has been determined not to present a significant effect on the chemical, physical, and biological integrity of downstream TNWs.
6. Lack of an ecological connection to TNWs. The ephemeral washes present low to no potential or capacity to transfer nutrients and organic carbon (vital to support downstream foodwebs [e.g., macroinvertebrates] present in headwater streams or to convert carbon in leaf litter making it available to species downstream), nor do these ephemeral washes present habitat services such as providing spawning areas for recreationally or commercially important species in downstream waters.
7. Ephemeral washes delineated within the project survey area abate into the landscape and become both continuous and discontinuous swale features.
8. The swales and swale complexes occurring within the project survey area, while unvegetated, occur within the larger Mojave creosote bush scrub habitat. The swales are generally poorly defined surface aquatic features characterized by low volume, infrequent or short-duration flow and are usually shallow topographical features in the landscape that *may* convey water across upland areas during and following uncommon large storm events. Swales are generally not considered jurisdictional waters of the U.S. because they lack an identifiable OHWM, are not tributaries themselves, or they do not have a significant nexus to TNWs (e.g., the Pacific Ocean).[32]

<u>Field Survey for Waters of the State</u>

Potential jurisdictional waters of the state were assessed and delineated within the project area pursuant to CFGC Section 1600 *et seq.* (and other relevant guidance and regulatory applicability [see above]). Boundaries for ephemeral wash and southern alluvial fan scrub (xeric riparian) waters of the state were determined (and recorded) by the presence of shelving and/or scour resulting in an established bank, bed, or channel of an ephemeral wash feature and its associated xeric riparian areas (where applicable). In specific areas within the small underdeveloped ephemeral wash channel, where evidence of shelving or scour was absent, subsurface investigations were undertaken to identify established channel banks. Although some portions of the ephemeral wash presented shelving with smooth-toe transitions, these features are composed of friable sand and are evidence of recent sand deposition (both from fluvial- and aeolian-related events) covering the bank features.

Based on the CFGC Section 1600 *et seq.* definition, relevant state regulations (see above), CDFG regulatory practice, and past CDFG field guidance; swale features (individual and

[32] Even when not considered a jurisdictional water of the U.S. or state, swales may still contribute to a surface hydrologic connection between an upland and aquatic features. However, such hydrological connections are dependent on large, uncommon storm events.

complexes) occurring within the project area were also noted, delineated, and recorded as potential jurisdictional waters of the state.[33]

For wetlands and other aquatic habitats occurring in California, CDFG relies on the U.S. Fish and Wildlife Service (USFWS) wetland definition and classification system, which is based on *Classification of Wetland and Deepwater Habitats of the United States* (Cowardin et al. 1979). Therefore, jurisdictional wetland delineations within the RE Barren Ridge 1 site were conducted based on the one-parameter[34] method outlined in CDFG/USFWS guidance documents and classification manual(s) to define presence and state jurisdictional extent.[35] The Cowardin method requires diligence to avoid false positive conclusions (e.g., concluding that an area with no transitional relation to the aquatic system is a wetland based on presence of vegetation equally likely to be found in wetland or nonwetland circumstances).[36]

Results

The findings for each potential jurisdictional water were recorded during the formal field delineation within the project survey area (Table 1).

Jurisdictional Waters of the U.S.

The extent and distribution of the collective area of potential jurisdictional waters of the U.S. occurring within the project area is 0.0 acre (Figure 7; see above and also Footnote 2 pertaining to the JD process). Jurisdictional waters of the U.S. are listed for each aquatic habitat in Table 1. Aquatic-related habitats have been classified according to both the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Both classification systems incorporate a hierarchical structure of systems, subsystems, and classes to identify vegetation communities, wetland habitat types, and cover types. The vegetation occurring within the project area is typically associated with desert scrub ecosystems occurring within this vicinity of California.

Jurisdictional Waters of the State

The extent and distribution of the collective area of potential jurisdictional waters of the state occurring within the project area is approximately 6.62 acres (Figure 7). Jurisdictional waters of the state are also listed for each aquatic habitat in Table 1.

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[33] Swales are microtopographic features that convey surface water in low volume and short duration (hours to days [usually in sheetflow]) and are commonly associated with riverine features (Hauer and Lamberti 2007).

[34] For federal jurisdictional waters, a determination for the presence of wetland is based on the presence of three parameters occurring simultaneously at the area of investigation and study: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Therefore, for state-defined wetlands, only one of these three wetland criteria is required to be present for the state to consider an aquatic feature a wetland.

[35] It should be noted that CDFG does not currently have a delineation manual for jurisdictional waters of the state (including wetlands).

[36] Although aquatic features can be delineated and defined as wetlands under the Cowardin Classification System, they are not necessarily *jurisdictional* waters of the U.S. or state.

Table 1
Summary of Potential Jurisdictional Waters of the U.S. and State Occurring within the Project Area[a,b]

Type of Potential Jurisdictional Waters	Type of Habitat (Holland 1986)	Type of Habitat (Cowardin et al. 1979)	Acres	Linear Feet	Regulatory Authority
Potential Jurisdictional Waters of the U.S.					
N/A	N/A	N/A	N/A	N/A	N/A
Subtotal Potential Waters of the U.S.			*0.0*	*0.0*	
Potential Jurisdictional Waters of the State					
Xeric Riparian Extent	Southern Alluvial Fan Scrub Channel (Holland Code 63330)	Palustrine; Scrub/Shrub, Broad-Leaved, Evergreen, Intermittently Flooded/ Temporary, Well Drained/Fresh, Alkaline	0.65	155	CDFG and RWQCB
Unvegetated Ephemeral Dry Wash	Nonvegetated Floodplain or Channel (Holland Code 64200)	Riverine; Intermittent; Unconsolidated Bottom, Sand, Intermittently Flooded, Alkaline	3.21	1,008	CDFG and RWQCB
Unvegetated Swale	Mojave Creosote Bush Scrub (Holland Code 34100)[c]	Mojave Creosote Bush Scrub is not considered an aquatic habitat by Cowardin[d]	2.76	20,015	CDFG and RWQCB
Subtotal Potential Waters of the State			*6.62*	*21,178*	
Grand Total Potential Jurisdictional Waters			**6.62**	**21,178**	

[a] Based on the total area of potential jurisdictional waters delineated within the RE Barren Ridge 1 site.
[b] Acreage of all jurisdictional waters was determined by using the GIS program ArcGIS. All acreages are rounded to the nearest hundredth after summation, which may account for minor rounding error.
[c] Although swales are unvegetated they are within the larger Mojave creosote bush scrub habitat.
[d] Swales are microtopographic features that convey surface water in low volume and short duration (hours to days [usually in sheetflow]) and are commonly associated with riverine features (Hauer and Lamberti 2007).

Photo locations and representative photos taken during the field delineation are included in Figures 8 through 13.

Discussion

Avoidance and Minimization of Potential Impacts

If the proposed project will result in impacts to jurisdictional waters of the state then avoidance and minimization measures to jurisdictional waters of the state will require implementation through project design and will be employed during the construction process to avoid and minimize potential impacts to jurisdictional aquatic features to the greatest practicable extent feasible.

Potential Impacts and Requisite Permitting

If it is determined that anticipated unavoidable impacts (permanent and temporary) will occur to jurisdictional waters of state as a result of this proposed project then issuance of the following state permits will be required.

Requisite Permitting

CFGC Section 1600 et seq. *Permitting*

By submitting a Notification for a Lake or Streambed Alteration Agreement (SAA) to the appropriate CDFG field office (South Coast Region), CDFG will ascertain which (or all) of the delineated aquatic features occurring within the project area will be under its regulatory administration. The SAA Notification process also allows CDFG to determine whether aquatic features will become "substantially adversely affected" under CFGC Section 1602(a), and to provide guidance on requisite and appropriate compensatory mitigation for any unavoidable impacts to these aquatic resources as a result of the proposed project.

As a requirement of the SAA, the development of a conceptual mitigation, maintenance, and monitoring plan would be required for creation, restoration, or enhancement mitigation, which is a requirement of the SAA. This plan should include details regarding site preparation (e.g., grading), planting specifications, and irrigation design, as well as maintenance and monitoring procedures. The plan should outline yearly success criteria and remedial measures should the mitigation effort fall short of the success criteria. Any appropriate mitigation that cannot be achieved through on-site creation-restoration and enhancement should be performed off-site, typically per agency guidance within the same hydrologic unit (watershed) where impacts occur. Alternatively, the mitigation obligations may also be satisfied by participating in a fee-based mitigation program through an approved mitigation bank. Any proposed mitigation is subject to the resource agencies' review and discretion; thus, the mitigation obligations for the impacts to jurisdictional aquatic habitats may change from those recommended here.

Project compliance with state policy, i.e., California Wetlands Conservation Policy (EO W-59-93), provides for "no overall net loss" of wetlands and achieving a "long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California." Therefore, a minimum 1:1 mitigation ratio would be applied toward any impacts to jurisdictional waters of the state. Project-specific mitigation ratios would be developed in consultation with CDFG.[37]

CWC Section 13000 et seq*. (Porter-Cologne) Waste Discharge Requirement (or Waiver)*

The RWQCB regulates the "discharge of waste" to waters of the state.[38] The definition of the waters of the state is broader than that for waters of the U.S. in that all waters are

[37] Many desert aquatic resources, such as southern alluvial fan scrub, lack the characteristic features of a wetland but still perform wetland functions (USACE 2007).
[38] "Waters of the state" is defined in CWC Section 13050(e).

considered to be a water of the state regardless of circumstances or condition. The term "discharge of waste" is also broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact waters of the state. As conditional to this permit, best management practices (BMPs) will be required to ensure compliance with state water quality standards. BMPs can also be specified by the RWQCB, based on the report of waste discharge (ROWD) (filed with the appropriate RWQCB by the applicant), which is authorized to regulate discharges of waste and fill material to waters of the state (including "isolated" waters and wetlands), through the issuance of a WDR.[39] WDRs are commonly issued based on the threshold of allowable pollutants into waters of the state.

Under Porter-Cologne, all applicants proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, shall file with the appropriate RWQCB an ROWD containing such information and data as may be required by the RWQCB.[40] The RWQCB will then respond to the ROWD by issuing a WDR in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge. The RWQCB has a statutory obligation to prescribe WDRs, except where the RWQCB finds that a waiver (with or without conditions) of WDRs for a specific type of discharge is in the public interest.[41] Therefore, all parties proposing to discharge waste that could affect waters of the state, but do not affect federal waters (which requires authorization under CWA Section 404 and certification under CWA Section 401) must file an ROWD with the appropriate RWQCB prior to issuance of the WDR.[42] The ROWD/WDR is also subject to the resource agencies' review and discretion for BMPs and mitigation.

Sincerely,

Joshua Zinn
Ecologist and Regulatory Specialist

cc: Seth Israel, Recurrent Energy
Charity Wagner, Urban Planning Partners

Attachment A – Figures:
- Figure 1 – Regional Map
- Figure 2 – Project Vicinity
- Figure 3 – Survey Area
- Figure 4 – Vegetation Communities
- Figure 5 – Soils
- Figure 6 – Watersheds
- Figure 7 – Potential Jurisdictional Waters of the State

[39] CWC Section 13263.
[40] CWC Section 13260(a).
[41] CWC Section 13269.
[42] CWC Section 13260.

Figure 8 – Photopoint Locations
Figure 9 – Representative Photographs 1 and 2
Figure 10 – Representative Photographs 3 and 4
Figure 11 – Representative Photographs 5 and 6
Figure 12 – Representative Photographs 7 and 8
Figure 13 – Representative Photographs 9 and 10

Attachment B – Approved JD Form

Attachment C – Approved JD Letter for Beacon Solar, LLC

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2011b Topographic Map Symbols. Available at http://egsc.usgs.gov/isb/pubs/booklets/symbols/topomapsymbols.pdf. Accessed April.

Western Regional Climate Center (WRCC)

2011 Western US COOP Station Map. Available at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2713. Accessed April.

ATTACHMENT A

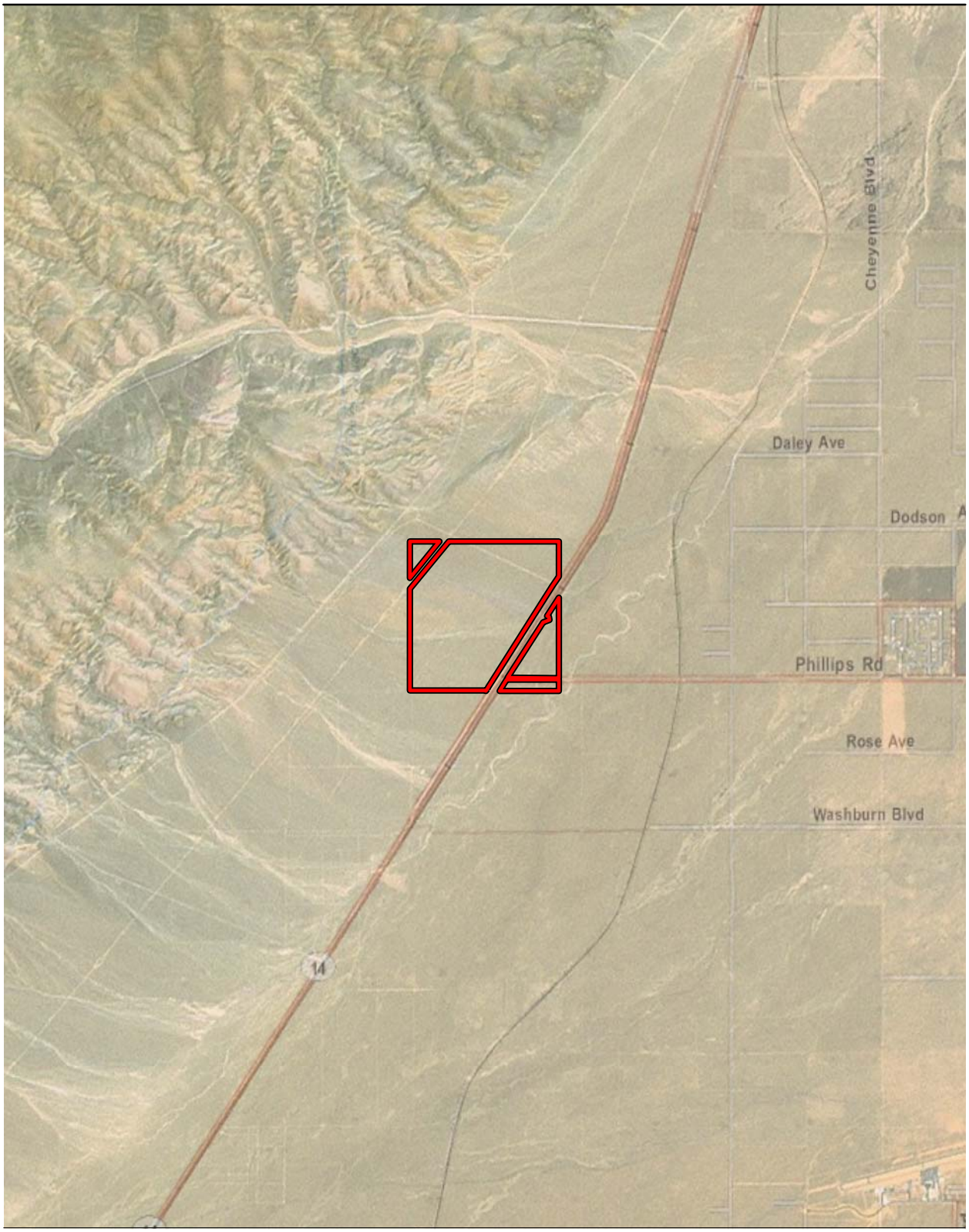
FIGURES

Source: Concurrent Energy 2011; ESRI 2011

5 2.5 0 5 Miles

Scale: 1 = 380,160; 1 inch = 6 mile(s)

Figure 1
Regional Map



Source: Concurrent Energy 2011; ESRI 2011

1 0.5 0 1 Miles

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

Figure 2
Vicinity Map

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\JDR\BR Vicinity Map.mxd, 5/11/2011, IrelandM

Source: Concurrent Energy 2011; ESRI 2011

1,000 500 0 1,000 Feet

Scale: 1 = 12,000; 1 inch = 1,000 feet

Figure 3
Survey Area

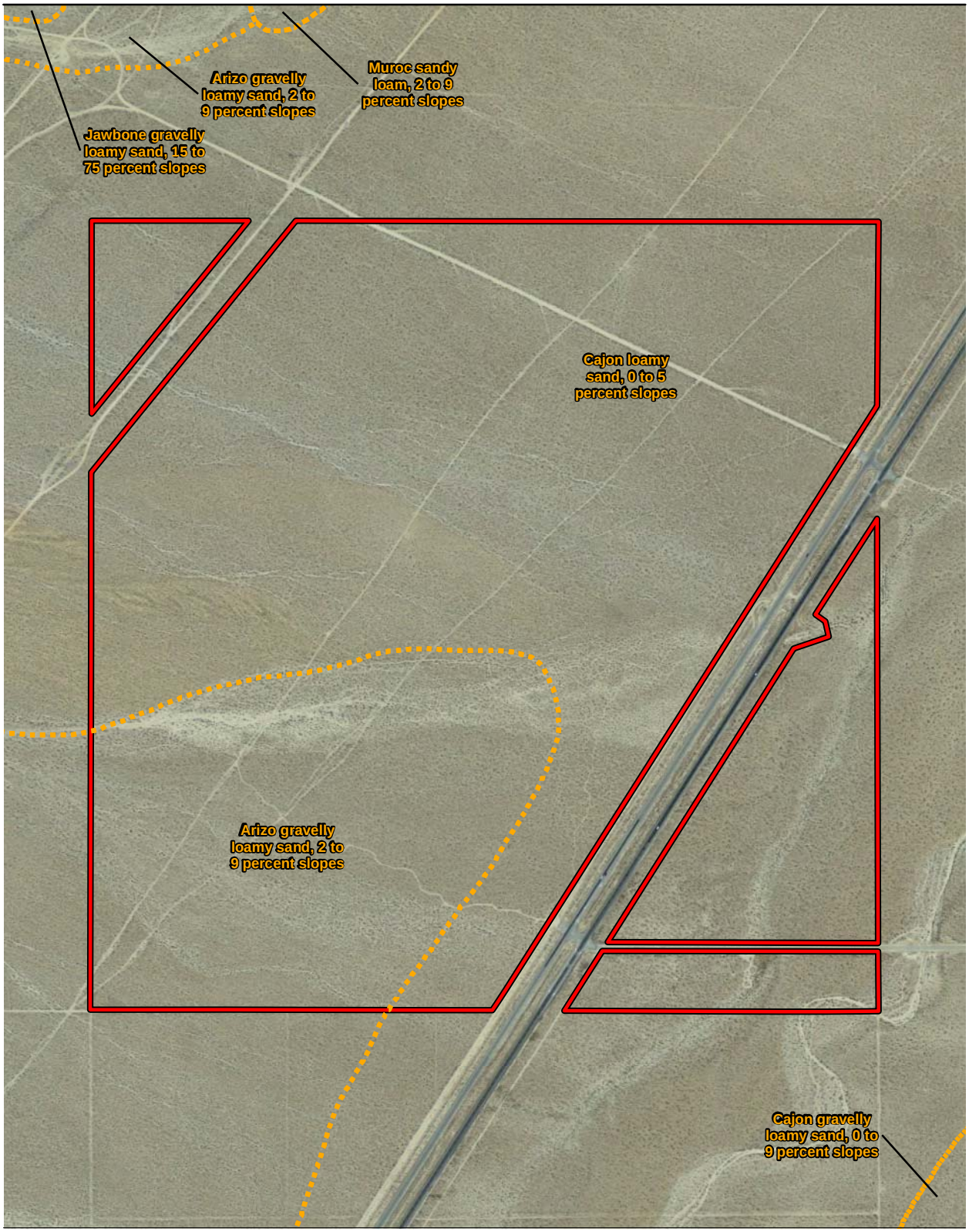
Source: AECOM 2011; Recurrent Energy 2011; ESRI 2011

750 375 0 750 Feet

Scale: 1 = 9,000; 1 inch = 750 feet

Figure 4
Vegetation Communities

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\JDR\Barren Ridge Vegetation.mxd, 5/11/2011, IrelandM



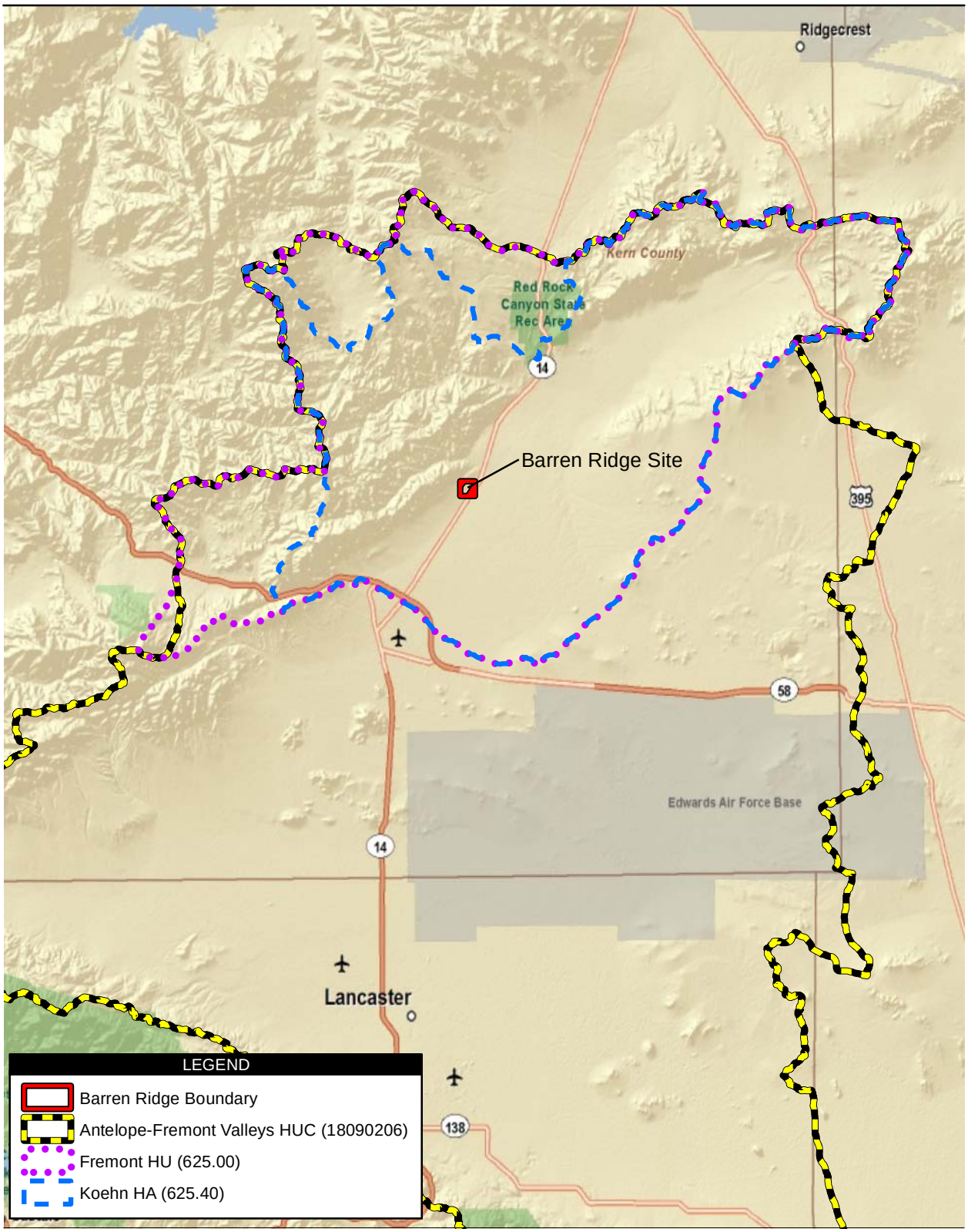
Source: Concurrent Energy 2011; ESRI 2011; SSURGO 2008

1,000 500 0 1,000 Feet

Scale: 1 = 12,000; 1 inch = 1,000 feet

Figure 5
Soils

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\JDR\BR Soils.mxd, 5/11/2011, IrelandM



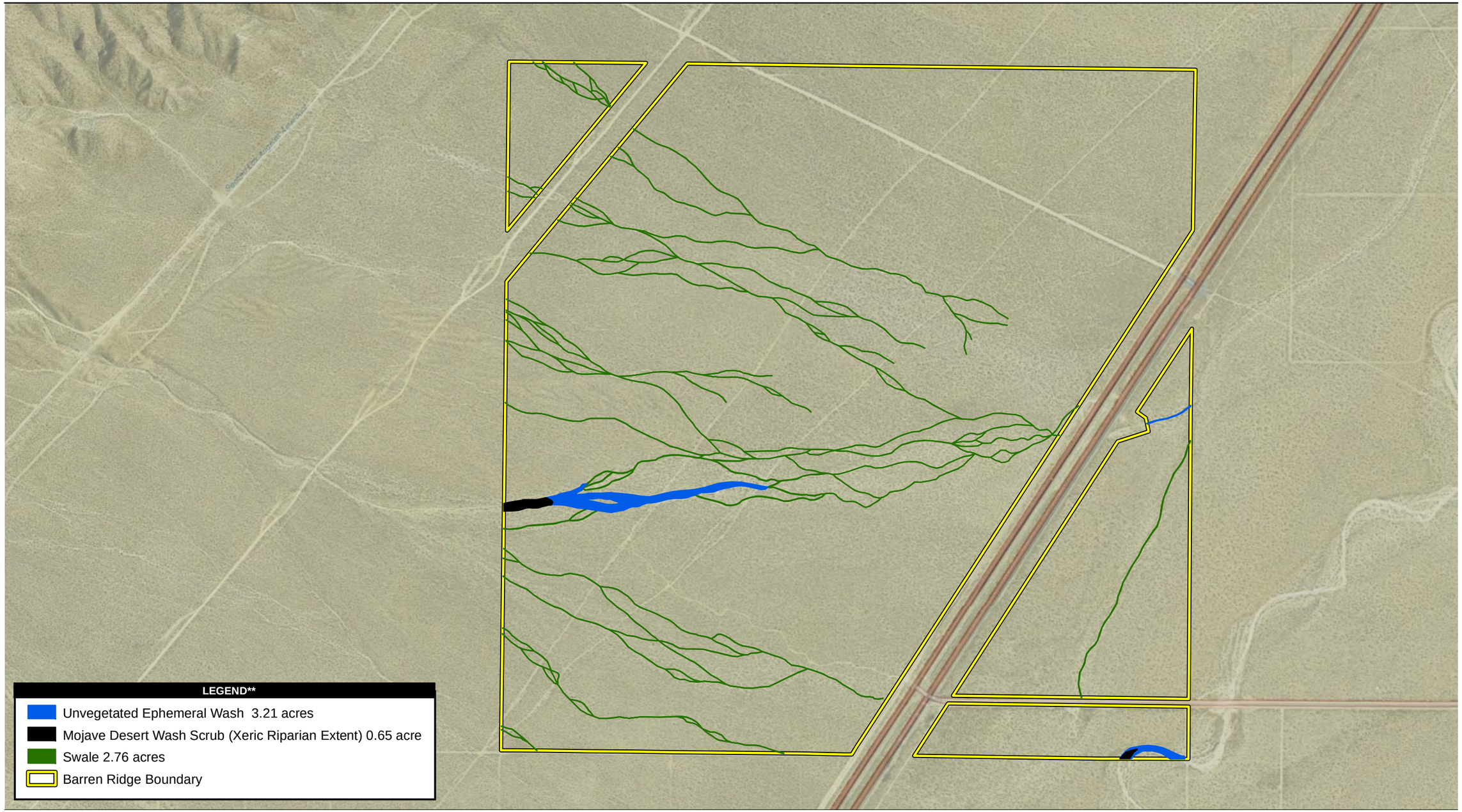
Source: Concurrent Energy 2011; ESRI 2011; CalWater 2008

10 5 0 10 Miles

Scale: 1 = 633,600; 1 inch = 10 miles

Figure 6
Watersheds

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\JDR\BR Watersheds.mxd, 5/11/2011, IrelandM



Source: AECOM 2011; Recurrent Energy 2011; ESRI 2011

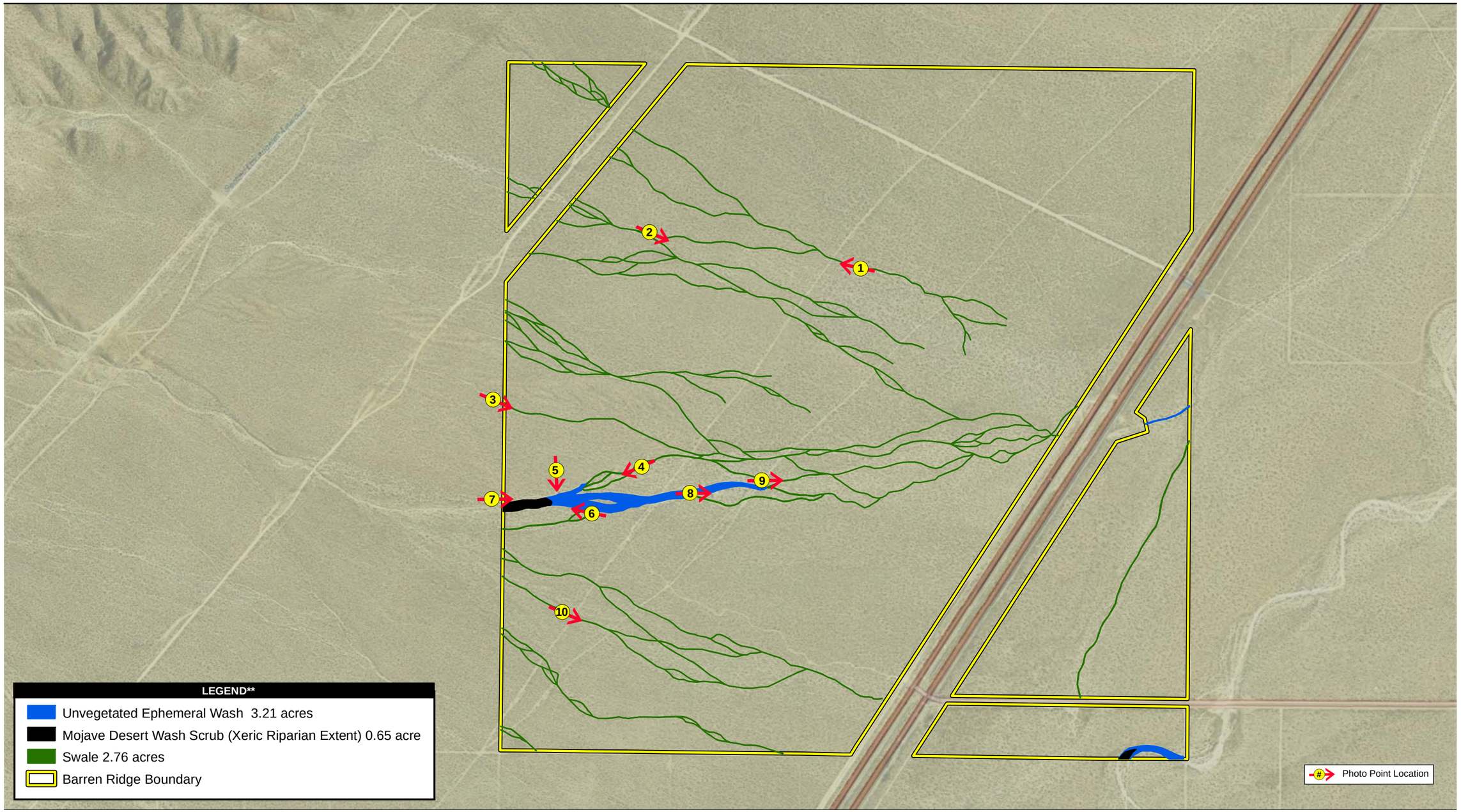
750 375 0 750 Feet

Scale: 1 = 9,000; 1 inch = 750 feet

*For all delineated desert aquatic features no formal Jurisdictional Determination with the USACE has been pursued at this time. When a formal Jurisdictional Determination is pursued with the USACE it is anticipated that all delineated aquatic features will be considered as 'Geographically Isolated' and therefore nonjurisdicitonal waters of the U.S. by the USACE (and USEPA).

**Map features not to scale. Acreages are accurate and based on digitized field notes.

Figure 7
Potential Jurisdictional Waters of the State*



Source: AECOM 2011; Recurrent Energy 2011; ESRI 2011

750 375 0 750 Feet

Scale: 1 = 9,000; 1 inch = 750 feet

Figure Figure 8
Photopoint Locations

Photograph 1: Looking northwest at unvegetated swale feature.

Photograph 2: Looking southeast at unvegetated swale feature.

Figure 9
Representative Photographs 1 and 2

Photograph 3: Looking southeast at unvegetated swale feature.

Photograph 4: Looking east at unvegetated swale feature.

Figure 10
Representative Photographs 3 and 4

Photograph 5: Looking south at unvegetated ephemeral dry wash.

Photograph 6: Looking west at ephemeral dry wash supporting Mojave Desert wash scrub. Note *Lepidospartum squamatum* occurring within wash.

Figure 11
Representative Photographs 5 and 6

Photograph 7: Looking east at unvegetated ephemeral dry wash just below end of Mojave Desert wash scrub.

Photograph 8: Looking east at terminus of unvegetated ephemeral dry wash where the wash transforms into a swale complex feature.

Figure 12
Representative Photographs 7 and 8

Photograph 9: Looking east at unvegetated swale feature below the terminus of the unvegetated ephemeral dry wash.

Photograph 10: Looking southeast at unvegetated swale feature.

Figure 13
Representative Photographs 9 and 10

ATTACHMENT B

APPROVED JD FORM

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District Regulatory Division, Los Angeles Section, South Coast Branch

C. PROJECT LOCATION AND BACKGROUND INFORMATION: Barren Ridge PV Solar Project. Please refer to Introduction, Summary, Project Location, and Project Description located in the Jurisdictional Delineation Letter Report (JDLR).
State: CA County/parish/borough: Kern City: N/A (site is located approximately 7 miles northwest of California City, CA):
Center coordinates of site (lat/long in degree decimal format): Lat: 35.204486 Long: -118.068574
Universal Transverse Mercator: 11n 402737.21 mE 3896225.57 mN
Name of nearest waterbody: Koehn Dry Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A
Name of watershed or Hydrologic Unit Code (HUC): Antelope-Fremont Valleys Watershed (HUC18090206)

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request (Please refer to Figures 7 through 13 of the JDLR. Please see the attached Waters Upload Sheet (page 9 of this form)

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): April 8, 2011

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):[1]

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☐ Non-RPWs that flow directly or indirectly into TNWs
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:
Non-wetland waters: linear feet: width (ft) and/or acres.
Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on:
Elevation of established OHWM (if known): N/A

2. Non-regulated waters/wetlands (check if applicable):[3]

☒ Potentially jurisdictional waters of the U.S. were assessed and delineated within the project survey area (please see Figure 3 in the JDLR) and determined not to be federally jurisdictional waters under the regulatory administration of the USACE.
Explain: Ephemeral streams present geographic isolation with no hydrological or ecological surface connection to a TNW. Ephemeral streams occurring within the project survey area either abate into the landscape of form a confluence with the Pine Tree Creek dry wash which is a tributary to Koehn Dry Lake. Using the citeria outlined in 33 CFR 328.3 the USACE has determined that Koehn Dry Lake exhibits insufficient evidence of interstate commerce to meet the requirements of 33 CFR 328.3(a)(3)(iii) and does not meet the requirements for navigability at 33 CFR 328.3(a)(1). Therefore aquatic features within the immediate vicinity and that form a confluence with Koehn Dry Lake are not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **pick list**
Drainage area: **pick list**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **pick list** tributaries before entering TNW.

Project waters are **pick list** river miles from TNW.
Project waters are **pick list** river miles from RPW.
Project waters are **pick list** aerial (straight) miles from TNW.
Project waters are **pick list** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW[5]:
Tributary stream order, if known:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **pick list**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable. An established vegetated drainage feature.
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **pick list**
Tributary gradient (approximate average slope):

(c) Flow:

Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **pick list**
Describe flow regime:
Other information on duration and volume: .

Surface flow is: **pick list** Characteristics: .

Subsurface flow: **pick list**. Explain findings:
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list): .
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list): .
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:
Identify specific pollutants, if known: .

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☐ Aquatic/wildlife diversity. Explain findings:

---

[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

[7] Ibid.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: Vernal pool.
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Intermittent Flow**. Explain: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain: .
☐ Ecological connection. Explain: .
☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **pick list** river miles from TNW.
Project waters are **pick list** aerial (straight) miles from TNW.
Flow is from: **pick list**.
Estimate approximate location of wetland as within the **pick list** floodplain.

(ii) Chemical Characteristics:
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Clear with some turbidity from sediment.
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):
☐ Riparian buffer. Characteristics (type, average width): .
☐ Vegetation type/percent cover. Explain: .
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis:
Approximately acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and

its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet, width (ft) Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: linear feet, width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   - ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: linear feet, width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

[8] See Footnote #3.

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres. :

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.**[9]
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination:
Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet, width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
   ☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

---

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.**

Based on the results of the delineation and federal guidance outlined above, this JDLR was prepared to provide support to USACE in making a formal determination of all waters delineated within the project survey area that are determined to be isolated waters and thus not regulated by USACE for the following reasons:

1. All ephemeral washes delineated within the project survey area eventually form a confluence with the Pine Tree Creek dry wash, which is a tributary to Koehn Dry Lake. Koehn Dry Lake has been determined by USACE to be an isolated nonjurisdicitonal water of the U.S. (Attachment C).
2. The lack of hydrological connectivity of the ephemeral washes into a Relatively Permanent Waterway (RPW), storm drains, culverts, or ditches (no storm drains are present within the disturbance area).
3. The lack of hydrological connectivity (presenting a significant nexus [SNX] to any TNW) for washes occurring within the disturbance area.
4. The evaluation of the ephemeral washes not presenting an SNX to a TNW includes the volume, duration, and frequency of the flow of water to a TNW.
5. Examination of the flow characteristics and functions of ephemeral washes (which do not support adjacent wetlands) has been determined not to present a significant effect on the chemical, physical, and biological integrity of downstream TNWs.
6. Lack of an ecological connection to TNWs. The ephemeral washes present low to no potential or capacity to transfer nutrients and organic carbon (vital to support downstream foodwebs [e.g., macroinvertebrates] present in headwater streams or to convert carbon in leaf litter making it available to species downstream), nor present habitat services such as providing spawning areas for recreationally or commercially important species in downstream waters.
7. Ephemeral washes delineated within the project survey area abate into the landscape and become both continuous and discontinuous swale features.
8. The swales and swale complexes occurring within the project survey area, while unvegetated, occur within the larger Mojave creosote bush scrub habitat. The swales are generally poorly defined surface aquatic features characterized by low volume, infrequent or short-duration flow and are usually shallow topographical features in the landscape that *may* convey water across upland areas during and following uncommon large storm events. Swales are generally not considered jurisdictional waters of the U.S. because they lack an identifiable OHWM, are not tributaries themselves, or they do not have a significant nexus to TNWs (e.g., the Pacific Ocean).

☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

☒ Non-wetland waters (i.e., rivers, streams): 1163 linear feet, 2-65 width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands:

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

☒ Non-wetland waters (i.e., rivers, streams): 1163 linear feet, 2-65 width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters:
List type of aquatic resource:

SECTION IV: DATA SOURCES

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Refer to the Jurisdictional Delineation Letter Report (JDLR).
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  ☐ Office concurs with data sheets/delineation report.
  ☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
  ☒ USGS NHD data.
  ☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: 7.5 Mojave NE Quadrangle (1973).
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey and Soil Survey of the Antelope Valley Area (USDA 1970).
☒ National wetlands inventory map(s). Cite name: N/A.
☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps:
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): USDA NAIP 2010.
or ☒ Other (Name & Date): Please see Figures 8 through 13 in the JDLR (field photographs)

☒ Previous determination(s). File no. and date of response letter: Corps File No. 2007-1414-CLM (please see Attachment C of the JDLR).
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify): Refer to 'Waters Upload Sheet' provided on page 9 of this form.

B. ADDITIONAL COMMENTS TO SUPPORT JD: Please see the JDLR and Attachment C of the JDLR.

WATERS UPLOAD SHEET FOR ISOLATED EPHEMERAL WASHES OCCURRING AT THE BARREN RIDGE PV SOLAR PROJECT SITE

Figure in JDLR	Project Area	Waters Name	Cowardin Code	HGM Code	Area (acres)	Waters Types	Latitude	Longitude	Local Watershed	Hydrologic Unit
7	Barren Ridge	Ephemeral Wash	R4SB4	Riverine	3.18	Isolated	33.202627	-118.076048	Koehn Hydrologic Area	Antelope-Fremont Valleys
7	Barren Ridge	Ephemeral Wash	R4SB4	Riverine	0.68	Isolated	35.197512	-118.060744	Koehn Hydrologic Area	Antelope-Fremont Valleys

ATTACHMENT C

APPROVED JD LETTER FOR BEACON SOLAR, LLC

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

REPLY TO
ATTENTION OF:

February 5, 2008

Office of the Chief
Regulatory Division

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

Dear Mr. Stein:

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

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

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

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

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

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

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

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

Sincerely,

Antal Szijj
Senior Project Manager
North Coast Branch

Enclosures

RE KERN COUNTY DESERT SOLAR BIOLOGICAL RESOURCES ASSESSMENT

NOTE TO READER: This report evaluates a total of 10 solar sites that were evaluated in the County's 2011 EIR. The Cinco project is referred to as "RE Barren Ridge 1" or "Site 10" in this report.

January 2011

Biological Resources Assessment

RE Kern County Desert Solar

RE Rosamond One and Two
RE Rio Grande
RE Columbia, Columbia Two, and Columbia 3
RE Great Lakes
RE Barren Ridge 1
RE Tehachapi Solar
RE Tehachapi 2

Prepared for:

Recurrent Energy
300 California Street, 8th Floor
San Francisco, CA 94104
(415) 956-3433

Prepared by:

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, CA 93003
(805) 644-4455

January 2011

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Appendix A - Botanical Compendia
Appendix B – Site Photographs
Appendix C – Sub-consultant Technical Reports (Bound under Separate Cover)

SECTION 1 - INTRODUCTION

Rincon Consultants, Inc. (Rincon) has prepared a Biological Resources Assessment for the Recurrent Energy (RE) Kern County Desert Solar projects. The projects are distributed at seven locations within a geographic region from the western Mojave to the Tehachapi Range, in eastern Kern County. The sites are collectively referred to as the Kern County Desert Solar project sites. Formal names for each of the individual project sites are listed below followed by the designation given for the purpose of this report in parentheses. Please note that several project sites adjoin one another (e.g. Rosamond One and Rosamond Two).

- RE Rosamond One and RE Rosamond Two (Rosamond)
- RE Rio Grande (Rio Grande)
- RE Columbia, Columbia Two, and Columbia 3 (Columbia)
- RE Great Lakes (Great Lakes)
- RE Barren Ridge 1 (Barren Ridge)
- RE Tehachapi Solar (Tehachapi)
- RE Tehachapi 2 (Tehachapi 2)

Because the proposed projects encompass seven locations within a broad biogeographic region, relevant biological information is presented in both a regional and site-specific analysis. Therefore, this report is organized as follows: *Section 1 – Introduction* provides location information, project description, and significance criteria for evaluation of biological effects, *Section 2 – Methodology* details the study methods employed, *Section 3 – Regional Biological Resources* describes the biological resources and environmental conditions within the general project area, *Section 4 – Site-Specific Biological Resources and Effects Analysis* presents the biological survey results and evaluates potential environmental effects at each site, *Section 5 – Mitigation Measures* lists proposed mitigation measures for the projects, and *Section 6 – Summary and Conclusions* provides a summary of potential effects and recommended mitigations measures for each site. References are included in Section 7, a List of Preparers is in Section 8, and botanical compendia, site photographs, and sub-consultant technical reports are included in Appendices A-C.

This report has been prepared for RE Rosamond One, RE Rosamond Two, RE Rio Grande, RE Columbia, RE Columbia Two, RE Columbia 3, RE Great Lakes, RE Barren Ridge 1, RE Tehachapi Solar, and RE Tehachapi 2 ("Clients"). This report may be used and relied upon by Clients, any entity that has an ownership interest in any of these Clients, any of Clients' subsidiaries and/or affiliates, and any successor in interest to Clients' interest in the project.

1.1 PROJECT LOCATIONS

The Kern County Desert Solar project sites are generally located in eastern Kern County, California. They are geographically distributed within a project region that includes the Mojave Desert in the east to the Tehachapi Range in the west. The Mojave Desert sites are located in the Antelope Valley along State Route (SR) 14, north of the City of Lancaster and west of Edwards Air Force Base. The Tehachapi and Tehachapi 2 sites occur in the Tehachapi Valley along SR-202, west of the City of Tehachapi. The sites

range in size from approximately 40 to 594 acres. Site locations are listed in Table 1 and shown on Figure 1.

Table 1. Location Information for the Kern County Desert Solar Sites

Project Name	Community	Location	APN	Elevation	Size
RE Rosamond One and RE Rosamond Two	Rosamond	6500-7514 Favorito Avenue	252-031-01	2560-2632 ft	320 acres
RE Rio Grande	Mojave	State Route 14, 0.75 mile north of Silver Queen Road	427-400-05	2655-2683 ft	46 acres
RE Columbia RE Columbia Two RE Columbia 3	Mojave	2998 Purdy Avenue	427-030-03	2683-2760 ft	400 acres
RE Great Lakes	Rosamond	10th Street W and Patterson Road	473-023-10	2304-2307 ft	40 acres
RE Barren Ridge 1	Mojave	State Route 14 at Phillips Road	461-15-10	2390-2675 ft	594 acres
RE Tehachapi	Tehachapi (Unincorporated)	Dale Road, between Pellisier Road and Bailey Road	448-052-10 448-052-11	3828-3865 ft	156 acres
RE Tehachapi 2	Tehachapi (Unincorporated)	Baumbach Avenue, between Pellisier Road and Bailey Road	448-051-30 - 31; -69-74	3820-3848 ft	160 acres

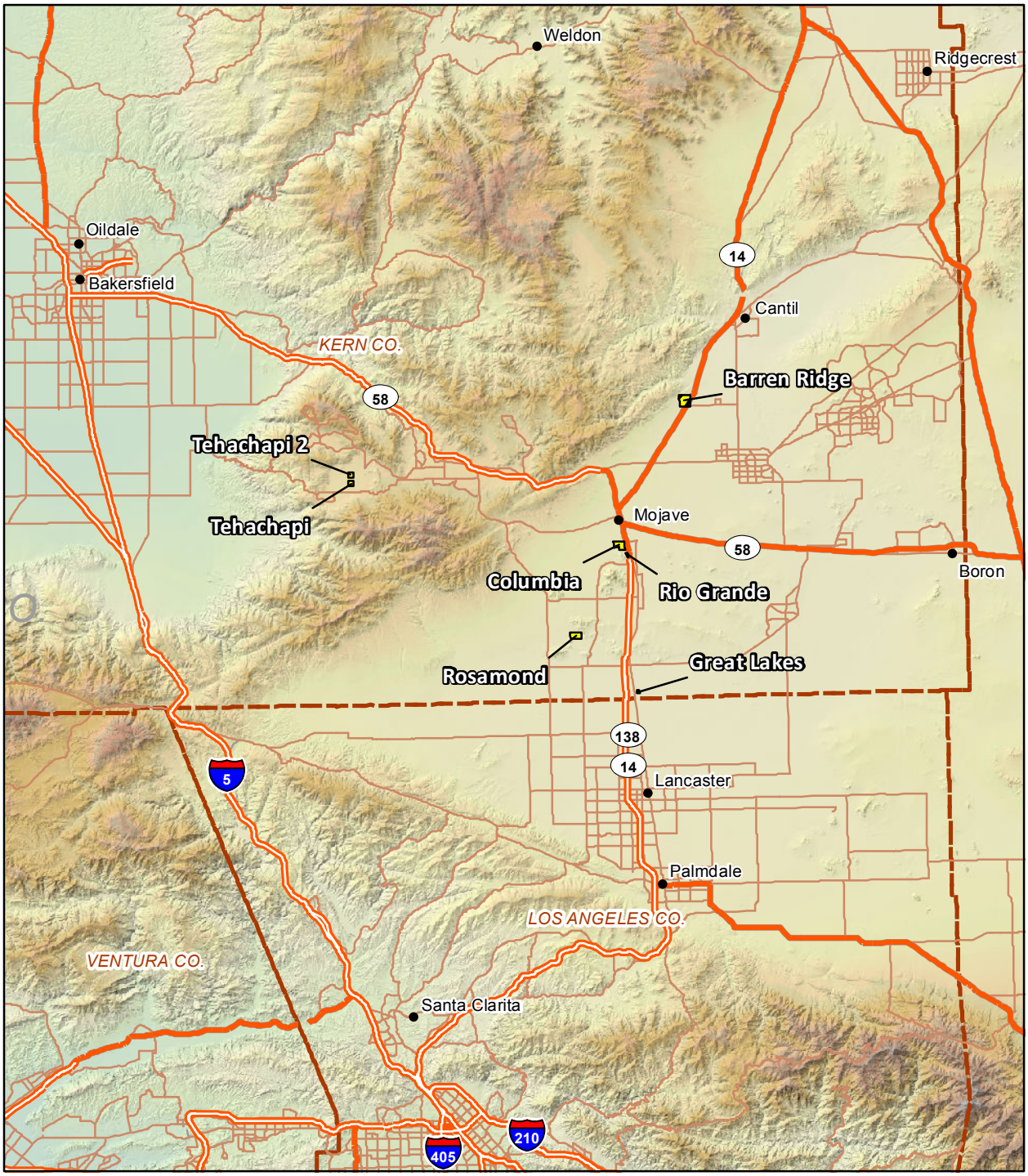
1.2 PROJECT DESCRIPTION

The proposed projects consist of the development of a photovoltaic (PV) solar electrical generation facilities. The facilities would include PV panels mounted on steel and aluminum structures, solar substations, equipment pads, and associated infrastructure such as access roads, fencing, and tie-ins to adjacent power lines.

1.3 REGULATORY OVERVIEW

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- Kern County General Plan



Basemap Source: ESRI Data, 2004, and USGS/CDFG, 2002. Additional map data from Kern County Assessor's Office, Assessment Standards Division, Mapping Section, 2010.

Project Sites

0 5 10
Miles

N

Regional Location

Figure 1

January 2011

The sites in the vicinity of SR-14 within the Antelope Valley (Rosamond, Rio Grande, Columbia, Great Lakes) and Fremont Valley (Barren Ridge) are within the Western Mojave Recovery Unit of the West Mojave Plan Habitat Conservation Plan (HCP) and the Desert Renewable Energy Conservation Plan (DRECP), neither of which have been formally adopted. None of the sites occur within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

1.3.1 SIGNIFICANCE CRITERIA

The following threshold criteria from the Kern County CEQA Environmental Checklist Form were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interrup-tion, or other means.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

SECTION 2 – METHODOLOGY

The biological resources at the project sites were analyzed through a review of relevant literature, field reconnaissance survey, focused biological surveys, and jurisdictional delineations/evaluations. The methods used are described below, and survey dates for each site are listed in Table 2. For the purpose of this report, sensitive biological resources include special-status plant and wildlife species, sensitive plant communities, jurisdictional drainages and wetlands, wildlife movement corridors, locally protected resources such as Joshua trees, and other regulated resources or areas, such as those subject to adopted Habitat Conservation Plans (HCPs).

2.1 LITERATURE REVIEW

Rincon reviewed literature for baseline information on biological resources potentially occurring at the project sites and in the surrounding areas. The literature review included information available in peer-reviewed journals, standard reference materials (e.g. e.g. Bowers, Bowers, & Kaufman 2004, Burt and Grossenheider 1980, Holland 1986, Hickman 1993, Sawyer, Keeler-Wolf, and Evens 2009, Stebbins 2003, American Ornithologists Union 2010, USACE 2008), and relevant databases on sensitive resource occurrences from the California Department of Fish and Game (CDFG) California Natural Diversity Data Base (CNDDB), Biogeographic Information and Observation System (BIOS – www.bios.dfg.ca.gov), and U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (http://criticalhabitat.fws.gov). Other sources of information about the sites included aerial photographs, topographic maps, soil survey maps, geologic maps, climatic data, previous biological studies, and project plans.

2.2 FIELD RECONNAISSANCE SURVEY

Rincon biologists John Dreher and Duane Vander Pluym conducted field reconnaissance surveys of the project sites, with the exception of Tehachapi and Tehachapi 2, on March 19, 2010. The surveys were conducted after a review of aerial photographs and other resources, then driving and walking the project areas to document existing biological conditions (e.g. vegetative communities, potential presence of sensitive species and/or habitats, and presence of jurisdictional wetlands and waters of the U.S.). The purpose of the surveys was to identify potential sensitive biological resources and constraints, and determine which focused surveys would be required at each site.

2.3 FOCUSED SURVEYS

The literature review and field reconnaissance identified five sensitive biological resources that would require focused surveys: special-status plant species, desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*) and other special status raptors, and Mohave ground squirrel (*Xerospermophilus mohavensis*). Observations of other sensitive species potentially occurring on-site were made concurrent with the focused surveys. The methods employed in each of the focused surveys are described below, and specific survey dates for each site are included in Table 2.

Note that focused surveys for special status plants, desert tortoise, and Mohave ground squirrel were not conducted at the Tehachapi and Tehachapi 2 sites. Both sites are in agricultural production with no potential to harbor special-status plants. The Tehachapi Valley lies outside the range of desert tortoise and Mohave ground squirrel and no suitable habitat is present at either site. Focused surveys for

Table 2. 2010 Field Survey Dates for the Kern County Desert Solar Sites

Project Site	Field Recon	Special Status Plants	Desert Tortoise	Burrowing Owl	Swainson's Hawk / Raptors	Mojave Ground Squirrel	Jurisdictional Evaluation
Rosamond	3/18 - 3/19	4/7 - 4/8 5/12 - 5/13	4/27 - 4/30 5/8	4/27- 4/30 5/8	6/24 - 6/25	1st Term: (4/5 - 4/14)(4/20 - 4/24) 2nd Term: (5/16 - 5/25) 3rd Term: (6/24 - 6/28) (6/29 - 7/3)	7/7 7/26
Rio Grande	3/18 - 3/19	4/15 5/5	5/6 - 5/7	5/6 - 5/7	6/24	1st Term: (4/25 - 4/29) 2nd Term: (5/27 - 5/21) 3rd Term: (6/15 - 6/19)	7/16
Columbia	3/18 - 3/19	4/14 - 4/15 5/4 - 5/5	5/1 - 5/7	5/1 - 5/7	6/22 6/24	1st Term: (4/11 - 4/15) (4/20 - 4/29) 2nd Term: (5/9 - 5/13) (5/22 - 5/31) 3rd Term: (6/15 - 6/29)	7/16
Great Lakes	3/18 - 3/19	4/12 5/12	5/9	5/9	7/12	1st Term: (4/25 - 4/29) 2nd Term: (5/11 - 5/15) 3rd Term: (7/5 - 7/9)	7/16 7/22
Barren Ridge	3/18 - 3/19 10/19	N/A	9/29 - 10/3	9/29 - 10/3	N/A	N/A	10/19
Tehachapi	7/7	N/A	N/A	5/22	7/11	N/A	7/26
Tehachapi 2	9/30	N/A	N/A	9/30	N/A	N/A	N/A

burrowing owl at Barren Ridge and Tehachapi 2 were conducted outside the protocol survey window (February 1 - August 31) and thus consisted of a survey for potentially suitable burrows. Special status plant surveys were not conducted at Barren Ridge.

2.3.1 SPECIAL STATUS PLANT SPECIES

Prior to conducting field surveys, a search and review of the CNDDB was conducted for recorded occurrences of special status plant taxa (species, varieties, and subspecies) within a five-mile radius of the study area. A search range of this extent was used to encompass a sufficient distance to accommodate for regional habitat diversity and to overcome the limitations of the CNDDB. The CNDDB is based on recorded occurrences of special-status plant taxa and does not constitute an exhaustive inventory of botanical resources for any given area. A search was also conducted using the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2010) for the *Soledad Mountain* and *Willow Springs* USGS 7.5-minute quadrangles and the ten surrounding quadrangles at the Rosamond project site, and for the *Mohave* USGS 7.5-minute quadrangle and the eight surrounding quadrangles at the Rio Grande and Columbia sites. Additionally, the U.S. Fish and Wildlife Service (USFWS) website was queried for federally listed plants occurring in Kern County.

For the purpose of this report, special status plant taxa consist of plants: 1) listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS under the federal Endangered Species Act; 2) listed or proposed for listing as rare, threatened, or endangered by the CDFG under the California Endangered Species Act; and 3) recognized on lists 1, 2, 3 and 4 of the CNPS *Inventory of Rare and Endangered Plants of California* per the following CNPS code definitions:

- **List 1A:** Plants presumed extinct in California;
- **List 1B.1:** Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat);
- **List 1B.2:** Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened);
- **List 1B.3:** Rare or endangered in California and elsewhere, not very endangered in California (<20% of occurrences threatened or no current threats known);
- **List 2:** Rare, threatened or endangered in California, but more common elsewhere;
- **List 3:** Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA);
- **List 4.2:** Plants of limited distribution (watch list), fairly endangered in California (20-80% occurrences threatened); and
- **List 4.3:** Plants of limited distribution (watch list), not very endangered in California.

A list of special-status plant taxa that could potentially occur on-site was developed from the CNDDB, CNPS, and USFWS search results (see Table 4). Listing status was cross-referenced with the CDFG *Special Vascular Plants, Bryophytes, and Lichens List* (April 2010) to verify rarity status for each special-status plant with potential to occur on-site. Habitat requirements and flowering periods for special-status plant

taxa were obtained from the California Native Plant Society (2010), The Jepson Desert Manual (Baldwin et al. 2002), and The Jepson Manual (Hickman 1993). Using this information, Rincon conducted an evaluation of the likelihood of occurrence on the site based upon species' local distribution and habitat requirements (e.g., vegetation community type, soil type, elevation above sea level). Special status plants with habitat requirements similar to the habitat types expected to occur on-site were included on a target list to be used during botanical surveys performed on the site. Furthermore, a field guide was prepared to assist in the identification of special-status plant taxa with potential to occur on-site. The field guide included photographs and/or illustrations of habitat, plant and/or diagnostic features, as well as descriptions of morphological and ecological attributes, as excerpted from The Jepson Manual (Hickman 1993) and CNPS online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2010), for each plant taxon.

Focused surveys for the special-status plants indentified as having potential to occur on-site were conducted, which consisted of two seasonally timed botanical surveys to capture the flowering periods of potentially occurring species. The botanical surveys were conducted in general accordance with the guidelines set forth by the CDFG (2009) and CNPS (2001). To achieve sufficient visual coverage of the site, systematic surveys were employed through the incorporation of survey transects with 30 meters between each surveyor. Transects were generally walked in a north-south direction to avoid sun glare in the morning and late afternoon, and to ensure that good visibility and high detectability was achieved during the survey. In addition to focused surveys, a floristic inventory was conducted at each site, with all plant species observed identified to a sufficient level to determine rarity (e.g. genus, species, subspecies, or variety). Plant taxa were identified in the field through examination of morphological characteristics and referencing regional plant field guides and dichotomous keys. Unknown plant taxa were identified off-site using regional plant field guides, dichotomous keys and a dissecting microscope, with taxonomic nomenclature based on Baldwin et al. (2002), Hickman (1993) and updates from the Jepson Online Interchange (UCB, 2010). As specified in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), a CNDDB Field Survey Form was completed for each special-status plant occurrence detected on-site. Vegetation communities were classified in accordance with the classification system presented in Sawyer et al. (2009) and cross-referenced to Holland (1986). Modifications to the vegetation community classifications were made by Rincon as appropriate based on the floristic composition and plant taxa distribution and abundance observed on-site.

2.3.2 DESERT TORTOISE

The survey for desert tortoise was conducted in accordance with the *Pre-project Survey Protocol for Potential Desert Tortoise Habitats, 2010* (USFWS, 2010). The survey was managed by Stephen Boland and Mercy Vaughn of Sundance Biology, Inc., with field work by Leslie Backus and Juan Miranda. The extent of potential desert tortoise habitat was determined for all sites during a field reconnaissance in April 2010. Subsequent survey dates are shown in Table 2. The survey was conducted by walking a set of transects spaced ~10 meters (30 feet) between transect centerlines (the standard width for desert tortoise presence/absence surveys) that covered the entirety of the survey area. Lowrance iFinder handheld global positioning system (GPS) units were used for transect navigation. Transects were established by calculating UTM coordinates for virtual north-south transects, as follows:

- Rosamond: 81 transects, each 1 mile in length
- Rio Grande: 35 transects, from 500 - 1,300 feet in length
- Columbia: 122 transects, from 0.5 - 1 mile in length

- Great Lakes: 41 transects, each 0.25 mile in length
- Barren Ridge: 191 transects, each 1.2 miles in length

In accordance with the desert tortoise pre-survey protocol (USFWS, 2010), Zone-of-Interest (ZOI) transects at three 200-meter (~650-foot) intervals from the project boundary were conducted in adjacent habitat at sites where the action area was less than 81 hectares (200 acres) (Rio Grande and Great Lakes). Weather conditions were generally calm and clear at the time of survey, with the only exception being winds 15-20 mph out of the southwest at the time of the Great Lakes project site survey. Daily high temperatures were generally less than 70ºF on all survey days, with the exception of Barren Ridge, in which temperatures ranged from 63 ºF to 95 ºF.

2.3.3 BURROWING OWL

Burrowing owl surveys were conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995). The survey was managed by Stephen Boland and Mercy Vaughn of Sundance Biology, Inc. The extent of potential burrowing owl habitat was determined for all sites during a field reconnaissance in April 2010. Subsequent field surveys were conducted in late April to early May, 2010 by Leslie Backus and Juan Miranda for the Rosamond, Rio Grande, Columbia and Great Lakes sites, and on May 22, 2010 by Ashley Spenceley for the Tehachapi site. Focused surveys for burrowing owl at Barren Ridge and Tehachapi 2 were conducted outside the protocol survey window (February 1 - August 31) and thus consisted of a survey for potentially suitable burrows. Exact survey dates are shown in Table 2.

The *Staff Report on Burrowing Owl Mitigation* (CDFG 1995) recommends transects be surveyed at ~30-meter (100-foot) intervals throughout a given site, with five transects spaced at ~30 meter (100-foot) intervals surveyed in adjacent areas. However, at the western Mojave sites transects were established at ~10-meter (30 foot) intervals to provide greater visual coverage. Burrowing owl surveys were conducted simultaneous with the desert tortoise surveys. In addition, fifteen transects spaced ~10 meters (30 feet) apart were established in the 150 meter (500-foot) buffer zone around the project site. Lowrance iFinder handheld global positioning system (GPS) units were used for transect navigation. Any burrows that could potentially be used by burrowing owls (e.g. coyote and kit fox burrows), if observed, were monitored for one hour before sunset until shortly after sunset on four consecutive days. In addition, any burrowing owl sign was recorded, which includes burrows with and without whitewash (i.e. droppings), feathers, and/or diagnostic pellets. No winter surveys were performed.

Field surveys at the Tehachapi site were adjusted based on existing conditions. As the site was under agricultural production (sod farming), the survey attention was focused on potential burrowing owl habitat that included a small strip of unplowed land in the NW corner of the property, and a 20 meter area of untilled earth and a pile of 5-inch diameter pipes in the NE corner of the property. No winter surveys were performed.

2.3.4 SWAINSON'S HAWK/RAPTORS

Swainson's hawk surveys were conducted using *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (California Energy Commission and CDFG, 2010) as the guide. The survey was managed by Stephen Boland and Mercy Vaughn of Sundance Biology, Inc. Potential habitat for the

Swainson's hawk was evaluated during a field reconnaissance conducted in June 2010. Field surveys were conducted by field biologists Rachel Woodard (Rosamond, Rio Grande, and Columbia sites) and Ashley Spencely (Great Lakes and Tehachapi sites) in late June – early July, 2010 (Survey Period IV). Exact survey dates for each site are shown in Table 2. All potential nest trees on-site and within a 1-mile radius were surveyed for the presence of nests. A windshield survey was conducted along all roadways on site and within a 1-mile radius, with periodic stops and walks using binoculars and a spotting scope to survey the habitat.

In addition to the Swainson's hawk, a number of year-round resident raptor species are found in the project region, such as the golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), prairie falcon (*Falco mexicanus*), great-horned owl (*Bubo virginianus*). Surveys for these raptor species were conducted concurrent with the Swainson's hawk protocol surveys.

2.3.5 MOHAVE GROUND SQUIRREL

Presence/absence surveys for the Mohave ground squirrel were performed in compliance with CESA and CEQA, as the project area is within habitats currently or historically occupied by this species. If field surveys indicate that there is a likelihood of "take" of these species, consultation with the CDFG under Fish and Game Code Section 2050 and 2091 would be required.

Surveys were conducted by certified wildlife biologists William J. Vanherweg, with field work by Mike McGovern, Greg Wivert and Paul Vanherweg, from April – June 2010 (exact survey dates shown in Table 2). The surveys were conducted using methods recommended by CDFG (2003). This included a visual survey of all potential habitat at each project site to determine Mohave ground squirrel activity and habitat quality, conducted during daylight hours by a biologist who can readily identify both the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*). Following the visual survey, a live-trap sampling grid was established. One sampling grid consisting of 100 Sherman live-traps was established for each 80 acres (or fraction thereof) of potential Mohave ground squirrel habitat at each site, as follows:

- Rosamond: 320 acres of habitat, 4 grids
- Rio Grande: 40 acres of habitat, 1 grid
- Columbia: 400 acres of habitat, 5 grids
- Great Lakes: 40 acres of habitat, 1 grid

The traps were arranged in a 10 x 10 grid, with 35-meter (~115-foot) spacing between traps. Each sampling grid was trapped for up to three terms consisting of five consecutive days each, or until a Mohave ground squirrel was captured on any sampling grid at the project site. All trapping was conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures (<50°F or 10°C), within the following time periods: the *first term* from March 15 to April 30, 2010, the *second term* from May 1 to May 31, 2010, and the *third term*, if required, from June 15 to July 15, 2010. All trapping was conducted by qualified biologists to minimize heat stress. No surveys were conducted at the Barren Ridge, Tehachapi, or Tehachapi 2 sites.

2.3.6 OTHER SENSITIVE SPECIES

Observations on other sensitive species with the potential to occur on-site were conducted concurrent with the focused surveys. All sensitive species observed were recorded, location information was recorded with a GPS where possible, and the results are presented in the site-specific biological resources section.

2.4 JURISDICTIONAL WATERS EVALUATION/DELINEATION

Each project site was evaluated for the presence of potentially jurisdictional waters and delineations were conducted at sites where such features were determined present (note that the regulatory agencies make the final jurisdictional determination). Any observed drainage features, riparian habitat, wetland features, and wetland sample points were mapped on recent aerial photography. Width measurements for USACE and Regional Water Quality Control Board (RWQCB) jurisdiction were determined based on the lateral extent of the Ordinary High Water Mark (OHWM). CDFG jurisdictional limits were measured laterally from bank to bank at the top of the channel. Width measurements were taken at approximately 100-foot intervals or based on changes in drainage width, using a 100-foot tape. When appropriate, wetland sample points were taken at representative locations to determine the presence/absence of wetland indicators, such as hydrophytic vegetation, hydric soils, and wetland hydrology. Soil pits were dug at the sample points, and data collected with a Munsell® color chart, tactile evaluation of soil texture, and other visual observations of soil characteristics. When necessary, the soil was probed in the surrounding areas to ensure the test pit is representative of site conditions. Data from the sample points was entered on standardized Wetland Determination Data Forms. Waters and wetlands potentially subject to agency jurisdiction were evaluated in accordance with:

- USACE *Wetlands Delineation Manual* (1987)
- USACE *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (2001)
- USACE *Jurisdictional Determination Form Instructional Guidebook* (2007)
- USACE *Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region* (2008)
- USACE *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the Western United States* (2008)
- Section 1602(a) of the California Fish and Game Code
- Porter-Cologne Water Quality Control Act

SECTION 3 – REGIONAL BIOLOGICAL RESOURCES

This section describes the environmental setting, flora and fauna, sensitive biological resources, and wetland/riparian resources within the project region. Section 4 describes existing conditions, biological resources, potential jurisdictional areas, and environmental effects specific to each of the seven project sites.

3.1 ENVIRONMENTAL SETTING

Elevation within the project area ranges from 2304 – 3865 feet above mean sea level (msl), with environmental conditions varying along a gradient from the Mojave Desert in the eastern part of the project region, to the Tehachapi Mountains in the western part. The sites in the vicinity of SR-14 (Rosamond, Rio Grande, Columbia, Great Lakes and Barren Ridge) are located in the Antelope Valley, a broad gently sloping to undulating high basin with scattered remnants of low granitic uplands (e.g. the Rosamond Hills). This portion of the project area lies within the Mojave Desert biogeographic region. The Tehachapi Valley sites (Tehachapi and Tehachapi 2) are located in a montane valley within the Tehachapi Range, part of the geologically complex Transverse Ranges.

3.1.1 CLIMATE

Data from NOAA Western Regional Climate Centers' Mojave, Lancaster and Tehachapi stations (NOAA 2010, Table 3) indicates that climate varies within the projects region along an elevation gradient from the Tehachapi Valley in the west to the Antelope Valley in the east, and along a latitudinal gradient from south to north.

The Antelope Valley is broadly classified as a continental desert regime formed in the rain shadow of the Coast and Transverse Ranges, commonly known as 'high desert' due to the combination of an arid climate regime and a relatively high elevation (~2500 feet). Desert climates are characterized by an arid environment (low humidity/rainfall), strong fluctuations in daily temperatures, hot summers and cold winters, and generally clear skies. Wind is also a strong feature of this climatic regime, with dry winds in excess of 25 mph in the late winter and early spring. Regionally, average temperature ranges from 46.9 to 75.8 degrees Fahrenheit, with an average annual rainfall of 6.2 inches. Rainfall in the Mojave is characterized by a high degree of spatio-temporal variability, with isolated precipitation events, high inter-annual variability and decadal oscillations in rainfall rates, and rainfall gradients from south to north and west to east (e.g. decreased rainfall from Lancaster to Mojave, Table 3). Prolonged droughts are common, and exert a strong influence on vegetation (Twisselman 1995). The extreme heat and aridity of the Mojave exerts a strong influence on soils, vegetation types, and predominant land uses.

The climate of the Tehachapi Valley and surrounding slopes, in contrast, is strongly influenced by the montane environment of the Tehachapi Range, with warm dry summers and cold wet winters. Average temperatures range from 41.1 to 67.6 degrees Fahrenheit, with an average annual rainfall of 11.1 inches (with an additional annual snowfall rate of 23.3 inches).

Table 3. Comparison of Climate Data for the Antelope and Tehachapi Valleys, Kern County.

Station	Elevation	Average Maximum Temperature	Average Minimum Temperature	Average Annual Precipitation
Antelope Valley Mojave, CA – Coop ID 045756	2801 ft	75.8ºF	49.4ºF	5.9 in/yr
Antelope Valley Lancaster, CA – Coop ID 044749	2351 ft	75.5ºF	46.9ºF	7.8 in/yr
Tehachapi Valley Tehachapi, CA – Coop ID 048826	4220 ft	67.6ºF	41.1ºF	11.1 in/yr

Sources: NOAA Western Regional Climate Center historical climate information, http://www.wrcc.dri.edu/CLIMATEDATA.html
NRCS Web soil survey, http://websoilsurvey.nrcs.usda.gov/app/

3.1.2 WATERSHEDS

The Antelope Valley is an isolated basin that comprises approximately 1,580 square miles of alluvial valley in the western Mojave Desert, bounded by the Tehachapi Mountains to the northwest and the San Gabriel Mountains to the southwest. As evapotranspiration greatly exceeds precipitation in the Mojave, salt sinks and alkali playas are common in low-lying areas. In the lowest part of the basin are Rosamond Lake and Rodgers Lake, dry lake beds that receive intermittent water from terminal ephemeral drainages.

Four of the five Mojave sites are part of the Antelope Hydrologic Unit (CalWater Version 2.2, http://www.ca.nrcs.usda.gov/features/calwater/); the Rosamond and Great Lakes sites are part of Lancaster Hydrologic Area that drains to Armagosa Creek, and the Columbia and Rio Grande sites are part of the Chafee Hydrologic Area that drains to Cache Creek. Barren Ridge is within the Fremont Hydrologic Unit in the Koehn Hydrologic Area, and drains to Koehn Dry Lake. The Tehachapi Valley sites are part of the Grapevine Hydrologic Unit, and the Tejon Creek Hydrologic Area. The Tehachapi sites drain to Chanac Creek, which is a tributary to Tejon Creek.

3.1.3 SOILS

Topography within the Antelope Valley ranges from nearly level to gently undulating plains to steeply sloping areas associated with remnants of older landforms that occur as scattered buttes or low granitic uplands (e.g. Rosamond Hills). The soils formed predominantly on alluvial fans and terraces, with parent material derived from granitic rock common to the Rosamond Hills to the north, the Tehachapi Range to the west, and the San Gabriel Mountains to the south (USDA 1970). Dominant soils at the Mojave project sites are from the Hesperia – Rosamond – Cajon association, and the Pond – Tray – Oban association. The Hesperia – Rosamond – Cajon soils are moderately well drained to excessively well drained, deep soils that developed on recent alluvial fans; surface layers are mildly acidic light brownish-gray to pale brown loamy sands or silty clays over mildly alkaline and calcareous soils at depth. The Pond – Tray – Oban soils are nearly level moderately well drained soils in basins; surface soils are moderately saline-alkali yellowish-brown to light brownish gray calcareous fine sand, sandy loams, or

silty clay loams over gravelly coarse sandy loams. Other soils in the project region include soils associated with low granitic uplands which are shallow, moderately alkaline and calcareous, pale-brown to light yellowish-brown sandy loams over granitic bedrock, and Riverwash soils associated with ephemeral drainages and washes.

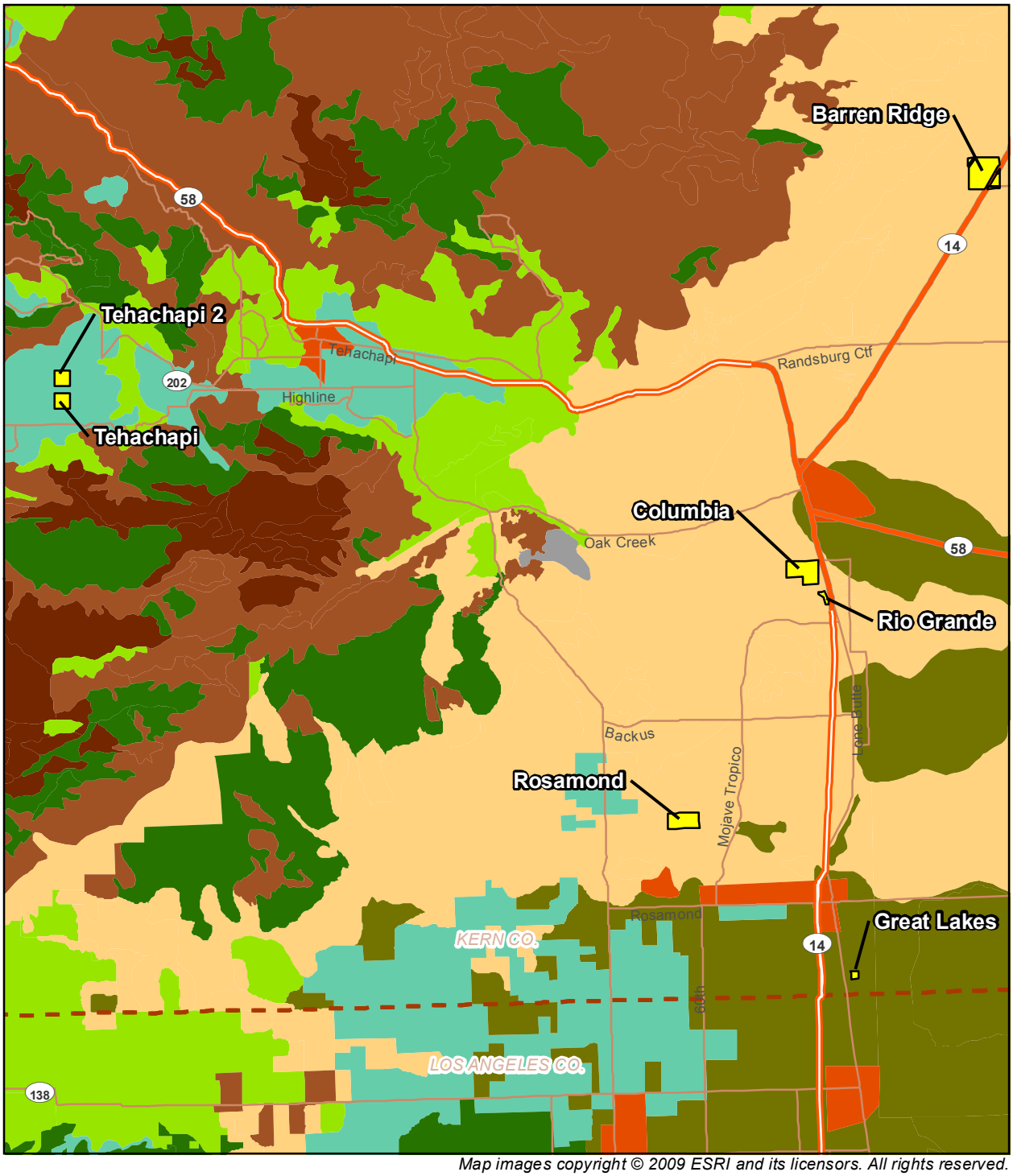
Desert soils have several unique properties that influence vegetative community development and restrict land use options. Under arid climatic conditions where evapotranspiration exceeds precipitation, excess salt accumulation (e.g. Na^-, Cl^-, Ca_2^-, Mg_2^- and HCO_3^-) can cause drastic changes in the physical and chemical properties of soils (Chhabra 2005), including a high *salinity* and *sodicity* (high electrical conductivity/sodium adsorption ratio) and *alkalinity* (high pH). Salt affected soils occupy as much as 7 percent of the world's land surface (Dudal and Purnell 1986), resulting in an environment unsuitable for growth of most crops (Qadir et al. 2000), limiting plant growth to *halophytic* (salt adapted) and *xerophytic* and *phraetophytic* (drought adapted) species, and reducing the organic content of soils. Saline-alkali soils can also lack redoximorphic features and other indicators of hydric soil conditions. Surface soil layers also commonly exhibit specialized properties such as desert pavement or biotic crusts. Biotic crusts are complex surficial biological communities comprised of lichens, bryophytes, cyanobacteria, soil fungi and other microbes that facilitate infiltration, nutrient retention, and seed germination/establishment (Bowker 2007). As a result of these factors, desert soils are often susceptible to disturbance that can disrupt ecosystem processes and reduce the capacity to recover following stress. Land use suitability of desert soils is often restricted to development or open space/wildlands management.

Soils in the Tehachapi area, in contrast, developed on granitic alluvium deposited on the alluvial fans and floodplains of the Tehachapi Valley. Topography is nearly level to gently sloping or undulating. The Stueber sandy loams are well drained coarse sandy loams, light brown to yellowish-brown and are not saline or alkali due to a moderate temperature regime and higher rainfall. Land use in the Tehachapi Valley is dominated by agricultural production and rural residential areas.

Hydric soils potentially present at the Kern Desert project sites (National list of Hydric Soils, Feb. 2010; http://soils.usda.gov/use/hydric/lists/state.html) include Riverwash soils (associated with drainageways), Arizo loamy fine sands, 0 to 2 percent slopes (associated with drainageways), Cajon loamy sand, 0 to 2 percent slope (associated with plays), and the Pond-Oban complex (associated with basin floors).

3.2 VEGETATION

Vegetation types in the Mojave Desert (Figure 2) are strongly influenced by climate and soils, with a predominance of plant morphological adaptations to extreme aridity (e.g. waxy or resinous leaf cuticles, drought deciduous or succulent plants, woolly leaf pubescence, deep tap root systems), saline-alkali soils (e.g. salt excretion, active transport systems), and vegetation structure characterized by short stature and widely spaced shrubs and arborescent shrubs due to competition for soil water resources (Twisselman 1995, Hickman 1993). Desert ecosystem function is also influenced by the integrity of the highly diverse biotic soil crusts that increase infiltration, soil water holding capacity, and nutrient retention, provide temperature regulation, and facilitate seed germination and establishment (Bowker 2007).



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Project Sites
Agriculture
Alkali Desert Scrub
Annual Grassland
Barren
Chaparral / Sage Scrub
Cismontane Woodland
Desert Scrub
Montane Woodland/Forest
Urban

0 2.5 5
Miles

N

Regional Vegetation Communities

Figure 2

Mojave Desert ecosystems have been subjected to a variety of human disturbances, including off-highway vehicle (OHV) use, mineral extraction (e.g. gold, borax), road building, agriculture, historical sheep grazing, and fire. Due to the marginal nature of desert environments, vegetative resources can be poorly resilient, often taking a long time to recover or following successional pathways towards an alternative stable state dominated by invasive species (Beisner et al. 2003, Chartier and Rostagno 2006). Therefore, portions of the Mojave are currently in a degraded state, with cleared lands, non-native species, and/or altered vegetative structure evident. For example, it was observed that a high proportion of associated species in desert saltbush scrub vegetation in the western portion of the Mojave are invasive exotics (Thomas et al. 2004).

Three vegetation types contribute to 75 percent of the land cover in the Mojave Desert region (Davis et al. 1998): Mojave creosote bush scrub (16,398 square miles), Mojave mixed woody scrub (Joshua tree woodland, 3,646 square miles), and desert saltbush scrub (1,510 square miles). Other vegetation types (Holland 1986) occurring or potentially occurring within the project area include desert and valley sink scrub, Mojave desert wash scrub, Mojave mixed steppe. Disturbed or non-native vegetation types within the Mojave include California annual grasslands, agricultural lands, and developed areas.

In contrast, vegetation in the Tehachapi Valley has been altered and degraded by a variety of human land use, road construction, and residential and commercial development. Vegetation types in this portion of the project area are dominated by agricultural lands, California annual grassland, ruderal, and developed areas. The surrounding areas contain a diverse assemblage of coniferous montane forest (e.g. oak woodlands, pinyon juniper woodlands), chaparral (e.g. chamise chaparral), grassland (e.g. California annual grassland, needlegrass grassland), and wetland and riparian vegetation types.

3.3 WILDLIFE

The desert scrub habitats in the project area support a wide variety of reptiles, birds, and mammals. Common reptiles include side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis tigris*), rattlesnake (*Crotalus* sp.), and gopher snake (*Pituophis melanoleucus*). Bird species include, but are not limited to red-tailed hawks (*Buteo jamaicensis*), burrowing owl (*Athene cunicularia*), western meadowlark (*Sturnella neglecta*), and loggerhead shrike (*Lanius ludoviciaus*). Mammals occupying desert scrub habitat types are black-tailed hare (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kangaroo rats (*Dipodomys* spp.), deer mouse (*Peromyscus maniculatus*), desert kit fox (*Vulpes macrotus arsipus*), coyote (*Canis latrans*), and American badger (*Taxidea taxus*).

The Transverse Range is biologically significant due to its function as a linkage and wildlife corridor between the Sierra Nevada and the Coast Ranges, the specific climatic conditions created by its east-west orientation, and the convergence of the distinct biogeographic regions associated with the Mojave Desert, the Great Central Valley, the Sierra Nevada, and the Coast Ranges. The wildlife movement functions that the Transverse Ranges provide is particularly important for ungulates and for predators that require large home ranges (e.g. bobcat, mountain lions, bears).

3.4 SENSITIVE BIOLOGICAL RESOURCES

3.4.1 SPECIAL STATUS SPECIES

Special status plant and wildlife species potentially occurring in the project area (tracked within approximately 5 miles of each site) or known to occur at the project sites are listed in Table 4. The natural history and status on or in the vicinity of the sites for each of these species, based on the focused survey findings, is presented in Table 2 and discussed in the following sections.

Table 4. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements	Status on Project Sites / Factual Basis for Determination
PLANTS				
Androstephium breviflorum	Small-flowered androstephium	CNPS 2.2	Found in mid-elevation open desert scrub. Blooms March-April.	**Absent.** Marginally suitable habitat present at project sites. Species not observed during focused botanical surveys.
Astragalus hornii var. *hornii*	Horn's milk-vetch	CNPS 1B.1	Found in meadows and seeps, playas or lake margins. Prefers alkaline soils. Blooms May-October.	**Absent.** Marginally suitable habitat present at Great Lakes project site. Species not observed during focused botanical surveys.
Erodium macrophylla	Round-leaved filaree	CNPS 1B.1	Found in loamy soils open sites, grassland and scrub habitats below 1,200m. Blooms March-May.	**Absent.** No suitable habitat present at project sites. Species not observed during focused botanical surveys.
Calochortus striatus	Alkali mariposa lily	CNPS 1B.2	Inhabits alkaline meadows and ephemeral washes within chaparral, chenopod scrub, Mojavean desert scrub, and meadows. Blooms April-June.	**Present (Great Lakes).** Suitable habitat present at Great Lakes site. Species observed during focused botanical surveys.
Calystegia peirsonii	Peirson's morning-glory	CNPS 4.2	Found in grassland and open chaparral or scrub vegetation on rocky slopes. Blooms May-June.	**Absent.** No suitable habitat present at project sites. Species not observed during focused botanical surveys.
Canbya candida	White pygmy-poppy	CNPS 1B.2	Found in open sandy soils in the western Mojave and adjacent Sierra Nevada. Blooms April-May.	**Absent.** Suitable habitat present at project sites, and recorded occurrence within 5-mile radius of Columbia and Rio Grande. Species not observed during focused botanical surveys.
Chorizanthe parryi var. *parryi*	Parry's spineflower	CNPS 1B.1	Found in chaparral and coastal scrub in openings with sandy or rocky soil. Blooms April-June.	**Absent.** No suitable habitat present at project sites. Species not observed during focused botanical surveys.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	SE / CNPS 1B.1	Found in chaparral and coastal scrub in openings with sandy or rocky soil. Blooms April-June.	**Absent.** No suitable habitat present at project sites. Species not observed during focused botanical surveys.

Table 4. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements	Status on Project Sites / Factual Basis for Determination
Chorizanthe spinosa	Mojave spineflower	CNPS 4.2	Found in desert and creosote bush scrub, Joshua tree woodland in the western Mojave Desert. Blooms April – July.	**Present (Great Lakes).** Suitable habitat present at Great Lakes project site. Species observed during focused botanical surveys.
Eschscholzia minutiflora ssp. *twisselmannii*	Red Rock poppy	CNPS 1B.2	Found in creosote bush scrub in the Mojave Desert, specifically on volcanic tuff soils.	**Absent.** No suitable habitat present at project sites (lack of suitable soils). Recorded occurrence within 5-mile radius of Barren Ridge. Species not observed during focused botanical surveys at other sites.
Goodmania luteola	Golden goodmania	CNPS 4.2	Meadows and playas in creosote bush scrub, valley grassland, alkali sinks, and wetland-riparian areas. Blooms April-August.	**Present (Great Lakes).** Suitable habitat present at Great Lakes site. Species observed during focused botanical surveys.
Layia heterotricha	Pale yellow layia	CNPS 1B.1	Alkaline or clay soils in grasslands, coastal scrub, cismontane woodland, pinyon-juniper woodland. Blooms March-June.	**Absent.** No suitable habitat present at project sites. Species not observed during focused botanical surveys.
Loeflingia squarrosa var. *artemisiarum*	Sagebrush loeflingia	CNPS 2.2	Found in desert dunes, Great Basin scrub and sandy Sonoran desert scrub. Blooms April-May.	**Absent.** Suitable habitat present at project sites. Species not observed during focused botanical surveys.
Mimulus pictus	Calico monkeyflower	CNPS 1B.2	Found in foothill woodlands, often on granitic soils. Blooms March – May.	**Absent.** No suitable habitat present at project sites. Recorded occurrence within 5-mile radius of Tehachapi. Species not observed during focused botanical surveys.
Phacelia nashiana	Charlotte's phacelia	CNPS 1B.2	Found in creosote bush scrub, Joshua tree woodland, pinyon-juniper woodland. Blooms March – June.	**Absent.** Suitable habitat present at project sites. Recorded occurrence within 5-mile radius of Barren Ridge. Species not observed during focused botanical surveys.
Phacelia parishii	Parish's phacelia	CNPS 1B.1	Clay or alkaline soils, dry lake margins in the western Mojave. Blooms April-July.	**Absent.** Suitable habitat present at Great Lakes. Species not observed during focused botanical surveys.
Plagiobothrys parishii	Parish's popcorn-flower	CNPS 1B.1	Wet, alkaline soils around desert springs in the Mojave and eastern Sierra Nevada. Blooms April-June.	**Absent.** Suitable habitat present at Great Lakes. Species not observed during focused botanical surveys.
Puccinellia parishii	Parish's alkali grass	CNPS 1B.1	Inhabits higher elevation mineral springs in the Mojave Desert. Blooms April-May.	**Absent.** No suitable habitats present at project sites. Species not observed during focused botanical surveys.

Table 4. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements	Status on Project Sites / Factual Basis for Determination
Saltugilia latimeri	Latimer's woodland-gilia	CNPS 1B.2	Chaparral, Mojavean desert scrub, pinyon and juniper woodland, rocky or sandy, often granitic, sometimes washes. Blooms March-June.	**Absent.** Suitable habitat present at project sites. Species not observed during focused botanical surveys.
Sidalcea neomexicana	Salt spring checkerbloom	CNPS 1B.2	Inhabits alkaline springs and marshes in the South Coast, San Gabriel Mountains, San Bernardino Mountains, Peninsular Ranges, southwest Mojave Desert. Blooms April-June.	**Absent.** No suitable habitats present at project sites. Species not observed during focused botanical surveys.
Viola aurea	Golden violet	CNPS 2.2	Found in sagebrush scrub and pinyon-juniper woodland, sandy soils. Blooms April-June.	**Absent.** Marginally suitable habitat present at project sites. Recorded occurrence within 5-mile radius of Columbia and Rio Grande. Species not observed during focused botanical surveys.
REPTILES				
Gopherus agassizii	Desert tortoise	FT / ST	Prefers creosote bush habitat with annual wildflower blooms. Inhabits friable soil for burrow and nest construction, occurs in most desert habitats.	**Present (Barren Ridge).** Three individuals observed on Barren Ridge project site during fall focused surveys and field reconnaissance. Species not observed/detected on any of the other project sites. Recorded occurrences 6.5 miles north and 4 miles east of Rosamond, and 4.5 miles east of Rio Grande and Columbia.
BIRDS				
Athene cunicularia	Burrowing owl	SSC	Inhabits open, dry, annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	**Potentially Present (Columbia & Barren Ridge).** Although marginal to suitable habitat is present at the project sites, observations of burrowing owl sign was limited to 6 burrows with burrowing owl sign (pellets, scat, seed pods) at Columbia, an incidental pellet observed in the buffer area of Rio Grande, and potential burrows at Barren Ridge. No burrowing owls were observed at the other sites during focused surveys.
Aquila chrysaetos	Golden eagle	FP	Nests in canyons on cliffs and large trees in open habitats. Forages chiefly for mammalian prey in grasslands and over open areas.	**Present (Tehachapi).** Observed flying over the Tehachapi sites. No nests observed and no suitable nesting habitat present on any of the sites, but species may occasionally use the sites for foraging.

Table 4. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements	Status on Project Sites / Factual Basis for Determination
Buteo swainsoni	Swainson's hawk	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural areas or ranches; requires adjacent suitable foraging areas such as grasslands, alfalfa or grain fields supporting rodent populations.	**Absent.** Marginally suitable foraging habitat occurs at the project sites, and potential nesting habitat occurs at or adjacent to the sites. No Swainson's hawks were observed at the project sites during the focused surveys.
Lanius ludovicianus	Loggerhead shrike	SSC	Occurs in open habitats utilizing shrubs, trees, posts, fences, and low utility lines for perches. Specifically prefers open foothill and valley woodlands with some canopy cover and adequate roosting and foraging perches. Forages in edge habitats, and in particular prefers shrubs adjacent to grasslands.	**Present (Rio Grande).** Suitable foraging and nesting habitat exists at the project sites. Three adult individuals observed at Rio Grande.
Toxostoma lecontei	Le Conte's thrasher	SSC	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.	**Present (Columbia).** Suitable foraging and nesting habitat exists at the project sites. Two adults (calling pair) observed at Columbia.
MAMMALS				
Xerospermophilus mohavensis	Mohave ground squirrel	ST	Inhabits open desert scrub, alkali scrub, and Joshua tree woodland; feeds in annual grasslands; restricted to Mojave desert. Prefers sandy to gravelly soils, avoids rocky areas. Uses burrows at base of shrubs for cover. Nests are in burrows.	**Absent.** No Mohave ground squirrels trapped at any of the project sites. No sign (scat) seen near burrows or within any of the sites. Potentially suitable habitat observed at all Mojave Desert sites. Note: focused surveys not conducted at Barren Ridge.
Taxidea taxus	American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Needs sufficient food and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Present (Rosamond, Columbia, & Barren Ridge)**. Suitable burrows and scrapes found on Rosamond, Columbia, and Barren Ridge. No badgers or sign observed at any of the other sites.

[1] FT = Federally threatened; FE = Federally endangered; • SE = State endangered; ST = State threatened; SR = State rare; FP = CA Fully Protected; SSC = CA Species of Special Concern; SA = CDFG Special Animal; • California Native Plant Society (CNPS): 1B = Rare or endangered in California and elsewhere; 2 = Rare or endangered in California, more common elsewhere; 3 = Plants for which more information is needed (Review list); 4 = Plants with limited distribution (Watch list); .1 = Seriously endangered in California; .2 = Fairly endangered in California; .3 = Not very endangered in California

Special Status Plant Species

Following a literature review (described in Section 2.1), the list of special status plant species occurring in the western Mojave and the Tehachapi Valley was evaluated for potential to occur at the project sites. Species known to occur within the project region but limited to specific biotypes or soil types not present at the project site (e.g. dunes, mineral springs), and species common to ubiquitous habitats of the Tehachapi Range that are not present at the Tehachapi sites due to agricultural land use were excluded from the list, unless an occurrence record was found within a 5-mile radius. The final list of special-status plants potentially occurring at the project sites included a total of 21 species. All the plant species listed in Table 4 are from CNPS List 1B, List 2 or List 4; only one species (San Fernando Valley spineflower, *Chorizanthe parryi* var. *fernandina*) is also listed as endangered by CDFG and as a candidate for listing by USFWS.

Desert Tortoise

The desert tortoise is a long-lived species found on flats, alluvial fans, bajadas and rocky terrain. This species has characteristics that enable it to survive in arid environments, including elephantine limbs with well-developed claws that allow them to create burrows over 3 meters long. Individuals emerge to forage in the morning or late afternoon from March – October, and hibernate from November to March. Human impacts and habitat loss have contributed to the decline of historical populations throughout much of its range. The desert tortoise is federally and state-listed as threatened, and potential impacts to the species requires incidental take permits from both the USFWS and CDFG. The Mojave population of the desert tortoise was listed by the USFWS as threatened on April 2, 1990. Consequently, proposed actions within the range of the desert tortoise fall under purview of the federal Endangered Species Act (ESA), 16 U.S.C. § 1531, et seq. ESA § 7, in addition to State (CESA) regulations.

Burrowing Owl

The burrowing owl is a small long-legged owl found in dry, open areas with low vegetation in North and South America. Habitats include grasslands, rangelands or agricultural areas. Burrowing owls rely on existing burrows of other animals, such as coyotes or kit foxes, which they modify for their own use. The burrowing owl is a California Species of Special Concern (SSC) and is protected by CFGC Section 3503 et. seq. and the federal MBTA. Mitigation measures for potential project impacts to the species typically follow the guidelines developed by the California Burrowing Owl Consortium (1993) and CDFG (1995). Mitigation requirements under CEQA are established at the discretion of the lead agency and not CDFG or the consortium. Mitigation is typically comprised of at least 2 steps: 1) construction buffers for active burrows during the breeding season, and 2) passive relocation of owls during the non-breeding season. Compensatory mitigation for occupied habitat is typically recommended by CDFG, but the amount has varied. When compensatory mitigation lands are required for other species (e.g., Mohave ground squirrel, desert tortoise), no additional land is typically required for burrowing owl. No mitigation is required for unoccupied or unsuitable habitat.

Swainson's Hawk/Golden Eagle/Raptors

In addition to the burrowing owl, the Mojave Desert region provides habitat for a number of year-round resident raptor species, such as the golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), prairie falcon (*Falco mexicanus*), great-horned owl (*Bubo virginianus*), rare breeding populations for Swainson's hawk (*Buteo swainsonii*), and wintering species such as the ferruginous hawk (*Buteo regalis*). Raptors are generally protected by CFGC Section 3503 et. seq. and the federal MBTA. Specific legal protections are afforded to the golden eagle pursuant to The Bald and Golden Eagle Protection Act and

CFGC 3511, to Swainson's hawk pursuant to CESA, and to the white-tailed kite under CFGC 3511. Mitigation measures for potential project impacts typically include nesting surveys and avoidance of active nests and surrounding buffers. Compensatory mitigation is usually not required for permanent impacts to raptor foraging habitat in general, but may be required for the permanent loss of a breeding territory for species such as the golden eagle and Swainson's hawk.

Mohave Ground Squirrel

Mohave ground squirrels (*Xerospermophilus mohavensis*) are approximately 8.5 - 9 inches in length and can be found in desert scrub habitats. Activity periods for this species vary and little is known about their reproduction (Ingles 1979). Their diet consists of seeds, vegetative parts of desert plants including fruits of the Joshua tree. Due to the aridity and high temperatures of its environment they are a diurnal species spending up to seven months underground. The Mohave ground squirrel is state-listed as threatened and potential impacts to the species, including activities that jeopardize the continued existence of Mohave ground squirrel and activities that impact occupied habitat for Mohave ground squirrel, would require an Incidental Take Permit (ITP) under Section 2081(b) of Fish and Game Code would be required for compliance with CESA.

Other Sensitive Species

Other sensitive avian and mammal species present or potentially occurring at the project sites include the loggerhead shrike (*Lanius ludovicianus*) listed as an SSC by CDFG and a bird of conservation concern by the USFWS, Le Conte's thrasher (*Toxostoma lecontei*) listed as an SSC by CDFG and a bird species of conservation concern by the USFWS, and the American badger (*Taxidea taxus*) listed as an SSC by CDFG. The avian SSCs are specifically considered sensitive when nesting. The project sites also contain suitable nesting habitat for a variety of native avian species common to the desert, including black-throated sparrow, horned lark (*Eremophila alpestris*), northern mockingbird (*Mimus polyglottos*), and cactus wren (*Campylorhynchus brunneicapillus*). Native bird nests are protected by CFGC 3503 and the MBTA.

3.4.2 SENSITIVE PLANT COMMUNITIES

Of the plant communities occurring within Kern County (excluding the San Joaquin Valley) and potentially occurring within the project region, eight are designated as sensitive by CDFG. These include alkali seep, stabilized interior dunes, valley needlegrass grassland, valley sacaton grassland, valley saltbush scrub, valley sink scrub, valley oak woodland, and wildflower fields. The Kern County Desert project sites are not within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA), carbonate endemic plants critical habitat, California towhee critical habitat, or California condor critical habitat.

A habitat of local concern is Joshua tree woodland, which CDFG considers globally 'uncommon, but not rare' and a 'high priority for inventory' (CDFG 2003); this habitat is also specifically designated in many local plans, ordinances, and policies as a biological resource of concern. Mitigation is typically comprised of either: 1) avoidance, 2) moving (transplanting) Joshua trees, and/ or 3) revegetation using nursery-grown stock. Joshua trees (*Yucca brevifolia*) are irregularly branched to 30' tall, from the Agave family (Agavaceae). Joshua trees grow on dry stony mesas, flats and slopes from 2,000 – 6,000 feet in the Mojave Desert, in association with desert scrub vegetation. While a formal Joshua tree inventory was not conducted for this analysis, per CDFGs *California Wildlife Habitat Relationships System* classification rules, a plant community with greater than 10% aerial vegetation coverage by Joshua trees would be considered a Joshua tree woodland.

3.4.3 JURISDICTIONAL WATERS

Within the arid and semi-arid western United States limited precipitation restricts wetland and riparian resources to 1-5% of the land surface, a relatively low proportion compared to other systems globally; the proportion of wetland resources is even lower (<1%) in extremely arid areas such as the Mojave Desert and the Great Basin (USACE 2008). The Regional Supplement to the Corps *Wetland Delineation Manual: Arid West Region* (USACE 2008) describes considerations and methodologies for delineating wetlands in arid regions in general, and for 'problem' hydric soils in particular. Challenges to delineating wetlands in arid regions include 1) the fact that many hydrophytic species are halophytes or phraetophytes that can also survive in saline-alkali soils or in areas where groundwater resources are present but below typical wetland delineation depths, 2) the prevalent use of surface soil cracks, salt crusts and ponding-remnant biotic crusts as indicators of wetland hydrology, and 3) the fact that many arid soils do not exhibit clear indicators of redoximorphic conditions and organic accumulation resulting from repeated saturation and/or inundation ('problem' soils). Examples of 'problem soils' include moderately to very strongly alkaline soils that do not readily develop iron or manganese reduction indicators, areas of active deposition (young soils) such as vegetated sandbars within floodplains, and seasonally ponded soils with a limited saturation depth above a restrictive soil layer.

Portions of the project area within the Antelope Valley are located in isolated basins associated with the dry lakebeds of Rosamond Lake and Rogers Lake that receive intermittent water from terminal ephemeral drainages. Therefore, many wetland and riparian resources may not be considered USACE Jurisdictional Wetlands or Waters of the U.S. as they are hydrologically isolated from Traditional Navigable Waters, but may be subject to RWQCB and CDFG jurisdiction. Wetland and riparian resources potentially considered jurisdictional within the project area include ephemeral drainages and washes, desert playas, alkali sinks and vernal depressions, springs and seeps that support small marshes, oasis, or other wetland types, and emergent marshes associated with remnants of large lakes.

3.4.4 WILDLIFE MOVEMENT

The project region contains large expanses of open habitat. The western Mojave sites are surrounded by open space areas where local wildlife movement likely occurs within the sites. However, given the extent of open space in the surrounding area, the sites do not appear to concentrate wildlife movement through a narrow corridor that links large areas of undeveloped open space on a local or regional basis. The Mojave Desert sites do not lie within a wildlife connectivity area as indentified by the *California Essential Habitat Connectivity Project* (Spencer et al., 2010).

The Tehachapi project sites, in contrast, are under active management and situated within converted agricultural lands of relatively low function as habitat or wildlife movement areas; significant wildlife movement does not likely occur at these sites. The *California Essential Habitat Connectivity Project* identifies connectivity areas in the vicinity of these sites; however, these areas correspond with natural, relatively undeveloped habitat to the east and west of the sites. Therefore, the Tehachapi projects are not likely to adversely affect wildlife movement. No further site-specific evaluation of the effect of the proposed projects on wildlife movement is included within this analysis.

3.4.5 LOCALLY PROTECTED RESOURCES

Biological resources, such as Joshua trees, are often afforded protection by local ordinances, such as development codes or general plans. The Kern County General Plan does not have specific Joshua tree

protections. However, Joshua trees are sensitive resources as designated by the County's Willow Springs and Mojave Specific Plans that contain the Rosamond and Columbia project sites, respectively.

In addition to CDFG classification of valley oak woodlands as a sensitive habitat, the Kern County General Plan (Code 1.10.10) protects oak woodlands as well as large oaks. A development parcel with greater than 10% aerial vegetation coverage by oak trees would be considered a woodland. Potential environmental effects associated with oak woodlands or individual oak trees is limited to the Tehachapi Valley; however, no large oaks were observed at the Tehachapi sites during the reconnaissance surveys. Therefore, no further site specific evaluations of the effects of the proposed projects on large oaks are necessary or included within this analysis.

3.4.6 HABITAT CONSERVATION PLANS

The Antelope Valley project sites are located within the boundaries of the draft West Mohave Plan portion of the Western Mojave Recovery Unit (WMRU). However, the HCP for this portion of the CDCA has not been adopted. The Desert Renewable Energy Conservation Plan (DRECP), a joint collaboration between the California Energy Commission, the Bureau of Land Management, the USFWS, and the CDFG, is currently being developed but it is still approximately 2 to 3 years from formal adoption. The sites are not located within any other local, regional, or state conservation planning areas; therefore, no additional, site-specific discussion of HCPs is included within this analysis.

4.5 BARREN RIDGE

Issues of Concern:

- The site is potential habitat for the desert tortoise, burrowing owl, and Mojave ground squirrel. Desert tortoises were observed on-site. Burrowing owl sign was observed on-site.
- One other special status species, American badger, was observed on-site.
- Three drainages potentially subject to CDFG and RWQCB jurisdiction exist on-site.

4.5.1 PROJECT LOCATION

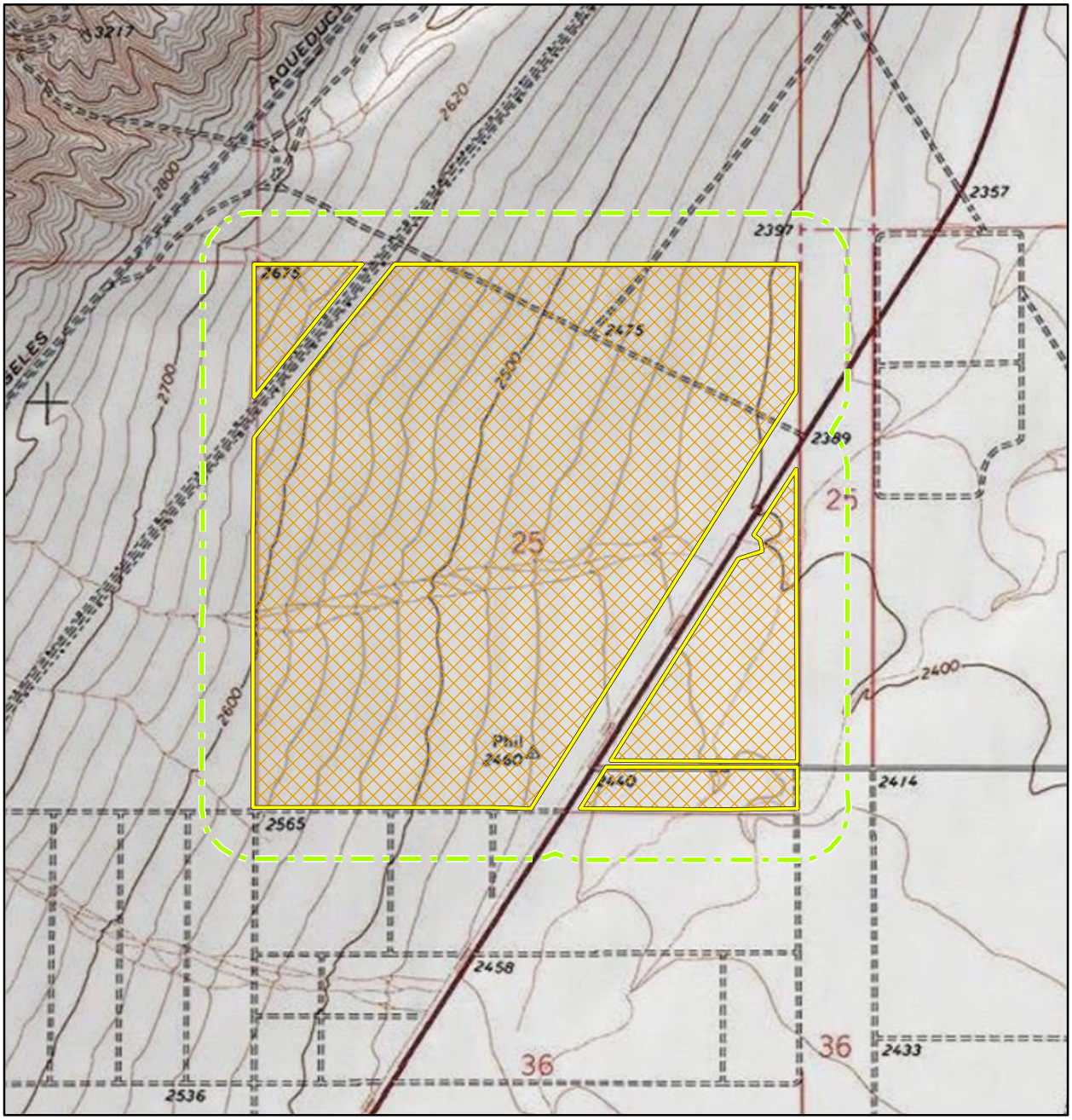
The Barren Ridge project site consists of an approximate 594-acre rectangular shaped property located in an unincorporated area of Kern County. The site occurs approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct. It is bisected by SR-14, a transmission corridor easement extends through the northwest corner of the site, and Phillips Road extends through the southeast portion of the site. The site is bounded on all sides by undeveloped natural habitat. The Barren Ridge project site is located in the Mojave NE USGS 7.5-minute quadrangle (Figure 7a).

4.5.2 PHYSICAL SETTING

The Barren Ridge project site is located in the Fremont Valley portion of the western Mojave Desert, characterized by low precipitation and atmospheric humidity, high summer temperatures, and relatively cool winter temperatures. Elevation at the project site ranges from 2420 – 2670 feet. Topography is generally moderately sloping (2 - 15% slopes) and undulating, with water flowing generally northwest to southeast across the site.

Vegetation in the project area is dominated by creosote bush – white burr sage scrub, with disturbed and ruderal areas as associated vegetation types along the highway, transmission corridor and dirt roads. Though human use of the site is evident throughout, the project site has been comparatively minimally disturbed by human activity. A few rural access roads exist on-site, a flood control channel has been constructed along the west side of SR-14 to capture storm-water flows, and scattered trash dump sites are present in relatively close proximity to SR-14. Evidence of grazing and recreational shooting (skeets and shotgun shells) are also present.

Land uses in the regional vicinity of the Barren Ridge site include rural residential areas, recreational OHV areas, ecological reserves, grazing, and commercial and industrial areas.



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Project Site

Desert Tortoise, Burrowing Owl, (100% Visual Coverage)

Burrowing Owl Survey Buffer Zone (500 Feet)

N

0 700 1,400
Feet

Barren Ridge Survey Area

Figure 7a

4.5.3 BARREN RIDGE VEGETATION

In accordance with the vegetation classification system presented in Sawyer et al. (2009), one vegetation community is present at the proposed project site: creosote bush-white burr sage scrub (Figure 7b).

Creosote Bush-White Burr Sage Scrub

This floristic association corresponds to Mojave creosote bush scrub (Holland 1986). Creosote bush-white burr sage occurs throughout the site, and is dominated by creosote bush and white burr sage. Associated shrubs and subshrubs include allscale saltbush, Nevada ephedra, scalebroom (*Lepidospartum squamatum*), Cooper's goldenbush, rubber rabbitbrush, California buckwheat, cheesebush, winterfat, and Anderson's desert thorn. Cacti present include Wiggins' cholla (*Cylindropuntia echinocarpa*). Common herbaceous plants include fiddleneck (*Amsinckia* sp.), filaree (*Erodium* sp.), chia (*Saliva columbariae*), and angled stem buckwheat. Grass species present in this community consist of red brome, cheat grass, ripgut (*B. diandrus*), and rattail fescue.

4.5.4 BARREN RIDGE SPECIAL STATUS SPECIES

This section presents the results of the 2010 focused biological surveys at the Barren Ridge project site. Survey areas are shown in Figure 7a. Survey results are summarized in Table 10, and locations of all sensitive species are shown in Figure 7b.

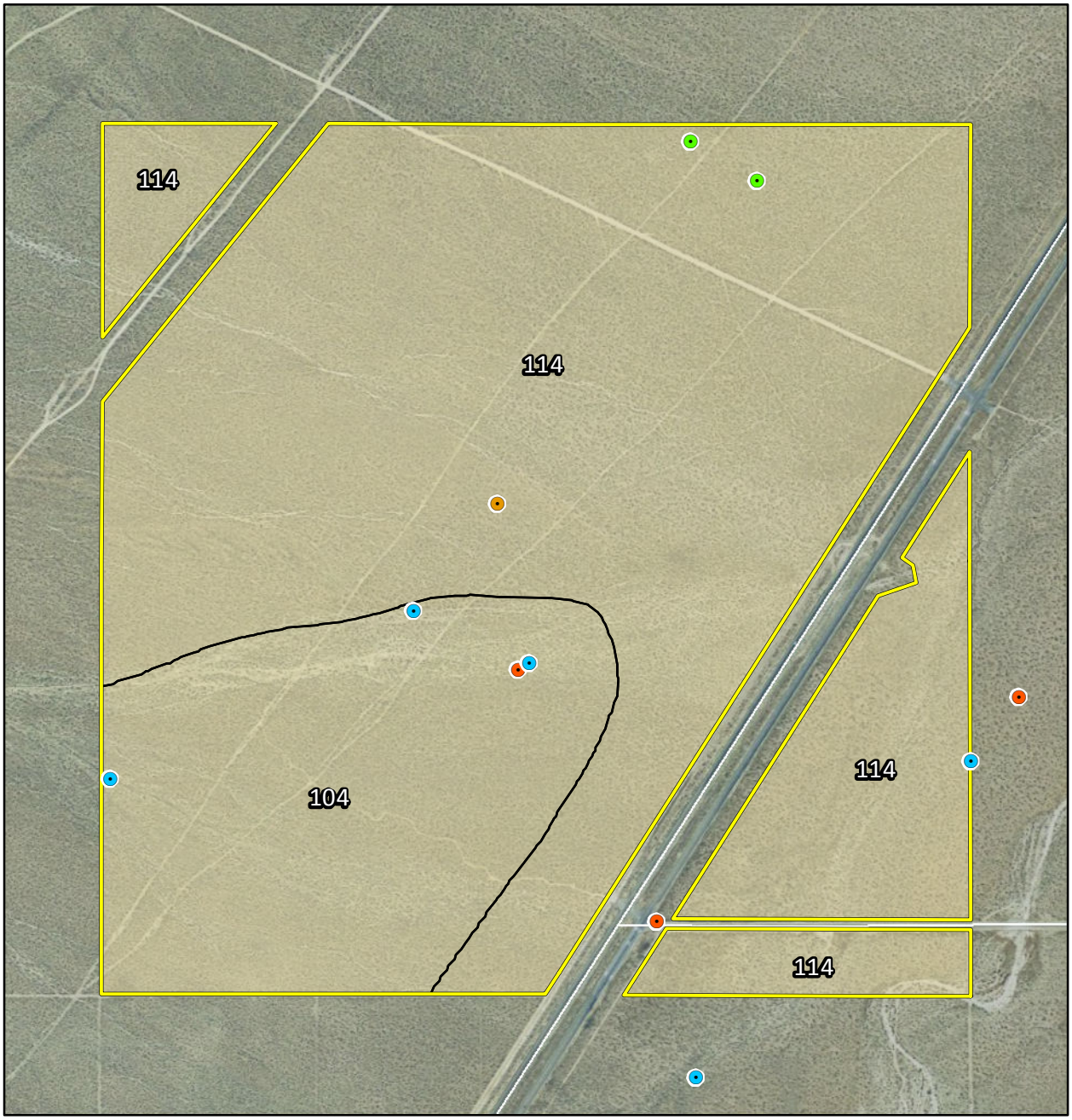
Special Status Plant Species

The project site provides suitable habitat for a number of special status plant species. No special status plants were observed on the project site during the field reconnaissance surveys; however, the site visits were conducted during a time of year when many species are unrecognizable. As discussed in Section 5, spring botanical surveys are recommended to definitively determine the presence/absence of special status species on-site.

Desert Tortoise

The project site provides suitable habitat for the desert tortoise. Three desert tortoise observations were made on-site. One adult female and one juvenile were observed during protocol surveys conducted by Sundance Biology, Inc. between September 29 and October 3, 2010. The juvenile detection occurred west of SR-14 and the adult female detection was east of SR-14, within the ZOI off-site. The second sighting was of an 8 - 10 year old male at the intersection of SR-14 and Phillips Road on October 14, 2010 by Rincon biologists. In addition to these sightings, suitable burrows (some with scat or tracks) were detected on-site and at off-site buffers surveyed for burrowing owls. Tortoise-shell skeletal remains were also observed off-site.

Because some desert tortoises may be missed during focused surveys, the desert tortoise survey protocol (USFWS 2010) provides an equation to estimate the number of tortoises within the project's action area based on several factors. Three desert tortoises were observed during the focused surveys; however, only 2 of the tortoises had a midline carapace length (MCL) greater than 160 mm, the minimum length necessary to be included in the estimation. Calculating the equation based on the observation of these 2 tortoises provides an estimated number of approximately 4 tortoises within the action area (based on rainfall greater than 1.5 inches and assuming the action area is roughly the same



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Project Site

Creosote Bush-White Burr Sage Scrub

104 Arizo gravelly loamy sand, 2 to 9 percent slopes

114 Cajon loamy sand, 0 to 5 percent slopes

Active American Badger Burrow

Inactive Burrowing Owl Burrow

Desert Tortoise

Desert Tortoise Burrow

N

0 500 1,000
Feet

Barren Ridge Biological Resources

Figure 7b

January 2011

size as the project site). The site is approximately 2.41 square kilometers, thus the density of desert tortoises onsite is less than 2 tortoises per square kilometer. Population monitoring within desert tortoise critical habitat indicates that tortoise densities range from a low of 1.2 tortoises to a high of 8.2 tortoises per square kilometer (USFWS 2009). Therefore, the density of desert tortoises on the Barren Ridge project site is relatively low in contrast to range-wide densities.

Burrowing Owl

The project site provides suitable habitat for the burrowing owl. The site is adjacent to natural areas that provide foraging habitat, and burrows suitable for occupation by burrowing owls were observed on-site. Three burrows observed on-site had burrowing owl sign (white wash and pellets). However, no burrowing owls were detected at the project site or the buffer zone during focused surveys.

Golden Eagle/Raptors

The Barren Ridge site provides potential foraging habitat for raptors, and common raptors, such as the red-tailed hawk, could nest in the transmission towers adjacent to the site. No special status raptors, such as the golden eagle, were observed on the project site or within survey buffers during the field surveys. Furthermore, no golden eagle nests are tracked in the vicinity of the project site (within 5 miles, CNDDB 2010).

Mohave Ground Squirrel

The project site provides suitable habitat for the Mohave ground squirrel. The site is not located near known core areas (Leitner 2009) and suitable burrows were not commonly encountered during the field surveys. However, based on the presence of suitable habitat and project location within the known range of Mohave ground squirrel, there is potential for this species to occur.

Other Sensitive Species

The project site provides suitable habitat for American badger, and one badger was observed in a burrow west of SR-14. The site also contains suitable nesting habitat for native birds protected by the MBTA and CFG Code 3503.

Table 10. Summary of Barren Ridge Focused Survey Results

Observation	Date	Location (NAD 83, Zone 11)		Comments
1. Desert Tortoise	9/29/2010 -10/3/2010	E 402704	N 3896055	Juvenile (inside burrow)
2. Desert Tortoise	9/29/2010 -10/3/2010	E 403636	N 3895996	Adult female; detected in ZOI off-site
3. Desert Tortoise burrow	9/29/2010 -10/3/2010	E 403545	N 3895876	Observed within project site
4. Desert Tortoise burrow	9/29/2010 -10/3/2010	E 402508	N 3896168	Tracks also present
5. Desert Tortoise burrow	9/29/2010 -10/3/2010	E 403026	N 3895291	Detected in ZOI off-site
6. Desert Tortoise shell-skeletal remains	9/29/2010 -10/3/2010	E 403597	N 3896220	Detected in ZOI off-site

Table 10. Summary of Barren Ridge Focused Survey Results

Observation	Date	Location (NAD 83, Zone 11)		Comments
7. Desert Tortoise shell-skeletal remains	9/29/2010 -10/3/2010	E 403048	N 3895293	Detected in ZOI off-site
8. Desert Tortoise burrow	10/14/2010	E 401941	N 3895861	At base of creosote bush in a drainage
9. Juvenile Desert Tortoise	10/14/2010	E 402956	N 3895583	Intersection of SR-14 and Phillips Rd.
10. Burrowing Owl sign	9/29/2010 -10/3/2010	E 402668	N 3896365	Pellets and white wash at burrow
11. Burrowing Owl sign	9/29/2010 -10/3/2010	E 403035	N 3897036	Pellets and white wash at burrow
12. Burrowing Owl sign	9/29/2010 -10/3/2010	E 403158	N 3896962	Pellets and white wash at burrow
13. American Badger	9/29/2010 -10/3/2010	E 402668	N 3896365	Individual in burrow

4.5.5 BARREN RIDGE JURISDICTIONAL DELINEATION

The soils at the Barren Ridge site include Cajon loamy sand, 0 to 5 percent slopes, and Arizo gravelly loamy sand, 2 to 9 percent slopes. Cajon soils, which dominate the site, are somewhat excessively drained, moderately sloping loamy sands formed on alluvial fans and floodplains. Arizo soils are excessively drained soils on alluvial fans and floodplains. None of the soils at the Barren Ridge site are listed as hydric by NRCS (National list of Hydric Soils, Feb. 2010; http://soils.usda.gov/use/hydric/lists/state.html).

The Barren Ridge site is located on a broad alluvial fan that receives water flows from the mountains northwest of the project site. High energy water flows from the steeply sloping mountain range flow onto the alluvial fan via well-defined channels approximately 0.5 mile northwest of the site. This portion of the alluvial fan at the base of the mountains is inactive, characterized by relatively high topographic relief due to historic sediment deposition, and the formation of well-defined, stable and continuous channels. The Barren Ridge project site is in the active portion of the alluvial fan east and southeast of the mountain range. In this portion of the alluvial fan, slope decreases and channelized flows give way to radiating flow patterns, sheet flows, and active sediment deposition. Primary measurable alluvial fan characteristics (Table 2, USACE 2008b) evident on the project site include overall deposition patterns, debris flows, radiating channel patterns changing to sheet flow areas, and discontinuous and/or abandoned channels due to active processes of stream capture and avulsion.

The dynamic nature of the alluvial fan system limits the delineation of jurisdictional waters to a current "snapshot" in time. Both the spatial location of channels and whether or not water is present within a particular channel is likely to vary substantially over time. Although water flows were delineated through field observation and analysis of aerial photographs of the site, the jurisdictional limit is expected to change over time as deposition/flow patterns and channel locations change from year to

year. In addition, hydrologic flows on-site have been altered by road construction and flood control measures.

Water drains east and southeast across the project site in sheet flows, generally collecting in discontinuous channels for short to moderate reaches before radiating out in sheet flows again. For the portion of the site west of SR-14, water flows eventually collect in a flood control channel that parallels SR-14, before discharging through a culvert under SR-14 near the eastern property boundary. Observations indicate that most defined channels in the current year (Figure 7c) occur within areas of prominent historic braided drainage patterns. As the discontinuous drainages are located in historic drainage areas and the previous rainfall year is representative of the long-term mean, it is assumed that the current extent is both a good indicator of the amount of jurisdictional waters at the site, as well as a good indicator of general flow patterns on-site from an ecological perspective.

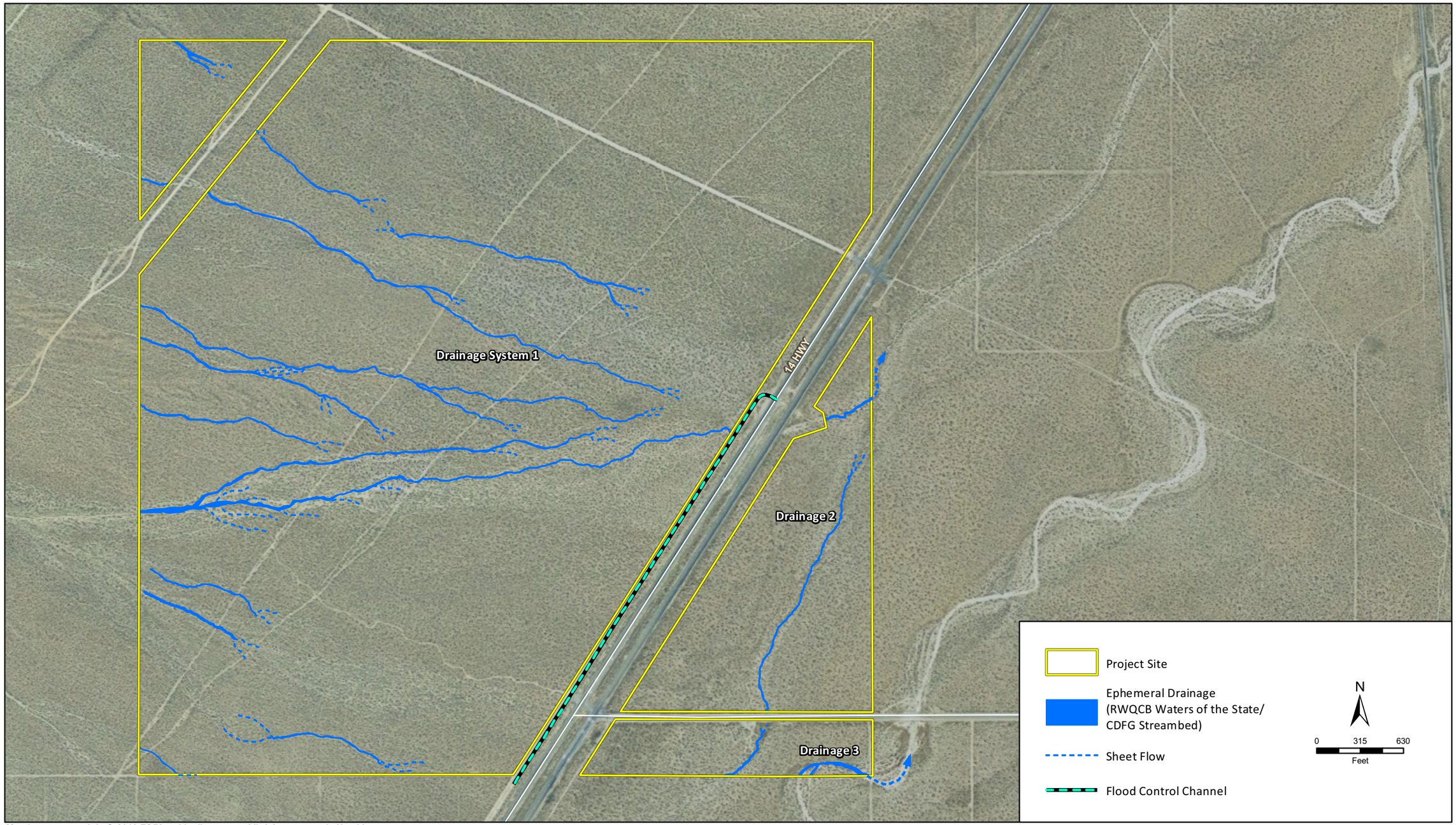
The alluvial fan system west of SR-14 is classified and mapped on Figure 7c as Drainage System 1. Two additional drainages, Drainage 2 and Drainage 3 occur east of SR-14. These drainages are more well-defined desert washes. Drainage System 1 and Drainage 2 converge immediately east of the project site, and then connect with Drainage 3 approximately 1.5 miles northeast of the site. Water flow from the drainages is conveyed northeast and appears to empty into isolated Koehn Dry Lake approximately 11.5 miles northeast of the site.

A summary of jurisdictional resources at the Barren Ridge project site is shown in Table 11. The drainages within the site are not expected to be subject to USACE jurisdiction because the western Mojave region is isolated from Traditional Navigable Waters. As discussed in Section 2.4, RWQCB jurisdiction is typically delineated based on the lateral extent of the OHWM, whereas CDFG jurisdiction is determined based on the bank to bank width. Due to significant overlap between OHWM indicators and channel embankments throughout alluvial fan and desert wash drainages, as well as the discontinuous nature of discernible drainage indicators in many locations, jurisdiction was delineated at the same extent for both agencies.

Drainage System 1

Drainage System 1 comprises the alluvial fan system within the project site west of SR-14, and contains approximately 4.32 acres (26,655 linear feet) subject to RWQCB and CDFG jurisdiction within the project site. As described above, water flow generally originates in well-defined channels at the base of the mountains northwest of the project site and then radiates into discontinuous channels and sheet flow across the site. It accumulates within the flood control channel adjacent to SR-14, which traverses under the freeway and connects with Drainage 2 east of the site.

The largest defined feature enters the eastern boundary of the project site through a well-defined channel, approximately 30 feet wide, and gradually fans out into discontinuous channels and sheet flow through the central portion of the site. Water within this feature is generally conveyed through two intermittently defined channels that become smaller and less discernible through the central portion of the site as water is lost to sheet flow in adjacent areas. The southern channel is barely evident as an approximate 1-foot-wide erosional feature at the connection with the flood control channel adjacent to SR-14. Discontinuous channels in the southwestern portion of the site appear to be associated with water flow that is conveyed southeast across the alluvial fan during larger storm events. These channels transport water for short distances before fanning out into sheet flow.



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Barren Ridge Jurisdictional Drainages

Figure 7c

January 2011

Several discontinuous channels are also present in the northern portion of the project site. The widths of these channels generally range from 2 to 6 feet and are evident for varying lengths before transitioning to sheet flow. None of the features appeared to have direct channel connectivity to the SR-14 flood control channel.

Drainage 2

Drainage 2 is a small, ephemeral feature that comprises approximately 0.36 acre (2,471 linear feet) subject to RWQCB and CDFG jurisdiction within the project site. This drainage enters the southeastern portion of the project site and flows northeast across the site. Most of the drainage has a well-defined channel ranging in width from 2 to 4 feet. However, water flow in the upstream (southern) portion of the drainage has been altered by the construction of Phillips Road and appears to accumulate within a depression south of the road. As such, water likely only flows across the road and connects downstream during larger storm events. In addition, Phillips Road discharges runoff into the feature as it continues north.

Water flow within Drainage 2 traverses northeast and then transitions to sheet flow near the eastern site boundary. Flows then re-converge and connect with Drainage System 1 approximately 650 feet to the northeast, immediately east of the site boundary.

Drainage 3

Drainage 3 is a large, braided wash that contains approximately 0.24 acre (687 linear feet) of RWQCB and CDFG jurisdiction within the project site. This drainage enters the extreme southeastern portion of the project site, traverses north for a short distance, and then rapidly bends to the east and exits at the southeastern corner of the site. The feature has a well-defined channel approximately 30 feet wide that contains sandy/cobbly soils and is mostly devoid of vegetation. The drainage braids into two channels near the southern site boundary that converge within the site. After exiting the site, water flow is conveyed northeast for 2 miles and then converges with flows from Drainage System 1 and Drainage 2.

Table 11. Summary of Barren Ridge RWQCB and CDFG Jurisdiction

Jurisdictional Feature	Acreage	Linear Feet
Drainage System 1	4.32	26,655
Drainage 2	0.36	2,471
Drainage 3	0.24	687
TOTAL	4.92	29,813

4.5.6 BARREN RIDGE POTENTIAL ENVIRONMENTAL EFFECTS

Implementation of the proposed project at the Barren Ridge site has the potential to affect special-status species and jurisdictional waters. Recommended mitigation measures to avoid and/or minimize potential project effects to these sensitive resources are detailed below. The project is not expected to substantially interfere with wildlife movement in the project vicinity or region, or conflict with the

provisions of an adopted HCP. Therefore, potential effects to these sensitive resource types are considered less than significant.

BIO I: POTENTIAL EFFECTS TO SPECIAL-STATUS SPECIES

The project site contains suitable habitat for several special status plant species that occur in desert scrub communities. No special status plants were observed on the Barren Ridge project site during the field reconnaissance survey. However, the timing of the survey was such that many plant species were desiccated or in a state of dormancy and, thus, unidentifiable to a sufficient level to determine rarity. Therefore, the proposed project may potentially affect special status plant species, and spring botanical surveys are recommended to definitively determine the presence/absence of special status species on-site (see Section 5).

The Barren Ridge site provides suitable habitat for desert tortoises, and desert tortoises were observed onsite. Additionally, burrows suitable for use by desert tortoises were observed on and offsite and other sign (e.g., tracks, skeletal remains) were also observed. Completion of the proposed project may result in direct impacts to desert tortoise individuals during construction and would result in loss of suitable habitat.

The Barren Ridge site provides suitable habitat for burrowing owl. A total of three burrows with evidence of recent occupation (whitewash and pellets) were detected during the 2010 focused surveys; however, no burrowing owls were observed. The proposed project could potentially result in adverse impacts to this species if these burrows become re-occupied prior to project construction.

No trapping efforts have been conducted for Mohave ground squirrels onsite. Based on the presence of suitable habitat, the project location within the historic range of the species and recorded occurrences in the project region, the proposed project has the potential to result in adverse effects if Mohave ground squirrels were to occur on the site prior to construction. The project would also result in loss of suitable habitat for the species.

The Barren Ridge site provides potential foraging habitat for raptors, and common raptors, such as the red-tailed hawk, could nest in the transmission towers adjacent to the site. No special status raptors, such as the golden eagle, were observed on the project site or within survey buffers during the field surveys. Furthermore, no golden eagle nests are tracked in the vicinity of the project site (within 5 miles, CNDDB 2010). Therefore, the project is not expected to directly affect or result in incidental take of special status raptors. The site contains suitable nesting habitat for a variety of native avian species common to the desert and protected by CFGC §3503 and the MBTA. The proposed project could result in direct impacts to protected nesting birds if implemented during the nesting season.

One additional mammal species of special concern, the American badger, was observed on site, and dens suitable for this species were also observed. The proposed project has the potential to directly impact this species during construction of the project.

BIO II: POTENTIAL EFFECTS TO SENSITIVE PLANT COMMUNITIES/LOCALLY PROTECTED RESOURCES

No sensitive plant communities tracked by the CNDDB or locally protected resources occur on or adjacent to the Barren Ridge project site. Therefore, implementation of the proposed project is not expected to affect any sensitive plant communities or locally protected resources.

BIO III: POTENTIAL EFFECTS TO JURISDICTIONAL WATERS

Three unnamed ephemeral drainage features, Drainage System 1, and Drainages 2 and 3, occur on the Barren Ridge project site. These features comprise CDFG jurisdictional streambed and RWQCB waters of the state. Alteration of drainages within the site would likely constitute an impact to jurisdictional waters and require the acquisition of appropriate permits prior to altering these features. Implementation of the proposed project has the potential to affect up to 4.92 acres (29,813 linear feet) of RWQCB and CDFG jurisdiction. These drainages are not considered subject to USACE jurisdiction as the western Mojave is isolated from traditional navigable waters; however, this requires USACE verification.

SECTION 5 – RECOMMENDED MITIGATION MEASURES

The following measures are recommended to ensure adverse effects to sensitive biological resources are avoided and/or minimized. With implementation of these measures, potential effects to sensitive biological resources are anticipated to be less than significant.

MM BIO I-A: MITIGATION MEASURES FOR SPECIAL STATUS PLANT SPECIES

The following measures apply to special-status plant species encountered at the Great Lakes project site, and are intended to reduce the impacts to regional conservation objectives for alkali mariposa lily (potential impacts to Mojave spineflower and golden goodmania are not considered significant). The following measures are recommended:

1. To the extent feasible, the project should be designed to avoid impacts to special status plant species. Establishing a buffer on either side of the central drainage at the Great Lakes site would not only minimize impacts to jurisdictional waters and maintain water flows through the site, but would preserve several rare plant locations. These include some of the main sub-populations of alkali mariposa lily, as well as two of the golden goodmania sub-populations, and the highest Mojave spineflower densities within 120 feet of the central drainage. If mitigation is implemented on-site, a Habitat Management Plan should be developed to ensure adequate management and conservation of botanical resources on-site over the long term.
2. If on-site avoidance/minimization is not feasible, a Mitigation and Monitoring Plan should be prepared that details impacts to alkali mariposa lily, identifies a suitable offsite property (preferably with a historical alkali mariposa lily population), and proposes a plan for habitat restoration, enhancement, and potential transplanting of special status plant species present at the Great Lakes at a minimum 1:1 ratio. A 1:1 ratio is considered sufficient because alkali mariposa is not federally or state listed as threatened or endangered and is relatively common in the project area. If feasible, offsite mitigation should be incorporated into the Mitigation and Monitoring Plan for impacts to jurisdictional resources as described in MM BIO III.

The following measures are recommended for the Barren Ridge project site:

1. Conduct preconstruction botanical surveys for special status plant species during the appropriate blooming period, in accordance with the guidelines established by CDFG (2009). If no special status plant species are observed during the focused surveys, no further actions are recommended.
2. If special status plant species (i.e., endangered, threatened, or CNPS List 1B species) are observed within the site, the proposed project should be designed to reduce impacts to these species through the establishment of preservation areas and buffers, to the extent feasible. If mitigation is implemented on-site, a Habitat Management Plan should be developed to ensure adequate management and conservation of botanical resources on-site over the long term.
3. If on-site avoidance/minimization is not feasible, a Mitigation and Monitoring Plan should be prepared that details impacts to special status plant species, identifies a suitable offsite property, and proposes a plan for habitat restoration, enhancement, and/or potential transplanting of special status plant species at a minimum 1:1 ratio.

4. If impacts to federally or state-listed threatened and/or endangered plant species cannot be avoided, consultation with the wildlife agencies should be initiated to obtain any necessary incidental take permit authorizations.

MM BIO I-B: GENERAL MITIGATION MEASURES FOR SPECIAL STATUS WILDLIFE SPECIES

The following recommended measures are based on standard mitigation policies and guidelines currently practiced and are intended to reduce the potential for direct take of special status wildlife species, specifically the desert tortoise, Mohave ground squirrel, and American badger. No desert tortoises or Mohave ground squirrels were observed during the focused surveys on the Rosamond, Rio Grande, Columbia, and Great Lakes sites. However, these sites contain suitable habitat for the species and adverse effects could occur if individuals were to occupy the sites prior during construction, although the potential for effects is low. The measures discussed below are recommended to ensure that adverse effects to these species are avoided and/or minimized on the Rosamond, Rio Grande, Columbia, and Great Lakes sites. Specific measures for desert tortoise and Mohave ground squirrel at the Barren Ridge site are outlined in the sections that follow.

1. Qualified biologists should conduct preconstruction clearance surveys for desert tortoises, Mohave ground squirrels, and American badgers within 48 hours of the start of any ground disturbing construction activity and during all grading/ground disturbing activities. All burrows that could provide shelter for any of these species should be hand excavated during the first clearance survey. A biologist should remain on-call throughout construction in the event a tortoise or badger wanders onto the site.
2. If a permanent tortoise proof exclusion fence is practicable, a fence should be installed around all construction areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence should be constructed of ½-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches would be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence should be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by site operator to ensure its integrity. Provisions should be made for closing off the fence at the point of vehicle entry. Raven perching deterrents should be installed as part of the fence construction.
3. After fence installation, the qualified biologist should conduct a clearance survey for special status wildlife species within the construction site.
4. A raven management plan should be developed for the projects. This plan should include language stipulating that all trash that could attract predators of the desert tortoise, such as common ravens, be removed from work sites or completely secured at the end of each work day.
5. All construction and operations personnel should undergo environmental awareness training, with specific discussion of desert tortoise, Mohave ground squirrel, and American badger natural history and protective measures.
6. If any American badger burrows are determined to be active, an on-site passive relocation program should be implemented. This program should consist of excluding badgers from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the

burrow for one week to confirm badger usage has been discontinued, and hand excavation and collapse of the burrow to prevent reoccupation.

7. If a desert tortoise or Mohave ground squirrel is found onsite during subsequent surveys or biological monitoring activities, construction activities should cease to avoid the potential for take. Consultation with CDFG and the USFWS should be initiated to obtain the necessary incidental take permit authorizations pursuant to the federal ESA and CESA.

MM BIO I-C: MITIGATION MEASURES FOR DESERT TORTOISE

The following measures specific to desert tortoise are recommended for the Barren Ridge project site:

1. Consult with the USFWS and CDFG to obtain incidental take permit authorizations for desert tortoise. If the project has a federal nexus (e.g. requires federal approval or is subject to federal funding), incidental take authorization would be obtained by the federal agency through the ESA Section 7 consultation process. If no federal nexus exists, take authorization would be obtained by the project proponent through direct consultation with the USFWS through the ESA Section 10 Habitat Conservation Plan (HCP) process. Incidental take authorization from CDFG can be obtained through acquisition of a CESA Section 2081b permit or Consistency Determination.
2. Develop a desert tortoise translocation and monitoring plan in coordination with the USFWS and CDFG. It is anticipated that development of this plan will be required for acquisition of the incidental take permits. The plan should provide the framework for implementing the following measures:
    a. All land surveying personnel prior to construction should be accompanied by an authorized desert tortoise biologist. An authorized desert tortoise biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the resource agencies.
    b. Authorized biologists should conduct preconstruction clearance surveys for desert tortoise prior to the start of any ground disturbing construction activity.
    c. If a permanent tortoise proof exclusion fence is practicable, the fence should be installed around all construction areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence should be constructed of ½-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches would be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence should be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by site operator to ensure its integrity. Provisions should be made for closing off the fence at the point of vehicle entry. Raven perching deterrents should be installed as part of the fence construction.
    d. After fence installation, authorized biologists should conduct clearance surveys for desert tortoises within the fenced project site. Two surveys without finding any tortoises or new tortoise sign should occur prior to declaring the site clear of tortoises. All burrows that could provide shelter for a desert tortoise should be excavated during the first clearance survey. An authorized biologist should remain onsite until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a regular

basis throughout construction in order to ensure project compliance with mitigation measures.

e. Authorized biologists should be onsite to survey for tortoises immediately in front of vegetation clearance activities in the event a tortoise was inadvertently missed during clearance surveys. A biologist should remain on-call throughout construction in the event a tortoise wanders onto the site.

f. A raven management plan should be developed for the project.

g. Post-construction reporting should be provided to all agencies within 90 days of completion of construction.

3. Develop a mitigation plan in coordination with the USFWS and CDFG to provide adequate compensatory mitigation for the loss of desert tortoise habitat. Providing compensatory mitigation to offset species/habitat impacts can be accomplished through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area (DTNA), or private purchase of mitigation lands. Compensatory mitigation should be provided at a minimum 1:1 ratio to reduce potential effects to less than significant under CEQA. This ratio is considered adequate based on the relatively low density of desert tortoises on-site in contrast to range-wide densities (see discussion in Section 4.5.4). It is noted that the final mitigation ratio required by the wildlife agencies for incidental take authorization may differ.

MM BIO I-D: MITIGATION MEASURES FOR BURROWING OWL

Mitigation measures for potential project impacts to burrowing owls typically follow the guidelines developed by the California Burrowing Owl Consortium (1993) and CDFG (1995). However, mitigation requirements under CEQA are established at the discretion of the lead agency. No burrowing owls were observed on any of the sites during the focused surveys. However, each of the sites contain suitable habitat for the species and burrowing owl sign was observed on the Columbia and Barren Ridge sites. Therefore, adverse effects to burrowing owls could occur if individuals were to occupy the sites in the future and the following measures are recommended for all project sites (note that additional measures are recommended for Barren Ridge at the end of this discussion).

1. Conduct preconstruction clearance surveys of the sites and within 250 feet of the sites to confirm burrowing owls remain absent. Clearance surveys are typically conducted 30 days prior to construction activities. If no burrowing owls are observed, no further actions are recommended.

2. If burrowing owls are found during the clearance surveys, develop a burrowing owl Mitigation and Monitoring Plan. The plan should provide the framework for implementing the following tasks:

   a. Unless otherwise authorized by CDFG, avoid disturbance within 50 meters of occupied burrows during the non-breeding season (September 1 through January 31) or within 75 meters during the breeding season (February 1 through August 31).

   b. Passively relocate burrowing owls to a suitable offsite location. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 meters from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls. Relocation of owls can only occur during the non-breeding season.

c. At minimum one, and potentially two, alternate natural or artificial burrows should be provided/identified for each active burrow that will be excavated in the project impact zone.

d. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone.

e. Burrows should be excavated using hand tools and refilled to prevent reoccupation.

f. If the project will reduce the amount of suitable foraging habitat contiguous to occupied burrows on or adjacent to the site below the 6.5-acre threshold (per pair or individual owl), provide compensatory mitigation for direct impacts to occupied burrowing owl habitat based on the ratios outlined by the Burrowing Owl Consortium (1993).

The following measures are specifically recommended for the Barren Ridge project site:

1. Conduct focused protocol surveys for burrowing owl during the breeding season (February 1 - August 31) to definitively determine if burrowing owls are present on the project site and the number present. The focused surveys should be conducted in accordance with the California Burrowing Owl Consortium (1993) and CDFG (1995) guidelines.
2. If no burrowing owls are found during the protocol surveys, conduct preconstruction clearance surveys of the site and within 250 feet of the site 30 days prior to construction to confirm burrowing owls remain absent. If no burrowing owls are observed during the clearance surveys, no further actions are necessary.
3. If burrowing owls are found during the protocol or clearance surveys, develop a burrowing owl mitigation and monitoring plan, as described above.

MM BIO I-E: MITIGATION MEASURES FOR SPECIAL STATUS RAPTORS AND NESTING BIRDS

The following measures are recommended for all projects to ensure that potential direct or indirect effects to nesting raptors and other avian species are avoided and/or minimized:

1. Project construction should avoid the general avian nesting season (February – August), if feasible.
2. If breeding season avoidance is not feasible, a qualified biologist should conduct a preconstruction nesting bird survey to determine the presence/absence, location, and status of any active nests on or adjacent to the project site. The extent of the survey buffer area surrounding the site should be established by the qualified biologist to ensure that indirect effects to nesting birds are avoided. Nesting bird surveys are typically conducted 3-30 days prior to construction activities (last survey conducted within 3 days of the start of construction). A suitable buffer (e.g. 0.25 mile for Swainson's hawk, 200-300 feet for common raptors; 30-50 feet for passerines) should be established around active nests and no construction within the buffer allowed until a qualified biologist has determined that the nest is no longer active (e.g. the nestlings have fledged and are no longer reliant on the nest). Encroachment into the buffer should occur at the discretion of a qualified biologist.

MM BIO I-F: MITIGATION MEASURES FOR MOHAVE GROUND SQUIRREL

The following measures specific to Mohave ground squirrel are recommended for the Barren Ridge project site:

1. Conduct protocol trapping surveys for Mohave ground squirrel to determine the presence/absence of this species on the project site in accordance with the CDFG *Mohave Ground Squirrel Survey Guidelines* (2003). If no Mohave ground squirrels are trapped on the site during protocol surveys, implement MM BIO I-B.
2. As an alternative to conducting protocol trapping surveys, the project proponent can assume that Mohave ground squirrel is present on the project site and obtain an incidental take permit from CDFG pursuant to CESA Section 2081b.
3. If Mohave ground squirrels are determined present during the focused trapping surveys, or Mohave ground squirrels are assumed present, develop a Mohave ground squirrel translocation and monitoring plan in coordination with the USFWS and CDFG. It is anticipated that development of this plan will be required for acquisition of the incidental take permit. The plan should provide the framework for implementing the following measures:
    a. Authorized biologists should conduct preconstruction clearance surveys for Mohave ground squirrel prior to the start of any ground disturbing construction activity. An authorized Mohave ground squirrel biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the resource agencies.
    b. After installation of a tortoise exclusion fence, if implemented, authorized biologists should conduct clearance surveys for Mohave ground squirrels within the fenced project site. All burrows that could provide shelter for a Mohave ground squirrel should be excavated during the clearance survey.
    c. Authorized biologists should be onsite to survey for Mohave ground squirrels immediately in front of vegetation clearance activities in the event a squirrel was inadvertently missed during clearance surveys. A biologist should remain on-call throughout construction in the event a squirrel wanders onto the site.
    d. Post-construction reporting should be provided to all agencies within 90 days of completion of construction.
4. Develop a mitigation plan in coordination with the CDFG to provide adequate compensatory mitigation for the loss of Mohave ground squirrel habitat. Providing compensatory mitigation to offset species/habitat impacts can be accomplished through purchase of credit from an existing mitigation bank, such as the DTNA, or private purchase of mitigation lands. Compensatory mitigation should be provided at a minimum 1:1 ratio to reduce potential effects to less than significant under CEQA. This ratio is considered adequate based on the fact that the site is not located within any Mohave ground squirrel core areas or known population areas (Leitner 2008). It is noted that the final mitigation ratio required by CDFG for acquisition of a 2081 incidental take permit may differ. Given that Mohave ground squirrel and desert tortoise occupy the same habitat types, compensatory mitigation for both species can be combined into one mitigation program.

MM BIO II: MITIGATION MEASURES FOR JOSHUA TREES/WOODLANDS

The following measures are recommended for the Rosamond, Rio Grande, and Columbia projects to ensure that potential direct effects to Joshua trees/woodlands (sensitive plant communities/locally protected resources) are minimized:

1. Conduct a Joshua tree survey to inventory Joshua trees within the project sites. The survey should include an assessment of the height, diameter at breast height (dbh), and health status of all trees. Joshua tree woodlands should be mapped based on groupings of trees with greater than 10% areal coverage in accordance with the *California Wildlife Habitat Relationships System Classification Rules*. Such mapping shall be conducted based on aerial photography and other remote sensing techniques, and shall be determined based on a census count and a spatial analysis technique such as "nearest neighbor" and associated statistical analysis.
2. Prepare a Joshua Tree Impact and Mitigation Plan that details the acreage of Joshua trees/woodlands to be removed and mitigation measures to compensate for impacts. The plan should outline a compensatory mitigation approach consisting either of relocation of trees to an approved preserve, or the purchase of preserved mitigation lands at a minimum 1:1 ratio of impacted specimen trees or Joshua tree woodlands. A 1:1 ratio is considered sufficient to reduce potential effects to less than significant because Joshua trees/woodlands are relatively abundant in the vicinity of the project sites and comprise one of the more common communities in the region (Davis et al. 1998).

MM BIO III: MITIGATION MEASURES FOR JURISDICTIONAL WATERS

The following measures are recommended for the Rosamond, Great Lakes, and Barren Ridge projects to ensure that direct or indirect effects to jurisdictional waters are minimized:

1. To the extent practicable, the project should be designed to avoid impacts to the jurisdictional waters within the Rosamond, Great Lakes, and Barren Ridge project sites, and the following avoidance/minimization measures are recommended:
    a. Any material/spoils from project activities should be located away from jurisdictional areas or sensitive habitat and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
    b. Only the minimal amount of material needed for the project should be stored. Materials should be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank.
    c. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed of. For all spills the project foreman or designated environmental representative will be notified.
2. If jurisdictional waters cannot be avoided, minimization measures should be applied and all necessary resource agency permits should be obtained. This includes Waste Discharge Requirements (WDRs) from the RWQCB and a Streambed Alteration Agreement from CDFG. It is also recommended that verification from the USACE be obtained to confirm the drainages do not constitute waters of U.S.

3. Minimization measures for impacts to jurisdictional waters should include routing on-site drainage and placing the water discharge point at the location of existing or historic ephemeral drainages. Small retention basins should be placed at the discharge points, sized in such a manner that temporary water ponding and subsequent soil saturation foster the growth of seasonal wetland habitat.
4. Prepare a Habitat Mitigation and Monitoring Plan that outlines a compensatory mitigation approach for the projects in coordination with the RWQCB and CDFG. Impacts to jurisdictional waters should be mitigated at a minimum 1:1 ratio. This ratio is considered sufficient to reduce effects to less than significant under CEQA because the type of affected jurisdictional features (i.e. non-riparian desert wash/scrub and non-wetland seasonal ponds) are relatively common in the context of desert region drainage features. Furthermore, most effects would likely be temporary because jurisdictional features are anticipated to be relocated on-site to maintain hydrology in the project area for flood control purposes. It is noted that the final mitigation ratio required by the RWQCB and CDFG for acquisition of regulatory permits may differ.

   The Habitat Mitigation and Monitoring Plan should identify portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration of alluvial desert scrub habitat and provide adequate acreage to compensate for the anticipated project impacts. If mitigation must be implemented offsite, suitable mitigation lands should be identified and purchased in the local vicinity of the site or watershed. The Plan should discuss preservation of the site through a conservation easement and identify an approach for funding assurance for the long-term management of the conserved land.

6.4 GREAT LAKES

The Great Lakes project site does not contain any locally protected trees, provide an important wildlife movement corridor or occur within an adopted HCP. Therefore, potential adverse effects to these sensitive biological resources are not expected and no further actions are recommended.

Three special status plant species, alkali mariposa lily, golden goodmania, and Mojave spineflower, occur on the Great Lakes site. Mojave spineflower and golden goodmania are CNPS List 4.2 (watchlist) species with abundant local distribution. The Mojave spineflower in particular was observed growing in high densities on adjacent properties. Although the proposed project will result in direct effects to the Mojave spineflower and golden goodmania, these effects are not considered significant. The proposed project has the potential to result in adverse direct effects to alkali mariposa lily if unmitigated. Therefore, mitigation measure MM BIO I-A is recommended to ensure potential effects to alkali mariposa lily are avoided and/or minimized.

No desert tortoises, burrowing owls, or Mohave ground squirrels were observed during the focused surveys. Therefore, the proposed project is not expected to result in direct adverse effects to these special status wildlife species. Nonetheless, the site contains suitable habitat for these species. Adverse effects could occur if individuals were to wander on to the site during construction, although the potential for effects is relatively low. Mitigation measures BIO MM I-B and I-D are recommended to ensure that adverse effects to special status wildlife species are avoided and/or minimized.

No Swainson's hawks, golden eagles, or other special status raptors were observed on the Great Lakes site or within 1 mile of the site during the focused surveys. Therefore, the project is not expected to result in direct effects to or incidental take of these species. However, the project site contains suitable foraging habitat for raptor species and nesting habitat for a variety of native avian species common to the desert and protected by CFGC 3503 and the MBTA. Mitigation measure BIO MM I-E is recommended to ensure that adverse effects to nesting birds/raptors are avoided and/or minimized.

The project site contains jurisdictional waters. Therefore, mitigation measure BIO III is recommended to ensure impacts to this sensitive resource are avoided and/or minimized.

With implementation of the mitigation measures described above, potential effects to sensitive biological resources associated with the proposed project at the Great Lakes site would be less than significant.

6.5 BARREN RIDGE

The Barren Ridge project site does not contain any sensitive plant communities or locally protected resources, such as Joshua trees. The site does not provide an important wildlife movement corridor or occur within an adopted HCP. Therefore, potential adverse effects to these sensitive biological resources are not expected and no further actions are recommended.

No special status plant species were observed on the project site during the field reconnaissance surveys; however, the site visits were conducted during a time of year when many species are unrecognizable. Therefore, MM BIO I-A is recommended to ensure potential effects to special status plants are avoided or minimized.

Three desert tortoises were observed on the Barren Ridge project site during the focused surveys. Project implementation would likely result in direct adverse effects to this species. Therefore MM BIO I-C is recommended to ensure potential effects to desert tortoise are avoided or minimized.

No burrowing owl individuals were observed on the project site during focused surveys; however, potential burrows and owl sign were detected. Therefore, MM BIO I-D is recommended to ensure potential adverse effects to burrowing owl are avoided or minimized.

No golden eagles or other special status raptors were observed on the Barren Ridge site or in the survey buffer or adjacent areas during focused surveys. Therefore, the project is not expected to result in direct effects to or incidental take of these species. However, the project site contains suitable foraging habitat for raptor species and nesting habitat for a variety of native avian species common to the desert and protected by CFGC 3503 and the MBTA. Mitigation measure BIO MM I-E is recommended to ensure that adverse effects to nesting birds/raptors are avoided or minimized.

Mohave ground squirrel surveys were not conducted on the Barren Ridge project site. The site is not located within any core areas or known population areas (Leitner 2009). Nonetheless, the site contains suitable habitat for Mohave ground squirrel and project implementation could result in adverse effects. Therefore, MM BIO I-F is recommended to ensure potential effects to Mohave ground squirrel are avoided or minimized.

An active American badger burrow was observed on the project site. Project implementation could result in direct adverse effects to this species, including mortality or injury. Therefore, MM BIO I-B is recommended to ensure potential effects are avoided or minimized.

The Barren Ride project site contains potential jurisdictional waters. Therefore, mitigation measure BIO MM III is recommended to ensure impacts to this sensitive resource are avoided or minimized.

With implementation of the mitigation measures described above, potential effects to sensitive biological resources associated with the proposed project at the Barren Ridge project site would be less than significant.

6.6 TEHACHAPI

No special status plants or jurisdictional waters occur on the Tehachapi project site. The site does not contain sensitive plant communities or locally protected trees, provide an important wildlife movement corridor, or occur within an adopted HCP. Therefore, potential adverse effects to these sensitive biological resources are not expected and no further actions are recommended.

No burrowing owls were observed during the field surveys at the Tehachapi site. Therefore, the proposed project is not expected to result in direct adverse effects to this or any other special status wildlife species. Nonetheless, the site contains suitable habitat for the species. Adverse effects could occur if a burrowing owl were to occupy the site in the future prior to construction, although the potential for effects is relatively low. Mitigation measure BIO MM I-D is recommended to ensure that adverse effects to burrowing owl are avoided and/or minimized.

No Swainson's hawks were observed on the Tehachapi site or within 1 mile of the site during the focused surveys. One golden eagle was observed flying over the site, but no golden eagle nests were

Photo 1 - View of Creosote Bush - White Burr Sage Scrub characteristic of the entire site.

Photo 2 - View of man-made ditch along the western side of SR-14, looking south.

Photo 3 - View of alluvial fan (Drainage 1) facing west. Drainage system is made up of numerous discontinuous channels and areas of sheet flow.

Photo 4 - Desert tortoise observed at the intersection of SR-14 and Phillips Road.

Barren Ridge Site Photographs

Supplemental Biological Results

RE Rosamond One and Two
RE Barren Ridge 1

RE Distributed Solar
Biological Resources Assessment
Kern County, California

Prepared for:

Recurrent Energy
300 California Street, 8th Floor
San Francisco, CA 94104
(415) 956-3433

Prepared by:

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, CA 93003
(805) 644-4455

July 2011

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APPENDICES

Appendix A – Summary Tables of Focused Survey Results for the Rosamond and Barren Ridge Sites
Appendix B – Site Photographs
Appendix C – Botanical Compendia
Appendix D – Summary of Mitigation Measures Applicable to Each Site
Appendix E – Sub-consultant Technical Reports

SECTION 1 – INTRODUCTION

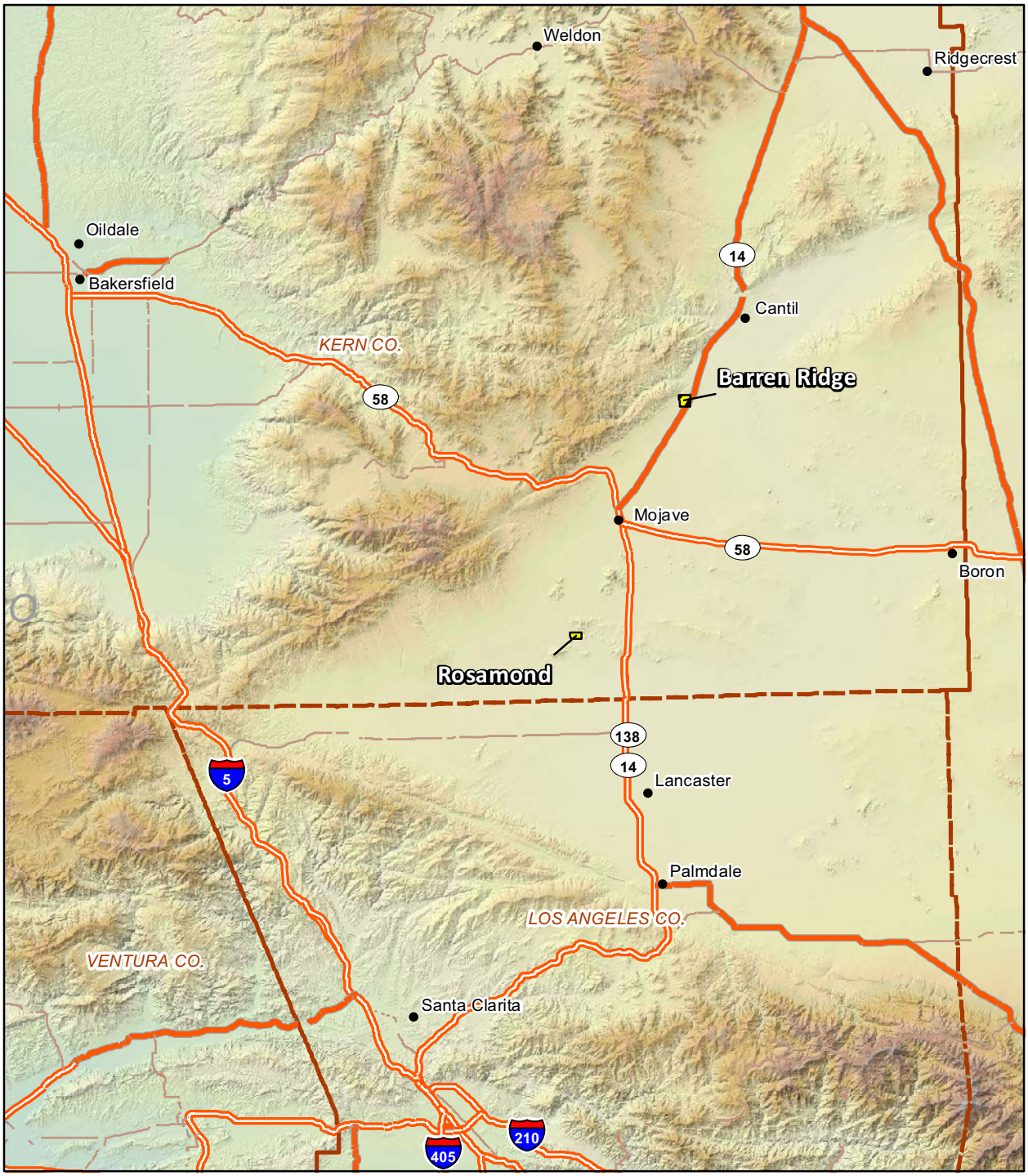
Rincon Consultants, Inc. (Rincon) has prepared supplemental results for the Biological Resources Assessment for the Recurrent Energy (RE) Distributed Solar project. A comprehensive biological resource assessment, including vegetative mapping, protocol surveys and jurisdictional delineations, was conducted for seven Kern Desert sites (RE Rosamond One and Two, RE Rio Grande, RE Columbia, Columbia Two, and Columbia 3, RE Great Lakes, RE Barren Ridge 1, RE Tehachapi Solar, and RE Tehachapi 2). Results were presented in *RE Distributed Solar Biological Resources Assessment, Kern County, California* (Rincon Consultants, Inc. 2011). However, the RE Rosamond One and Two (Rosamond) generation tie-line route and the RE Barren Ridge 1 (Barren Ridge) project site and associated generation tie-line route were added after the survey window for most protocol surveys. Therefore, this report presents the results of additional surveys conducted at the Barren Ridge and Rosamond sites. These include: protocol surveys for special status species and a jurisdictional evaluation along a proposed generation tie-line route at the Rosamond site; protocol surveys at the Barren ridge main site; and protocol surveys and a jurisdictional evaluation of a proposed generation tie-line route at the Barren Ridge project. This report also includes updated mitigation measures for the two sites based on the survey findings, which are intended to supersede those outlined for the two sites in the comprehensive biological resources assessment.

This report is organized as follows: *Section 1 – Introduction* provides location information, project description, and significance criteria for evaluation of biological effects; *Section 2 – Methodology* details the study methods employed at each site; *Section 3 – Site-Specific Biological Resources and Effects Analysis* presents the biological survey results and evaluates potential environmental effects at each site; *Section 4 – Mitigation Measures* lists proposed mitigation measures for the projects, and *Section 5 – Summary and Conclusions* provides a summary of potential effects and recommended mitigations measures for each site. References are included in Section 6, a List of Preparers is in Section 7, and summary tables of focused survey results, site photographs, botanical compendia, and a summary of mitigation measures applicable to each site are included in Appendices A-D.

This report has been prepared for RE Rosamond One, RE Rosamond Two, and RE Barren Ridge 1 ("Clients"). This report may be used and relied upon by Clients, any entity that has an ownership interest in any of these Clients, any of Clients' subsidiaries and/or affiliates, and any successor in interest to Clients' interest in the project.

1.1 PROJECT LOCATIONS

The two RE Distributed Solar project sites addressed in this report are located in the Antelope Valley (Rosamond) and Fremont Valley (Barren Ridge) along State Route (SR) 14, in eastern Kern County, California. The sites range in size from approximately 320 to 594 acres. Note that RE Rosamond One and RE Rosamond Two are two project sites that adjoin one another, and are treated as one project site (Rosamond) in this report. Site locations are listed in Table 1, and shown on Figure 1.



Basemap Source: ESRI Data, 2004, and USGS/CDFG, 2002. Additional map data from Kern County Assessor's Office, Assessment Standards Division, Mapping Section, 2010.

Project Sites

0 7 14
Miles

N

Regional Location **Figure 1**

Table 1. Location Information for the RE Distributed Solar Sites

Project Name	Community	Location	APN	Elevation	Size
RE Rosamond One and RE Rosamond Two	Rosamond	6500-7514 Favorito Avenue	252-031-01	2560-2632 ft	320 acres
RE Barren Ridge 1	Mojave	State Route 14 at Phillips Road	461-15-10	2390-2675 ft	594 acres

1.2 PROJECT DESCRIPTION

The proposed projects consist of the development of a photovoltaic (PV) solar electrical generation facilities. The facilities would include PV panels mounted on steel and aluminum structures, solar substations, equipment pads, and associated infrastructure such as access roads, fencing, and tie-ins to adjacent power lines.

1.3 REGULATORY OVERVIEW

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- Kern County General Plan

The sites are within the Western Mojave Recovery Unit of the West Mojave Plan Habitat Conservation Plan (HCP) and the Desert Renewable Energy Conservation Plan (DRECP), neither of which have been formally adopted. Neither of the sites occur within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

1.3.1 SIGNIFICANCE CRITERIA

The following threshold criteria from the Kern County CEQA Environmental Checklist Form were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

I. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

II. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

III. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interrup-tion, or other means.

IV. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

V. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

VI. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

SECTION 2 – METHODOLOGY

Extensive biological surveys were conducted at the RE Distributed Solar Kern Desert sites (RE Rosamond One and Two, RE Rio Grande, RE Columbia, Columbia Two, and Columbia 3, RE Great Lakes, RE Barren Ridge 1, RE Tehachapi Solar, and RE Tehachapi 2) in 2010, as detailed in *RE Distributed Solar Biological Resources Assessment, Kern County, California* (Rincon Consultants, Inc. 2011). This section details the methods utilized during additional surveys conducted in Spring 2011 at the Rosamond and Barren Ridge sites only.

Rosamond surveys: Prior surveys at the Rosamond main project site included a field reconnaissance, literature review, focused surveys for special-status plant species, desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*) and other special status raptors, Mohave ground squirrel (*Xerospermophilus mohavensis*), and a jurisdictional evaluation. Protocol surveys along the generation tie-line were not conducted, as the preferred route alternative had not been identified as of the spring 2010 survey period. Therefore, this Biological Resources Addendum covers the following surveys along the generation tie-line route from the Rosamond project site to a substation located at the intersection of Rosamond Boulevard and 60th Street:

- Special-status plant species surveys along the generation tie-line
- Focused surveys for the desert tortoise along the generation tie-line
- Focused surveys for burrowing owl along the generation tie-line

Barren Ridge surveys: The biological review for the Barren Ridge project began after the 2010 spring survey window. Therefore, surveys at the Barren Ridge site were limited to a field reconnaissance, a literature review, vegetative mapping, general wildlife surveys (included desert tortoise surveys), and a jurisdictional evaluation. The RE Distributed Solar Kern Desert BRA (2011) included recommendations for follow-on protocol surveys for special-status plant species, desert tortoise, burrowing owl, and special status raptors. In addition, a preferred route alternative for a generation tie-line to a substation located north of Pine Tree Canyon Road has since been identified for the Barren Ridge project. Therefore, this Biological Resource Addendum addresses the following surveys at the Barren Ridge project site and along the generation tie-line route to a substation located north of Pine Tree Canyon Road:

- Special-status plant species surveys at the main project site and along the generation tie-line
- Focused surveys for the desert tortoise along the generation tie-line
- Focused surveys for burrowing owl and other raptors at the main project site and along the generation tie-line
- Jurisdictional evaluation of the generation tie-line, focused on Pine Tree Wash

The methods used are described below, and survey dates for each site are listed in Table 2. For the purpose of this report, sensitive biological resources include special-status plant and wildlife species, sensitive plant communities, jurisdictional drainages and wetlands, wildlife movement corridors, locally protected resources such as Joshua trees, and other regulated resources or areas, such as those subject to adopted Habitat Conservation Plans (HCPs).

Table 2. 2011 Field Survey Dates for the RE Distributed Solar Sites

Project Site	Field Recon	Special Status Plants	Desert Tortoise	Burrowing Owl	Raptors	Jurisdictional Evaluation (Gen-tie line)
Rosamond	Mar 2011	4/25/11 5/17/11 5/19/11	4/11/11 4/17 - 4/19/11	4/11/11 4/17 - 4/19/11	4/11/11 4/17 - 4/19/11	3/23/11
Barren Ridge	Mar 2011	4/11 - 4/14/11 5/17 - 5/19/11	4/23 - 4/25/11 5/1 - 5/5/11	*Main Site:* 5/10 - 5/11/11 5/30 - 5/31/11 *Gen-Tie:* 4/23 - 4/25/11 5/1 - 5/5/11	5/10 - 5/11/11 5/30 - 5/31/11	4/14/11

2.1 LITERATURE REVIEW

Rincon reviewed literature on biological resources potentially occurring at the project sites and in the surrounding areas. The literature review included information available in peer-reviewed journals, standard reference materials (e.g. e.g. Bowers, Bowers, & Kaufman 2004, Burt and Grossenheider 1980, Holland 1986, Hickman 1993, Sawyer, Keeler-Wolf, and Evens 2009, Stebbins 2003, American Ornithologists Union 2010, USACE 2008), and relevant databases on sensitive resource occurrences from the California Department of Fish and Game (CDFG) *California Natural Diversity Data Base* (CNDDB), *Biogeographic Information and Observation System* (BIOS – www.bios.dfg.ca.gov), and U.S. Fish and Wildlife Service (USFWS) *Critical Habitat Portal* (http://criticalhabitat.fws.gov), and the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2011). A list of special-status species potentially occurring in the project area is included in Table 3. Other sources of information about the sites included aerial photographs, topographic maps, soil survey maps, geologic maps, climatic data, previous biological studies, and project plans.

Table 3. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements
PLANTS			
Androstephium breviflorum	Small-flowered androstephium	CNPS 2.2	Found in mid-elevation open desert scrub. Blooms March-April.
Astragalus hornii var. *hornii*	Horn's milk-vetch	CNPS 1B.1	Found in meadows and seeps, playas or lake margins. Prefers alkaline soils. Blooms May-October.
Erodium macrophylla	Round-leaved filaree	CNPS 1B.1	Found in loamy soils open sites, grassland and scrub habitats below 1,200m. Blooms March-May.
Calochortus striatus	Alkali mariposa lily	CNPS 1B.2	Inhabits alkaline meadows and ephemeral washes within chaparral, chenopod scrub, Mojavean desert scrub, and meadows. Blooms April-June.

Table 3. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements
Canbya candida	White pygmy-poppy	CNPS 1B.2	Found in open sandy soils in the western Mojave and adjacent Sierra Nevada. Blooms April-May.
Eschscholzia minutiflora ssp. *twisselmannii*	Red Rock poppy	CNPS 1B.2	Found in creosote bush scrub in the Mojave Desert, specifically on volcanic tuff soils.
Layia heterotricha	Pale yellow layia	CNPS 1B.1	Alkaline or clay soils in grasslands, coastal scrub, cismontane woodland, pinyon-juniper woodland. Blooms March-June.
Loeflingia squarrosa var. *artemisiarum*	Sagebrush loeflingia	CNPS 2.2	Found in desert dunes, Great Basin scrub and sandy Sonoran desert scrub. Blooms April-May.
Mimulus pictus	Calico monkeyflower	CNPS 1B.2	Found in foothill woodlands, often on granitic soils. Blooms March – May.
Phacelia nashiana	Charlotte's phacelia	CNPS 1B.2	Found in creosote bush scrub, Joshua tree woodland, pinyon-juniper woodland. Blooms March – June.
Phacelia parishii	Parish's phacelia	CNPS 1B.1	Clay or alkaline soils, dry lake margins in the western Mojave. Blooms April-July.
Plagiobothrys parishii	Parish's popcorn-flower	CNPS 1B.1	Wet, alkaline soils around desert springs in the Mojave and eastern Sierra Nevada. Blooms April-June.
Puccinellia parishii	Parish's alkali grass	CNPS 1B.1	Inhabits higher elevation mineral springs in the Mojave Desert. Blooms April-May.
Saltugilia latimeri	Latimer's woodland-gilia	CNPS 1B.2	Chaparral, Mojavean desert scrub, pinyon and juniper woodland, rocky or sandy, often granitic, sometimes washes. Blooms March-June.
Sidalcea neomexicana	Salt spring checkerbloom	CNPS 1B.2	Inhabits alkaline springs and marshes in the South Coast, San Gabriel Mountains, San Bernardino Mountains, Peninsular Ranges, southwest Mojave Desert. Blooms April-June.
Viola aurea	Golden violet	CNPS 2.2	Found in sagebrush scrub and pinyon-juniper woodland, sandy soils. Blooms April-June.
REPTILES			
Gopherus agassizii	Desert tortoise	FT / ST	Prefers creosote bush habitat with annual wildflower blooms. Inhabits friable soil for burrow and nest construction, occurs in most desert habitats.
BIRDS			
Athene cunicularia	Burrowing owl	SSC	Inhabits open, dry, annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.
Aquila chrysaetos	Golden eagle	FP	Nests in canyons on cliffs and large trees in open habitats. Forages chiefly for mammalian prey in grasslands and over open areas.

Table 3. Special Status Species Potentially Occurring in the Project Region

Scientific Name	Common Name	Status [1] Fed/State/CNPS	Habitat Preference/ Requirements
Buteo swainsoni	Swainson's hawk	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural areas or ranches; requires adjacent suitable foraging areas such as grasslands, alfalfa or grain fields supporting rodent populations.
Lanius ludovicianus	Loggerhead shrike	SSC	Occurs in open habitats utilizing shrubs, trees, posts, fences, and low utility lines for perches. Specifically prefers open foothill and valley woodlands with some canopy cover and adequate roosting and foraging perches. Forages in edge habitats, and in particular prefers shrubs adjacent to grasslands.
Toxostoma lecontei	Le Conte's thrasher	SSC	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.
MAMMALS			
Xerospermophilus mohavensis	Mohave ground squirrel	ST	Inhabits open desert scrub, alkali scrub, and Joshua tree woodland; feeds in annual grasslands; restricted to Mojave desert. Prefers sandy to gravelly soils, avoids rocky areas. Uses burrows at base of shrubs for cover. Nests are in burrows.
Taxidea taxus	American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Needs sufficient food and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.

[1] FT = Federally threatened; FE = Federally endangered; • SE = State endangered; ST = State threatened; SR = State rare; FP = CA Fully Protected; SSC = CA Species of Special Concern; SA = CDFG Special Animal; • California Native Plant Society (CNPS): 1B = Rare or endangered in California and elsewhere; 2 = Rare or endangered in California, more common elsewhere; 3 = Plants for which more information is needed (Review list); 4 = Plants with limited distribution (Watch list); .1 = Seriously endangered in California; .2 = Fairly endangered in California; .3 = Not very endangered in California

2.2 FOCUSED SURVEYS

Focused surveys were conducted for four sensitive biological resources at Barren Ridge and Rosamond in 2011: special-status plant species, desert tortoise, burrowing owl, and special status raptors. Observations of other sensitive species potentially occurring on-site were made concurrent with the focused surveys. Mohave ground squirrel surveys were not conducted at the Barren Ridge project site or generation tie-line, or along the Rosamond generation tie-line. The methods employed in each of the focused surveys are described below, and specific survey dates for each site are included in Table 2.

2.2.1 SPECIAL STATUS PLANT SPECIES

Prior to conducting field surveys, a CNDDB search was conducted for recorded occurrences of special status plant taxa within a five-mile radius of the study area. A search range of this extent was used to encompass a sufficient distance to accommodate for regional habitat diversity and to overcome

limitations of the CNDDB. A search was also conducted using the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2010) for the *Soledad Mountain* and *Willow Springs* USGS 7.5-minute quadrangles and the ten surrounding quadrangles at the Rosamond project site, and for the *Mojave NE* USGS 7.5-minute quadrangle and the eight surrounding quadrangles at the Barren Ridge project site. Additionally, the U.S. Fish and Wildlife Service (USFWS) website was queried for federally listed plants occurring in Kern County.

For the purpose of this report, special status plant taxa consist of plants: 1) listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS under the federal Endangered Species Act; 2) listed or proposed for listing as rare, threatened, or endangered by the CDFG under the California Endangered Species Act; and 3) recognized on lists 1B and 2 of the CNPS *Inventory of Rare and Endangered Plants of California*. A list of special-status plant taxa likely to occur on-site (see Table 3) was developed from the CNDDB, CNPS, and USFWS search results, and cross-referenced with the CDFG *Special Vascular Plants, Bryophytes, and Lichens List* (April 2011) as well as known habitat requirements and flowering periods for each species (CNPS 2011, Baldwin et al. 2002, Hickman 1993). Furthermore, a field guide was prepared to assist in the identification of special-status plant taxa with potential to occur on-site, including photographs and/or illustrations of habitat and descriptions of morphological and ecological attributes for each plant taxon.

Focused surveys for the special-status plants identified as having potential to occur on-site were conducted, which consisted of seasonally timed botanical surveys to capture the flowering periods of potentially occurring species. The botanical surveys were conducted in general accordance with the guidelines set forth by the CDFG (2009) and CNPS (2001). To achieve sufficient visual coverage of the site, systematic surveys were employed through the incorporation of survey transects with 30 meters between each surveyor. In addition to focused surveys, a floristic inventory was conducted at each site, with all plant species observed identified to a sufficient level to determine rarity (e.g. genus, species, subspecies, or variety). Taxonomic nomenclature is based on Baldwin et al. (2002), Hickman (1993) and updates from the Jepson Online Interchange (UCB, 2011). As specified in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), a CNDDB Field Survey Form was completed for each special-status plant occurrence detected on-site. Vegetation communities were classified in accordance with the classification system presented in Sawyer et al. (2009) and cross-referenced to Holland (1986). Modifications to the vegetation community classifications were made by Rincon as appropriate based on the floristic composition and plant taxa distribution and abundance observed on-site.

2.2.2 DESERT TORTOISE

Desert tortoise surveys were conducted for the generation tie-line routes at Rosamond and Barren Ridge in 2011. For clarity, results of the 2011 surveys are included with the fall 2010 survey results at the Barren Ridge project site.

The survey for desert tortoise was conducted in accordance with the *Pre-project Survey Protocol for Potential Desert Tortoise Habitats, 2010* (USFWS, 2010). The survey was managed by Stephen Boland of Sundance Biology, Inc., with field work by Stephen Boland and Mike Gallagher. A ground reconnaissance was conducted in April 2011, with survey dates shown in Table 2. The survey was conducted by walking a set of transects spaced ~10 meters (30 feet) between transect centerlines (the standard width for desert tortoise presence/absence surveys) that covered the entirety of the survey

area. Lowrance iFinder handheld global positioning system (GPS) units were used for transect navigation. Transects were established by calculating UTM coordinates for virtual north-south transects, as follows:

- Barren Ridge (main site, 2010): 191 transects, each 1.2 miles in length
- Barren Ridge (generation tie-line, 2011): 7 transects, each approximately 2.36 miles in length
- Rosamond (main site, 2010): 81 transects, each 1 mile in length
- Rosamond (generation tie-line, 2011): four transects each approximately 3 miles in length

In accordance with the desert tortoise pre-survey protocol (USFWS, 2010), Zone-of-Influence (ZOI) transects at three 200-meter (~650-foot) intervals from the project boundary were conducted in adjacent habitat at sites, as the action area was less than 81 hectares. Weather conditions were generally calm and clear at the time of survey, with winds up to 20 mph on occasion. Daily temperatures ranged from 55 ºF to 84 ºF.

2.2.3 BURROWING OWL

Burrowing owl surveys were conducted on the Barren Ridge main site by Rincon and along the Rosamond and Barren Ridge generation tie-lines by Sundance Biology, Inc. Burrowing owl surveys were conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995). The preliminary (Phase II) burrow surveys on the Barren Ridge main site were conducted by Stephen Boland of Sundance Biology, Inc. These visits were conducted on September 29 - October 3, 2010. Phase III surveys conducted by Rincon Biologists Jennifer Turner and Christina Sulzman during the peak of breeding season from April 15 to July 15, 2011. These visits were conducted on May 10, 11, 30, and 31. Sundance Biology conducted both Phase II and Phase II surveys of the generation tie-line route on April 23 - 25, May 1 and May 5, 2011.

The Phase III surveys included an inspection of all burrows and burrow complexes found during previous surveys to visually inspect for burrowing owls or recent burrowing owl sign. Weather conditions, and timing of the surveys were followed per the Survey Protocol and Mitigation Guidelines from the Burrowing Owl Consortium (1993). Temperatures at the time of the surveys were between 50 ºF and 76 ºF under sunny or partly cloudy skies. No rain had fallen within the 5 days previous to any of the four surveys. Inspections of burrows previously identified as having burrowing owl sign were conducted within two hours prior to sunset and one hour after, or within two hours after sunrise and one hour prior. A site visit with wind conditions outside of the preferred survey conditions was conducted on May 9, 2011; therefore, an additional site visit was conducted. No winter surveys were performed.

2.2.4 SPECIAL STATUS RAPTORS

A survey for special status raptor species (e.g. Swainson's hawk, golden eagle, prairie falcon) was conducted at the Rosamond project site in 2010. In 2011, an additional raptor survey was conducted at the Barren Ridge main site, and incidental observations of raptor species were made along the Rosamond generation tie-line during protocol burrowing owl surveys. Rincon Biologists Jennifer Turner and Christina Sulzman conducted four surveys on and adjacent to the Barren Ridge site in May 2011 to look for special status raptors (e.g. golden eagle, prairie falcon) within or adjacent to the site. These visits were conducted on May 10, 11, 30, and 31, 2011. The surveys included inspection of all potential nesting areas (e.g. towers, cliffs, Joshua trees) and surveying for soaring individuals within the site and

out to at least a 1-mile buffer. Although the entire site and buffer area were searched each visit, focused time was spent in areas with the highest potential (e.g. cliffs, ridgelines, towers). Binoculars and spotting scopes were used to aid in the identification.

2.2.5 OTHER SENSITIVE SPECIES

Observations on other sensitive species with the potential to occur on-site were conducted concurrent with the focused surveys. All sensitive species observed were recorded, location information was recorded with a GPS where possible, and the results are presented in the site-specific biological resources section.

2.3 JURISDICTIONAL WATERS EVALUATION

Rincon conducted an evaluation of potential jurisdictional resources along the generation tie-lines for Rosamond and Barren Ridge, but formal delineations were not conducted for either of these lines. The evaluations consisted of a general characterization of the vegetative and hydrogeomorphic features of any observed drainages. Waters and wetlands potentially subject to agency jurisdiction were evaluated in accordance with:

- USACE *Wetlands Delineation Manual* (1987)
- USACE *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (2001)
- USACE *Jurisdictional Determination Form Instructional Guidebook* (2007)
- USACE *Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region* (2008)
- USACE *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the Western United States* (2008)
- Section 1602(a) of the California Fish and Game Code
- Porter-Cologne Water Quality Control Act

SECTION 3 – SITE-SPECIFIC BIOLOGICAL RESOURCES AND EFFECTS ANALYSIS

This section describes the biological resources present at the two RE Distributed Solar project sites included in this Biological Resources Addendum (Rosamond and Barren Ridge), including project location, environmental setting, vegetation, focused survey results, and jurisdictional evaluation. An analysis of potential environmental effects is also presented for each site. For clarity, the results of the 2010 surveys were included with the results of the 2011 surveys where appropriate.

3.1 ROSAMOND GENERATION TIE-LINE

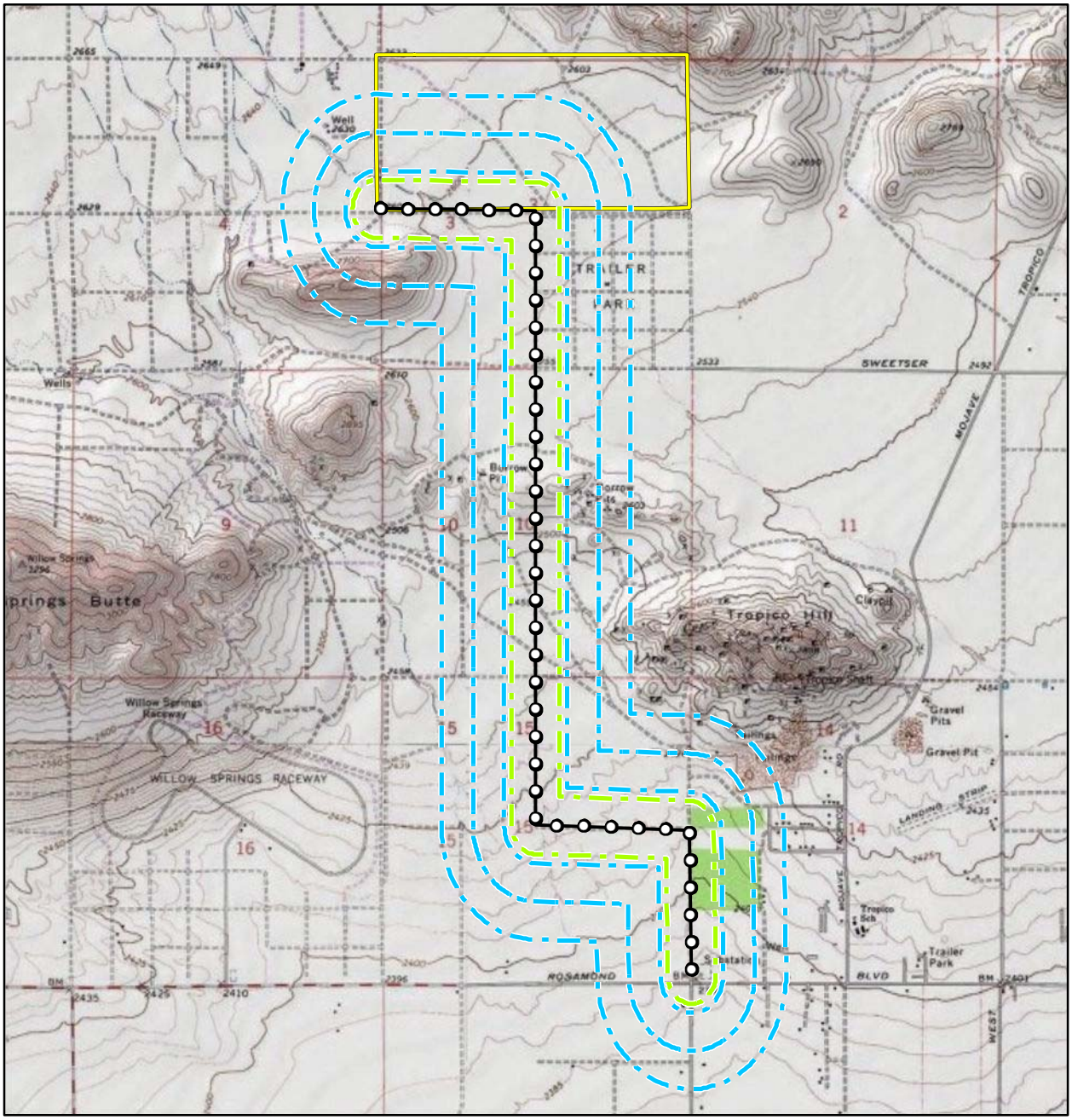
Summary of Results:

- Alkali mariposa lily, a CNPS List 1B.2 species, was detected along the generation tie-line.
- The generation tie-line is potential habitat for the desert tortoise, burrowing owl, special status raptors, and Mohave ground squirrel. However, these species were not observed in the survey corridor during focused surveys. One burrowing owl sign was detected during the 2011 surveys.
- Evidence of American badger, a special status species, was observed on the main site but not along the generation tie-line.
- Joshua tree woodland, a sensitive plant community, occurs along the generation tie-line.
- Drainages potentially subject to CDFG and RWQCB jurisdiction exist along the generation tie-line.

3.1.1 PROJECT LOCATION

The Rosamond project site contains both the RE Rosamond One and RE Rosamond Two facilities. It is located in an unincorporated area approximately 3.7 miles northwest of the community of Rosamond and 4.1 miles west of SR-14, in Kern County, California. The site consists of an approximate 320-acre rectangular shaped property located north of a rural residential development that includes addresses from 6500 – 7514 Favorito Avenue. The Rosamond project site is located in the Willow Springs and Soledad Mountain USGS 7.5-minute quadrangles (Figure 2).

The proposed Rosamond generation tie-line, where the 2011 focused surveys were conducted, would originate on-site and extend south for approximately 2 miles along 65th Street West, east for 0.5 mile along Felsite Avenue, and then south for 0.5 mile along 60th Street West to an existing electrical substation.



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Project Site

Gen-Tie Line (Special Status Plants, Desert Tortoise, Burrowing Owl, Raptors)

Burrowing Owl Survey Buffer Zone (500 Feet)

Desert Tortoise ZOI Transects (200-Meter (~655-Foot) Intervals)

N

0 1,400 2,800
Feet

Rosamond Survey Area

Figure 2

3.1.2 ENVIRONMENTAL SETTING

The Rosamond project site occurs in the Rosamond Hills of the western Mojave Desert, characterized by low precipitation and atmospheric humidity, high summer temperatures, and relatively cool winter temperatures. Elevation at the project site and along the generation tie-line route ranges from 2391 – 2632 feet. Topography is mostly moderately sloping (2 - 10% slopes) and undulating, with water flowing generally northwest to southeast across the project site. Topography in the northeast portion of the project site is a steeply sloping rock outcrop.

Vegetation in the Mojave Desert is strongly influenced by climate, elevation and soils. A predominance of plants with morphological adaptations to endure extreme aridity (e.g., waxy or resinous leaf cuticles, drought deciduous or succulent plants, woolly leaf pubescence, deep tap root systems) and/or saline-alkali soils (e.g., salt excretion, active transport systems) exists in the Mojave Desert. The morphological structure of these plants is typically characterized by short stature, with shrubs and arborescent shrubs (i.e., tree-like) widely spaced due to competition for soil water resources (Hickman 1993, Moe and Twisselmann 1995). In addition, the Mojave Desert ecosystem has been subjected to a variety of human disturbances, including off-highway vehicle (OHV) use, mineral extraction (e.g., gold, borax), road building and other development, agriculture, historical sheep grazing and fire. Portions of the desert are currently in a degraded state, with cleared lands, non-native plants and altered vegetation structure.

Vegetation in the project area is dominated by creosote bush scrub and Joshua tree woodland, with grassland, developed, disturbed and ruderal areas as associated vegetation types. The project site and surrounding area have been altered and disturbed by construction of rural access roads and rural residential development. In particular, the network of dirt and gravel access roads at the site has contributed to alteration of drainage patterns. Trash and debris are evident at the project site, and adjacent areas to the north are heavily utilized by OHVs and for target practice.

Land uses within the vicinity of the Rosamond site include rural residential areas, with gold mining and commercial areas associated with the community of Rosamond to the southeast.

3.1.3 ROSAMOND GENERATION TIE-LINE VEGETATION

In accordance with the vegetation classification system presented in Sawyer et al. (2009), two vegetation communities occur adjacent to the Rosamond generation tie-line: creosote bush-white burr sage with Joshua tree (*Yucca brevifolia*) woodland inclusions, and broom snake weed scrub. While Joshua trees are present in some areas along the generation tie-line, most areas are dominated by creosote bush with little to no Joshua tree cover. In addition, vegetation grades into spinescale scrub (*Atriplex spinifera*) and grassland habitats between Irone Avenue and Felsite Avenue.

<u>Creosote Bush Scrub</u>

Creosote bush-white burr sage occurs along the generation tie-line route, and is dominated by creosote bush (*Larrea tridentata*). While Joshua trees are present in some areas along the generation tie-line route, most areas are dominated by creosote bush with little to no Joshua tree cover.

Associated shrubs and subshrubs include white burr sage (*Ambrosia dumosa*), goldenhead (*Acamptopappus sphaerocephalus*), budsage (*Artemisia spinescens*), allscale saltbush (*Atriplex polycarpa*), green ephedra (*Ephedra viridis*), Cooper's goldenbush (*Ericameria cooperi*), rubber

rabbitbrush (*E. nauseosa*), California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), hopsage (*Grayia spinosa*), cheesebush (*Hymenoclea salsola*), winterfat (*Krascheninnikovia lanata*), Anderson's desert thorn (*Lycium andersonii*), pale desert thorn (*L. pallidum* var. *oligospermum*), desert wishbone bush (*Mirabilis laevis*), distant phacelia (*Phacelia distans*), and Mohave cottonthorn (*Tetradymia stenolepis*). Cacti in the creosote bush-white burr sage community include Colorado buckhorn cholla (*Opuntia acanthocarpa* var. *coloradensis*) and beavertail cactus (*O. basilaris* var. *basilaris*). Common herbaceous plants include Bigelow's coreopsis (*Coreopsis bigelovii*), cushion cryptantha (*Cryptantha circumscissa*), Nevada cryptantha (*C. nevadensis*), slender stemmed buckwheat (*Eriogonum gracillimum*), redstem filaree (*Erodium cicutarium*), goldfields (*Lasthenia californica*), sandblossoms (*Linanthus parryae*), desert dandelion (*Malacothrix glabrata*), and slender combseed (*Pectocarya linearis* ssp. *ferocula*). Grass species occurring in this community consist of Indian ricegrass (*Achnatherum hymenoides*), desert needlegrass (*A. speciosum*), red brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*B. tectorum*), one-sided bluegrass (*Poa secunda*), Mediterranean grass (*Schismus arabicus*), and rattail fescue (*Vulpia myuros*).

3.1.4 ROSAMOND GENERATION TIE-LINE SPECIAL STATUS SPECIES

This section presents the results of the 2011 focused biological surveys along the Rosamond generation tie-line route. Survey areas are shown in Figure 2. Locations of all sensitive species are shown in Figure 3, and a summary table of focused survey results is presented in Appendix A.

Special Status Plant Species

The only special-status plant species observed within the survey area during the focused botanical surveys is alkali mariposa lily (*Calochortus striatus*), a CNPS List 1B.2 species. This species was observed at six locations west of 60th Street, and north of the intersection of 60th Street and Rosamond Boulevard. Alkali mariposa lily observations ranged from individuals to groups of 2 – 6 individuals.

Desert Tortoise

The generation tie-line route for the Rosamond project provides suitable habitat for the desert tortoise. No desert tortoises or desert tortoise sign was detected along the generation tie-line route or in the buffer zone adjacent to the main survey corridor. However, in 2009 a desert tortoise was found approximately 6.5 miles north of the site (Sundance Biology, Inc., 2009) and scat was found approximately 4 miles west of the site (Sundance Biology, Inc., 2005). Though the site has suitable habitat for desert tortoises, human impacts from the adjacent housing development, OHVs and target shooters have probably contributed to the decline of any historical populations.

Burrowing Owl

The generation tie-line provides suitable habitat for the burrowing owl. The desert scrub within the survey corridor provides foraging habitat, and coyote and badger burrows suitable for occupation by burrowing owls were observed on-site. No burrowing owls were detected along the generation tie-line or within the survey buffer zone during focused surveys. However, pellets were observed at one of the burrows, at the location shown in Figure 3. No field indicators of current burrowing owl use were observed.

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Project Site

American Badger Burrow

Burrowing Owl Sign

Alkali Mariposa Lily Observation

N

0 1,050 2,100

Feet

Rosamond Biological Resources

Figure 3

Special Status Raptors

No Swainson's hawks, golden eagles, or nests of either species were observed on the project site or within a 1-mile radius of the site. The closest recorded Swainson's hawk nest is approximately 5 miles south of the main site (ICF 2010), and no golden eagle nests have been recorded within 5 miles. The generation tie-line contains marginal nesting habitat for Swainson's hawk, which nest rarely in Joshua trees, and the rocky outcrops northeast of the site could potentially be used by golden eagle for nesting. The generation tie-line provides potentially suitable foraging habitat for both species, although Swainson's hawks prefer irrigated alfalfa fields and occurrences in the Antelope Valley tend to be clustered around agricultural areas. A red-tailed hawk pair and one immature red-tailed hawk were observed flying above the cliffs to the north side of the site during the April 28, 2010 focused survey. A nest was discovered on the cliffs, but it was not confirmed if this was a red-tailed hawk nest as no birds were observed in or around the nest during the time of the survey. During the May 2011 surveys, one prairie falcon was seen flying over the east end of Willow Springs Butte approximately one mile west of the project corridor.

Mohave Ground Squirrel

The project site provides suitable habitat for the Mohave ground squirrel. No Mohave ground squirrels were observed or captured on-site during the 2010 protocol surveys conducted on the main project site. Protocol-level surveys were not conducted along the generation tie-line.

Other Sensitive Species and Species of Interest

One American badger den, with indicative badger scrapes on the sides of the den, was found in the eastern portion of the project site in 2010. No live animals were observed. The site also contains suitable nesting habitat for native birds protected by the MBTA and CFG Code 3503.

3.1.5 ROSAMOND GENERATION TIE-LINE JURISDICTIONAL EVALUATION

Mapped soils at the Rosamond site are dominated by Cajon loamy sand, 0 to 5 percent slopes and 5 to 15 percent slopes, which are somewhat excessively drained, moderately sloping loamy sands formed on alluvial fans and floodplains. Other soils include Arizo gravelly loamy sands, 2 to 9 percent slopes (excessively drained soils on alluvial fans and floodplains), DeStazo sandy loams, 5 to 9 percent slopes, eroded (well drained very slightly saline-alkali soils formed on alluvium derived from granite in basin floors and floodplains), and a small area of Rock Outcrop in the northeast portion of the site. None of the soils at the Rosamond site are listed as hydric by NRCS (National list of Hydric Soils, Feb. 2010; http://soils.usda.gov/use/hydric/lists/state.html).

AECOM conducted a formal field delineation for the Rosamond site on April 10, 2011, which was included as an appendix in the RE Distributed Solar BRA (Rincon 2011). They determined that the Rosamond site supports a small, underdeveloped and unvegetated ephemeral dry wash within the southwestern portion of the site, and an unvegetated swale in the central portion of the site. While these features were determined to be geographically isolated for the purposes of determining U.S. Army Corps of Engineers jurisdiction, these areas were determined to fall under state jurisdiction based on California Fish and Game Code Section 1600 *et seq*., California Water Code Section 13000 *et seq*., relevant California Code of Regulations definitions, and the latest CDFG and RWQCB regulatory practice.

The surveys for the generation tie-line route included an evaluation of potential jurisdictional resources.

A total of four drainage features were detected along the generation tie-line route, three of which generally convey flows in an easterly direction. These features are small vegetated swales to unvegetated drainages with an OHWM from 1- 3 feet wide. A formal jurisdictional delineation was not conducted, and is recommended prior to project initiation to determine the extent of jurisdictional resources, potential impacts to Waters of the State, and the need for permits from the regulatory agencies.

3.1.6 ROSAMOND POTENTIAL ENVIRONMENTAL EFFECTS

Implementation of the proposed project at the Rosamond site has the potential to affect special status wildlife species, Joshua trees, and jurisdictional waters. Recommended mitigation measures to avoid and/or minimize potential project effects to these sensitive resources are detailed in Section 5. The project is not expected to substantially interfere with wildlife movement in the project vicinity or region, or conflict with the provisions of an adopted HCP. Therefore, potential effects to these sensitive resource types are considered less than significant.

BIO I: POTENTIAL EFFECTS TO SPECIAL STATUS SPECIES

One special status plant species, alkali mariposa lily, was detected along the generation tie-line. Potential effects would be limited to the utility pole locations at intervals of 300 to 500 feet along an existing road. Although the exact pole locations for the tie-line have not been established, impacts to special status plant species are likely avoidable by adjusting specific pole locations. Therefore the potential for effects to alkali mariposa lily is considered low but nonetheless possible.

The Rosamond generation tie-line provides suitable habitat for desert tortoises and burrowing owls. These species were not detected on project site or within the survey buffers during the 2010 and 2011 protocol surveys, and each of these species is considered absent from the project site. However, the proposed project has the potential to result in adverse effects if a protected species were to unexpectedly occupy the site prior to construction. Based on the focused survey results the potential for occurrence is low.

No Swainson's hawks, golden eagles or special status raptors were observed on the project site or within the 1-mile survey buffer during the focused surveys, and there are no historic records for nest sites within the close vicinity of the site (within 1 mile). The closest recorded Swainson's hawk nest is approximately 5 miles south of the main site (ICF 2010). Therefore, the project is not expected to directly affect or result in incidental take of nesting Swainson's hawks or golden eagles. Other raptor species observed during the focused surveys include the red-tailed hawk and prairie falcon, both of which may use the cliffs to the north of the site as nesting habitat and the project site as part of a foraging territory. Given the existing levels of disturbance at the site and to the south (OHV use, target practice, housing development); the presence of higher quality habitat north and west of the project site; the ubiquitous nature of foraging habitat in the western Mojave (creosote bush scrub and Joshua tree woodland are the two most common vegetation types in the western Mojave; Davis et al. 1998); and the minimal footprint associated with utility pole locations at intervals of 300 to 500 feet along an existing road, the removal of potential foraging habitat along the generation tie-line is not expected to result in significant indirect effects to raptor species. However, potential indirect effects to nesting raptors in the immediate vicinity of the project site could occur if the proposed project is implemented during the nesting season. The project site also contains suitable nesting habitat for a variety of native

avian species common to the desert and protected by CFGC 3503 and the MBTA. The proposed project could result in direct impacts to protected nesting birds if implemented during the nesting season.

The proposed project may potentially affect Mohave ground squirrel along the generation tie line where suitable habitat is present. Based on the negative survey results for the main site and the location of the alignment on the far western fringe of the species' range, the potential for effects is low. Once the final alignment has been chosen, focused surveys for Mohave ground squirrel are recommended within potentially suitable habitat that would be affected by pole placement or any other ground disturbance to definitively determine the presence/absence of the species.

A den of one mammal species of special concern, the American badger, was observed on site; no live animals were observed during focused surveys. If present on-site at the time of construction, the proposed project has the potential to result in injury or mortality of the individuals present. No American badger sign was detected along the generation tie-line.

BIO II: POTENTIAL EFFECTS TO SENSITIVE PLANT COMMUNITIES/LOCALLY PROTECTED RESOURCES

The project site contains creosote bush-white burr sage with Joshua tree woodland inclusions. This community is dominated by white burr sage, creosote bush, and scattered Joshua trees. In some locations, the scattered Joshua trees present along the generation tie-line may form occasional groupings with greater than 10% coverage that could be mapped as Joshua tree woodlands and would be considered a sensitive plant community. Joshua trees are also a locally protected resource within the Willow Springs Specific Plan. Therefore, while potentially avoidable by adjusting the location of utility poles, construction to the generation tie-line has the potential to result in adverse effects to this sensitive plant community/locally protected resource.

BIO III: POTENTIAL EFFECTS TO JURISDICTIONAL WATERS

Four potentially jurisdictional drainage features occur along the generation tie-line. These drainages are not considered subject to USACE jurisdiction as the western Mojave is isolated from traditional navigable waters, but would potentially fall under CDFG jurisdictional streambed and RWQCB waters of the state. Alteration of any of these drainages would likely constitute an impact to jurisdictional waters and would require a formal delineation and acquisition of appropriate permits prior to alteration.

3.2 BARREN RIDGE

Summary of Results:

- The site is potential habitat for the desert tortoise, burrowing owl, and Mojave ground squirrel. Desert tortoises were observed on-site. Burrowing owl sign was observed on-site.
- Two other special status species, the American badger and desert kit fox, were observed on-site.
- Drainages potentially subject to CDFG and RWQCB jurisdiction exist on-site.

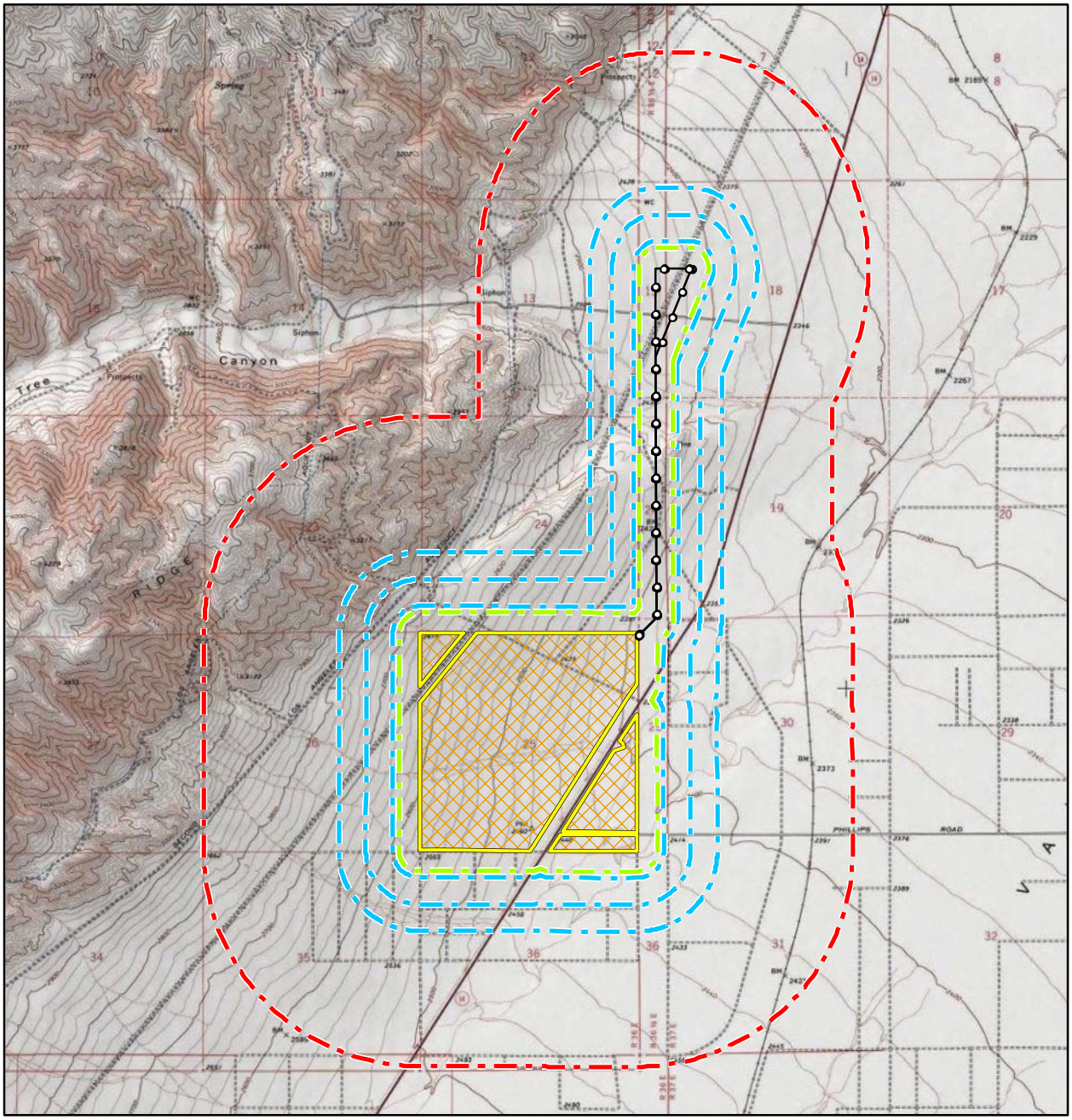
3.2.1 PROJECT LOCATION

The Barren Ridge project site consists of an approximate 594-acre rectangular shaped property located in an unincorporated area of Kern County. The site is located approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct. It is bisected by SR-14, a transmission corridor easement extends through the northwest corner of the site, and Phillips Road extends through the southeast portion of the site. The site is bounded on all sides by undeveloped natural habitat. The Barren Ridge project site is located in the Mojave NE USGS 7.5-minute quadrangle (Figure 4). The generation tie-line route for the Barren Ridge project is a 1.85-mile line extending north and slightly east that is partially within BLM lands and mostly within private lands.

3.2.2 ENVIRONMENTAL SETTING

The Barren Ridge project site is located in the Fremont Valley portion of the western Mojave Desert, characterized by low precipitation and atmospheric humidity, high summer temperatures, and relatively cool winter temperatures. High desert climates are characterized by strong fluctuations in daily temperatures, hot summers and cold winters, strong seasonal winds, generally clear sky, and an arid environment (low humidity/rainfall). Winds can be strong, with dry winds in excess of 25 mph in the late winter and early spring. Average temperature in the project region ranges from 46.9 to 75.8 degrees Fahrenheit, with an average annual rainfall of 6.2 inches. Elevation at the project site ranges from 2420 – 2670 feet. Topography is generally moderately sloping (2 - 15% slopes) and undulating, with water flowing generally northwest to southeast across the site.

Vegetation in the Mojave Desert is strongly influenced by climate, elevation and soils. A predominance of plants with morphological adaptations to endure extreme aridity (e.g., waxy or resinous leaf cuticles, drought deciduous or succulent plants, woolly leaf pubescence, deep tap root systems) and/or saline-alkali soils (e.g., salt excretion, active transport systems) exists in this region. The morphological structure of these plants is typically characterized by short stature, with shrubs and arborescent shrubs (i.e., tree-like) widely spaced due to competition for soil water resources (Hickman 1993, Moe and Twisselmann 1995). In addition, the Mojave Desert ecosystem has been subjected to a variety of human



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Project Site

Gen-Tie Line (Special Status Plants, Desert Tortoise, Burrowing Owl, Raptors)

Special Status Plants, Desert Tortoise, Burrowing Owl, Raptors

Burrowing Owl Survey Buffer Zone (500 Feet)

Desert Tortoise ZOI Transects (200-Meter (~655-Foot) Intervals)

Raptor Survey Buffer (1-mile)

N

0 2,000 4,000
Feet

Barren Ridge Survey Area

Figure 4

disturbances, including off-highway vehicle (OHV) use, mineral extraction (e.g., gold, borax), road building and other development, agriculture, historical sheep grazing and fire. Portions of the desert are currently in a degraded state, with cleared lands, non-native plants and altered vegetation structure.

Vegetation in the project area is dominated by creosote bush – white burr sage scrub, with disturbed and ruderal areas as associated vegetation types along the highway, transmission corridor and dirt roads. Though human use of the site is evident throughout, the project site has been comparatively minimally disturbed by human activity. A few rural access roads exist on-site, a flood control channel has been constructed along the west side of SR-14 to capture storm-water flows, and scattered trash dump sites are present in relatively close proximity to SR-14. Evidence of grazing and recreational shooting (skeets and shotgun shells) are also present. Land uses in the regional vicinity of the Barren Ridge site include rural residential areas, recreational OHV areas, ecological reserves, grazing, and commercial and industrial areas.

3.2.3 BARREN RIDGE VEGETATION

In accordance with the vegetation classification system presented in Sawyer et al. (2009), one vegetation community is dominant at the proposed project site and along the generation tie-line: creosote bush-white burr sage scrub. Small inclusions of scale broom scrub (alluvial fan sage scrub) occur within limited portions of 2 drainage features on the main site (approximately 0.1% of the project site) and within Pine Tree Wash. For the purpose of this report these areas were not classified or mapped as a distinct plant community; however, this community is discussed in the context of jurisdictional drainages in Section 3.2.5.

<u>Creosote Bush-White Burr Sage Scrub</u>

This floristic association corresponds to Mojave creosote bush scrub (Holland 1986). Creosote bush-white burr sage occurs throughout the site, and is dominated by creosote bush and white burr sage. Associated shrubs and subshrubs include desert senna (*Senna armata*), Mojave indigo bush (*Psorothamnus arborescens*), allscale saltbush, Nevada ephedra (*Ephedra nevadensis*), scalebroom (*Lepidospartum squamatum*), Cooper's goldenbush, rubber rabbitbrush, California buckwheat, cheesebush, winterfat, and Anderson's desert thorn. Cacti present include Wiggins' cholla (*Cylindropuntia echinocarpa*). Common herbaceous plants include fiddleneck (*Amsinckia* sp.), filaree (*Erodium* sp.), chia (*Salvia columbariae*), and angled stem buckwheat. Grass species present in this community consist of red brome, cheat grass (*Bromus tectorum*), ripgut (*B. diandrus*), and rattail fescue.

3.2.4 BARREN RIDGE SPECIAL STATUS SPECIES

This section presents the results of the 2011 focused biological surveys for special status plants, desert tortoise, and burrowing owl on the Barren Ridge main project site and generation tie-line. For clarity, results of the 2010 survey results are included in the presentation of the 2011 survey results. Any areas that have been resurveyed are amended and updated as appropriate, and the survey results presented in this report supersede the 2010 survey results presented in *RE Distributed Solar Biological Resources Assessment, Kern County, California* (Rincon Consultants, Inc. 2011). Survey areas are shown in Figure 4. Locations of all sensitive species are shown in Figure 5, and a summary table of focused survey results is presented in Appendix A.

Special Status Plant Species

No special status plants were observed at the project site or along the generation tie-line during the 2010 vegetative surveys or the 2011 focused plant surveys. Therefore, special status plants are considered absent from the project site.

Desert Tortoise

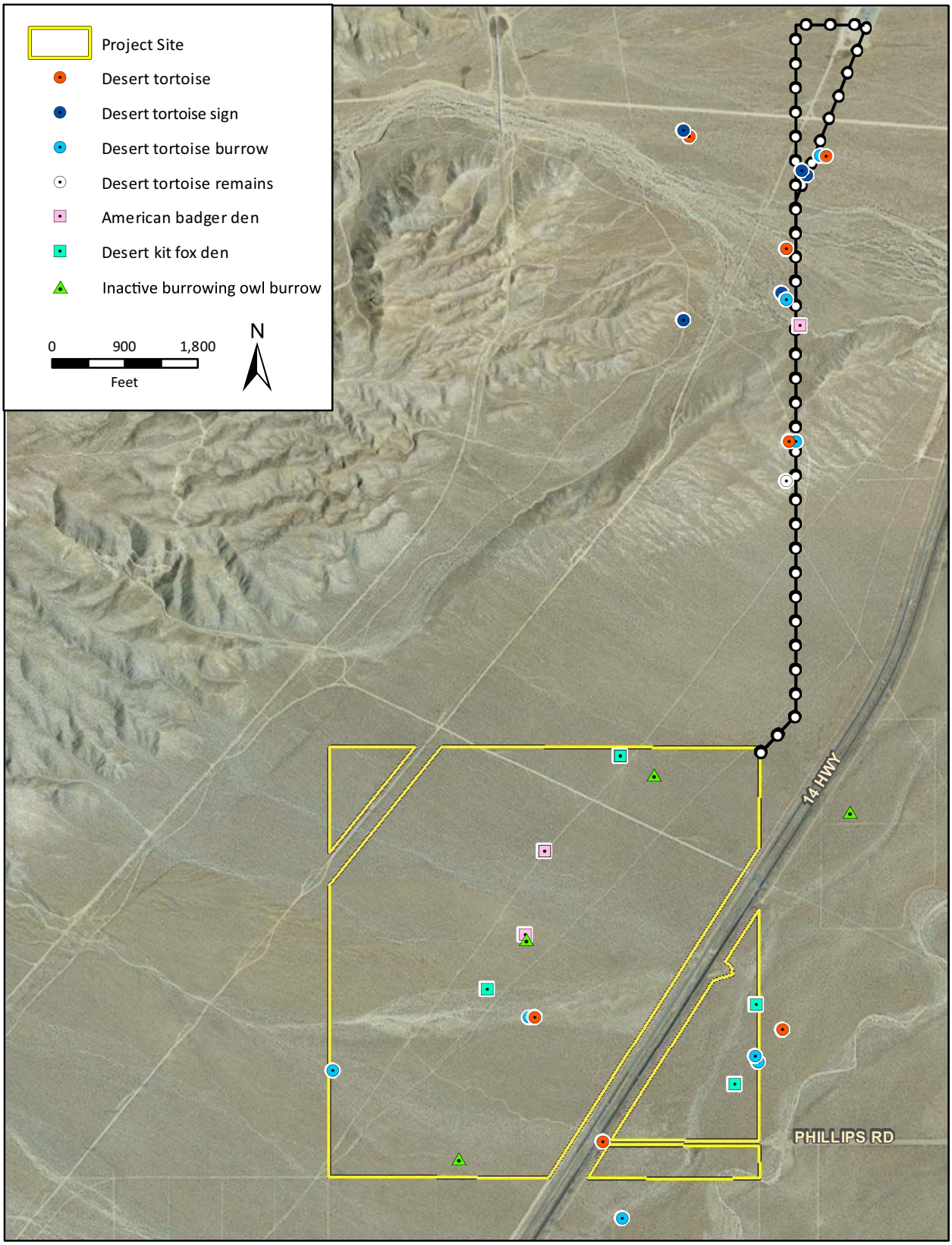
The project site provides suitable habitat for the desert tortoise. During the 2010 and 2011 surveys, a total of seven desert tortoise observations were made on the main project site and along the generation tie-line. Of these, three tortoises were observed on the main project site during the 2010 protocol surveys, and three were observed along the generation tie-line during the 2011 protocol surveys. A fourth desert tortoise was incidentally observed along the northern portion of the tie-line during the 2011 botanical surveys. Three of these individuals were detected at burrows, all along the generation tie-line. One tortoise-shell skeletal remain was also found in the tie-line survey corridor. In addition to these sightings, a total of five additional suitable burrows (some with desert tortoise sign) were detected on-site and in the off-site buffers. Desert tortoise sign (scat or tracks) was also detected in open foraging areas not adjacent to burrows at several locations.

Burrowing Owl

The project site and generation tie-line route provides suitable habitat for the burrowing owl. The site is adjacent to natural areas that provide foraging habitat, and burrows suitable for occupation by burrowing owls were observed both on the project site and along the generation tie-line route. During the 2010 reconnaissance surveys and 2011 focused surveys for burrowing owls, a total of four burrows or burrow complexes were observed on the main project site and associated survey buffer areas. Fresh burrowing owl sign was detected at one of the burrows in 2011; however, no owls were observed at this burrow. Three of the burrows appear inactive, with evidence of old whitewash and/or pellets with small mammal bones/remains present. Seven other burrows were located with no recent sign of large mammal or burrowing owl activity (these burrows were not mapped). The burrow entrances were either partially or completely collapsed by unknown causes, or the entrances were covered with cobwebs, vegetation, or other debris. Any recent activity at these burrows and/or burrow complexes was due to small mammals or lizards. No burrowing owls were detected during the 2011 Phase III surveys.

Special Status Raptors

The Barren Ridge site provides potential foraging habitat for raptors. Common raptors, such as the red-tailed hawk, could nest in the transmission towers adjacent to the site. No special status raptors were observed within the site or buffer area, and no Swainson's hawk or golden eagle nests are tracked in the vicinity of the project site (within 5 miles, CNDDB 2011). A red-tailed hawk nest and several common raven nests were located along the utility towers northwest of the site. An adult red-tailed hawk was observed soaring along the ridgeline west of the site on May 31. A ferruginous hawk (a migratory species that does not breed in Antelope Valley) was briefly observed in April 2011 soaring over the ridgeline northwest of the site, outside the survey area.



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Barren Ridge Biological Resources

Figure 5

Other Sensitive Species and Species of Interest

The project site provides suitable habitat for American badger, and a total of three American badger dens were observed in the project area. One American badger was observed in a burrow west of SR-14 during the 2011 surveys. Four desert kit fox dens were detected, and four pups were observed at one of the burrows in the 2011 surveys. The site also contains suitable nesting habitat for native birds protected by the MBTA and CFG Code 3503.

3.2.5 BARREN RIDGE JURISDICTIONAL EVALUATION

The soils at the Barren Ridge site include Cajon loamy sand, 0 to 5 percent slopes, and Arizo gravelly loamy sand, 2 to 9 percent slopes. Cajon soils, which dominate the site, are somewhat excessively drained, moderately sloping loamy sands formed on alluvial fans and floodplains. Arizo soils are excessively drained soils on alluvial fans and floodplains. None of the soils at the Barren Ridge site are listed as hydric by NRCS (National list of Hydric Soils, Feb. 2010; http://soils.usda.gov/use/hydric/lists/state.html).

The approximate 4,200-foot-high mountain feature called "Barren Ridge" located to the west of the project site and generation tie-line route creates an acute topographical divide. This divide supports semi-developed ephemeral dry washes that sustain a limited expanse of alluvial fan scrub and several swale complexes occurring within the Barren Ridge site. A formal delineation was conducted for the Barren Ridge project site by AECOM on April 8 and 9, 2011. This delineation did not include Pine Tree Wash, located along the generation tie-line route north of the main site.

Pine Tree Wash consists of a broad wash approximately 1,550 feet wide, that traverses the generation tie-line approximately 1 mile north of the main project site. Vegetation within Pine Tree Wash consists of southern alluvial fan scrub dominated by allscale saltbush, scale-broom (*Lepidospartum squamatum*), desert allysum (*Lepidium fremontii*), and green rabbitbrush (*Ericameria teretifolia*), with associated species from the neighboring creosote scrub. Southern alluvial fan scrub is considered a sensitive habitat. A formal jurisdictional delineation was not conducted at Pine Tree Wash, and is recommended prior to project initiation to determine the extent of jurisdictional resources, potential impacts to Water of the State, and the need for permits from the regulatory agencies.

3.2.6 BARREN RIDGE POTENTIAL ENVIRONMENTAL EFFECTS

Implementation of the proposed project at the Barren Ridge site has the potential to affect special-status species and jurisdictional waters. Recommended mitigation measures to avoid and/or minimize potential project effects to these sensitive resources are detailed in Section 5. The project is not expected to substantially interfere with wildlife movement in the project vicinity or region, or conflict with the provisions of an adopted HCP. Therefore, potential effects to these sensitive resource types are considered less than significant.

BIO I: POTENTIAL EFFECTS TO SPECIAL-STATUS SPECIES

No special status plants were observed on the Barren Ridge project site during the 2011 botanical surveys. Therefore, special status plant species are considered absent from the site and potential effects are not anticipated.

The Barren Ridge site provides suitable habitat for desert tortoises, and desert tortoises were observed onsite. Additionally, burrows suitable for use by desert tortoises were observed on and offsite and other sign (e.g., tracks, skeletal remains) were also observed. Completion of the proposed project may result in direct impacts to desert tortoise individuals during construction and would result in loss of suitable habitat.

The Barren Ridge site provides suitable habitat for burrowing owl. A total of four burrows with evidence of recent occupation (whitewash and pellets) were detected during the 2010 and 2011 focused surveys; however, no burrowing owls were observed. The proposed project could potentially result in adverse impacts to this species if these burrows become re-occupied prior to project construction.
No trapping efforts have been conducted for Mohave ground squirrels onsite. Based on the presence of suitable habitat, the project location within the historic range of the species and recorded occurrences in the project region, the proposed project has the potential to result in adverse effects if Mohave ground squirrels were to occur on the site prior to construction. The project would also result in loss of suitable habitat for the species.

The Barren Ridge site provides potential foraging habitat for raptors. The red-tailed hawk, a common raptor, was found nesting in the transmission towers adjacent to the site. No special status raptors, such as Swainson's hawk or the golden eagle, were observed on the project site or within survey buffers during the field surveys. Furthermore, no golden eagle nests are tracked in the vicinity of the project site (within 5 miles, CNDDB 2011). Therefore, the project is not expected to directly affect or result in incidental take of special status raptors. The site contains suitable nesting habitat for a variety of native avian species common to the desert and protected by CFGC §3503 and the MBTA. The proposed project could result in direct impacts to protected nesting birds if implemented during the nesting season.

Two additional mammal species of special concern, the American badger and the desert kit fox, were observed on site, and dens suitable for this species were also observed. The proposed project has the potential to directly impact this species during project construction.

BIO II: POTENTIAL EFFECTS TO SENSITIVE PLANT COMMUNITIES/LOCALLY PROTECTED RESOURCES

No locally protected resources occur on or adjacent to the Barren Ridge project site; therefore, implementation of the proposed project is not expected to affect locally protected resources. Southern alluvial fan scrub, a community generally considered sensitive by the regulatory agencies, occurs within limited portions of 2 drainage features onsite and within Pine Tree Wash to the north of the site. Potential effects are addressed in the context of jurisdictional waters, below.

BIO III: POTENTIAL EFFECTS TO JURISDICTIONAL WATERS

Based on AECOM's field delineation, three types of potentially jurisdictional drainage features occur on the Barren Ridge project site: southern alluvial fan scrub, unvegetated ephemeral dry wash, and unvegetated swale. These features comprise CDFG jurisdictional streambed and RWQCB waters of the state. In addition, the northern portions of the generation tie-line alternatives bisect Pine Tree Canyon wash, and several minor but potentially jurisdictional drainages occur within the alignments. Alteration of drainages within the site would likely constitute an impact to jurisdictional waters and require the acquisition of appropriate permits prior to alteration. These drainages are not considered subject to USACE jurisdiction as the western Mojave is isolated from traditional navigable waters; however, this requires USACE verification.

SECTION 4 – RECOMMENDED MITIGATION MEASURES

The following measures are recommended to ensure adverse effects to sensitive biological resources are avoided and/or minimized. With implementation of these measures, potential effects to sensitive biological resources are anticipated to be less than significant.

MM BIO I-A: MITIGATION MEASURES FOR SPECIAL STATUS PLANT SPECIES ALONG THE ROSAMOND GENERATION TIE-LINE

The following recommended measures apply to special-status plant species encountered along the Rosamond generation tie-line, and are intended to reduce the impacts to regional conservation objectives for alkali mariposa lily.

1. The project shall be designed to avoid alkali mariposa lily to the extent feasible. On-site avoidance measures, such as adjusting the specific pole location of the generation tie-line, and flagging individuals for avoidance by construction vehicles as necessary, would preserve the alkali mariposa lily detected within the Rosamond project area.
2. If impacts to the alkali mariposa lily along the Rosamond generation tie-line are unavoidable and the proposed project would impact greater than 10 percent of the alkali mariposa lily population, a Mitigation and Monitoring Plan shall be prepared that provides for compensatory mitigation. This plan shall include the following:
    - the number of specimens affected;
    - onsite or offsite preservation location (preferably within an area containing an existing alkali mariposa lily population);
    - methods for restoration, enhancement, and/or transplanting of alkali mariposa lily;
    - a performance standard replacement ratio of 1:1 per impacted specimen to be achieved within three years; and
    - adaptive management and remedial measures in the event that the performance standard is not achieved.

A 1:1 ratio is considered sufficient because alkali mariposa is not federally or state listed as threatened or endangered and is relatively common in the project region. If feasible, offsite mitigation could be incorporated into the Mitigation and Monitoring Plan for impacts to jurisdictional resources as described in MM BIO III.

MM BIO I-B: GENERAL MITIGATION MEASURES FOR SPECIAL STATUS WILDLIFE SPECIES

The following recommended measures are based on standard mitigation policies and guidelines currently practiced and are intended to reduce the potential for direct take of special status wildlife species, specifically the desert tortoise, Mohave ground squirrel, American badger and desert kit fox. No desert tortoises or Mohave ground squirrels were observed during the focused surveys on the Rosamond main site. However, these sites contain suitable habitat for the species and adverse effects could occur if individuals were to occupy the sites prior during construction, although the potential for such effect is low. The measures discussed below are recommended to ensure that adverse effects to these species are avoided and/or minimized at the Rosamond and Barren ridge sites and their associated generation tie-lines. Specific measures for desert tortoise and Mohave ground squirrel at the

Barren Ridge site and along the Rosamond generation tie-line are outlined in the sections that follow.

1. Qualified biologists shall conduct preconstruction clearance surveys for special status wildlife species within 2 weeks of the start of any ground disturbing construction activity and during all grading/ground disturbing activities. All burrows that could provide shelter for special status species shall be excavated during the first clearance survey. A biologist shall remain on-call throughout construction in the event a tortoise or badger wanders onto the site.
2. If a permanent tortoise proof exclusion fence is practicable, a fence shall be installed around all construction areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence shall be constructed of ½-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by site operator to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Raven perching deterrents shall be installed as part of the fence construction.
3. After fence installation, the qualified biologist shall conduct a clearance survey for special status wildlife species within the construction site.
4. A raven management plan shall be developed that includes language stipulating that all trash that could attract predators of the desert tortoise, such as common ravens, be removed from work sites or completely secured at the end of each work day.
5. Construction and operations personnel shall undergo environmental awareness training provided by the qualified biologist immediately prior to commencement of ground disturbing activities, with specific discussion of desert tortoise, Mohave ground squirrel, and American badger natural history and protective measures. New construction personnel shall be similarly trained prior to their start of work onsite.
6. If any American badger or desert kit fox burrows are determined to be active, an on-site passive relocation program shall be implemented. This program shall consist of excluding badgers or kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm badger and kit fox usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. Relocation should occur during the non-breeding season.
7. If a desert tortoise or Mohave ground squirrel is found onsite during subsequent surveys or biological monitoring activities, construction activities shall cease to avoid the potential for take. Consultation with CDFG and the USFWS shall then be initiated to obtain the necessary incidental take permit authorizations pursuant to the federal ESA and CESA.

MM BIO I-C: MITIGATION MEASURES FOR DESERT TORTOISE AT BARREN RIDGE

The following measures are recommended for the Barren Ridge project site to reduce potentially significant effects to a less than significant level under CEQA. Although not listed herein as a specific mitigation measure, incidental take authorization from the USFWS and CDFG is expected to be necessary for ESA and CESA compliance. Any activities that result in take of the species, such as translocation, would also require take authorization from USFWS and CDFG.

1. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall include but not be limited to the following components:
    - Biologist qualifications/authorizations
    - Preconstruction clearance surveys and construction monitoring
    - Burrow excavation
    - Desert tortoise handling and transport
    - Relocation site characteristics, preparation, and management
    - Relocation monitoring and reporting
2. Compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area (DTNA), private purchase of mitigation lands, or onsite preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 0.5:1 ratio to reduce potential effects to less than significant under CEQA.

The compensatory mitigation ratio of 0.5:1 is considered adequate under CEQA based on the fact that the site is not located within designated critical habitat for desert tortoise or a DWMA. It is noted that the final mitigation ratio required by the USFWS for incidental take authorization is subject to negotiation.

MM BIO I-D: MITIGATION MEASURES FOR BURROWING OWL

Mitigation measures for potential project impacts to burrowing owls typically follow the guidelines developed by the California Burrowing Owl Consortium (1993) and CDFG (1995). However, mitigation requirements under CEQA are established at the discretion of the lead agency. No burrowing owls were observed on any of the sites during the focused surveys. However, each of the sites contain suitable habitat for the species and burrowing owl sign was observed on the Barren Ridge site. Therefore, adverse effects to burrowing owls could occur if individuals were to occupy the sites in the future and the following measures are recommended for all project sites.

1. Conduct preconstruction clearance surveys of the sites and within 250 feet of the sites to confirm burrowing owls remain absent. Clearance surveys are typically conducted 30 days prior to construction activities. If no burrowing owls are observed, no further actions are recommended.
2. If burrowing owls are found during the clearance surveys, develop a burrowing owl Mitigation and Monitoring Plan. The plan shall provide the framework for implementing the following tasks:
    a. Unless otherwise authorized by CDFG, avoid disturbance within 50 meters (164 feet) of occupied burrows during the non-breeding season (September 1 through January 31) or within 75 meters (246 feet) during the breeding season (February 1 through August 31).
    b. Passively relocate burrowing owls to a suitable offsite location. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 meters (164 feet) from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls. Relocation of owls can only occur during the non-breeding season.

c. At minimum one, and potentially two, alternate natural or artificial burrows shall be provided/identified for each active burrow that will be excavated in the project impact zone.

d. The project area shall be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone.

e. Burrows shall be excavated using hand tools and refilled to prevent reoccupation.

f. If the project will reduce the amount of suitable foraging habitat contiguous to occupied burrows on or adjacent to the site below the 6.5-acre threshold (per pair or individual owl), provide compensatory mitigation for direct impacts to occupied burrowing owl habitat based on the ratios outlined by the Burrowing Owl Consortium (1993).

MM BIO I-E: MITIGATION MEASURES FOR SPECIAL STATUS RAPTORS AND NESTING BIRDS

The following measures are recommended for all projects to ensure that potential direct or indirect effects to nesting raptors and other avian species are avoided and/or minimized:

1. If construction activities occur during the breeding season (February – August), a qualified biologist shall conduct a nesting bird/raptor survey to determine the presence/absence, location, and status of any active nests on or adjacent to the project site. The extent of the survey buffer area surrounding the site shall be established by the qualified biologist to ensure that indirect effects to nesting birds are avoided. Nesting bird surveys are typically conducted 3-30 days prior to construction activities (last survey conducted within 3 days of the start of construction). A suitable buffer (e.g. 0.25 mile for Swainson's hawk, 200-300 feet for common raptors; 30-50 feet for passerines) shall be established around active nests and no construction within the buffer allowed until a qualified biologist has determined that the nest is no longer active (e.g. the nestlings have fledged and are no longer reliant on the nest). Encroachment into the buffer may occur at the discretion of a qualified biologist.

MM BIO I-F: MITIGATION MEASURES FOR MOHAVE GROUND SQUIRREL

The following measures specific to Mohave ground squirrel are recommended for the Rosamond generation tie line:

1. Conduct focused surveys for Mohave ground squirrel within potentially suitable habitat that would be affected by any ground disturbing activities to determine the presence/absence of the species. The surveys must be conducted by a qualified biologist with a CDFG MOU to survey for Mohave ground squirrels, in accordance with the CDFG protocol (2003). If Mohave ground squirrels are determined present during focused surveys, implement MM BIO I-F, 2 and 3.

The following measures are recommended for the Barren Ridge project site and generation tie line. Although not listed herein as a specific mitigation measure, incidental take authorization from the CDFG is likely to be necessary for CESA compliance. Any activities that result in take of the species, such as translocation, would also require take authorization from CDFG.

2. If Mohave ground squirrels are determined present on the project site based on protocol trapping surveys, or Mohave ground squirrels are assumed present as an alternative to surveys, develop a Mohave ground squirrel translocation and monitoring plan. The plan shall include but

not be limited to the following components:

- Biologist qualifications/authorizations
- Preconstruction clearance surveys and construction monitoring
- Burrow excavation
- Mohave ground squirrel handling and transport
- Relocation site characteristics, preparation, and management
- Relocation monitoring and reporting

3. Develop a mitigation plan to provide adequate compensatory mitigation for the loss of Mohave ground squirrel habitat. Providing compensatory mitigation to offset species/habitat impacts can be accomplished through purchase of credit from an existing mitigation bank, such as the DTNA, or private purchase of mitigation lands. Compensatory mitigation shall be provided at a minimum 0.5:1 ratio to reduce potential effects to less than significant under CEQA.

This ratio is considered adequate based on the fact that the site is not located within any Mohave ground squirrel core areas or known population areas (Leitner 2008). It is noted that the final mitigation ratio required by CDFG for acquisition of a 2081 incidental take permit is subject to negotiation. Given that Mohave ground squirrel and desert tortoise occupy the same habitat types, compensatory mitigation for both species can be combined into one mitigation program.

MM BIO II: MITIGATION MEASURES FOR JOSHUA TREES/WOODLANDS

The following measures are recommended for the Rosamond project to ensure that potential direct effects to Joshua trees/woodlands (sensitive plant communities/locally protected resources) are minimized:

1. Conduct a Joshua tree survey to inventory Joshua trees within the project sites. The survey shall include an assessment of the height, diameter at breast height (dbh), and health status of all trees. Joshua tree woodlands shall be mapped based on groupings of trees with greater than 10% areal coverage in accordance with the *California Wildlife Habitat Relationships System Classification Rules*. Such mapping shall be conducted based on aerial photography and other remote sensing techniques, and shall be determined based on a census count and a spatial analysis technique such as “nearest neighbor” and associated statistical analysis.
2. Prepare a Joshua Tree Impact and Mitigation Plan that details Joshua trees/woodlands to be removed and mitigation measures to compensate for impacts. The plan shall outline a compensatory mitigation approach consisting either of relocation of trees to an approved preserve, payment of an in-lieu fee or purchase of mitigation credit, or the purchase of preserved mitigation lands at a minimum 1:1 ratio of impacted Joshua tree woodlands.

A 1:1 ratio per specimen tree is considered sufficient to reduce potential effects to less than significant because Joshua trees/woodlands are relatively abundant in the vicinity of the project sites and comprise one of the more common communities in the region (Davis et al. 1998). Equivalent habitat means the same general number of trees since mitigation lands to be preserved may contain a higher density of trees than that at the site, and consequentially proportionately less acreage would be necessary to meet the mitigation requirement, and vice versa.

MM BIO III: MITIGATION MEASURES FOR JURISDICTIONAL WATERS

The following measures are recommended for the Rosamond, and Barren Ridge projects to ensure that direct or indirect effects to jurisdictional waters are minimized:

1. To the extent practicable, the project shall be designed to avoid impacts to the jurisdictional waters within the Rosamond and Barren Ridge project sites, and the following avoidance/minimization measures are recommended:
    a. Any material/spoils from project activities shall be located away from jurisdictional areas or sensitive habitat and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
    b. Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank.
    c. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed of. For all spills the project foreman or designated environmental representative will be notified.
2. If jurisdictional waters cannot be avoided, minimization measures shall be applied and all necessary resource agency permits shall be obtained. This includes Individual or General Waste Discharge Requirements (WDRs) from the RWQCB and a Streambed Alteration Agreement from CDFG. Verification from the USACE is recommended to confirm the drainages do not constitute waters of U.S.
3. Minimization measures for impacts to jurisdictional waters shall include routing on-site drainage and placing the water discharge point at the location of existing or historic ephemeral drainages, if feasible.
4. Compensatory mitigation may occur either onsite or offsite, and would occur at a ratio no less than 1:1 for the impact to jurisdictional waters. A Habitat Mitigation and Monitoring Plan shall be prepared that outlines the compensatory mitigation in coordination with the RWQCB and CDFG. If onsite mitigation is proposed, the Habitat Mitigation and Monitoring Plan shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration of alluvial desert scrub habitat. Determination of mitigation adequacy shall be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity (such as up or downstream of the site). The Plan shall include remedial measures in the event that this performance criteria is not met. If mitigation is implemented offsite, mitigation lands shall be comprised of similar or more well-developed alluvial desert scrub and preferably be located in the vicinity of the site or watershed. Off-site land shall be preserved through a conservation easement and the Plan shall identify an approach for funding assurance for the long-term management of the conserved land.

The proposed 1:1 acreage ratio is considered sufficient to reduce project effects to less than significant under CEQA because the type of affected jurisdictional feature (i.e. non-riparian desert wash/scrub and swales) are relatively common in the context of desert region drainage features. Furthermore, most effects would likely be temporary because jurisdictional features are anticipated to be relocated on-site to maintain hydrology in the project area for flood control purposes. It is noted that the final mitigation ratio required by the RWQCB and CDFG for acquisition of regulatory permits may differ.

SECTION 5 – SUMMARY AND CONCLUSIONS

The following discussion summarizes the potential project effects to sensitive biological resources at each project site and recommended mitigation measures to reduce effects to a less than significant level under CEQA. Appendix D provides a summary table of the recommended mitigation measures for the individual sites, with an "X" indicating an applicable mitigation measure for a particular site.

5.1 ROSAMOND

No special status plants were observed on the project site; therefore, special status plants are considered absent from the site and potential adverse effects are not anticipated. However, the proposed project may potentially affect special status plant species, specifically alkali mariposa lily, along the generation tie-line where suitable habitat is present. Mitigation measure BIO I-A is recommended to ensure potential effects to special status plants along the generation tie-line are avoided or minimized.

No desert tortoises, burrowing owls, or Mohave ground squirrels were observed during the focused surveys. Therefore, the proposed project is not expected to result in direct adverse effects to these special status wildlife species on the project site. Nonetheless, the site contains suitable habitat for these species, and an inactive American badger burrow was observed onsite. Adverse effects could occur if individuals were to wander on to the site during construction, although the potential for effects is relatively low. The proposed project may also affect special status wildlife species along the generation tie-line where potentially suitable habitat is present. Mitigation measures BIO I-B, I-C, I-D, and I-F are recommended to ensure that adverse effects to special status wildlife species are avoided and/or minimized.

No Swainson's hawks, golden eagles, or other special status raptors were observed on the Rosamond site or within 1 mile of the site during the focused surveys. Therefore, the project is not expected to result in direct effects to or incidental take of these species. However, the project site contains suitable foraging habitat for raptor species and nesting habitat for a variety of native avian species common to the desert and protected by CFGC 3503 and the MBTA. Mitigation measure BIO I-E is recommended to ensure that adverse effects to nesting birds/raptors are avoided and/or minimized.

The project site contains a sensitive plant community and locally protected resource, Joshua trees/woodland, and potentially jurisdictional waters. Therefore, mitigation measures BIO II and III are recommended to ensure impacts to these sensitive resources are avoided and/or minimized.

With implementation of the mitigation measures described above, potential effects to sensitive biological resources associated with the proposed project at the Rosamond site would be less than significant.

5.2 BARREN RIDGE

No special status plant species were observed on the project site during focused surveys. Therefore, potential adverse effects to special status plant species not expected and no further actions are recommended.

Seven desert tortoises were observed on the Barren Ridge project site during the focused surveys. Project implementation would likely result in direct adverse effects to this species. Therefore MM BIO I-C is recommended to ensure potential effects to desert tortoise are avoided or minimized. It is noted that incidental take authorization from the USFWS and CDFG is expected to be necessary for ESA and CESA compliance.

No burrowing owl individuals were observed on the project site during focused surveys; however, potential burrows and owl sign were detected. Therefore, MM BIO I-D is recommended to ensure potential adverse effects to burrowing owl are avoided or minimized.

No golden eagles or other special status raptors were observed on the Barren Ridge site or in the survey buffer or adjacent areas during focused surveys. Therefore, the project is not expected to result in direct effects to or incidental take of these species. However, the project site contains suitable foraging habitat for raptor species and nesting habitat for a variety of native avian species common to the desert and protected by CFGC 3503 and the MBTA. Mitigation measure BIO I-E is recommended to ensure that adverse effects to nesting birds/raptors are avoided or minimized.

Mohave ground squirrel surveys were not conducted on the Barren Ridge project site. The site is not located within any core areas or known population areas (Leitner 2009). Nonetheless, the site contains suitable habitat for Mohave ground squirrel and project implementation could result in adverse effects. Therefore, MM BIO I-F is recommended to ensure potential effects to Mohave ground squirrel are avoided or minimized. It is noted that incidental take authorization from the CDFG is likely to be necessary for CESA compliance.

A total of three American badger burrows (individual observed in one burrow) and four desert kit fox burrows (pups observed at one burrow) were observed on the project site. Project implementation could result in direct adverse effects to these species, including mortality or injury. Therefore, MM BIO I-B is recommended to ensure potential effects are avoided or minimized.

The Barren Ridge project site contains potentially jurisdictional waters. Therefore, MM BIO III is recommended to ensure impacts to this sensitive resource are avoided or minimized.

With implementation of the mitigation measures described above, potential effects to sensitive biological resources associated with the proposed project at the Barren Ridge project site would be less than significant.

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SECTION 7 – LIST OF PREPARERS

RINCON CONSULTANTS, INC.

- Primary Author: Brett D. Hartman, Ph.D. (c), Senior Biologist
- Technical Review/Editing:
  - Steven J. Hongola, Senior Ecologist/Biological Program Manager
  - John Dreher Jr., LEED AP, Principal Biologist
  - Duane Vander Pluym, D.Env., Vice President
- Graphics:
  - Katherine Warner, GISP, GIS Analyst
  - Kathy Babcock, Graphics Technician
- Production: Katharine Stanulis, Production/Marketing Coordinator
- Barren Ridge Burrowing Owl and Raptor Surveys:
  - Jennifer M. Tuner, M.S., Biologist
  - Christina Sulzman, Biologist
- Botanical Surveys:
  - Colby J. Boggs, M.S., Senior Ecologist/Biological Program Manager
  - Kristie Haydu, Botanist
  - Danielle Castle, Botanist
  - Melinda Elster, Botanist
- Jurisdictional Evaluation:
  - Colby Boggs

SUNDANCE BIOLOGY, INC.

- Barren Ridge and Rosamond Generation Tie-Line Desert Tortoise and Burrowing Owl Surveys

Appendix A

Summary of Focused Survey Results for the Rosamond and Barren Ridge Sites

Appendix A-1. Summary of Rosamond Focused Survey Results

Observation	Location (NAD 83, Zone 11)		Comments
1. Burrowing owl sign	E 385658	N 3860209	Pellets at burrow, detected in 2011
2. Alkali mariposa lily	E 386812	N 3858680	Four individuals observed west of 60th Street, associated with alkali saltbush, cheatgrass, and filaree.
3. Alkali mariposa lily	E 386821	N 3858684	Six individuals observed west of 60th Street, associated with alkali saltbush, cheatgrass, and filaree.
4. Alkali mariposa lily	E 386811	N 3858667	One individual observed west of 60th Street, associated with alkali saltbush, cheatgrass, and filaree.
5. Alkali mariposa lily	E 386815	N 3858914	Five individuals observed northwest of intersection between west of 60th Street and Rosamond Blvd., in ruderal vegetation.
6. Alkali mariposa lily	E 386814	N 3858935	One individual observed northwest of intersection between west of 60th Street and Rosamond Blvd., in ruderal vegetation.
7. Alkali mariposa lily	E 386829	N 3858849	One individual observed northwest of intersection between west of 60th Street and Rosamond Blvd., in ruderal vegetation.
8. Inactive American badger den	E 386122	N 3862768	Inactive, indicative scrapes on side of den, detected in 2010
9. Red-tailed hawk pair	N/A	N/A	Observed above cliffs in 2010
10. Red-tailed hawk pair	E 385563	N 3862663	Observed near southwest corner of the site; potentially the same pair as #2
11. Immature red-tailed hawk	E 385200	N 3862664	Near pair, seen immediately after pair sighting in 2010
12. Raptor nest	E 386756	N 3863528	In cliffs north of site, observed in 2010
13. Prairie falcon	N/A	N/A	One individual seen flying over Willow Springs Butte in 2011

Appendix A-2: Summary of Barren Ridge Focused Survey Results

Observation	Location (NAD 83, Zone 11)		Comments
1. Desert tortoise	E 403316	N 3899374	Adult desert tortoise observed west of gen-tie corridor in 2011
2. Desert tortoise	E 403680	N 3898939	Sub-adult desert tortoise observed along gen-tie corridor in 2011
3. Desert tortoise	E 403636	N 3895996	Adult female desert tortoise observed east of project site in 2010
4. Desert tortoise	E 402940	N 3895537	Adult male desert tortoise observed at SR-14 and Phillips Rd intersection in 2010
5. Desert tortoise and burrow	E 403683	N 3898214	Adult desert tortoise observed at burrow along gen-tie corridor in 2011
6. Desert tortoise and burrow	E 403813	N 3899289	Adult desert tortoise observed foraging adjacent to burrow along gen-tie corridor in 2011
7. Desert tortoise and burrow	E 402704	N 3896055	Juvenile desert tortoise observed inside burrow in 2011; juvenile tortoise also observed in 2010
8. Desert tortoise burrow	E 403026	N 3895891	Desert tortoise burrow identified in 2010; coyote sign observed in 2011
9. Desert tortoise burrow	E 403545	N 3895876	Desert tortoise burrow identified in 2010; sign of desert tortoise activity in 2011
10. Desert tortoise burrow	E 403543	N 3895889	Desert tortoise tracks observed at burrow in 2011
11. Desert tortoise burrow	E 403680	N 3898749	Desert tortoise burrow observed along gen-tie corridor in 2011
12. Desert tortoise burrow	E 401941	N 3895861	Desert tortoise burrow identified in 2010; no sign of recent activity/use in 2011
13. Desert tortoise remains	E 403673	N 3898062	Desert tortoise shell-skeletal remains observed along the gen-tie corridor in 2011
14. Desert tortoise sign	E 403672	N 3898761	Desert tortoise scat (from 2011) observed along gen-tie corridor in 2011
15. Desert tortoise sign	E 403762	N 3899214	Desert tortoise scat (from 2011) observed along gen-tie corridor in 2011
16. Desert tortoise sign	E 403744	N 3899233	Desert tortoise scat (from 2011) observed along gen-tie corridor in 2011
17. Desert tortoise sign	E 403307	N 3899382	Desert tortoise scat (from 2010) observed west of gen-tie corridor in 2011
18. Desert tortoise sign	E 403290	N 3898676	Desert tortoise scat (from 2010) observed west of gen-tie corridor in 2011
19. Inactive burrowing owl burrow	E 403896	N 3896818	Burrowing owl sign (pellets, whitewash) observed at burrow in 2011, but no owls observed
20. Inactive burrowing owl burrow	E 402408	N 3895525	Burrowing owl sign (pellets, whitewash) observed from 2010; no sign of recent activity/use in 2011
21. Inactive burrowing owl burrow	E 402668	N 3896365	Burrowing owl sign (pellets, whitewash) observed in 2010; no sign of recent activity/use in 2011
22. Inactive burrowing owl burrow	E 403158	N 3896962	Burrowing owl sign (pellets, whitewash) observed in 2010; no sign of recent activity/use in 2011
23. American badger den	E 402670	N 3896365	American badger den. American badger individual observed in 2010; badger tracks observed in 2011
24. American badger den	E 402748	N 3896677	American badger tracks and scat observed in 2011

Appendix A-2: Summary of Barren Ridge Focused Survey Results

Observation	Location (NAD 83, Zone 11)		Comments
25. American badger den	E 403728	N 3898647	American badger den observed along gen-tie corridor in 2011
26. Desert kit fox den	E 403456	N 3895793	9 burrow/den entrances; old kit fox scat observed in 2011
27. Desert kit fox den	E 403537	N 3896091	7 burrow/den entrances; kit fox scat and tracks observed in 2011
28. Desert kit fox den	E 402509	N 3896168	5 burrow/den entrances; kit fox scat observed in 2011; desert tortoise tracks observed in 2010
29. Desert kit fox den	E 403035	N 3897036	14 burrow/den entrances; 4 fox pups observed in 2011; burrowing owl sign (pellets, whitewash) observed in 2010
30. Red-tailed hawk	E 399512	N 3895916	Red-tailed hawk adult observed in 2011 soaring far overhead along ridgeline and within surrounding canyons 1.5 mi west of project site (not shown on map)
31. Red-tailed hawk	E 403268	N 3898348	Two adult red-tailed hawks observed in 2011 near active nest located on tower 73/3 west of gen-tie corridor (not shown on map)
32. Ferruginous hawk	E 402741	N 3898594	Ferruginous hawk observed in 2011 soaring over ridgeline west of gen-tie corridor (not shown on map)

Appendix B

Site Photographs

Photo 1 - View from northeast corner of project site facing southwest. Vegetation at this point consists of Broom Snake Weed Scrub that transitions to Creosote Bush-White Burr Sage Scrub to the south and west.

Photo 2 - View of drainage facing northeast. Feature exits natural channel and enters road at this location.

Photo 3 - View of drainage facing northwest. Note active channel within dirt access road.

Photo 4 - View from western portion of project site facing south. Vegetation dominated by Creosote Bush and lacking Joshua Trees at this location

Rosamond Site Photographs

Photo 1 - View of Creosote Bush - White Burr Sage Scrub characteristic of the entire site.

Photo 2 - View of man-made ditch along the western side of SR-14, looking south.

Photo 3 - View of alluvial fan facing west. Drainage system is made up of numerous discontinuous channels and areas of sheet flow.

Photo 4 - Desert tortoise observed at the intersection of SR-14 and Phillips Road.

Barren Ridge Site Photographs

Appendix C

Botanical Compendia

Rosamond Plant Species Compendium	
Scientific Name	**Common Name**
Yucca brevifolia	Joshua tree
Allium sp.	onion
Acamptopappus sphaerocephalus	goldenhead
*Ambrosia artemisiifolia**	common ragweed
Ambrosia dumosa	white bursage
Ambrosia (Hymenoclea) salsola	cheesebush
Coreopsis bigelovii	tickseed
Ericameria cooperi var. *cooperi*	goldenbush
Ericameria (Chrysothamnus) nauseosa	rubber rabbitbrush
Glyptopleura marginata	glyptopleura
Gutierrezia microcephala	sticky snakeweed
*Lactuca serriola**	prickly lettuce
Lasthenia gracilis (californica)	common goldfields
Leptosyne (Coreopsis) calliopsidea	tickseed
Psathyrotes annua	psathyrotes
Uropappus lindleyi	silverpuffs
Lomatium mohavense	Mojave lomatium
Malacothrix sp.	malacothrix
Stephanomeria exigua	stephanomaria
Stephanomeria pauciflora	wire-lettuce
Stylocline gnaphaloides	everlasting neststraw
Tetradymia stenolepis	striped horsebrush
Xylorhiza tortifolia var. *tortifolia*	desert-aster
Amsinckia tessellata	devil's lettuce
Cryptantha circumscissa	cryptantha
Pectocarya linearis ssp. *ferocula*	pectocarya
Pectocarya recurvata	pectocarya
Pectocarya setosa	round-nut pectocarya
Phacelia distans	distant phacelia
Phacelia fremontii	Fremont's phacelia
Plagiobothrys nothofulvus	rusty popcornflower
Descurainia pinnata	tansy mustard
*Sisymbrium altissimum**	tumble mustard
*Hirschfeldia incana**	mustard
Cylindropuntia (Opuntia) echinocarpa	silver cholla
Atriplex polycarpa	allscale saltbush
Atriplex spinifera	spiny saltbush
Grayia spinosa	hop-sage
Krasheninnikovia lanata	winter fat
Ephedra nevadensis	Nevada ephedra
Ephedra viridis	green ephedra
Chamaesyce albomarginata	rattlesnake weed
Croton setigerus	dove weed
Astragalus didymocarpus	two-seeded milkvetch
Astragalus lentiginosus	freckled milkvetch

Rosamond Plant Species Compendium	
Scientific Name	**Common Name**
*Pisum sativum**	common pea
*Erodium cicutarium**	storksbill
*Marrubium vulgare**	horehound
Salvia columbariae	chia
Calochortus kennedyi	desert calochortus
Calochortus striatus	alkali mariposa lily
Mirabilis bigelovii	four o'clock
Camissonia campestris ssp. *campestris*	Mohave sun cup
Camissonia pallida	sun cup
Castilleja exserta	purple owl's-clover
Orobanche cooperi	broomrape
*Avena fatua**	common wild oats
*Bromus diandrus**	ripgut brome
Bromus madritensis ssp. *rubens**	foxtail chess
*Bromus tectorum**	cheat grass
Elymus elymoides	squirreltail
Festuca (Vulpia) microstachys	fescue
*Festuca (Vulpia) myuros**	rattail fescue
*Hordeum murinum**	barley
Poa secunda	one-sided bluegrass
*Schismus arabicus**	Mediterranean grass
Stipa (Achnatherum) hymenoides	sand grass
Stipa (Achnatherum) speciosa (speciosum)	desert needlegrass
Eriastrum densifolium ssp. *mojavense*	Mojave eriastrum
Eriastrum sapphirinum	eriastrum
Centrostegia thurberi	Thurber's spineflower
Chorizanthe brevicornu ssp. *brevicornu*	brittle spineflower
Eriogonum fasciculatum var. *polifolium*	California buckwheat
Eriogonum gracillimum	slender buckwheat
Eriogonum trichopes	little desert trumpet
Mucronea perfoliata	perfoliate spineflower
Lycium andersonii	Anderson's desert thorn
Lycium cooperi	Cooper's box thorn
Tamarix sp.	tamarisk
Larrea tridentata	creosote bush

**Indicates a non-native species.*

Barren Ridge Plant Species Compendium	
Scientific Name	**Common Name**
Hesperoyucca (Yucca) whipplei	our Lord's candle
Yucca brevifolia	Joshua tree
Lomatium mohavense	Mojave lomatium
Acamptopappus sphaerocephalus	goldenhead
*Ambrosia artemisiifolia**	common ragweed
Ambrosia dumosa	white bursage
Ambrosia (Hymenoclea) salsola	cheesebush
Brickellia incana	woolly brickellbush
Chaenactis fremontii	desert pincushion
Coreopsis bigelovii	tickseed
Encelia actoni	encelia
Ericameria cooperi var. *cooperi*	goldenbush
Ericameria linearifolia	interior goldenbush
Ericameria (Chrysothamnus) teretifolia	green rabbitbrush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace's woolly daisy
Lasthenia gracilis (californica)	common goldfields
Lepidospartum squamatum	scale-broom
Malacothrix californica	malacothrix
Malacothrix coulteri	snake's-head
Monolopia lanceolata	monolopia
Rafinesquia neomexicana	desert chicory
Stephanomeria exigua	stephanomeria
Stephanomeria pauciflora	wire-lettuce
Stylocline gnaphaloides	everlasting nest straw
Syntrichopappus fremontii	syntrichopappus
Uropappus lindleyi	silver puffs
Xylorhiza tortifolia var. *tortifolia*	desert-aster
Amsinckia menziesii	fiddleneck
Amsinckia tessellata	devil's lettuce
Cryptantha barbigera	cryptantha
Cryptantha circumscissa	cryptantha
Emmananthe penduliflora	whispering bells
Pectocarya linearis ssp. *ferocula*	pectocarya
Pectocarya recurvata	pectocarya
Phacelia distans	distant phacelia
Phacelia fremontii	Fremont's phacelia
Pholisma arenarium	sand food
Pholistoma membranaceum	pholistoma
Plagiobothrys arizonicus	Arizona popcornflower
Plagiobothrys nothofulvus	rusty popcornflower
*Brassica rapa**	field mustard
*Brassica tournefortii**	Asian mustard
Descurainia pinnata	tansy mustard
Guillenia lasiophylla	California mustard

Barren Ridge Plant Species Compendium	
Scientific Name	**Common Name**
*Hirschfeldia incana**	hirschfeldia
Lepidium flavum var. *flavum*	yellow pepperweed
Lepidium fremontii	desert pepperweed
Lepidium nitidum var. *howellii*	peppergrass
*Sisymbrium altissimum**	tumble mustard
*Sisymbrium irio**	London rocket
Tropidocarpum gracile	tropidocarpum
Cylindropuntia (Opuntia) echinocarpa	silver cholla
Peritoma (Isomeris) arborea	bladderpod
Atriplex canescens	fourwing saltbush
Atriplex lentiformis	big saltbush
Atriplex polycarpa	allscale saltbush
Grayia spinosa	hop-sage
Krasheninnikovia lanata	winter fat
*Salsola tragus**	Russian thistle
Cuscuta californica	California dodder
Ephedra viridis	green ephedra
Astragalus acutirostris	sharpkeel milkvetch
Astragalus didymocarpus	two-seeded milkvetch
Astragalus lentiginosus	freckled milkvetch
Lotus humistratus	foothill deervetch
Psorothamnus arborescens var. *minutifolius*	Mojave indigobush
Senna armata	spiny senna
*Erodium cicutarium**	storksbill
Scutellaria (Salazaria) mexicana	bladder sage
Salvia columbariae	chia
Mentzelia albicaulis	blazing star
Mirabilis bigelovii	four o'clock
Camissonia boothii ssp. *condensata*	clustered Booth's desert primrose
Camissonia campestris ssp. *campestris*	Mohave sun cup
Camissonia claviformis	browneyed primrose
Camissonia palmeri	Palmer's sun cup
*Oenothera laciniata**	evening-primrose
Eschscholzia californica	California poppy
Eschscholzia minutiflora ssp. *covillei*	Coville's poppy
Plantago ovata	plantain
*Bromus diandrus**	ripgut grass
Bromus madritensis ssp. *rubens**	foxtail chess
*Bromus tectorum**	cheat grass
*Bromus trinii**	Chilean chess
Elymus elymoides	squirreltail
*Festuca (Vulpia) microstachys**	fescue
*Festuca (Vulpia) myuros**	rattail fescue
*Hordeum murinum**	barley
Poa secunda	one-sided bluegrass

Barren Ridge Plant Species Compendium	
Scientific Name	**Common Name**
*Schismus arabicus**	Mediterranean grass
Stipa (Achnatherum) speciosa (speciosum)	desert needlegrass
Stipa (Achnatherum) hymenoides	sand grass
Eriastrum densifolium ssp. *mojavense*	Mojave eriastrum
Eriastrum diffusum	miniature eriastrum
Eriastrum sparsiflorum	Great Basin eriastrum
Gilia latiflora ssp. *latiflora*	broad-leaved gilia
Gilia sinuata	rosy gilia
Linanthus dichotomus	evening snow
Linanthus parryae	Parry's linanthus
Loeseliastrum matthewsii	desert calico
Centrostegia thurberi	Thurber's spineflower
Chorizanthe brevicornu ssp. *brevicornu*	brittle spineflower
Chorizanthe watsonii	Watson's spineflower
Eriogonum angulosum	angled buckwheat
Eriogonum fasciculatum var. *polifolium*	California buckwheat
Eriogonum gracillimum	slender buckwheat
Eriogonum inflatum	desert trumpet
Eriogonum mohavense	Mojave buckwheat
Eriogonum nudum var. *westonii*	Weston's wild buckwheat
Mucronea perfoliata	perfoliate spineflower
Delphinium parishii ssp. *parishii*	Parish's or desert larkspur
Lycium andersonii	Anderson's desert thorn
Lycium cooperi	Cooper's box thorn
Dichelostemma capitatum	blue dicks
Larrea tridentata	creosote bush

**Indicates a non-native species.*

Appendix D

Summary of Mitigation Measures Applicable to Each Site

SUMMARY OF MITIGATION MEASURES APPLICABLE TO EACH SITE	Site		
	RE Rosamond One & Two (Main Site)	RE Rosamond (Generation Tie-Line)	RE Barren Ridge 1
	1	2	3
MM BIO I-A: MITIGATION MEASURES FOR SPECIAL STATUS PLANT SPECIES ALONG THE ROSAMOND GENERATION TIE-LINE			
1. The project shall be designed to avoid alkali mariposa lily to the extent feasible. On-site avoidance, such as adjusting the specific pole location of the generation tie-line, and flagging individuals for avoidance by construction vehicles as necessary, would preserve the alkali mariposa lily detected within the Rosamond project area, and preserve several alkali mariposa lily locations. If avoidance or minimization measures are implemented on-site, a Habitat Management Plan should be developed to ensure adequate management and conservation of botanical resources over the long term.		X	
2. If the proposed project would impact greater than 10 percent of the alkali mariposa lily population, a Mitigation and Monitoring Plan shall be prepared that provides for compensatory mitigation. This plan shall include the following • the number of specimens affected; • onsite or offsite preservation location (preferably within an area containing an existing alkali mariposa lily population); • methods for restoration, enhancement, and/or transplanting of alkali mariposa lily; • a performance standard replacement ratio of 1:1 per impacted specimen to be achieved within three years; and • adaptive management and remedial measures in the event that the performance standard is not achieved.		X	
MM BIO I-B: GENERAL MITIGATION MEASURES FOR SPECIAL STATUS WILDLIFE SPECIES			
1. Qualified biologists shall conduct preconstruction clearance surveys for special status wildlife species within 2 weeks of the start of any ground disturbing construction activity and during all grading/ground disturbing activities. All burrows that could provide shelter for special status species shall be excavated during the first clearance survey. A biologist shall remain on-call throughout construction in the event a tortoise, badger or desert kit fox wanders onto the site.	X	X	X
2. If a permanent tortoise proof exclusion fence is practicable, a fence shall be installed around all construction areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence shall be constructed of ½-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by site operator to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Raven perching deterrents shall be installed as part of the fence construction.	X	X	X
3. After fence installation, the qualified biologist shall conduct a clearance survey for special status wildlife species within the construction site.	X	X	X

SUMMARY OF MITIGATION MEASURES APPLICABLE TO EACH SITE	Site		
	RE Rosamond One & Two (Main Site)	RE Rosamond (Generation Tie-Line)	RE Barren Ridge 1
	1	2	3
4. A raven management plan shall be developed that includes language stipulating that all trash that could attract predators of the desert tortoise, such as common ravens, be removed from work sites or completely secured at the end of each work day.	X	X	X
5. Construction and operations personnel shall undergo environmental awareness training provided by the qualified biologist immediately prior to commencement of ground disturbing activities, with specific discussion of desert tortoise, Mohave ground squirrel, American badger and desert kit fox natural history and protective measures. New construction personnel shall be similarly trained prior to their start of work onsite.	X	X	X
6. If any American badger or desert kit fox burrow is determined to be active, an on-site passive relocation program shall be implemented. This program shall consist of excluding badgers from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm badger usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. Relocation should occur during the non-breeding season.	X	X	X
7. If a desert tortoise or Mohave ground squirrel is found onsite during subsequent surveys or biological monitoring activities, construction activities shall cease to avoid the potential for take. Consultation with CDFG and the USFWS shall then be initiated to obtain the necessary incidental take permit authorizations pursuant to the federal ESA and CESA.	X	X	X
MM BIO I-C: MITIGATION MEASURES FOR DESERT TORTOISE AT BARREN RIDGE			
1. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall include but not be limited to the following components: • Biologist qualifications/authorizations • Preconstruction clearance surveys and construction monitoring • Burrow excavation • Desert tortoise handling and transport • Relocation site characteristics, preparation, and management • Relocation monitoring and reporting			X
2. Compensatory mitigation for the loss of desert tortoise habitat shall be provided through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area (DTNA), private purchase of mitigation lands, or onsite preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a 0.5:1 ratio to reduce potential effects to less than significant under CEQA.			X

SUMMARY OF MITIGATION MEASURES APPLICABLE TO EACH SITE	Site		
	RE Rosamond One & Two (Main Site)	RE Rosamond (Generation Tie-Line)	RE Barren Ridge 1
	1	2	3
MM BIO I-D: MITIGATION MEASURES FOR BURROWING OWL			
1. Conduct preconstruction clearance surveys of the sites and within 250 feet of the sites to confirm burrowing owls remain absent. Clearance surveys are typically conducted 30 days prior to construction activities. If no burrowing owls are observed, no further actions are recommended.	X	X	X
2. If burrowing owls are found during the clearance surveys, develop a burrowing owl Mitigation and Monitoring Plan. The plan should provide the framework for implementing the following tasks: a. Unless otherwise authorized by CDFG, avoid disturbance within 50 meters (164 feet) of occupied burrows during the non-breeding season (September 1 through January 31) or within 75 meters (246 feet) during the breeding season (February 1 through August 31). b. Passively relocate burrowing owls to a suitable offsite location. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 meters (164 feet) from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls. Relocation of owls can only occur during the non-breeding season. c. At minimum one, and potentially two, alternate natural or artificial burrows shall be provided/identified for each active burrow that will be excavated in the project impact zone. d. The project area shall be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. e. Burrows shall be excavated using hand tools and refilled to prevent reoccupation. f. If the project will reduce the amount of suitable foraging habitat contiguous to occupied burrows on or adjacent to the site below the 6.5-acre threshold (per pair or individual owl), provide compensatory mitigation for direct impacts to occupied burrowing owl habitat based on the ratios outlined by the Burrowing Owl Consortium (1993).	X	X	X
MM BIO I-E: MITIGATION MEASURES FOR SPECIAL STATUS RAPTORS AND NESTING BIRDS			
1. If construction activities occur during the breeding season, a qualified biologist shall conduct a nesting bird/raptor survey to determine the presence/absence, location, and status of any active nests on or adjacent to the project site. The extent of the survey buffer area surrounding the site shall be established by the qualified biologist to ensure that indirect effects to nesting birds are avoided. Nesting bird surveys are typically conducted 3-30 days prior to construction activities (last survey conducted within 3 days of the start of construction). A suitable buffer (e.g. 0.25 mile for Swainson's hawk, 200-300 feet for common raptors; 30-50 feet for passerines) shall be established around active nests and no construction within the buffer allowed until a qualified biologist has determined that the nest is no longer active (e.g. the nestlings have fledged and are no longer reliant on the nest). Encroachment into the buffer may occur at the discretion of a qualified biologist.	X	X	X

SUMMARY OF MITIGATION MEASURES APPLICABLE TO EACH SITE	Site		
	RE Rosamond One & Two (Main Site)	RE Rosamond (Generation Tie-Line)	RE Barren Ridge 1
	1	2	3
MM BIO I-F: MITIGATION MEASURES FOR MOHAVE GROUND SQUIRREL			
1. Conduct focused surveys for Mohave ground squirrel within potentially suitable habitat that would be affected by any ground disturbing activities to determine the presence/absence of the species. The surveys must be conducted by a qualified biologist with a CDFG MOU to survey for Mohave ground squirrels, in accordance with the CDFG protocol (2003). If Mohave ground squirrels are determined present during focused surveys, implement MM BIO I-F, 2 and 3.		X	
2. If Mohave ground squirrels are determined present on the project site based on protocol trapping surveys, or Mohave ground squirrels are assumed present as an alternative to surveys, develop a Mohave ground squirrel translocation and monitoring plan. The plan shall include but not be limited to the following components: • Biologist qualifications/authorizations • Preconstruction clearance surveys and construction monitoring • Burrow excavation • Mohave ground squirrel handling and transport • Relocation site characteristics, preparation, and management • Relocation monitoring and reporting		X	X
3. Develop a mitigation plan to provide adequate compensatory mitigation for the loss of Mohave ground squirrel habitat. Providing compensatory mitigation to offset species/habitat impacts can be accomplished through purchase of credit from an existing mitigation bank, such as the DTNA, or private purchase of mitigation lands. Compensatory mitigation shall be provided at a minimum 0.5:1 ratio to reduce potential effects to less than significant under CEQA.			X
MM BIO II: MITIGATION MEASURES FOR JOSHUA TREES/WOODLANDS			
1. Conduct a Joshua tree survey to inventory Joshua trees within the project sites. The survey shall include an assessment of the height, diameter at breast height (dbh), and health status of all trees. Joshua tree woodlands shall be mapped based on groupings of trees with greater than 10% areal coverage in accordance with the California Wildlife Habitat Relationships System Classification Rules. Such mapping shall be conducted based on aerial photography and other remote sensing techniques, and shall be determined based on a census count and a spatial analysis technique such as “nearest neighbor” and associated statistical analysis.	X	X	

SUMMARY OF MITIGATION MEASURES APPLICABLE TO EACH SITE	Site		
	RE Rosamond One & Two (Main Site)	RE Rosamond (Generation Tie-Line)	RE Barren Ridge 1
	1	2	3
2. Prepare a Joshua Tree Impact and Mitigation Plan that details the Joshua trees/woodlands to be removed and mitigation measures to compensate for impacts. The plan shall outline a compensatory mitigation approach consisting either of relocation of trees to an approved preserve, payment of an in-lieu fee or purchase of mitigation credit, or the purchase of preserved mitigation lands at a minimum 1:1 ratio of impacted Joshua tree woodlands.	X	X	
MM BIO III: MITIGATION MEASURES FOR JURISDICTIONAL WATERS			
1. To the extent practicable, the project shall be designed to avoid impacts to the jurisdictional waters within the Rosamond and Barren Ridge project sites, and the following avoidance/minimization measures are recommended: a. Any material/spoils from project activities shall be located away from jurisdictional areas or sensitive habitat and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate. b. Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank. c. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed of. For all spills the project foreman or designated environmental representative will be notified.	X	X	X
2. If jurisdictional waters cannot be avoided, minimization measures shall be applied and all necessary resource agency permits shall be obtained. This includes Individual or General Waste Discharge Requirements (WDRs) from the RWQCB and a Streambed Alteration Agreement from CDFG. Verification from the USACE is recommended to confirm the drainages do not constitute waters of U.S.	X	X	X
3. Minimization measures for impacts to jurisdictional waters shall include routing on-site drainage and placing the water discharge point at the location of existing or historic ephemeral drainages, if feasible.	X	X	X
4. Compensatory mitigation may occur either onsite or offsite, and would occur at a ratio no less than 1:1 for the impact to jurisdictional waters. A Habitat Mitigation and Monitoring Plan shall be prepared that outlines the compensatory mitigation in coordination with the RWQCB and CDFG. If onsite mitigation is proposed, the Habitat Mitigation and Monitoring Plan shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration of alluvial desert scrub habitat. Determination of mitigation adequacy shall be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity (such as up or downstream of the site). The Plan shall include remedial measures in the event that this performance criteria is not met. If mitigation is implemented offsite, mitigation lands shall be comprised of similar or more well-developed alluvial desert scrub and preferably be located in the vicinity of the site or watershed. Off-site land shall be preserved through a conservation easement and the Plan shall identify an approach for funding assurance for the long-term management of the conserved land.	X	X	X

Appendix E

Sub-consultant Technical Reports

SENSITVE SPECIES SURVEYS ON THE PROPOSED ROSAMOND RE SOLAR ENERGY PROJECT GEN-TIE LINE, KERN COUNTY, CALIFORNIA

June 5, 2011

Prepared for:

Rincon Consultants, Inc.

790 East Santa Clara Street • Ventura, California 93001

Prepared by:

Sundance Biology, Inc.

179 Niblick Road, PMB 272 • Paso Robles, California 93446

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INTRODUCTION

This report addresses the results of focused presence/absence surveys for the desert tortoise and western burrowing owl on the proposed Rosamond RE Energy Solar Project site Gen-Tie Line, Kern County, California as well as other sensitive species encountered during the focused surveys. Potential habitat for these species was delineated considering vegetation, elevation, and topography.

The proposed project site is located approximately 4 miles west of the city of Rosamond, CA Kern County (Figure 1). The project survey corridor is three miles long and 100 feet wide. The project corridor leaves the proposed Rosamond Solar Facility at the intersection of Favorito Avenue and 65th St W, follows the centerline of 65th St W south two miles to Felsite Avenue, then follows the centerline of Felsite Avenue ½ mile east to 60th St W, and then follows the centerline of 60th St W south ½ mile to Rosamond Boulevard. The project corridor traverses through Sections 3, 10, 14, and 15 of Township 9 N, Range 13 W, SBBM. The site lies within the Western Mojave Recovery Unit which is managed under the guidelines set out in the West Mojave Plan and Final Environmental Impact Statement. However, the site is not contained within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

METHODOLOGY

Habitat Delineation

Delineation of potential desert tortoise and burrowing owl habitat was done prior to commencing the survey during a ground reconnaissance in April 2011. Vegetation communities on the site were suitable for use by desert tortoises and burrowing owls.

Field Survey

Focused surveys were completed for the desert tortoise (*Gopherus agassizii*), western burrowing owl (*Athene cunicularia*), and other sensitive species on the entire site. Additionally, zone-of-influence transects were conducted at 200, 400, and 600 meters east and west of the project corridor. Common and other uncommon animal species were sought as these focused surveys were performed. All animal species identified during the surveys were recorded in field notes and are listed in Tables 1-4.

Desert Tortoise

The survey for desert tortoise was conducted in accordance with the *Pre-project Survey Protocol for Potential Desert Tortoise Habitats, 2010* (US Fish and Wildlife Service, 2010). A team consisting of two experienced desert tortoise biologists conducted the survey by walking a set of four transects that covered the project site. Transect spacing was at 30 feet between transect centerlines, the standard width for desert tortoise presence/absence surveys.

A set of UTM coordinates for transect turning points and endpoints paralleling the project corridor centerline were calculated for the site. This resulted in four transects each approximately 3 miles in length. For navigation of transects Garmin handheld global positioning system (GPS) units were used.

The proposed corridor was surveyed for desert tortoises and burrowing owls on 11 and 17-19 May, 2011. Weather conditions were generally calm and clear with winds up to 20 mph on occasion. Temperatures ranged from 13-29 degrees Celsius throughout the daylight hours.

Western Burrowing Owl

Burrowing owl surveys were conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game, 1995). Due to lower visibility through the vegetation, transects were conducted at 30 foot intervals rather than 100 foot intervals. These were done simultaneously with desert tortoise transects.

Data Recorded

All wildlife species encountered were recorded. Sensitive species and/or their sign encountered were recorded along with GPS coordinates for each incidence. Only definitive sign was recorded.

Biological Field Team

The survey was managed by Stephen Boland. The biological team for the surveys was as follows:

Stephen Boland
Mike Gallagher

RESULTS

Survey Area Description

The survey area ranges in elevation from 2390 to 2600 feet and is characterized by a creosote desert bush scrub vegetation community north of Irone Road and predominantly saltbush scrub south of Irone Road (Figures 2-3). The geomorphology of the survey area is isolated hills and middle to lower bajada with predominantly sandy loam soils. Most common human impacts within the survey area were multiple dirt roads running through this site, wooden pole transmission line and sub-station, and housing/mobile home tracks and ranches. There was moderate litter with some trash dumping and OHV activity in the area. Additionally portions of the site were moderately grazed by sheep. The overall habitat condition is fair. The entire site is suitable for desert tortoise and western burrowing owl.

Desert Tortoise

Desert tortoise is listed as a threatened species by both State and federal governments (California Department of Fish and Game, 2006b). No tortoise sign was found along the project corridor or on the ZOI transects.

Burrowing Owl

The Burrowing owl is designated as a Bird of Conservation Concern (U.S. Fish and Wildlife Service, 2002) and a Bird Species of Special Concern (California Department of Fish and Game, 2006a). Burrowing owls rely on existing burrows of other animals, which they modify for their own use. The presence of coyotes and kit fox on the site provide suitable burrows for burrowing owls. All sign observed was recorded. Types of sign include burrows with droppings, feathers, or diagnostic pellets. One burrow with pellets was found on the 400 meter ZOI west of the project corridor. The burrowing owl sign is listed in Table 1 and location shown in Figure 2.

Prairie Falcon

The Prairie falcon is designated as a Bird of Conservation Concern (U.S. Fish and Wildlife Service, 2002). This species nests on cliff ledges, so breeding adults are local during the breeding season. One bird was seen flying offsite over the east end of Willow Springs Butte approximately one mile west of the project corridor.

Other Sensitive Species

No other species of wildlife were identified on the project site listed as either a Species of Special Concern (SSC), Bird of Conservation Concern (BCC), or both (California Department of Fish and Game 2006a, USFWS 2002).

DISCUSSION

Desert Tortoise

The proposed Rosamond RE Solar Project Gen-Tie Line lies within the geographic range of the desert tortoise. The habitat within the survey area as well as adjacent habitat is typical and suitable for desert tortoises.

No tortoises were observed on site while surveying the project corridor or while conducting the ZOI transects. The presence of varying human impacts has probably contributed to the decline of any populations that may have occurred historically.

The proposed Rosamond RE Solar Project Gen-Tie Line may have direct impacts on desert tortoises in the area as well as indirect impacts occurring through loss of habitat. Direct impacts could occur during construction of the solar facility if resident tortoises are not moved off site or if a tortoise wanders onto the site from an adjacent area not surveyed in this study.

Western Burrowing Owl

The proposed project may have indirect impacts on any burrowing owls potentially in the area however, no burrowing owl sign was observed on site. One burrow with sign was found on the 400 meter ZOI west of the site. In addition to native desert scrub they seem to be attracted to disturbed areas and are often found in fallow agricultural fields and other moderately disturbed lands such as are found in the area, particularly since California ground squirrels are present to provide burrows. Burrowing owls rely on existing burrows of other animals, which they modify for their own use. This area contains at least one burrow appropriate for occupation by burrowing owls; these factors increase the possibility of burrowing owls occurring on site or close by after the time of the surveys.

MITIGATION RECOMMENDATIONS

Desert Tortoise

In order to mitigate potential direct impacts, the following recommendations will help minimize the potential for “take” of tortoises during and after construction.

1). Develop a biological monitoring plan in consultation with the CEC, USFWS and the CDFG. This plan would delineate all measures to be implemented prior to, during and post-construction, which would include but are not limited to the following measures:

a). All land surveying personnel prior to construction should be accompanied by an authorized desert tortoise biologist.

b). Temporary tortoise-proof fencing (1”x 2” mesh hardware cloth) may need to be erected and maintained along the boundary of the project corridor prior to initiating construction and clearance surveys for desert tortoises on site. The fence will prevent tortoises from wandering onto the site during construction. Ongoing maintenance of the fencing would be recommended with oversight by an authorized biologist. Fence installation should be monitored by a qualified tortoise biologist.

c). It is recommended that tortoise clearance surveys be conducted at 15-foot intervals and that two coverages without finding any tortoises or new tortoise sign be conducted prior to declaring the site clear of tortoises. All burrows that could provide shelter for a desert tortoise should be excavated during the first clearance survey.

d). All construction and operations personnel should undergo desert tortoise awareness training.

e). After the tortoise-proof fence is erected, a qualified biologist(s) should remain onsite until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a bi-weekly basis throughout construction in order to maintain compliance with mitigation measures.

f). A qualified biologist(s) should be on site to survey for tortoises immediately in front of vegetation clearance activities in the event a tortoise was inadvertently missed during clearance surveys.

g). A biologist should remain on-call throughout construction in the event a tortoise wanders onto the site.

h). A raven management plan should be developed for the project site.

i). Post-construction reporting should be provided to all agencies within 90 days of completion of construction.

Western Burrowing Owl

Two alternatives exist for mitigation of this species.

- Avoidance: No disturbance should occur within 50 meters of occupied burrows during non-breeding season of September 1 through January 31 or within 75 meters during the breeding season (February 1 through August 31). A minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls. (CBOC, 1993)

- Mitigation for Impacts

On-site Mitigation

Passive relocation of burrowing owls is permitted on-site if impact to area is unavoidable. Passive relocation involves encouraging burrowing owls to relocate to natural or artificial burrows that are farther than 50 meters from the impact zone and are contiguous to a preserved 6.5 acre parcel of foraging habitat for each pair of relocated owls. Relocation of owls should be implemented during non-breeding season (September 1 through January 31).

Off-site Mitigation

If on-site mitigation is not feasible, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat and the site approved. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios.

- Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

- Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

- Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5

(19.5) acres per pair or single bird.

Avoidance, passive relocation or active relocation should be considered to fulfill mitigation requirements. In order to mitigate direct impacts to burrowing owls it is recommended that construction activities not occur during the breeding season if any nests are in the area. Otherwise, nests should be avoided and construction activities approach no closer than 300 feet. If a passive relocation plan is preferred, it is recommended that the client repeat surveys 30 days prior to construction activities.

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Table 1. Sensitive Species and Sign Locations (Datum NAD 83 CONUS)

SIGN	PROJECT SITE	ZOI	EASTING	NORTHING
Owl Burrow/Pellet		x	385658	3860209
Prairie Falcon (Offsite, flying. Location approximate)	-	-	384400	3861000

Table 2. Mammal Species List

LATIN NAME	COMMON NAME
Ammospermophilus leucurus	White-tailed antelope squirrel
Canis latrans	Coyote (scat only)
Lepus californicus	Black-tailed jackrabbit
Lynx rufus	Bobcat
Otospermophilus beecheyi	California ground squirrel
Ovis aries	Domestic sheep (scat)
Vulpes macrotis	Kit fox (dens and scat)

Table 3. Reptile Species List

SCIENTIFIC NAME	COMMON NAME
Aspidoscelis tigris	Tiger whiptail
Crotalus cerastes	Sidewinder rattlesnake
Gambelia wislizenii	Long-nosed leopard lizard
Pituophis catenifer	Gopher snake
Uta stansburiana	Common side-blotched lizard

Table 4. Bird Species List

COMMON NAME	COMMON NAME

Black-throated sparrow	Northern mocking bird
Brewer's blackbird	**Prairie falcon (BCC)**
Burrowing owl-sign only (SSC, BCC)	Red-tailed hawk
California quail	Rock wren
Common raven	Sage sparrow
Horned lark	White-crowned sparrow
House finch	Western kingbird
Mourning dove	Western tanager

Figure 1. Rosamond RE Solar Project Gen-Tie Line site location, Kern County, California.

Figure 2. Burrowing owl sign found on the Rosamond RE Solar Project Gen-Tie Line, Kern County, California.

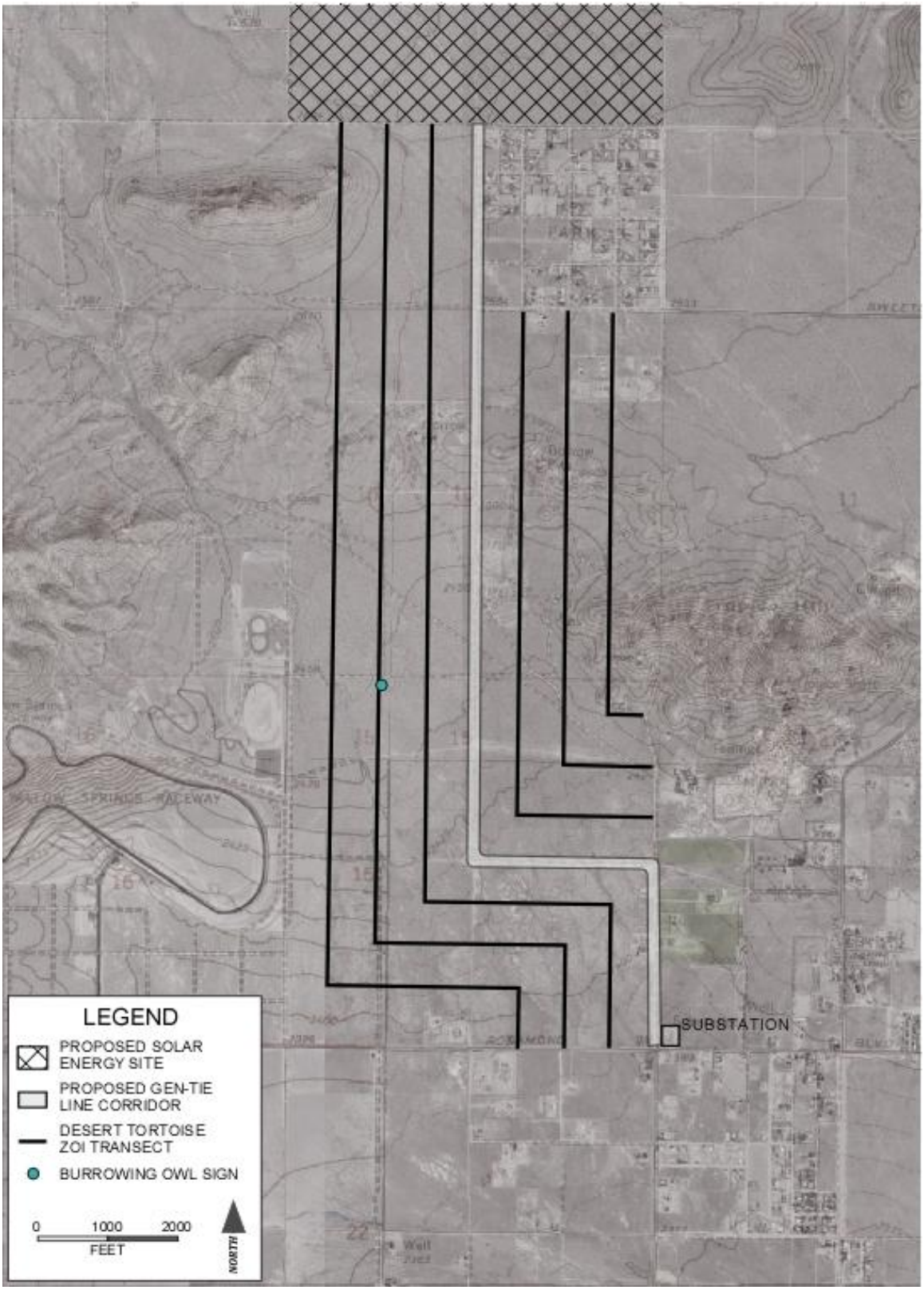

Figure 3. Habitat photos, Rosamond RE Solar Project Gen-Tie Line, Kern County, California. (Datum NAD 83 CONUS)

View north from Rosamond Blvd along 60th St. W, UTM 386838 E, 3858645 N

View east from 65th St. W along Felsite Ave., UTM 386024 E, 3859460 N

View north from Felsite Ave along 65th St. W., UTM 386024 E, 3859460 N

View south from Favorito Ave. along 65th St. W., UTM 386066 E, 3862676 N

SENSITVE SPECIES SURVEYS ON THE PROPOSED BARREN RIDGE RE SOLAR ENERGY PROJECT GEN-TIE LINE, KERN COUNTY, CALIFORNIA

June 5, 2011

Prepared for:

Rincon Consultants, Inc.

790 East Santa Clara Street • Ventura, California 93001

Prepared by:

Sundance Biology, Inc.

179 Niblick Road, PMB 272 • Paso Robles, California 93446

MERCY VAUGHN manydogs10@aol.com 928-380-5507 *STEPHEN BOLAND spboland@aol.com 918-380-8850*

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Figure 4. Sensitive species sign photos, Barren Ridge RE Solar Project proposed site, Kern County, California. (Datum NAD 83 CONUS) 14

INTRODUCTION

This report addresses the results of focused presence/absence surveys for the desert tortoise and western burrowing owl on the proposed Barren Ridge RE Energy Solar Project site Gen-Tie Line, Kern County, California as well as other sensitive species encountered during the focused surveys. Potential habitat for these species was delineated considering vegetation, elevation, and topography.

The proposed project site is located approximately 11 miles north of the city of Mojave, CA Kern County on Highway 14 (Figure 1). The project corridor is 2.36 miles long and 200 feet wide. The site is located in the Mojave Desert immediately west of Highway 14 and traverses through Sections 13, 24, and 25 of Township 31S, Range 36 ½ E and Section 18 of Township 31S, Range 37 E, SBBM. The site lies within the Western Mojave Recovery Unit which is managed under the guidelines set out in the West Mojave Plan and Final Environmental Impact Statement. However, the site is not contained within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

METHODOLOGY

Habitat Delineation

Delineation of potential desert tortoise and burrowing owl habitat was done prior to commencing the survey during a ground reconnaissance in April 2011. Vegetation communities on the site were suitable for use by desert tortoises and burrowing owls.

Field Survey

Focused surveys were completed for the desert tortoise (*Gopherus agassizii*), western burrowing owl (*Athene cunicularia*), and other sensitive species on the entire site. Additionally, zone-of-influence transects were conducted at 200, 400, and 600 meters east, west and north of the project corridor. Common and other uncommon animal species were sought as these focused surveys were performed. All animal species identified during the surveys were recorded in field notes and are listed in Tables 1-4.

Desert Tortoise

The survey for desert tortoise was conducted in accordance with the *Pre-project Survey Protocol for Potential Desert Tortoise Habitats, 2010* (US Fish and Wildlife Service, 2010). A team consisting of two experienced desert tortoise biologists conducted the survey by walking a set of seven transects that covered the project site. Transect spacing was at 30 feet between transect centerlines, the standard width for desert tortoise presence/absence surveys.

A set of UTM coordinates for transect turning points and endpoints paralleling the project corridor centerline were calculated for the site. This resulted in seven transects

each approximately 2.36 miles in length. For navigation of transects Garmin handheld global positioning system (GPS) units were used.

The proposed corridor was surveyed for desert tortoises and burrowing owls from 23-25 April, 2011. ZOI transects were conducted on 01 and 05 May 2011. Weather conditions were generally calm and clear. Temperatures ranged from 15-29 degrees Celsius throughout the daylight hours.

Western Burrowing Owl

Burrowing owl surveys were conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game, 1995). Due to lower visibility through the vegetation, transects were conducted at 30 foot intervals rather than 100 foot intervals. These were done simultaneously with desert tortoise transects.

Data Recorded

All wildlife species encountered were recorded. Sensitive species and/or their sign encountered were recorded along with GPS coordinates for each incidence. Only definitive sign was recorded.

Biological Field Team

The survey was managed by Stephen Boland. The biological team for the surveys was as follows:

Stephen Boland
Mike Gallagher

RESULTS

Survey Area Description

The survey area ranges in elevation from 2350 to 2440 feet and is characterized by a creosote desert bush scrub vegetation community (Figures 2-4). The geomorphology of the survey area is middle bajada with predominantly sandy loam soils. Most common human impacts within the survey area were multiple dirt roads running through this site as well as a high voltage transmission line and sub-station. There was minimal litter with some trash dumping and OHV activity in the area. Additionally portions of the site were moderately grazed by sheep. The overall habitat condition is good. The entire site is suitable for desert tortoise and western burrowing owl.

Desert Tortoise

Desert tortoise is listed as a threatened species by both State and federal governments (California Department of Fish and Game, 2006b). On the main project corridor, there was one adult and one subadult tortoise found, one of which was at a burrow. On the

ZOI transect, 400 west, another adult tortoise was found in the open. Three tortoise burrows were found along the project corridor. One burrow in the project corridor was active (with tortoise mentioned above). One adult tortoise carcass was found in the project corridor. Five tortoise scat events were found. The three in the project corridor were laid down this year; and two on the 400 meter west ZOI were laid down last year. All sign found is listed in Table 1. Locations are shown in Figure 2.

Burrowing Owl

The Burrowing owl is designated as a Bird of Conservation Concern (U.S. Fish and Wildlife Service, 2002) and a Bird Species of Special Concern (California Department of Fish and Game, 2006a). Burrowing owls rely on existing burrows of other animals, which they modify for their own use. The presence of coyotes and kit fox on the site provide suitable burrows for burrowing owls. All sign observed was recorded which included burrows with droppings, feathers, or diagnostic pellets. One burrow with whitewash and pellets was found on the 400 meter ZOI southeast of the project corridor. All burrowing owl sign is listed in Table 1 and location shown in Figure 2.

Other Sensitive Species

No other species of wildlife were identified on the project site listed as either a Species of Special Concern (SSC), Bird of Conservation Concern (BCC), or both (California Department of Fish and Game 2006a, USFWS 2002).

DISCUSSION

Desert Tortoise

The proposed Barren Ridge RE Solar Project Gen-Tie Line lies within the geographic range of the desert tortoise. The habitat within the survey area as well as adjacent habitat is typical and suitable for desert tortoises.

Two tortoises were observed on site while surveying the project corridor and one was observed 400 meters west the site while conducting the ZOI transects. The presence of varying human impacts has probably contributed to the decline of any populations that may have occurred historically.

The proposed Barren Ridge RE Solar Project Gen-Tie Line may have direct impacts on desert tortoises in the area as well as indirect impacts occurring through loss of habitat. Direct impacts could occur during construction of the solar facility if resident tortoises are not moved off site or if a tortoise wanders onto the site from an adjacent area not surveyed in this study.

Western Burrowing Owl

The proposed project may have indirect impacts on any burrowing owls potentially in the area between the project corridor and the 200 meter ZOI transect, however, no

burrowing owl sign was observed on site. They seem to be attracted to disturbed areas and are often found in fallow agricultural fields as well as native desert scrub. Burrowing owls rely on existing burrows of other animals, which they modify for their own use. This area contains appropriate burrows for occupation by burrowing owls; these factors increase the possibility of burrowing owls coming on site after the time of the surveys.

MITIGATION RECOMMENDATIONS

Desert Tortoise

In order to mitigate potential direct impacts, the following recommendations will help minimize the potential for "take" of tortoises during and after construction.

1). Develop a biological monitoring plan in consultation with the CEC, USFWS and the CDFG. This plan would delineate all measures to be implemented prior to, during and post-construction, which would include but are not limited to the following measures:

a). All land surveying personnel prior to construction should be accompanied by an authorized desert tortoise biologist.

b). Temporary tortoise-proof fencing (1"x 2" mesh hardware cloth) may need to be erected and maintained along the boundary of the project corridor prior to initiating construction and clearance surveys for desert tortoises on site. The fence will prevent tortoises from wandering onto the site during construction. Ongoing maintenance of the fencing would be recommended with oversight by an authorized biologist. Fence installation should be monitored by a qualified tortoise biologist.

c). It is recommended that tortoise clearance surveys be conducted at 15-foot intervals and that two coverages without finding any tortoises or new tortoise sign be conducted prior to declaring the site clear of tortoises. All burrows that could provide shelter for a desert tortoise should be excavated during the first clearance survey.

d). All construction and operations personnel should undergo desert tortoise awareness training.

e). After the tortoise-proof fence is erected, a qualified biologist(s) should remain onsite until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a bi-weekly basis throughout construction in order to maintain compliance with mitigation measures.

f). A qualified biologist(s) should be on site to survey for tortoises immediately in front of vegetation clearance activities in the event a tortoise was inadvertently missed during clearance surveys.

g). A biologist should remain on-call throughout construction in the event a tortoise wanders onto the site.

h). A raven management plan should be developed for the project site.

i). Post-construction reporting should be provided to all agencies within 90 days of completion of construction.

Western Burrowing Owl

Two alternatives exist for mitigation of this species.

- Avoidance: No disturbance should occur within 50 meters of occupied burrows during non-breeding season of September 1 through January 31 or within 75 meters during the breeding season (February 1 through August 31). A minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls. (CBOC, 1993)

- Mitigation for Impacts

On-site Mitigation

Passive relocation of burrowing owls is permitted on-site if impact to area is unavoidable. Passive relocation involves encouraging burrowing owls to relocate to natural or artificial burrows that are farther than 50 meters from the impact zone and are contiguous to a preserved 6.5 acre parcel of foraging habitat for each pair of relocated owls. Relocation of owls should be implemented during non-breeding season (September 1 through January 31).

Off-site Mitigation

If on-site mitigation is not feasible, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat and the site approved. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios.

- Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

- Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

- Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

Avoidance, passive relocation or active relocation should be considered to fulfill mitigation requirements. In order to mitigate direct impacts to burrowing owls it is

recommended that construction activities not occur during the breeding season if any nests are in the area. Otherwise, nests should be avoided and construction activities approach no closer than 300 feet. If a passive relocation plan is preferred, it is recommended that the client repeat surveys 30 days prior to construction activities.

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Table 1. Sensitive Species and Sign Locations (Datum NAD 83 CONUS)

SIGN	PROJECT SITE	ZOI	EASTING	NORTHING
Tortoise (adult-at burrow)	x		403683	3898214
Tortoise (subadult)	x		403680	3898939
Tortoise (adult)		x	403316	3899374
Tortoise burrow	x		403813	3899290
Tortoise burrow (active)	x		403683	3898214
Tortoise burrow	x		403680	3898749
Tortoise shell-skeletal remains	x		403673	3898062
Tortoise scat		x	403307	3899382
Tortoise scat		x	403290	3898676
Tortoise scat	x		403672	3898761
Tortoise scat	x		403762	3899214
Tortoise scat	*x*		403744	3899233
Owl Burrow/Pellet/White Wash		x	403896	3896818

Table 2. Mammal Species List

LATIN NAME	COMMON NAME
Ammospermophilus leucurus	White-tailed antelope squirrel
Canis latrans	Coyote (scat only)
Lepus californicus	Black-tailed jackrabbit
Ovis aries	Domestic sheep (scat)
Vulpes macrotis	Kit fox (dens and scat)

Table 3. Reptile Species List

SCIENTIFIC NAME	COMMON NAME
Aspidoscelis tigris	Tiger whiptail
Callisaurus draconoides	Zebra-tailed lizard
Gambelia wislizenii	Long-nosed leopard lizard
Gopherus agassizii	Desert tortoise
Uta stansburiana	Common side-blotched lizard

Table 4. Bird Species List

COMMON NAME	
Black-throated sparrow	House finch
Burrowing owl	Red-tailed hawk
Common raven	Rock wren
Horned lark	White-crowned sparrow

Figure 1. Barren Ridge RE Solar Project Gen-Tie Line site location, Kern County, California.

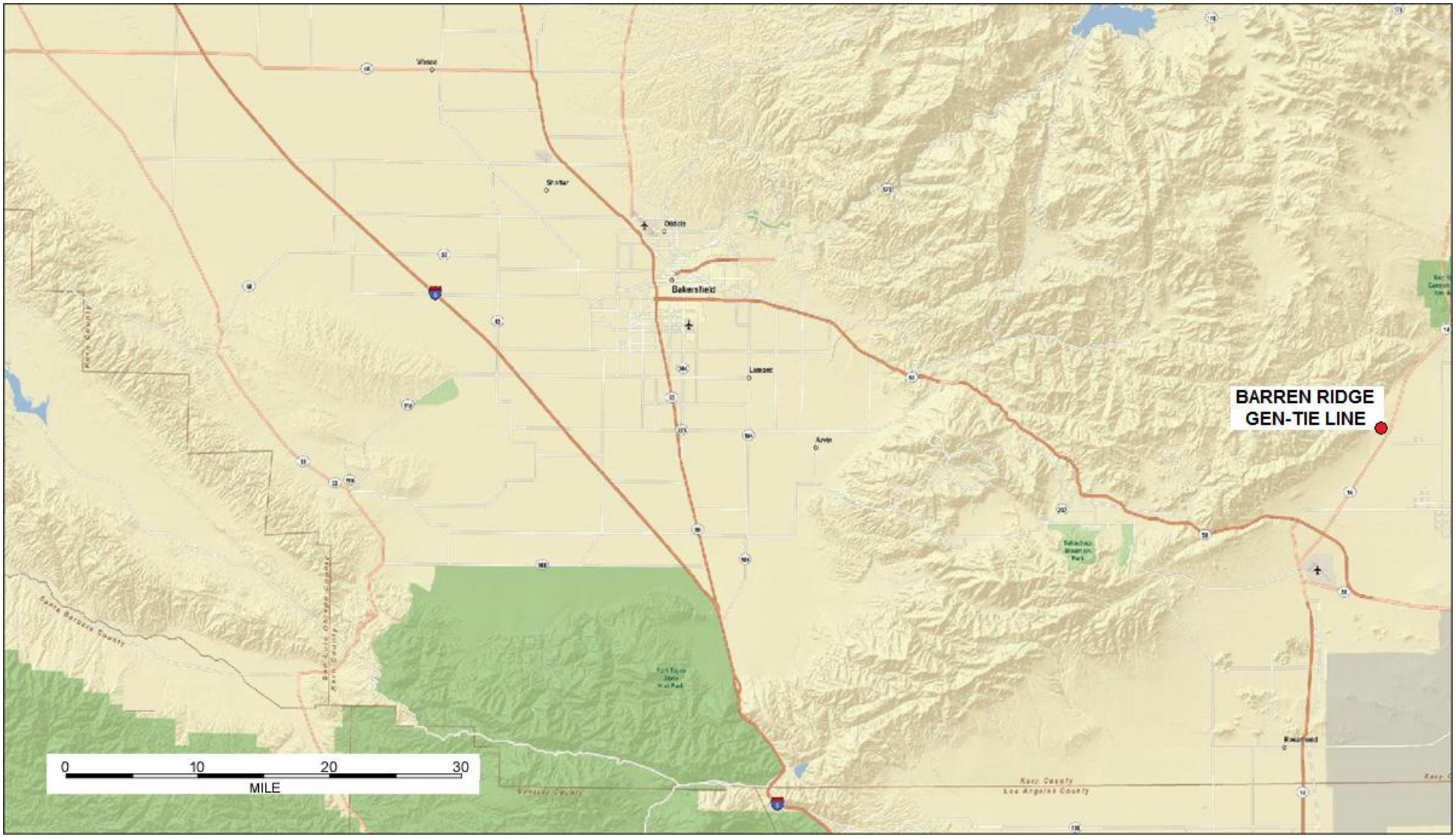

Figure 2. Desert tortoise and burrowing owl sign found on the Barren Ridge RE Solar Project Gen-Tie Line, Kern County, California.

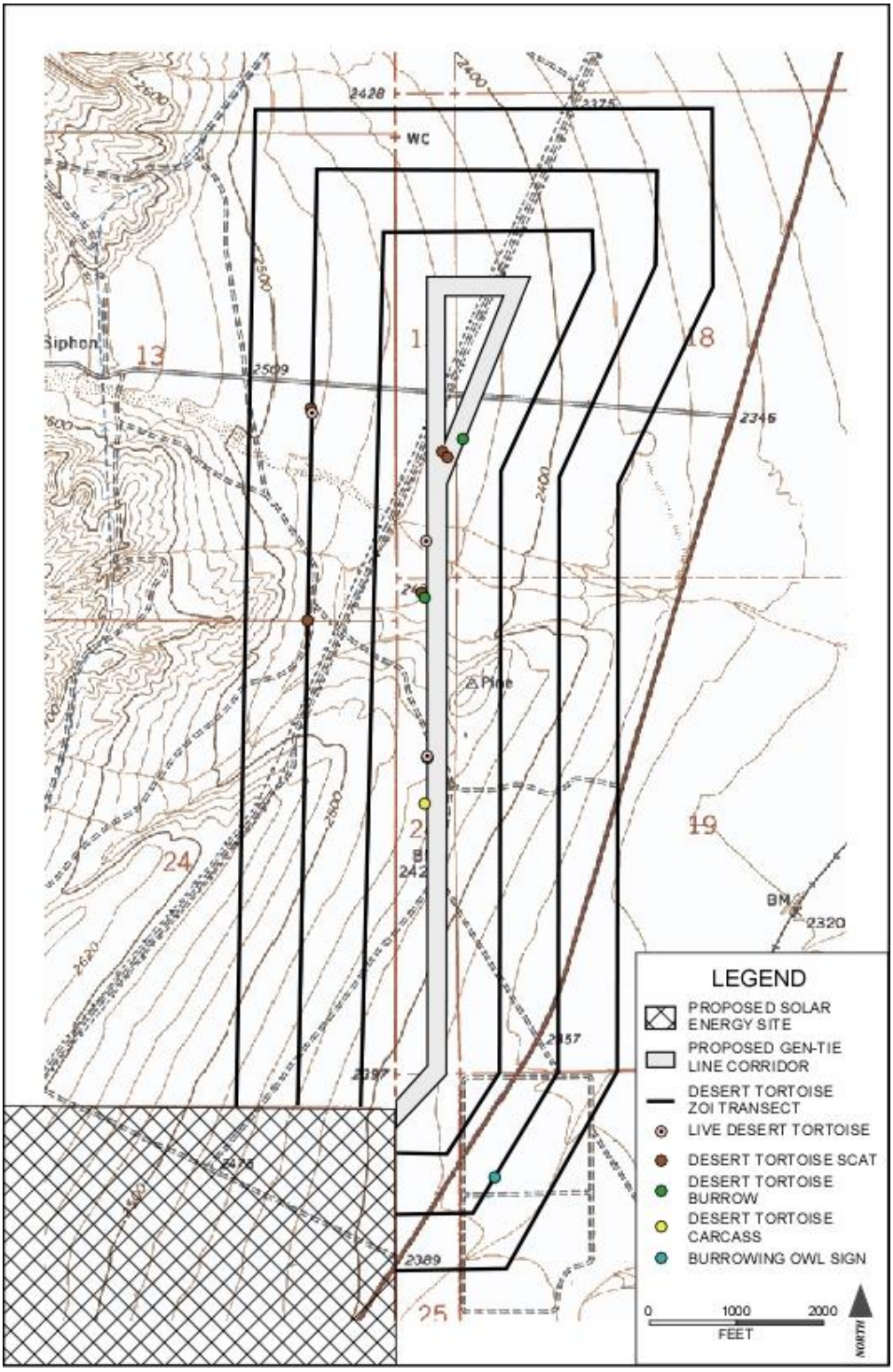

Figure 3. Habitat photos, Barren Ridge RE Solar Project Gen-Tie Line, Kern County, California. (Datum NAD 83 CONUS)

Main site-view south from north end, UTM 403680 E, 3898937 N

Main site-view north from south end, UTM 403701 E, 3897179 N

Figure 4. Sensitive species sign photos, Barren Ridge RE Solar Project proposed site, Kern County, California. (Datum NAD 83 CONUS)

Burrow occupied by a desert tortoise, UTM 403683 E, 3898214 N

Desert tortoise in open, UTM 403680 E, 3838939 N