CH2MHILL TRANSMITTAL

To: California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

From: Mary Finn for John Carrier
2485 Natomas Park Dr.
Sacramento, CA 95833

Attn: Mike Monasmith

Date: December 5, 2011

Re: Hidden Hills Solar Electric Generating Station

We Are Sending You:

Method of shipment: **Hand Delivery**

☑ Attached

Under separate cover via

Shop Drawings | Documents | Tracings

Prints | Specifications | Catalogs

Copy of letter | Other:

Quantity	Description
1	Original Hard Copy – HHSEGS Data Response 1B
6	Additional Hard Copies - HHSEGS Data Response 1B
1	CD - HHSEGS Data Response 1B (which includes Set 1A as well)
5 sets	Oversize maps for DR68

DOCKET
11-AFC-2
DATE DEC 05 2011
RECD. DEC 05 2011

If the material received is not as listed, please notify us at once.

Remarks:

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *HIDDEN HILLS SOLAR ELECTRIC GENERATING SYSTEM PROJECT*
HIDDEN HILLS SOLAR HOLDINGS, LLC

DOCKET NO. 11-AFC-2

PROOF OF SERVICE
(Revised 11/21/2011)

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DECLARATION OF SERVICE

I, Mary Finn, declare that on, December 5, 2011, I served and filed copies of the attached Hidden Hills Solar Electric Generating Station (11-AFC-2) Data Response 1B, dated December 5, 2011. The original document, filed with the Docket Unit or the Chief Counsel, as required by the applicable regulation, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.gov/sitingcases/hiddenhills/index.html].

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:

(Check all that Apply)

For service to all other parties:

_x_ Served electronically to all e-mail addresses on the Proof of Service list;

___ Served by delivering on this date, either personally, or for mailing with the U.S. Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "e-mail preferred."

AND

For filing with the Docket Unit at the Energy Commission:

_x_ by sending an original paper copy and one electronic copy, mailed with the U.S. Postal Service with first class postage thereon fully prepaid and e-mailed respectively, to the address below (preferred method); ***OR***

___ by depositing an original and 12 paper copies in the mail with the U.S. Postal Service with first class postage thereon fully prepaid, as follows:

CALIFORNIA ENERGY COMMISSION – DOCKET UNIT
Attn: Docket No. 11-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

___ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
Michael J. Levy, Chief Counsel
1516 Ninth Street MS-14
Sacramento, CA 95814
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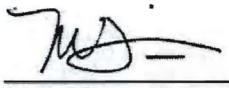
I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.



Mary Finn, CH2M Hill

Data Response 1B

Hidden Hills

Solar Electric Generating System

(11-AFC-2)

Application for Certification

Hidden Hills Solar I, LLC; and Hidden Hills Solar II, LLC

December 5, 2011

With Technical Assistance from

CH2MHILL®

IS061411043744SAC

Hidden Hills Solar Electric Generating System (HHSEGS)

(11-AFC-2)

Data Response, Set 1B
(Response to Data Requests 51 though 76)

Submitted to the

California Energy Commission

Submitted by

Hidden Hills Solar I, LLC; and
Hidden Hills Solar II, LLC

December 5, 2011

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Attachments

Introduction

Attached are Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, "Applicant") responses to the California Energy Commission (CEC) Staff's data requests numbers 51 through 76 for the Hidden Hills Solar Electric Generating System (HHSEGS) Project (11-AFC-2). The CEC Staff served these data requests on November 4, 2011. The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as provided by CEC Staff and are keyed to the Data Request numbers (51 through 76). New graphics or tables are numbered in reference to the data request number. For example, the first table used in response to Data Request 15 would be numbered Table DR15-1. The first figure used in response to Data Request 15 would be Figure DR15-1, and so on. Figures or tables from the HHSEGS Application for Certification ("AFC") that have been revised have "R1" following the original number, indicating revision 1.

Additional documents (e.g., Attachments) submitted in response to a data request are grouped together at the end of this document and are also numbered to match the data request number. The attachments are in numerical order of the data request number.

Biological Resources (51-73)

GOLDEN EAGLE

BACKGROUND: Due to recent changes in the U.S. Fish and Wildlife Service's (USFWS) survey protocols and management of golden eagle, staff needs additional information on the occurrence of golden eagle nests within the project area. The applicant's golden eagle surveys provided in Appendix 5.2D of the AFC did not completely follow the most recent survey protocol for this species, *Interim Golden Eagle Inventory and Monitoring Protocols and other Recommendations* (Pagel et al 2010). Staff contacted USFWS Migratory Bird Program staff (Heather Beeler) on September 6, 2011, and learned that helicopter surveys were highly recommended for this project and if there were conflicts with bighorn sheep lambing season, helicopter surveys could be flown prior to the lambing season to ensure all potential eagle nests are located. Staff also learned that upon completion of the helicopter survey, ground surveys could be conducted for the identified nest locations. Heather Beeler also indicated the applicant's golden eagle surveys included in Appendix 5.2D suffice as a preliminary, reconnaissance-level survey effort but are not thorough enough to draw any conclusions about eagle use of the project area during the breeding season or throughout the year. At staff's request, the applicant contacted Heather Beeler on September 7, 2011, to clarify aerial and ground survey needs and appropriate survey timing for golden eagles for this project.

Based on consultation with resource agencies, previous Energy Commission siting cases for large solar thermal projects in the Mojave Desert have considered a cumulative impact radius of 140 miles from the project site to golden eagle territories, since the local golden eagle population is defined as eagles that occur within the average natal dispersal distance of the nests under consideration (Pagel et al 2010). Heather Beeler also indicated that observational points are suggested for golden eagle migration data in which observers watch for golden eagle activity from fixed locations for a minimum of two hours to assess occurrence and habitat use of the project area by golden eagles; observational points are also useful to assess general raptor habitat use in the project area.

The following data requests are based on the preliminary agency conversations and guidance included in Records of Conversations provided by the applicant during Data Adequacy review (California Department Fish and Game (CDFG), Jeff Villepique; Sacramento USFWS, Heather Beeler; Ventura USFWS, Ashleigh Blackford; Nevada Department of Wildlife, Brad Hardenbrook)).

DATA REQUESTS

51. Please provide staff and the resource agencies a draft Golden Eagle Study proposal that identifies the appropriate month(s) to conduct helicopter surveys for golden eagles during fall 2011 or winter 2012 so the surveys do not

conflict with the start of Nelson's bighorn sheep (BHS) lambing season in the Nopah Range, Kingston Range, and surrounding ranges. Please also identify the appropriate time to conduct follow-up ground surveys of all potential golden eagle nests identified during the helicopter surveys based on breeding and non-breeding seasons for golden eagle and breeding season of BHS.

Please also include a list and the resumes and qualifications of surveyors/observers proposed to conduct these surveys. The surveyors/observers must meet the qualifications specified in Pagel et al 2010, see Observer Qualifications. Please provide the information to staff for review, with copies to USFWS.

Response: A Golden Eagle Study Plan is provided as Attachment DR51-1. It includes the resumes and qualifications of surveyors/observers who performed, or are planned to perform, future fieldwork.

52. Once the agencies have approved the study proposal and the fall 2011 helicopter survey(s) has been completed, please provide staff a fall 2011 helicopter survey report that will include the "minimum data collected at known golden eagle territories" identified in Pagel et al 2010 (See Section IX, Documentation and Accepted Notation). Once winter/spring 2012 ground surveys have been completed, please provide staff a complete Golden Eagle Study Report.

Response: The fall 2011 eagle survey reports should be available mid-December, 2011. The winter/spring 2012 ground surveys will be submitted when completed in 2012.

53. Pagel et al 2010 states that "prior to initiating inventory efforts, project proponents should first assess all existing and historical data available on eagles contained by and within 4 to 10+ miles of the areas slated for development . . .". Please provide staff the results of a literature review search (museum records, consultation with resource agencies, local birding experts and organizations) of golden eagle nest territories (both historic and active) that may occur in the project area.

Response: Prior to initiating golden eagle surveys, eagle nest data was requested from the Bureau of Land Management in California and the Nevada Department of Wildlife in Nevada. The contact in California was Dr. Larry LaPre, Wildlife Biologist, BLM, California Desert District Office, Moreno Valley, California. The contact in Nevada was Mr. Chet Van Dellen, GIS Coordinator, Nevada Department of Wildlife, Reno, Nevada. Each agency electronically transmitted GIS files to CH2M HILL GIS technicians.

EFFECTS OF POWER TOWERS ON AVIAN SPECIES

BACKGROUND: The potential for large solar thermal projects to impact avian species protected under the Migratory Bird Treaty Act is a concern to the resource agencies. The USFWS Regional Migratory Bird Program staff has indicated there is concern about the effects of large power tower projects to birds, bats, and eagles due to the potential for direct take from the super-heated air surrounding the tower

and indirect take due to loss of foraging habitat. The USFWS Region 8 has issued interim guidelines[1] on the development of Avian and Bat Protection Plans and indicate "…of concern are the cumulative effects of renewable energy projects in initiating or contributing to the decline of some bird and bat populations, as well as other affected species…"

The applicant performed fixed avian point count surveys utilizing three, east-west trending transects through the project site from March 23rd to April 14th 2011. In Data Adequacy Supplement A, the applicant indicated that the potential for effects to migrating birds is expected to be small (section 6 page 12) since birds typically migrate at night at an altitude above the ground structures. Appendix 5.2H, Avian Point County Survey Report, identified a few species that are likely migrant birds moving through the project area, including LeConte's thrasher and dusky flycatcher. The AFC and supplements do not discuss the occurrence of migratory bird corridors, wintering bird stopover sites, or Important Bird Areas in the project area. Supplement A (page 12) states that "bird strikes are expected to be rare due to the absence of migratory pathways, ridge tops, and concentrations of waterfowl" although provides no reference for such findings. Staff needs additional information on migratory bird species presence in the project area and habitat use of the project site in order to establish an adequate environmental baseline and to determine the project's potential for impacts to migratory birds.

DATA REQUEST

54. Please provide staff information on the occurrence of Important Bird Areas, migratory bird flyways, and large open-water nesting or migratory stopover sites in the project area. Please consult with local or regional bird experts including the local Audubon group, and/or Point Reyes Bird Observatory staff on available passerine point count data for breeding birds or migrant bird species that occur in the project area and provide that data, if available.

Response: The Project site is not located in an Important Bird Area (IBA), large open-water nesting area, or fly-way stopover site. Sites that attract bird populations are known in the region, but they are far from the HHSEGS site and have habitats vastly different from the site.

Important Bird Areas have been designated in the region. The closest areas are considered miniature "sky islands," which are mountain habitats isolated from each other by surrounding lowlands of dramatically different low-quality habitat areas. The Project site is located in this veritable ocean of unsuitable desert habitat. Point count data has been collected in bird-rich habitats but the Point Reyes Bird Observatory surveyor in the area does not think that this data is applicable to the HHSEGS site because of the differences in habitats. The following descriptions of IBAs, nesting areas, and stopover areas are provided to clarify their sharp contrasts with the project site and to inform an analysis of potential impacts.

[1] USFWS, Region 8, Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities (USFWS Region 8 September 2010).

Important Bird Areas (IBAs)

The Audubon Society has recognized three IBAs located within 30 miles of the project site. These are: the Kingston portion of the East Mojave Peak IBA, which lies approximately 5.5 miles south of the project site in the Kingston Mountain Range; the Horsethief Spring portion of the East Mojave Springs IBA, which lies approximately 13.5 miles south of the project site in Horsethief Springs, also located within the Kingston Mountain Range; and the Shoshone-Tecopa IBA, which lies approximately 17.5 miles west-southwest of the project site along the Amargosa River. Below is a summary, quoting from the Audubon IBA Site Report (Audubon, 2011), of the criteria leading to the designation of these areas as IBAs.

> **East Mojave Peak IBA** - The Kingston East Mojave Peak IBA is one of three segments of the East Mojave Peak IBA associated with three large mountain ranges whose unique natural habitats warrant their recognition as an IBA: the Kingston, Clark and New York ranges. Visible from I-15 just inside the border of Nevada, each supports large tracts of Joshua Tree woodland on lower slopes, grading into Pinyon-Juniper woodland and a floristically diverse desert chaparral, and finally into tiny groves of White Fir above 7000' on their peaks. Unique in California, these sky islands of forest separated by vast deserts are miniature versions of their larger counterparts in southern Nevada (Spring Mountains) and Arizona, with which they share several species. The habitat within the Kingston Range is entirely protected as a BLM wilderness area (Pahrump Valley Wilderness Area), and the New York Mountains are located within the Mojave National Preserve. Clark Mountain is protected by the Mojave National Preserve, with the exception of the southeast corner just north of Mountain Pass, which was left outside the preserve boundary for a mining operation. These mountains have been the subject of long-term studies in biogeography since the early 1900s, and continue to captivate ornithologists (see Cardiff and Remsen 1981).
>
> The relatively lush Joshua Tree woodland on the lower slopes of these peaks support strong populations of desert birds, notably Bendire's Thrasher, Juniper Titmouse, Scott's Oriole, and, in the New York Mountains, Gilded Flicker. Broad-tailed Hummingbird, Plumbeous Vireo and Virginia's Warbler are common in pinyon-rich chaparral on Clark Mountain, and wherever this habitat occurs on steep-sloped canyons, Gray Vireo breed in what is likely their largest population away from eastern San Diego County. The most unusual bird communities, however, are restricted to the tops of these peaks, occurring most consistently in the fir grove on Clark Mountain. Hepatic Tanager and Whip-poor-will (Arizonae race) virtually unknown elsewhere in California, are regular nesters on Clark (and at least the former in the New York Mountains as well), and joined by occasional strays from Arizona, including Painted Redstart, Red-faced Warbler, and Grace's Warbler.
>
> **East Mojave Springs IBA** - The Horsethief Spring East Mohave Springs IBA is one of three different segments of the East Mojave Springs IBA that draws attention to three major springs in the east Mojave Desert with similar avifauna. All are oases of riparian habitat associated with desert ranges

surrounded by arid scrub. Horsethief Spring, in the north, lies at the eastern edge of the Kingston Range (see East Mojave Peaks IBA above), and is reached by taking Excelsior Mine Rd. north 30 miles from I-15. It features a small grove of Fremont Cottonwoods. Piute Spring, adjacent to Ft. Piute about 20 miles due west of Bullhead City, AZ, flows above ground for several hundred meters through volcanic rock, supporting a thin strip of willow forest. Cornfield Spring emerges from the western flank of the Providence Mountains just east of Kelso. Horsethief is located on BLM land, and the latter two sites are within the Mojave National Preserve. There are several other springs with vital riparian scattered across the east Mojave, mostly associated with desert ranges (for example, Sunflower and Panamint Springs, Old Woman Mountains; Cove Spring, Granite Mountains). All should be considered important for birds in this harsh environment.

These springs are most heavily-used by birds during spring migration (April-May), when songbirds are moving up into the state from the Colorado River. The nesting avifauna, including Least Bell's Vireo and Yellow-breasted Chat, is highly dependent on the condition of the riparian vegetation at each, which is at times overgrazed (by cattle and by feral horses and burros) or burned (due to arson).

Shoshone-Tecopa IBA – This habitat is associated with the Amargosa River in the northeastern Mojave, less than 20 miles from the Nevada border. Located about halfway between Baker, on I-15, and the headquarters of Death Valley National Park, it is passed by hundreds of thousands of tourists each year, but remains nearly totally undeveloped for birding. One notable exception is China Ranch, which has been eager to spur ecotourism in the region. The vegetation consists of desert riparian thickets (dominated by willows and mesquite), with small areas of wetland and alkali marsh (especially Grimshaw Lake, just north of Tecopa). Ownership is complex, mainly a combination of small ranches and BLM lands. Main areas for birds include Grimshaw Lake/Tecopa Hot Springs County Park area north of Tecopa, and China Ranch, a 218-acre ranch with lush riparian woodland. Several extensive riparian thickets (willows) associated with the Amargosa River are northeast of Shoshone, and mesquite thickets are found just northwest of Shoshone and at Resting Springs in Chicago Valley east of Tecopa.

This area boasts an exceptionally rich avifauna compared with the rest of the Mojave Desert, owing both the abundance of year-round water as well as to its low level of habitat disturbance. China Ranch, only recently opened to birders, has been found to support a tiny population of breeding Yellow-billed Cuckoo, one of only a handful left in California. Other specialties reaching the northern terminus of the ranges in the state at China Ranch include Vermilion and Brown-crested flycatchers and Crissal Thrasher. Bell's Vireo has been found summering within the IBA, at China Ranch and near Shoshone, though their racial affiliation is not known at this time. Grimshaw Lake and associated alkali wetlands support breeding Least Bittern, Northern Harrier and Snowy Plover, otherwise highly localized in the north

> Mojave. Several endemic non-bird taxa are found here, including the Amargosa Vole (*Microtus californicus scirpensis*)."

CITATION: National Audubon Society 2011. Important Bird Areas in the U.S. Profile Reports. Accessed November 17, 2011 at: http://iba.audubon.org/iba/stateIndex.do?state=US-CA .

Species occurrence bar charts are available for all three IBAs on Ebird.org at the following link:
http://ebird.org/ebird/ca/GuideMe?reportType=location&bMonth=01&bYear=1900&eMonth=12&eYear=2011&parentState=US-CA&countries=US&states=US-CA&getLocations=ibas&continue.x=58&continue.y=9&continue=t

Migratory Bird Flyways and Stopover Sites

The project site is located within the vast Pacific Flyway, a major avian migration route running north-south from Alaska to Patagonia generally along the western edge of the United States. There are no stopover sites within the project area.

Stopover areas in the region include the East Mojave Springs and Shoshone-Tecopa IBAs, as well as a number of alkali playas and dry lakes and washes, such as Mesquite Lake (approximately 21 miles southwest of the site), Kingston Wash (28 miles southwest of the site), and the Pahrump Playa (located approximately 3 miles northwest of the site). During storm events, many portions of these dry lakes and playas support standing water, which allow them to function for periods of time as a stopover location for migrating birds. No large open water features are located within the vicinity of the project area.

The closest major migratory stopover location to the project site is the Ash Meadows National Wildlife Refuge (NWR), located approximately 35 miles northwest of the project area in Nye County, Nevada. Ash Meadows NWR is also recognized as an IBA and currently includes over 23,000 acres of spring-fed wetlands and alkaline desert uplands, managed by the U.S. Fish and Wildlife Service, which contain the greatest local concentration of endemic species in the United States (USFWS, 2011). This refuge is recognized as an important stopover location to birds migrating through the western Great Basin (McIvor, 2005). Over 239 different species of birds have been recorded on the refuge, with the highest numbers seen during Spring and Fall migration (USFWS, 2011). During the winter, marshes and reservoirs support the largest variety of water birds. Mesquite and ash tree groves at Ash Meadows NWR harbor resident and migratory birds year-round, including key species such as: waterfowl (up to 30,000), federally endangered "Yuma" Clapper Rail, federally endangered Southwestern Willow Flycatcher (up to 10 individuals), resident Verdin, resident Crissal Thrasher, breeding/winter Phainopepla (up to 50 individuals), breeding Lucy's Warbler (up to 100 individuals), Wilson's Warbler (up to 10,000 individuals documented in migration), breeding Yellow-breasted Chat (up to 60 individuals), and breeding Blue Grosbeak (up to 100 individuals) (McIvor, 2005).

CITATION: United States Fish and Wildlife Service (USFWS). 2011. Ash Meadows National Wildlife Refuge Webpage. Accessed November 17, 2011 at: http://www.fws.gov/desertcomplex/ashmeadows/

CITATION: McIvor, Donald E. 2005. Important Bird Areas of Nevada. Lahontan Audubon Society.

Bird Survey Information

Ash Meadows National Wildlife Refuge (NWR)

A bird list for the Ash Meadows NWR (located in Nevada) is available at the following link: http://www.npwrc.usgs.gov/resource/birds/chekbird/r1/ashmead.htm

Point Reyes Bird Observatory (PRBO)

Point-count Survey Data: There is no point-count survey location in the vicinity of the project area.

Breeding Bird Survey (BBS) Data

There are a number of breeding bird survey locations within the region of the project: Ash Meadows BBS Route, Tecopa BBS Route, Jean Lake BBS Route, Greenwater BBS Route, and Valley Wells BBS Route. The data for these locations is available at the following link: http://data.prbo.org/cadc2/index.php?page=137

EFFECTS OF POWER TOWERS ON BAT AND BIRD SPECIES

BACKGROUND: In the AFC and two supplements, the applicant addresses the potential for occurrence and project impacts to four bat species, two of which are BLM Sensitive and California Species of Concern, the pallid bat and Townsend's big-eared bat. The applicant identifies the site as supporting potentially suitable night-time foraging habitat for these species, but indicates the likelihood for use of the site for foraging is low due to distance of the project site from roost site occurrences being greater than their known foraging distances. The applicant states that bats or their sign were not observed during field surveys and the site does not provide suitable bat roost habitat, but does not describe the types of bat surveys conducted or how the determination was made that roost habitat does not occur on the project site.

The applicant relied primarily on CDFG's California Natural Diversity DataBase (CNDDB) occurrence information although that bat occurrence information may not be very complete since bat survey information is not commonly reported to the CNDDB. Four other special-status bat species identified as occurring within the Northern Eastern Mojave (NEMO) plan area were not addressed by the applicant as potentially occurring and include the occult little brown bat, western mastiff bat, spotted bat, and California leaf-nosed bat which are also identified as California Species of Concern.

Staff needs to analyze the potential for project impacts to roosting and foraging habitat of special-status bats. The applicant has indicated due to lack of roost habitat and low likelihood to forage onsite, impacts are expected to be less than significant and no mitigation would be necessary for special-status bat species. Based on a reconnaissance-level site visit performed by staff in March 2011 and review of aerial photography, staff believes the orchard trees and abandoned home structures located along the southern portion of the project may provide potential bat roost habitat. Based on a conference call between staff and other resource agencies on

October 20, 2011, BLM field staff recommends two years of acoustic collection data to provide baseline data for projects on bat species occurrence and habitat use within the project area. Staff believes the site and surrounding area may provide bat roost and foraging habitat and a more in-depth field surveys and data are needed to determine an environmental baseline for determining the project's potential for impacts to special-status bats. While 2 years of data are requested, this will not impact the timeline of the staff's assessment documents. As mentioned previously, the USFWS Regional Migratory Bird Program has indicated there is concern about the effects of large power tower projects to birds, bats, and eagles due to the potential for direct take from the super-heated air surrounding the tower and indirect take due to loss of foraging habitat. The USFWS Region 8 has issued interim guidelines[2] on the development of Avian and Bat Protection Plans and indicate "…of concern are the cumulative effects of renewable energy projects in initiating or contributing to the decline of some bird and bat populations, as well as other affected species."

The applicant claims that since the power plant would operate during the day, the potential for impacts to bat species foraging at night over the site is low. Staff needs to analyze the potential for direct and indirect impacts to special-status bats (and migratory bird species) from the project's two 750-foot tall power towers and the heat that will be emitted from the towers; however, the applicant has not provided temperature data expected to be emitted by the towers and over the mirror field.

DATA REQUESTS

55. Please describe the bat surveys that have been conducted to date and how the determination was made that no roost habitat occurs within the site. Please perform an assessment of bat roost habitat within the site and immediate surrounding areas, specifically the abandoned orchards and residential structures, and provide an assessment of the likelihood for bats foraging on site.

Response: Two CH2M HILL biologists completed four rounds each of bat observations at various boundary points on the Hidden Hills Project Site near Calvada Springs/Charleston View area in Inyo County, California between March 23rd and April 14th, 2011 from 30 minutes prior to sunset until dark.

During the eight surveys conducted no bats were observed. Typical roost locations such as trees, residences and mountain cliffs are present in the general vicinity (i.e., within 10 miles of the project site). No bat activity was identified. There is no water onsite or immediately adjacent to the project area to attract bats. It is unlikely that bats will forage on the project site as the population density of insects within the project boundary is low. Details of the surveys are described in a Technical Memorandum provided as Attachment DR55-1.

[2] USFWS, Region 8, Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities (USFWS Region 8 September 2010).

56. Please conduct one year of acoustic bat surveys within the site beginning in November 2011. Please coordinate with the resource agencies on the appropriate placement of acoustic unit(s) within the site; report quarterly findings to staff and copy the BLM, CDFG, and UFWS with the information. Once quarterly results of the first year's acoustic survey data becomes available, staff may subsequently request additional seasonal data.

Response: One AnaBat device will be installed on an onsite meteorological data collection tower this winter with the intent of providing data starting January 2012. Based on discussions with CEC Staff on November 18, 2011, Applicant has been informed that the collection and evaluation of AnaBat data will not result in any delays in production of either the PSA or FSA. Based on this understanding, once it is available, data will be transmitted quarterly to the CEC.

57. Please provide staff data (developed using Pro E, Solid Works or other equivalent 3D modeling package) showing ambient temperature data for heat emitted from each tower over a 24-hour period. The data should reflect the average temperature of each quarter day, and factoring in seasonal weather changes (4 Models) over a 24-hour period at specific heights and distances from the tower. Example: Q1 if average temperature is a high of 80 and a low of 34. Based on 1-hour intervals, state the temperature at the top of the tower, and extending outward at reasonable, regularly occurring heights and distances. Please provide staff both a model and to-scale renderings shown in top down and side view.

Response: Modeling information for ambient temperature data for heat emitted from each tower is provided as Attachment DR57-1. The extreme modeling conditions are as follows:

00:00-06:00 - Ambient temperature.

06:00-12:00 – Figures DR57-3 and 4 (included in Attachment DR57-1): The temperature of the air reduces to 45°C (113°F / 318°K) after about 180 feet from the center of the tower.

12:00-18:00– Figures DR57-3 and 4: The temperature of the air reduces to 45°C (113°F / 318°K) after about 180 feet from the center of the tower.

18:00-00:00 - Ambient temperature. The SRSG will reduce its temperature to the ambient temperature after about 3 hours.

This analysis describes the maximum conditions (the "hottest" conditions) under the assumption that the ambient temperature is 45 deg C, which is close to the highest temperature measured at HHSEGS. The temperature distribution in the figures reflects a side cross section view of the circular SRSG and thus is symmetrical. As can be seen, the temperature of the air decreases significantly in the vicinity of the SRSG.

The temperature of the air below the SRSG (along the concrete tower) can be assumed to be the same at any elevation and equal to the ambient temperature. After the operating hours of the power station, it takes the SRSG approximately 3 hours to "cool down" to the ambient temperature (graph is Figure DR57-4).

WESTERN BURROWING OWL

BACKGROUND The applicant performed burrowing owl surveys concurrently with desert tortoise surveys and reported the results of field surveys for both of these species in one report, Appendix 5.2 F (Desert Tortoise Survey Report). Burrowing owls were identified during field surveys (at least 1 owl and 8 active owl burrows) and the applicant provided field survey forms for these surveys in Data Adequacy Supplement B. However, Appendix 5.2 F and the field data forms do not indicate that Phase II (burrow survey) or Phase III (burrowing owl surveys, census, and mapping) surveys were performed in accordance with the California Burrowing Owl Consortium survey protocol and mitigation guidelines (CBOC 1993). The applicant indicated in a biology workshop on October 21, 2011, that Phase I and Phase II surveys were performed for burrowing owl and the most appropriate time for conducting Phase III season surveys would be during the peak nesting season, April 15 to July 15, per CBOC 1993 survey guidelines.

The burrowing owl survey protocol for burrowing owl (CBOC 1993) calls for breeding season surveys and a census map (Phase III surveys) if burrows or burrowing owls are recorded during field surveys. Phase III burrow census surveys consist of four site visits on separate days to observe owl activity at burrows identified during the initial site visit. Staff needs Phase III burrow survey data to determine how burrowing owls are using the site, to perform an impact analysis, determine appropriate mitigation, and ultimately develop a condition of certification for this species.

DATA REQUESTS

58. As indicated by the applicant, please provide staff a summary report documenting the results of the Phase I and Phase II burrowing owl surveys that have already been conducted for the project, following Phase IV reporting guidelines (CBOC 1993).

Response: The requested burrowing owl report has been prepared and is provided as Attachment DR58-1.

59. Please perform focused burrowing owl Phase III surveys that would include at least four site visits to burrows with sign and provide a map of occupied burrows per the burrowing owl survey protocol (CBOC 1993). As indicated in this survey protocol, a nesting season survey can begin as early as February 1st of any year. Following the completion of the Phase III surveys, please provide staff a summary report following Phase IV reporting guidelines (CBOC 1993).

Response: The requested Phase III burrowing owl surveys will be conducted in the appropriate season.

SPECIAL-STATUS PLANT SPECIES

BACKGROUND: Eight special-status plant species have been found on-site, some in very large numbers and densities throughout the project site; seven of these plants are identified by the California Native Plant Society as List 2 species and one is a List 1B species, Pahrump Valley buckwheat. An additional plant species, Nye milk-vetch (Astragalus nyensis), was previously not known to occur in California, was also found on-site. In addition to focused botanical surveys performed on-site, the applicant also performed off-site plant surveys in areas near Pahrump, Chicago, and Stewart valleys in California and Nevada although those results have not been provided to staff, to date. The applicant stated in Data Adequacy Supplement A (Response 7, page 15) that no significant impacts would occur to special-status plant species since avoidance measures would be implemented and that no further mitigation would be required, but did not identify which impact avoidance and minimization measures would be implemented.

In Data Adequacy Supplement B (Response B7, page 12), the applicant claimed impacts to special-status plant species would not be significant but includes a "general discussion of impact avoidance and minimization measures." The applicant also claims that the primary impact avoidance measure to special-status plant species is the project's use of taller solar power towers, which reduces the project's impact footprint (Response B5, page 7). Staff believes that since an adequate impact analysis of special-status plant species has not been provided by the applicant, in both a site-specific and regional context, it is premature to assume that impacts would not be significant. Staff needs all the field survey information in order to perform an analysis of the project's impacts to special-status plants and to determine if impacts may be significant and if additional mitigation is necessary.

DATA REQUESTS

60. Please provide an on-site impact analysis of the project's impacts during construction and operation for each of the nine plant species mentioned above that were found during focused botanical surveys. As part of this analysis, overlay the project's site plan over the plant populations that were mapped within the site and provide staff the number of each of the nine plant species that would be directly lost due to project construction. Please provide staff a map(s) showing the special-status plant occurrences (including Nye milk-vetch) with the site plan overlay, identifying those occurrences that will be directly impacted by the project. Also, please identify any special-status plant avoidance areas that may be set aside as an on-site preserve/avoidance area for special-status plant species.

Response: Applicant disagrees with Staff's statement that an adequate impact analysis of special-status plant species has not been provided by Applicant. As used in this response, the term "special-status" species does not mean listed as threatened, endangered or candidate species under the federal ESA or CESA. Instead, the term "special-status" species is a more expansive term, employed by many agencies for the purposes described herein. The term special-status has no relationship to the legal status of any particular species.

The AFC contains a thorough discussion of the potential impact to biological resources in general, and special-status plants in particular. See, for example, AFC Sections 5.2.2.4 (Special-status Plants), 5.2.2.5 (Offsite Surveys), and results of the surveys, Section 5.2.6. The known locations of special-status plant and wildlife species identified in CNDDB and NNHP records within a 10-mile range of the project site are shown on AFC Figure 5.2-1, Special-status Plants. A list of plant species that are characteristic of this arid region is presented in AFC Table 5.2-3. Vegetation types present within the site are described in more detail in Section 5.2.6.3.

As described in AFC Section 5.2.5.5.4 (Rare Plant Protocol Survey Methods), Special-status plant species surveys were performed onsite in fall 2010 for later-blooming plants and in spring 2011 for early-season species. Protocol-level surveys of the 250-foot buffer and reconnaissance-level surveys of the 1-mile buffer were performed in spring 2011. The botanical surveys for late-season special-status plants were conducted onsite October 25 through 30, 2010. The spring 2011 special-status plant surveys of the HHSEGS site and the 250-foot buffer were performed on April 16-19, 21, 23, and 26-30, 2011. Surveys of the 1-mile buffer were completed during April and May, 2011. See also Appendix 5.2G, "Detailed Special-Status Plant Descriptions." Site maps showing the locations of the eight special-status plants and Nye milkvetch were included in the AFC as Figures 5.2-6a through 6i. It is assumed that during construction, all of the plants will be affected.

No onsite special-status plant avoidance "areas" are planned. In terms of avoidance, the solar power tower technology for the HHSEGS project design incorporates an important technology advancement, the 750-foot tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre, the design is more efficient overall, and less potential habitat is affected by the project.

61. Please also identify herbicide and soil stabilizer drift control measures, erosion and sediment control measures, and monitoring and reporting requirements for any sensitive plant avoidance area to be implemented during construction. Please also explicitly identify design measures (other than the use of 750-foot tall power towers to minimize project footprint impacts) incorporated into project design and intended to minimize impacts to special-status plants.

Response: As stated above in Data Response 60, while no avoidance "areas" are planned, the taller solar tower design results in a smaller project footprint, thus avoiding impacts.

62. For each of the nine plant species identified above, please provide staff a species-specific assessment of proposed mitigation options such as seed collection, transplantation, or payment into an in-lieu mitigation fee program.

Response: CEQA provides that "[e]ach public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so." (PRC 21002.1(b)). Where a significant effect has been found, the nature and extent of the mitigation will depend upon the nature and extent of the impact. Therefore, feasible

mitigation can be proposed only after a significant effect has been determined, and the nature and the extent of the impact has been determined.

The mere fact that a species listed by the CNPS has been identified on the project site does not automatically mean that the project will have a significant environmental impact. The CNPS list is the starting point of the agency's environmental analysis -- a screening tool – not the end of the inquiry.

Plants that are identified in the initial screen must be analyzed pursuant to the requirements of the CEQA Guidelines (14 CCR 15380). Specifically, the appropriate inquiry includes an examination of at least three issues: (1) whether the listing accurately characterizes the existence of the species within its range, (2) whether, although not presently threatened with extinction, the plant species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens and (3) whether the plant species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

As discussed in DR 60, the Applicant has provided information on special status plants that demonstrate that impacts on special status plants are less than significant. Additional information on special status plants found offsite demonstrates that the plants identified: (1) are not presently threatened with extinction; (2) are existing in numbers throughout all or a significant portion of its range such that they will not become endangered if its environment worsens; (3) are not likely to become endangered within the foreseeable future throughout all or a significant portion of its range; or (4) are not considered "threatened" as that term is used in the Federal Endangered Species Act.

The Applicant anticipates discussing these issues in some detail at the first regularly scheduled Status Conference in January. Absent a showing that the project will have a significant adverse effect on the environment, as defined by CEQA, any discussion of specific mitigation measures would be premature.

63. As indicated in the AFC, please provide staff a survey report including maps for fall 2010 botanical surveys for off-site botanical surveys performed near Pahrump, Nevada, Chicago, and Stewart valleys in California and Nevada.

Response: There are three botany reports that were referenced in the AFC that are being prepared: (1) onsite spring, (2) offsite spring and (3) onsite fall. These reports are in production at this time, going through the quality control/quality assurance process. The spring survey reports (onsite and offsite) should be available mid-December, with the fall onsite survey report following shortly thereafter. Offsite fall botanical surveys were not performed.

DESERT TORTOISE

BACKGROUND: The proposed project site contains desert tortoise detections and sign, as stated in the AFC and supplements A and B. The applicant and staff agree that the site provides suitable desert tortoise habitat.

Cumulative and connectivity impacts to the local and regional population of desert tortoises from the proposed project and other development in the region are

concerns and need to be discussed more fully. Mitigation must address solutions to cumulative and habitat connectivity impacts. According to the AFC Appendix F, critical habitat for the tortoise is located approximately 24 miles away from the project. Staff would like additional information on the quality of the desert tortoise habitat adjacent to the project, including any potential habitat linkages or corridors, to analyze project impacts in a regional context.

DATA REQUESTS

64. Section 5.2.7.8 of the AFC dismisses the possibility of the project site to serve as a wildlife corridor. Please provide copies of reference materials and data used to develop this conclusion. Please identify which agencies were consulted for information, which data sets were used, and which local or state experts were consulted when drafting this section of the AFC.

Response: Section 5.2.7.8 of the AFC was drafted by Dr. James Marble, former Director of the Natural Resources Office for Nye County, Nevada, based on professional investigation, personal experience and familiarity with Nye County and the region. In response to this data request, consultations were conducted with Brad Hardenbrook (NDOW), Tammy Branston (CDFG), Len Warren (Point Reyes Bird Observatory), Richard Cantino (Point Reyes Bird Observatory) and Pat Cummings (NDOW bighorn sheep biologist) to determine whether the project site is known to be a wildlife corridor. No wildlife corridor has been identified by NDOW, CDFG or Nye County. Mr. Hardenbrook indicated that bighorn sheep migrate from the Spring Mountains in Southern Nevada to California mountains, but that the likely place for them to cross is south of Sandy (Mesquite) Valley near Mesquite Mountain and Diablo Mountain ranges. Mr. Cummings reported that NDOW has a single record of a bighorn sheep tagged by CDFG in the Mesquite Mountains, San Bernardino County, California (26 miles southwest of Calvada Springs and the project site) and harvested in the Spring Mountains in Clark County, Nevada. He emphasized that there is no data to support bighorn sheep use of the valley floors to migrate. The biologists consulted confirmed that bighorn sheep avoid open areas, like that around the Hidden Hills site. Movements of desert tortoise and other wildlife species are not likely to be impacted by the project. The background information is presented below as a supplement to AFC Section 5.2.7.8. Mr. Warren said that he has no data on bird use or migration across the HHSEGS site and does not think his point-count data from mountain and riparian locations in the region are applicable to the Hidden Hills site.

AFC Section 5.2.7.8 is edited and augmented as follows:

5.2.7.8 Wildlife Corridors

A wildlife corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two patches of comparatively undisturbed habitat or between a patch of habitat and vital resources. For example, desert washes may function as wildlife corridors. However, the project site is located in an area of abundant, contiguous open space with few well defined washes and is not considered a wildlife corridor.

The potential for desert tortoise corridors was examined in studies of landscape connectivity among Mojave Desert population of desert tortoise (*Gopherus agassizii*) using landscape genetics and statistical models to evaluate hypotheses that could explain isolation among

desert tortoise locations (Hagerty et al., 2010). The level of gene flow indicates the level of physical contact and travel between populations. Comparing models, they found that none included paths across large areas of unsuitable habitat, such as the northwest corner of the range, Death Valley and major mountain ranges such as the Spring Mountains. They found that regions between mountain ranges contained areas of very high current density (gene flow). In contrast, natural barriers did not fragment habitat within California, which has more diffuse current flow between sampling locations. Three of the 25 sampling region centroids were near Calvada Springs, which is the project location. They are Shadow Valley (west of the site), Pahrump Valley (north and east of the site) and Amargosa Desert (north and west of Pahrump). The probability of the same genes occurring in these populations was high, indicating gene flow between each. A least-cost path model, using habitat potential to assess the resistance to tortoise movement, indicated several paths in the area of the project site. This indicates a diffuse flow over an open area of relatively uniform resistance, rather than a corridor. When more than one pathway is available to traverse the landscape or the size of the path increases, the resistance distance effectively decreases, but the least-cost distance does not (McRae et al. 2008).

Other models that were supported by testing were isolation-by-resistance models that were used to generate cumulative current maps. The maps showed low current across the southern portions of the Pahrump Valley and the project site, which is classified as class 3 habitat. It also indicated higher current between Shadow Valley and valleys to the south and between Pahrump Valley and Amargosa Valley than across the project site.

References

Hagerty, Bridgette E., Kenneth E. Nussear, Todd C. Esque and C. Richard Tracy. 2010. Making molehills out of mountains: landscape genetics of the Mojave desert tortoise. Landscape Ecology, Volume 26, Number 2, Pages 267-280.

McRae, B.H., B.G. Dickson, T. Keitt and V.B. Shah. 2008. Using circuit theory to model connectivity in ecology, evolution, and conservation. Ecology 89: 2712–2724.

Studies of Desert Tortoise Populations in the Pahrump Valley

Data request 64 asks for data sets used to draw conclusions in the AFC about the presence of wildlife corridors. No additional data set from the Calvada Springs area (where the project is located) has been assembled except for those developed specifically for this project and previously reported. The data sets used in drafting this section are described below. The studies of desert tortoise populations in the Pahrump Valley and the quality of desert tortoise habitat are described in the following excerpt, quoting from the Pahrump Habitat Conservation Plan (HCP) (NCPD 2009):

> Within the Planning Area of this HCP, desert tortoise habitat occurs primarily on the east side of State Highway 160; however, tortoise habitat is present elsewhere in the Pahrump Valley at the rural/urban interface south/ southeast of Pahrump and extends out into undeveloped areas. Desert tortoise habitat quality varies throughout Pahrump Valley, with higher quality less-disturbed habitat occurring on the east side of State Route 160 and in the northern and northwestern edges of the town boundary. In general, the habitat tends to be less disturbed and fragmented the farther east it occurs from the highway. Habitat also occurs in southern areas of Pahrump, but is patchy and interspersed

with sandy mesquite hummocks. In general, the central area of Pahrump on the west side of State Route 160 has either been developed for residential and commercial purposes, or is dominated by abandoned agricultural fields and salt desert scrub, and for the most part does not provide suitable habitat for the tortoise. Estimates of desert tortoise densities in Pahrump Valley are generally very low to moderate. Survey data for Pahrump Valley is limited, and has been conducted mostly on the surrounding Federal lands managed by the BLM. A description of known desert tortoise surveys conducted in Pahrump Valley is summarized below. The town of Pahrump is surrounded by lands administered by the BLM. Most of the desert tortoise habitat in Pahrump Valley occurs on BLM-managed lands. The BLM collected data on 1,425 standard triangular strip transects from 1979 through the mid-1990's to determine relative densities of desert tortoise habitat in southern Nevada. Approximately 50 of these transects were conducted in Pahrump Valley. Standard transects consisted of walking the perimeter of an equilateral triangle, 0.5 mile on each side, while recording observations of desert tortoise sign in a 33-foot wide area. Average total adjusted sign was determined, and relative desert tortoise density was calculated based on the formula developed by Berry and Nicholson (1984). Most transects were conducted southeast and northwest of Pahrump on BLM-managed land. No surveys were conducted on private land. Relative densities ranged from very low (0 to 10 tortoises per square mile) to high (90 to 140 tortoises per square mile), with most relative densities ranging between 10 and 45 tortoises per square mile. In 1992, Dames & Moore biologists conducted a field survey of the 80-acre landfill expansion and sewage treatment facility site and surrounding areas within the Town of Pahrump. A combination of survey techniques were employed including a full survey of the site of the proposed project (80 acres), a full survey of other County-owned land adjacent to the project site (50 acres), and zone of influence transects adjacent to the County land (80 acres). The results of the 1992 survey were that one (1) tortoise was observed to the east of the site of the proposed project. Also, a total of 21 sign were observed including a tortoise, burrows, carcass, and scat. Then in 1994, one tortoise was found in a burrow on the site of the proposed project (WESTEC 1994).

An HCP for the Nye County landfill was completed in 1995. The 80-acre project site was surveyed for desert tortoises prior to initiation of construction activities. Four tortoises were found, which were relocated to adjacent suitable habitat (Coburn 1996). In 1998, the project proponent reported one dead tortoise which was found on the project site (Darling Environmental and Surveying 1999). The landfill is located in Township 20 South, Range 53 East, south half of the northeast quarter of section 2. In 2006, Knight and Leavitt Associates was retained to collect biological data for the desert tortoise as well as estimate the numbers of cacti and yucca present for the proposed construction of a new access roadway and water tank on approximately 2.0 acres of private land on the eastern extension of Manse Road, across State Route, 160 south of Pahrump. A desert tortoise survey was conducted according to the FWS Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise within the project area and the zones of influence (ZOI) at 33, 100, 200, and 400 meters from the project area perimeter. However, no observations of Mojave Desert

> Tortoise or sign were encountered during the field inventory on March 7, 2006 for 'the proposed project area and surrounding lands' (Knight & Leavitt Associates, Inc. 2006). On November 12 and 13, 2007, 100 percent pedestrian presence/absence surveys were conducted within the 120-acre project site of a proposed Federal detention facility located at 2250 East Mesquite Avenue in Pahrump (Louis Berger Group 2008). A total of 13 desert tortoise burrows were observed. Desert tortoise sign observed on the project site included six tortoise burrows and four burrows with tortoise scat, which indicates occupancy. One burrow was occupied by a burrowing owl, and two burrows were collapsed. No desert tortoises were encountered during the surveys. Based on results of the survey, the FWS estimated a relative density of 0 to 10 tortoises per square mile (USFWS 2008)."

Bird use in the area is not documented except for data collected in connection with this project. Mr. Richard Cantino, a Pahrump, Nevada resident who works for Point Reyes Bird Observatory, reported that he has no avian data for the Calvada Springs area where the project is located. His surveys have been conducted near ponds and water features in the immediate area of the Town of Pahrump. He deferred to Mr. Len Warren a local Shoshone, California resident who works for the Point Reyes Bird Observatory.

Mr. Warren said that he has no data from the Calvada Springs area. His data has been collected in riparian areas in the Kingston Mountains, Tecopa and the Amargosa River in Inyo County. He stated that he did not think his data were applicable to the Calvada Springs (i.e., project) area.

References

Berry, K.H. and L.L. Nicholson. 1984. *The Distribution and Density of Desert Tortoise Populations in California in the 1970's*. Pages 26-60 in K.H. Berry (ed.). The status of the desert tortoise (*Gopherus agassizii*) in the United States. Desert Tortoise Council report to the United States Fish and Wildlife Service.

Coburn, M.E. 1996. Nye County Landfill Expansion and Sewage Treatment Facility Improvement Projects, Desert Tortoise Permitting Document Annual Monitoring/Mitigation Report (Permit No. PRT- 76604). Prepared on behalf of Nye County Board of Commissioners, Tonopah, Nevada.

Dames and Moore 1992. Cited in NCPD 2009, but reference omitted.

Darling Environmental and Surveying, LTD. 1999. Pahrump Landfill, Nye County, Nevada, 1998 Annual Monitoring Report, USFWS Desert Tortoise Permit No. PRT-776604. Prepared for Nye County Public Works, Tonopah, Nevada.

Knight & Leavitt Associates, Inc. 2006. A Biological Report on the Mojave Desert Tortoise for a Proposed Access Road and Water Tank in Pahrump, Nye County, Nevada. Prepared for Environmental Compliance Specialist and Pahrump Utility Corridor, Inc.

Louis Berger Group, Inc. 2008. Biological Assessment for the Proposed Contractor Detention Facility, Las Vegas, Nevada Area. Prepared for the U.S. Department of Justice, Office of the Federal Detention Trustee, Arlington, Virginia.

New County Planning Department. 2009. Pahrump Valley Desert Tortoise Habitat Conservation Plan. Available online at www.nyecounty.net/DocumentView.aspx?DID=9953

US Fish and Wildlife Service (USFWS). 2008. Biological Opinion for the Proposed Contractor Detention Facility in Pahrump, Nye County, Nevada. Service File No. 84320-2008-F-0349.

WESTEC. 1994. Nye County Landfill Expansion and Sewage Treatment Facility Improvement Projects Desert Tortoise Permitting Documents: Habitat Conservation Plan, Environmental Assessment, and Biological Assessment. Prepared on behalf of Nye County Board of Commissioners. September 1994.

65. Please provide wildlife movement and/or wildlife corridor maps and textual description for desert tortoise. Please provide an assessment of the effects the proposed project will have on wildlife movement and corridors.

Response: The project is not expected to affect any wildlife corridors; see Data Response 64 for additional information. The area is not part of any known wildlife corridor. The topography of the area does not concentrate wildlife travel into a restricted travel area. Wildlife is expected to easily travel around the site. Maps of modeled tortoise corridors are in the cited paper (Hagerty et al., 2010).

BACKGROUND: A tortoise translocation plan is required by the USFWS when desert tortoise must be moved from the project site. The goals of this relocation/translocation effort should be to:

- relocate/translocate all desert tortoises from the project site to nearby suitable habitat;
- minimize impacts on resident desert tortoises outside the project site;
- minimize stress, disturbance, and injuries to relocated/translocated tortoises; and
- assess the success of the relocated/translocated effort through monitoring.

DATA REQUEST

66. Please provide a draft Desert Tortoise Translocation Plan that incorporates the most recent guidance from the Bureau of Land Management (BLM), United States Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). Please discuss translocation procedures and guidance in the plan, including a description of clearance survey protocol and desert tortoise transportation and release procedures, and develop a post-translocation monitoring and reporting plan. All methods discussed in the plan should be consistent with the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999) or the most recent handling guidance provided by the USFWS.

Generally, the translocation plan should include the following information:

a. Identification of potential translocation sites based on the presence of suitable soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope;

b. Surveys of resident populations at proposed translocation sites, including health assessment sampling and attaching transmitters to individuals;

c. Description of measures that would be implemented to prevent translocated desert tortoise entering the site or other hazardous areas;

d. Description of quarantine facilities to provide individual quarantine for all tortoises prior to translocation;

e. Description of health assessments that would be performed by qualified biologist or veterinarian on each tortoise prior to translocation;

f. A treatment/disposition plan for each tortoise, including those unfit for translocation;

g. Description of translocation procedures, including timing (e.g., time of year, time of day);

h. Description of post-translocation monitoring and adaptive management activities;

i. Description of methods used to mark translocated tortoises and fit them with transmitters so that they can be located and identified during post- translocation monitoring;

j. Description of methods used to mark existing tortoises in the receiving population and fit them with transmitters so that they can be located and identified during post- translocation monitoring; and

k. Description of how data would be compiled, synthesized, and reported to USFWS, CDFG, BLM, and Energy Commission staff.

The translocation site(s) must at a minimum:

a. be sited in accordance with all agency guidelines with respect to choice of land manager, land owner, and land manager;

b. satisfy the requirements of the federal Endangered Species Act Section 7 lead (BLM) and USFWS; and

c. have no proposed rights-of-way or other encumbrances at the time of its establishment.

Response: A Preliminary Draft Desert Tortoise Translocation Plan is provided as Attachment DR66-1. As in all cases, the biological opinion will be the primary governing document for the project

related to desert tortoise issues. Accordingly, the draft plan addresses the information requests of the Staff to the extent these issues are knowable and known at this point in time.

BACKGROUND: As part of required project permitting, a federal Endangered Species Act Section 7 consultation must occur to address impacts to the Federally-listed desert tortoise. The Ventura Office of USFWS has been designated to handle the Section 7 consultation with the BLM Southern Nevada District Office, the designated federal lead agency. The federal lead agency will develop a Biological Assessment (BA) for the project and submit it to the USFWS as part of the consultation process.

DATA REQUEST

67. Please coordinate with BLM Southern Nevada District office to prepare and submit a BA to the USFWS per federal guidelines, available from Ray Bransfield at the USFWS Ventura Field Office. Please also provide a copy of the BA to the Energy Commission staff when the BA is deemed complete by the USFWS.

Response: The Applicant will coordinate with BLM Southern Nevada in preparation of the BA. Preparation of a draft BA for BLM is in progress. A courtesy copy will be provided to the CEC when it is deemed complete by the USFWS.

BACKGROUND: Surveys and mapping of desert tortoise sign are provided in the AFC and supplementary reports. As part of staff's analysis, the conformance of the survey to established federal protocol, as well as calculations applied to derive final projected tortoise density onsite, need to be validated by independent analysis. Additionally, the results of the surveys, which ultimately affect the tortoise translocation plan and mitigation measures, must all be reviewed and approved by the USFWS, BLM, CDFG, and Energy Commission staff.

DATA REQUESTS

68. Desert tortoise survey results, including tortoise sign information, are to be mapped at a scale of 1:100. Please provide a revised AFC Figure 2, page 17 at the recommended 1:100 scale.

Response: For a project this size, maps at a scale of 1:100 would be unmanageable. As discussed at the December 1, 2011 workshop, we have provided maps at a scale of 1:2400. Due to the size and number of these maps, five sets have been provided to the CEC staff. Electronic copies will be provided to other parties upon request.

69. Mapping of tortoise field survey results additionally must comply with USFWS guidance regarding burrow class number, a cross-reference to the corresponding transect forms, and population distribution information (sex ratios and age classes) if available. Please provide a revised Figure 2 of Appendix 5.2F (Desert Tortoise Survey Report) that includes this required

information. Please also provide a copy of all desert tortoise transect forms to the Energy Commission staff for review and validation.

Response: AFC Appendix 5.2F has been revised and is provided as Appendix 5.2F-R1 (Revision 1). It includes the revised figure and field forms.

70. Table 1, Desert Tortoise Sign and Location (located within Appendix 5.2F), does not include burrow classification information. Please provide a revised Table 1 that includes burrow classifications.

Response: AFC Appendix 5.2F has been revised and is provided as Appendix 5.2F-R1 (Revision 1). Table 1 is now Table 5. It has been revised to provide burrow class information in column 3.

71. The desert tortoise survey report, while presenting survey details, stops short of providing a full assessment of the number, age class, sex ratio, or other such analysis of the tortoise presence and usage of the site. Please apply the tortoise survey correction formula used to correct survey error, present a final estimate of the tortoise density for the project site, and note the probability (Pa) and variance (Pd) coefficients selected, and present the information in a table.

Response: AFC Appendix 5.2F has been revised and is provided as Appendix 5.2F-R1 (Revision 1). The information requested is provided in the Discussion section of the report.

72. The table on page 5 of the desert tortoise survey report (Appendix 5.2F) begins this assessment. Please provide an updated table that identifies projected tortoise density, within both the upper and lower 95% confidence interval.

Response: AFC Appendix 5.2F has been revised and is provided as Appendix 5.2F-R1 (Revision 1). The estimated tortoise density within both confidence levels is provided in Table 4.

BACKGROUND: As part of its authority granted by the Warren-Alquist Act, the Energy Commission has in-lieu permitting authority for local and state agencies. This commonly includes the Section 2081 Incidental Take Permit issued by CDFG. As discussed in the September 2011 Supplement, the applicant intends to pursue a 2081 Incidental Take Permit through the Energy Commission's siting process. Energy Commission staff will coordinate with CDFG and the applicant to ensure that the Commission's Decision, as part of its in-lieu permit authority, contains all necessary requirements and meets all state standards and guidelines.

DATA REQUEST

73. Please prepare and submit an Incidental Take Permit application to the Energy Commission staff, and provide copies concurrently to the CDFG (Bishop Filed Office) for review.

Response: A draft 2081 incidental take permit application for desert tortoise is provided as Attachment DR73-1.

Land Use (74-75)

BACKGROUND: The Application for Certification (AFC) Land Use Section 5.6 refers to the Inyo County General Plan and Solar and Wind Renewable Energy General Plan Amendment (REGPA) as the primary planning document applicable to the project site. The REGPA provided the basis for approvals of solar or wind renewable energy facilities and established policies to encourage development of renewable energy in overlay zones in any zoning district under Title 18 of the Inyo County Code. The proposed project was identified by the REGPA as being within the Charleston View overlay zone. Projects that were within these overlay zones were subject to additional site-specific studies and appropriate environmental review according to Inyo County Code Title 21, Renewable Energy Development.

On September 6, 2011, the Inyo County Board of Supervisors rescinded the County's REGPA, effectively eliminating the overlay zone that was discussed in the AFC. As a consequence, the land use map in the AFC does not clearly identify the land use and zoning designations for the project site and surrounding area. Staff's review of the Inyo County website's general plan land use and zoning designations for the area appears to indicate a general plan designation of Open Space and Recreation, and a zoning of Open Space with a 40-acre minimum parcel size. However, staff was unable to clearly identify the zoning and general plan designations for the proposed project site. Also, as a result of the revocation of the REGPA, the proposed project would need to be analyzed for land use consistency and compatibility with the existing zoning and land use designations. In order for staff to prepare the land use analysis, additional information is needed as follows.

DATA REQUESTS

74. Please provide an updated legible map of the project site and surrounding land uses within one mile of the proposed site, on which existing land uses, jurisdictional boundaries, general plan designations, specific plan designations, and zoning have been clearly delineated (including the adjacent Charleston View area).

Response: In response to CEC Staff's Data Requests 93 and 94, (Data Request Set 1C), Applicant will discuss with Inyo County the applicable General Plan designation and whether a General Plan Amendment is necessary for the project. While we recognize that there may be differing views on this issue, Applicant believes that a General Plan Amendment will not be necessary prior to the CEC's Final decision on HHSEGS. Applicant intends to discuss these issues with the County and report the results of this discussion in response to Data Requests Set 1C. An updated map will be provided at that time.

75. Please provide a discussion of the proposed project's compatibility with present and future general plan designation(s) and zoning, including conformity with any long-range land use plans adopted by any federal, state, regional, or local planning agencies.

Response: Applicant is not aware of any land use plans applicable to the project site adopted by any federal, state or regional agency.

At the time the Application for Certification was submitted, the primary local planning documents applicable to the Project site were the Inyo County General Plan, and the Renewable Solar and Wind Energy General Plan Amendment ("REGPA"). HHSEGS is compatible with the REGPA because the project is located on land within a Renewable Energy Land Use Designation Overlay area created by the REGPA, and is consistent with Renewable Energy GPA policies related to siting on disturbed lands, public services and facilities, conservation and open space, water resources, and visual resources.

On September 6, 2011, the Inyo County Board of Supervisors voted to revoke the REGPA. In effect, this removed the Renewable Energy Land Use Designation Overlay from the HHSEGS project site. As a result, the land use designations and policies set forth in the Inyo County General Plan, as modified in December 2001, and as subsequently amended, along with Title 18 and Title 21 of the Inyo County Code represent the current Inyo County local land use applicable LORS.

Zoning

The proposed project area is currently zoned as Open Space (OS), with a minimum parcel size of 40 acres ("OS-40"). Permitted uses in an OS district include single-family dwellings, farms and ranches. Conditionally permitted uses in an OS district include feed lots, golf courses, airports, public and commercial refuse disposal sites, and mining and processing of natural resources.

Because HHSEGS is a solar thermal power plant, the permitted and conditional use provisions, as well as the development standards of the OS designation do not apply. Title 21 of the Inyo County Code provides that the following provisions of the Inyo County Zoning Ordinance do not apply to a solar thermal power plant:

- Permitted, conditional, and/or accessory uses related to a facility and its accessory uses and structures;
- Distance between buildings;
- Height, density, and intensity;
- Light and glare;
- Noise; and
- Wireless communications facilities directly related to the facility.

Therefore, HHSEGS is consistent with the applicable provisions of the Inyo County Code.

Inyo County General Plan Designation

In response to CEC Staff's Data Requests Set 1C, Data Requests 93 and 94, Applicant will discuss with Inyo County the applicable General Plan designation and whether a General Plan Amendment is necessary for the project. While we recognize that there may be differing views on this issue, Applicant believes that a General Plan Amendment will not be necessary prior to the CEC's Final decision on HHSEGS. Applicant intends to discuss these issues with the County and report the results of this discussion in response to Data Requests Set 1C.

Socioeconomics (76)

IMPLAN INPUT-OUTPUT MODELING

BACKGROUND: The AFC discusses the impacts to the local economy and employment, specifically the direct, indirect and induced economic impacts from project construction and operation. Key factors used to assess potential project construction and operation economic impacts include the project's capital cost, cost for local materials and supply purchases, total construction and operation/maintenance payroll, and direct construction and operation employment. These key factors are the direct inputs used to calculate secondary economic impacts (induced and indirect impacts) using an IMPLAN input-output model. Two models were run, one specific to Inyo County in California and another specific to the two-county region of Clark and Nye counties in Nevada (pgs. 5.10-24 & 5.10-28 and 5.10-25 & 5.10-29, respectively).

The 2010 California Employment Development Department (CEDD) data, as presented in the AFC shows employment in Inyo County was highest in the government and services sectors, with an employment share of about 42 percent and 32 percent, respectively. The trade wholesale and retail sector follows with a 14 percent share of employment. Construction, manufacturing, and the transportation, warehousing and utilities sectors all have an employment share of about 2 to 3 percent.

Inyo County contains one incorporated city (Bishop) and 65 small unincorporated communities. Bishop has a population of 3,879 people; the county seat is located at Independence, which has a population of 669 people (2010 US Census). The towns of Bishop and Independence are about 248 and 208 miles driving distance respectively, northwest from the project site.

Inyo County staff has expressed concerns that the IMPLAN model results exaggerate the project's positive economic impacts in Inyo County. For example, Inyo County has little in the way of retail and manufacturing where project construction and operation dollars could be spent. Assumptions regarding this spending would be used by the applicant to indicate the project's direct economic impacts. Secondary employment effects would include indirect and induced employment from the purchase of goods and services by firms involved with construction, and induced employment from construction workers spending their income within the county. As shown using 2010 CEDD data, the lack of retail and manufacturing opportunities in Inyo County would support little in the way of the purchase of goods and services by firms involved with construction, and little in the way of induced employment.

Given Inyo County's concerns, Energy Commission staff contacted an economist in the Fuels and Transportation Division of the Energy Commission to review the

discussion and model output results provided in pages 5.10-24 to 5.10-30 of the AFC. The economist concluded that the inputs used by the applicant seem reasonable, but suggested obtaining a breakdown of the operation and construction budgets for Inyo County to confirm the inputs used in the IMPLAN model. So that staff can more accurately assess the economic and employment impacts of the project, additional information is needed, as identified below.

DATA REQUEST

76. Please provide a breakdown of the HHSEGS construction and operation budgets for Inyo County. If a reassessment of the budgets indicates that new inputs would result, please re-run the IMPLAN model using the revised direct input assumptions and provide the revised indirect and induced impacts.

Response: In the AFC, it was assumed that about 5 percent of the overall construction and operation expenditure would be spent within Inyo County. There are few commercial centers nearby in California and a small California workforce. Based on the remote location of the facility and the available labor pool, it was assumed that the economic impact would be low, but not zero.

It is important to note that these figures focus on construction and operations budgets alone. These figures do not include, for example, revenues associated with property taxes (which will inure to the benefit of Inyo County and the State of California) and payroll taxes (which will be paid to the State of California regardless of the state residency of the wage earner).

Appendix 5.2F-R1
Presence/Absence Survey for Desert Tortoise and Other Sensitive Wildlife November 2001, Sundance Biology, Inc.

APPENDIX 5.2F-R1
(Prepared in Response to Data Requests 68-72)

Presence/Absence Survey for the Desert Tortoise *(Gopherus agassizii)* and other Sensitive Wildlife on the proposed Hidden Hills SEGS Project, Inyo County, California

November 30, 2011

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EXECUTIVE SUMMARY

As recommended in the US Fish and Wildlife Service (USFWS) *Survey Protocol for any Non-Federal Action that may Occur within the Range of the Desert Tortoise, January 1992,* a desert tortoise *(Gopherus agassizii)* presence or absence survey was conducted on the proposed 3,277 acre Hidden Hills SEGS (HHSEGS) Project site, Inyo County, CA located 15 miles south of Pahrump, NV.

Three thousand, two hundred and seventy-seven acres were surveyed for desert tortoises and tortoise sign. An additional 150-meter buffer (652 acres) outside the proposed project boundary was surveyed for burrowing owl for a total of 3,929 acres. Five zone of influence (ZOI) transects were conducted around the project site out to one mile where suitable habitat occurred in order to establish the possible effect the project may have on nearby tortoise populations and determine other wildlife use.

Two live tortoises were found on the project site. Within the onsite and offsite survey areas (site, 150-meter buffer and ZOIs), a total of 15 tortoises, 1 shell-skeletal remains, 94 burrows, 18 scat events, and 9 sets of tortoise tracks were detected on the main project site (2 tortoises), in the burrowing owl buffer zone (6 tortoises), and while conducting ZOI transects (7 tortoises). Based on the occurrence and distribution of tortoise sign it is reasonable to assume that portions of the home ranges of tortoises found within 150 meters of the site extend inside the HHSEGS project boundary and will be affected by development of the site. As such they were included in the density estimate calculations. The total action area for density estimate calculation is 3,929 acres (15.9 km^2). Density estimate for the action area is 0.9 tortoises per km^2.

Observations were recorded for Burrowing owl (*Athene cunicularia*) and its sign, the American badger (*Taxidea taxus*), the desert kit fox (*Vulpes macrotis arsipus*), and other plants and wildlife that occur in the area. In addition to the burrowing owl data summarized in this report a separate report was generated detailing the Phase I and Phase II burrowing owl surveys (see Data Response Set 1B, Attachment DR58).

Eight canid burrows were found with burrowing owl whitewash and/or pellets and feathers on the project site. One badger burrow and one canid burrow were found with burrowing owl sign in the ZOI and 150-meter buffer zone respectively.

Eleven badger burrows in fair to good condition were found on the project site. Another was found in the ZOI. There were no live animals observed.

Forty-six desert kit fox burrow complexes (i.e., numerous burrows within a 3 to 250 square meter area used by a family group) were found. A total of nineteen burrow complexes appeared to be active. Two young kit fox were seen at one on the active burrow complex. Twenty-seven burrow complexes did not appear to be active. In addition to the kit fox burrow complexes, 30 single canid burrows (isolated and not associated with a burrow complex) were found. Of these, eight were identified as kit fox based on the presence of scat and/or tracks, two of which appeared to be active.

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INTRODUCTION

This report addresses the results of a presence/absence survey for the desert tortoise on the proposed Hidden Hills SEGS Project site, Inyo County, California as well as other sensitive species. Potential desert tortoise habitat was delineated considering vegetation, elevation, and topography.

The proposed project site is located in Inyo County, CA in the East Mojave Desert approximately 15 miles south of Pahrump, NV and approximately 45 miles west-southwest of Las Vegas, NV (Figure 1). The site is bounded by the California-Nevada state line to the northeast; Tecopa Road to the south; Rosie Avenue to the west, and the north edge of Section 16, T22N, R10E, SBBM. An additional 180-acre strip of land immediately adjacent to and west of Rosie Avenue in Section 20 is planned for use as a construction area. The total project site comprises 3,277 acres and occurs within Sections 15, 16, 20-23, 27, and 28 of Township 22N, Range 10E, SBBM (Figure 2 and large-scale maps submitted under separate cover and labeled as Figure DR68-1a through 1p). The site is on privately-owned land within the North-East Mojave, South Recovery Unit but does not lie within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

As per the California Energy Commission (CEC), California Department of Fish and Game (CDFG), and US Fish and Wildlife Service (USFWS) guidelines, the proposed site (3,277 acres), a 150-meter buffer zone (652 acres) for burrowing owls (BUOW), and five Zone-of-Influence transects out to one mile from the project boundary were surveyed for desert tortoises and tortoise sign as well as other species.

METHODOLOGY

Habitat Delineation

Delineation of the potential desert tortoise habitat was done prior to commencing the survey during a ground reconnaissance in April 2011. All typical vegetation communities used by desert tortoises throughout their geographic range were included in the survey area.

Survey Methodology

Surveys were conducted between 13 April 2011 and 18 May 2011. A team consisting of 13 experienced desert tortoise biologists conducted the survey by walking a set of transects that covered the 3,277-acre site, and the 650-acre BUOW buffer zone. Transect spacing was at 30 feet between transect centerlines, the standard width for desert tortoise presence/absence surveys. No more than five biologists surveyed together in a team, as larger team sizes decrease efficiency and accuracy.

A set of UTM coordinates establishing transect endpoints for virtual east-west transects were calculated for the main site and BUOW buffer zone. This resulted in 514 transects ranging from 0.38 to 2.95 miles in length. For navigation of transects Lowrance iFinder handheld global positioning system (GPS) units were used.

Each team was equipped with an iFinder GPS unit. One member of each team was responsible to navigate the center transect. When the end of each transect was reached, the team shifted five transects (for a five person team) and the navigator navigated the team center transect for the next trip.

Team members focused on a search area that included 15 feet on either side of them. The members of each team remained close to one another without leading or lagging in order to increase the precision of searching. When one member of the team stopped to investigate an observation, all members of the team stopped. Team members were instructed to search beneath every shrub.

Zone-of-Influence Transects

ZOI transects were conducted in suitable tortoise habitat along all sides of the main project site at 200 meters, 400 meters, 600 meters, 1,200 meters, and 1,600 meters from the survey area perimeter. No ZOI transects were conducted south of the site due to private residences. The survey crew was asked to leave by several land owners on different occasions. Only the most experienced desert tortoise biologist conducted the ZOI transects.

Data Recorded

Any tortoise or large mammal burrows encountered that could potentially be used by tortoises were visually checked. When the end was not visible burrow entrances were gated with small sticks placed vertically in the soil at the entrance and checked periodically during the survey for tortoise activity. Very small burrows that could be potentially utilized by juvenile tortoises but are much more often rodent burrows were also visually checked when encountered. Only definitive tortoise sign was recorded with UTM locations and photographs.

All other wildlife and plant species encountered were also recorded. Sensitive species were recorded with UTM locations and photographs.

Weather

All surveys were conducted while air temperature was below 40 degrees Centigrade (°C) measured approximately 5 centimeters (cm) from the soil surface in an area of full sun, but in the shade of the observer. Actual temperatures during the survey between 13 April 2011 and 18 May 2011 ranged from a low of 4.3°C at 6:30 AM on 01 May to 35.4°C in the afternoon on 06 May, 2011. Winds ranged from calm to 20 miles per hour (mph). One day of rain on 10 May 2011 provided approximately 0.5 mm of rainfall.

Biological Field Team

The survey was managed by Stephen Boland and Mercy Vaughn. The biological team for the survey was as follows:

Table 1. Biological Survey Team

NAME	MAIN SITE and BUFFER ZONE	ZONE OF INFLUENCE
ADAM DRUMMER	X	
ALANA FROST	X	
AMANDA SCHEIB	X	X
CHRISTINE STIRLING	X	
CRAIG KNOWLES	X	
KIP KERMOIAN	X	X
MARCELLA WAGGONER	X	
MYLES TRAPHAGEN		X
PATTY KERMOIAN	X	X
RICH CRAWFORD	X	
SAGE CLEGG	X	
TERRY BAKER	X	
TIM HOCKIN	X	

RESULTS

Survey Area

The elevation of the main project site ranges between 2,580 and 2,680 feet above mean sea level. The entire survey area including ZOIs ranges in elevation from 2,550 to 2,790 feet and is characterized by creosote-bursage desert scrub vegetation in the eastern portions of the site transitioning into grassland with creosote bush to the west and saltbush scrub towards the southwest. Shrub density is generally moderate to low. Geomorphology is middle to lower bajada with a westerly aspect and slope gradient of 1-3%. Soils are generally silty loam to clay soils. Desert pavement is common in the southwestern portion of the site. North, west, and south of the site is lower bajada grading into the playa at the low point in Pahrump Valley northwest of the site. East of the site are stabilized sand dunes and dissected bajada sloping up northeast to the Spring Mountains.

Human impacts include graded dirt roads around every ¼ section. Evidence of cattle and sheep grazing were found in the western and central portions of the site. Some areas in the central portion were denuded of vegetation due extensive grazing or previous clearing.

Desert Tortoise Survey Area

Desert tortoise is listed as a threatened species by both State and federal governments (California Department of Fish and Game 2006b). On the project site, 2 tortoises were detected as well as 1 shell-skeletal remain, 58 burrows, 12 scat events, and 6 sets of tracks (Table 5, Figure 2 and large-scale maps [Figure DR68-1a through 1p]). All but three scat events occurred this year. The shell-skeletal remains were two to four years since time of death. It was an immature that appears to have been crushed.

Within 150 meters of the site (burrowing owl buffer zone) 6 tortoises, 15 burrows, 1 scat event, and 3 sets of tracks were found (Table 5, Figure 2 and large-scale maps [Figure DR68-1a through 1p]). The scat event occurred this year.

Size class and sex ratios for all live tortoises found onsite and within 150 meters of the site are shown in Table 2 below.

Table 2. Size Class and Sex Ratios for all live tortoises found on or within 150 meters of the project site

SIZE CLASS	SEX	TOTAL	SEX RATIOS
ADULT (MCL ≥180 MM)	MALE	4	M:F
ADULT (MCL ≥180 MM)	FEMALE	3	1.33 : 1
IMMATURE (MCL 100-179 MM)	UNKNOWN	1	N/A
JUVENILE (MCL<100 MM)	UNKNOWN	1	N/A

MCL= MIDLINE CARAPACE LENGTH IN MILLIMETERS (mm)

Condition class and Size class for all tortoise burrows found on site and within 150 meters of the site are shown in Table 3 below.

Table 3. Condition Class and Size Class for all tortoise burrows found on the project site and within 150 meters of the project site

CONDITION CLASS	SIZE CLASS								TOTAL
	ADULT (Width≥210 mm)		SUBADULT (Width 180-209 mm)		IMMATURE (Width 100-179 mm)		JUVENILE (Width<100 mm)		
	project site	150-meter buffer	project site	150-meter buffer	project site	150-meter buffer	project site	150-meter buffer	
1	5	4	0	1	1	1	0	0	12
2	18	6	11	0	6	1	1	0	43
3	7	1	1	0	8	1	0	0	18
TOTAL	30	11	12	1	15	3	1	0	73

Desert Tortoise Zone-of-Influence

During surveys along the ZOI transects, seven tortoises were located, 21 burrows, and 5 scat events. All but one scat event occurred this year (Table 5, Figure 2 and large-scale maps [Figure DR68-1a through 1p]).

Other Sensitive Species

Two species of wildlife 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) were identified on the project site. These include the burrowing owl and the American badger (Table 6, Figure 3). A third species identified on the project site, the desert kit fox (Table 7, Figures 4 and 5), is a fur-bearing mammal as defined by the California Fish and Game Code (§§ 4000 - 4012).

These findings are discussed below. A separate report detailing the Phase I and Phase II burrowing owl surveys was also generated (see Data Response Set 1B, Attachment DR58-1). Therefore, they are not discussed any further in this report.

American Badger

The American Badger is not listed or protected under the federal or state Endangered Species Acts. American Badger is identified as a third priority species of special concern by CDFG (California Department of Fish and Game, 1986). Eleven burrows in fair to good condition were found on the project site. Another burrow was found in the ZOI. There were no live animals observed. All badger sign is described and listed below in Table 6 and shown on Figure 3.

Desert Kit Fox

The desert kit fox is not listed or protected under the federal or state Endangered Species Acts. California Fish and Game Code (§§ 4000 - 4012) defines kit fox as a fur-bearing mammal. Forty-six desert kit fox burrow complexes (i.e., numerous burrows within a 3 to 250 square meter area used by a family group) were found. A total of nineteen burrow complexes appeared to be active. Two young kit fox were seen at one of the active burrow complex. Twenty-seven burrow complexes did not appear to be active. In addition to the kit fox burrow complexes, 30 single canid burrows (isolated and not associated with a burrow complex) were found. Of these, eight were identified as kit fox based on the presence of scat and/or tracks, two of which appeared to be active. All kit fox sign is described and listed below in Table 7 and shown on Figures 4 and 5. The condition classes assigned to the burrows are as follows:

Condition Class:

1. currently active, with desert kit fox or recent desert kit fox sign
2. good condition, definitely desert kit fox; no evidence of recent use
3. deteriorated condition; this includes collapsed burrows; definitely desert kit fox
4. good condition; possibly desert kit fox
5. deteriorated condition; this includes collapsed burrows; possibly desert kit fox

General Species

All plant, mammal, reptile and bird species observed during the survey were recorded. One hundred twenty-two plants representing 33 families were identified on the project site and in the ZOI and are listed in Table 8. Five mammal species were seen or their sign encountered and are listed in Table 9. Twelve reptile species were seen and are listed in Table 10. Twenty bird species were seen or their sign encountered (burrowing owl) and are listed in Table 11.

DISCUSSION

Desert Tortoise

The proposed Hidden Hills SEGS Project site 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. Juvenile through adult size classes were represented in the recent tortoise sign found in the survey area and in the ZOI.

Within the survey area (site and 150-meter buffer zone) recent sign was found throughout the site but was concentrated in the central and eastern portions of the project site predominantly in creosote bush scrub. Sign was scattered similarly in the ZOI with recent sign found mostly to the north and east of the main site, predominantly in creosote bush scrub. One shell-skeletal remain was found on the eastern boundary of the project site.

A total of 55 Class 1 and Class 2 tortoise burrows were found on the project site and within the 150-meter buffer. Of these 55 burrows, 42 were found on the project site. Twenty-seven of the 42 burrows were subadult, immature, or juvenile size class burrows.

The two tortoises found on the project site were adult size class (MCL=220 mm and 270 mm respectively) and cannot account for the subadult through juvenile size class burrows. Tortoises found in the 150-meter buffer included adult, immature, and juvenile size classes. This indicates that these tortoises include the project site as part of their home range. Evidence of tortoise activity diminished from east to west on the project site. Based on the USFWS density estimate calculations (see Table 4 below), there is currently a moderate-to-low density population of tortoises utilizing the project site. Evidence of reproduction, a juvenile tortoise near the site, and a juvenile size class burrow found on the project site suggests there is still a potentially viable population within the project area.

Density estimates for tortoises within the survey area were calculated using the Table 3 calculations from the USFWS Desert Tortoise Pre-project Survey Protocol 2010 Field Season (Figure 9, Table 4). Based on the size classes and distribution of tortoise sign it is apparent that portions of the home ranges of tortoises found within 150 meters of the site extend inside the HHSEGS project boundary and will be affected by development of the site. As such, they were included in the density estimate calculations. The total action area for the calculation is 3,929 acres (15.9 km^2). Seven tortoises were used in the density estimate calculation. Two were on the site and five were within 150 meters of the site. A juvenile tortoise was found in the 150-meter buffer but was not used in estimating the density. Only tortoises with a midline carapace length of 160 mm or larger were used. Winter rainfall was obtained from the web site http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv5890. Rainfall in December 2010 and January 2011 totaled 3.46 inches. Therefore, the value used for the probability that a tortoise is aboveground was Pa=0.80, Variance=0.05 (Previous winter rain > 1.5 inches),

and the value used for the probability of detecting a tortoise if above ground was Pd = 0.63; variance = 0.011 (USFWS assumed value in the Table 3 calculation).

Results of the calculations for number of tortoises in the survey area, lower and upper 95% confidence interval, and the respective tortoise density estimates per km^2 are shown in Table 4 below.

Table 4. USFWS Desert Tortoise Pre-project Survey Protocol 2010 Field Season: Table 3 calculation summary

		Tortoise Density	
N =	13.8	0.9	per km^2
Lower 95%CI =	5.74	0.4	per km^2
Upper 95%CI =	33.02	2.1	per km^2
Total action area (acres)	3929	15.9	km^2
Probability that a tortoise is aboveground given winter rainfall (Pa from Table 2) =	0.800		
Total length of transects walked (km) =	1604		
Number of transects walked =	514		
Number of tortoises found during surveys (n) =	7		

American Badger

The American badger occurs in open areas populated with small burrowing animals, which are used as a primary food source. Though no live individuals were sighted during the surveys, sign was observed onsite. There is potential for direct impact if the burrow area is graded or heavy machinery is working close to the burrow location. Indirect impacts can occur through loss of habitat.

Desert Kit Fox

The desert kit fox inhabits arid and semi-arid regions encompassing desert scrub, chaparral, halophytic, and grassland communities and generally avoid rugged terrain. Loose textured soils may be preferred for denning. Burrows were generally concentrated along the central region of the northeast border of the site between 2,600 and 2,650 feet elevation. Active burrow complexes were scattered randomly amongst inactive burrow complexes. All sign encountered was recorded. No determination was made as to whether the burrows were likely to be natal or satellite dens because the desert kit fox is not a listed or sensitive species.

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Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	007B	1	16cm wide, 1-1.5m deep, active condition, and am immature tortoise inside burrow.	599653	3984818	X						
Burrow	018B	1	32cm wide, 0-.5m deep, active condition, no scat. Another tortoise burrow next to this tortoise burrow.	599722	3984567	X						
Burrow	037B	1	30cm wide, 1-1.5m deep, active condition, and end not visible.	599260	3984090	X						
Burrow	038B	1	25cm wide, 1-1.5m deep, active condition with tracks present, and end not visible.	599357	3984097	X						
Burrow	055B	1	30cm wide, 1-1.5m deep, active condition with fresh tracks, + 6 pieces of TY/NTY scat inside and outside burrow, kit fox scat on mound, and end not visible.	600809	3983258	X						
Burrow	064B	1	40cm wide, .5-1m deep, good condition with annuals but tracks present, NTY scat in burrow, and end visible.	601121	3982987	X						
Burrow	002B	2	20cm wide, .5m deep, fair condition, no scat present, and annuals on runway.	597785	3985451	X						
Burrow	003B	2	19cm wide, 0-.5m deep, fair condition with annuals on runway.	598734	3985391	X						
Burrow	004B	2	28cm wide, .5-1m deep, fair condition, no scat present, and annuals on runway.	599046	3985176	X						
Burrow	013B	2	26cm wide, 0-.5m deep, fair condition with annuals present, no scat present, and partially collapsed.	599568	3984701	X						
Burrow	014B	2	17cm wide, 0-.5m deep, fair condition with annuals, partially collapsed, and no scat.	599096	3984683	X						
Burrow	019B	2	30cm wide, 1-1.5m deep, fair condition, no scat. Another tortoise burrow next to this tortoise burrow.	599722	3984567	X						
Burrow	021B	2	19cm wide, 1.5-2m deep, fair condition with annuals and LARTRI branches in runway, and end not visible.	599641	3984471	X						
Burrow	023B	2	24cm wide, 0-.5m deep, fair condition, end visible, and burrow under a LYCCOP.	599714	3984319	X						
Burrow	025B	2	12cm wide, 0-.5m deep, fair condition, and end visible.	600015	3984263	X						
Burrow	027B	2	32cm wide, 0-.5m deep, fair condition, and end visible.	599406	3984263	X						
Burrow	028B	2	25cm wide, >2m deep, fair condition, and end not visible.	599406	3984263	X						
Burrow	029B	2	20cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	599406	3984263	X						
Burrow	031B	2	28cm wide, 1.5-2m deep, fair condition with annuals and SALTRA in entrance, 2 pieces of NTY scat outside burrow, and end not visible.	599352	3984197	X						

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	033B	2	21cm wide, 0-.5m deep, fair condition with annuals present, and end not visible.	599564	3984199	X						
Burrow	036B	2	22cm wide, 1.5-2m deep, good condition, and end not visible.	599366	3984139	X						
Burrow	044B	2	21cm wide, 1-1.5m deep, fair condition with Russian thistle in mouth of burrow, and end not visible.	599338	3984055	X						
Burrow	046B	2	25cm wide, 0-.5m deep, fair condition with annuals present, burrow under a LARTRI, and end visible.	600242	3983826	X						
Burrow	048B	2	28cm wide, 1.5-2m deep, fair condition with annuals present, and end not visible.	600736	3983631	X						
Burrow	049B	2	28cm wide, >2m deep, fair condition with annuals, +3 scat NTY in burrow, and end not visible.	600668	3983640	X						
Burrow	050B	2	18cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	600849	3983494	X						
Burrow	052B	2	29cm wide, >2m deep, fair condition with annuals present, +10 pieces of NTY scat outside and inside burrow, and end not visible.	600748	3983421	X						
Burrow	058B	2	18cm wide, .5-1m deep, fair condition with annuals present, and end not visible.	600350	3983111	X						
Burrow	059B	2	8cm wide, 0-.5m deep, good condition, and end not visible.	599275	3983041	X						
Burrow	065B	2	34cm wide, 1-1.5m deep, fair condition with annuals, and end not visible.	601083	3982999	X						
Burrow	066B	2	28cm wide, 1-1.5m deep, fair condition with annuals, and end visible.	600601	3983011	X						
Burrow	067B	2	14cm wide, .5-1m deep, good condition, and end visible.	599846	3982998	X						
Burrow	069B	2	18cm wide, .5-1m deep, fair condition with debris in burrow, end not visible.	600299	3982710	X						
Burrow	070B	2	13cm wide, 0-.5m deep, good condition, and end not visible.	601738	3982699	X						
Burrow	073B	2	19cm wide, .5-1m deep, fair condition with annuals present and debris in burrow, and end not visible.	601737	3982666	X						
Burrow	078B	2	32cm wide, >2m deep, good condition, NTY scat inside and outside burrow, and end not visible.	601731	3982494	X						
Burrow	091B	2	20cm wide, 0-.5m deep, good condition, and end not visible.	598907	3983478	X						
Burrow	093B	2	15cm wide, .5-1m deep, fair condition with annuals, and end not visible.	598870	3983599	X						

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	097B	2	18cm wide, .5-1m deep, fair condition with annuals, and end not visible.	598701	3983660	X						
Burrow	098B	2	21cm wide, 1.5-2m deep, good condition, and end not visible.	598712	3983645	X						
Burrow	099B	2	21cm wide, >2m deep, fair condition with annuals, SALTRA in mouth of burrow, and end not visible.	598557	3984196	X						
Burrow	103B	2	15cm wide, .5-1m deep, fair condition with annuals, end not visible.	599042	3984400	X						
Burrow	001B	3	Adult inactive burrow with deteriorated conditions. Annuals growing in entrance to burrow.	597851	3986018	X						
Burrow	022B	3	23cm wide, 0-.5m deep, and poor condition.	599433	3984320	X						
Burrow	039B	3	17cm wide, 0-.5m deep, poor condition with annuals present, and end visible.	600221	3984078	X						
Burrow	040B	3	25cm wide, .5-1m deep, fair condition, front partially collapsed, burrow under an ATRCAN, and end visible.	600328	3984025	X						
Burrow	047B	3	17cm wide, .5-1m deep, poor condition, burrow under a LARTRI, and end not visible.	600349	3983820	X						
Burrow	053B	3	30cm wide, 1-1.5m deep, poor condition, front of burrow collapsed, tunnel and back of burrow open, 1 piece of NTY scat outside burrow, and end not visible.	600702	3983396	X						
Burrow	054B	3	32cm wide, 1-1.5m deep, poor condition with annuals present, and end not visible.	600634	3983377	X						
Burrow	087B	3	17cm wide, fair condition, and entrance collapsed.	599345	3981889	X						
Burrow	092B	3	23cm wide, 0-.5m deep, poor conditions with annuals, and end visible.	597500	3983555	X						
Burrow	094B	3	19cm wide, 0-.5m deep, poor condition with debris in burrow, and end visible.	597601	3983622	X						
Burrow	095B	3	25cm wide, .5-1m deep, poor condition, and end not visible.	597540	3983599	X						
Burrow	096B	3	15cm wide, 0-.5m deep, poor conditions with annuals, and end not visible.	597670	3983668	X						
Burrow	101B	3	15cm wide, 0-.5m deep, poor condition with annuals, and end not visible.	598902	3984251	X						
Burrow	102B	3	15cm wide, 1.5-2m deep, poor conditions with annuals, and end not visible.	599143	3984281	X						
Burrow	104B	3	13cm wide, 0-.5m deep, poor condition with annuals, burrow under a LYCCOP, and end not visible.	598887	3984406	X						

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	076B	3	14cm wide, 0-.5m deep, poor condition, end visible, and next to another tortoise burrow.	602057	3982500	X						
Carcass	068C	2-4 yrs TSD	> 2 years old. ~110mcl. Unknown cause of death possibly crushed; long fractures across carapace and plastron	601539	3982832	X						
Scat	015S	NTY	Tortoise scat, NTY	599670	3984639	X						
Scat	034S	NTY	1 piece of not this year's scat.	599694	3984221	X						
Scat	051S	NTY	Not this year's.	600768	3983492	X						
Scat	026S	TY	This year's.	599795	3984282	X						
Scat	030S	TY	2 pieces of this year's scat.	599312	3984246	X						
Scat	032S	TY	2 pieces of this year's scat.	599479	3984218	X						
Scat	041S	TY	This year's.	599692	3984023	X						
Scat	042S	TY	This year's.	599647	3984032	X						
Scat	043S	TY	This year's.	599440	3984041	X						
Scat	079S	TY	This year's.	601164	3982529	X						
Scat	090S	TY		598922	3983187	X						
Scat	100S	TY	1 piece of this year's.	599210	3984228	X						
Tortoise	045T	AD-F	Female basking next to LARTRI	599641	3983970	X						
Tortoise	080T	AD-M	Male resting in open.	601454	3982425	X						
Tortoise tracks	012tt		Adult tortoise tracks.	599557	3984682	X						
Tortoise tracks	024tt			599909	3984299	X						
Tortoise tracks	056tt			600813	3983143	X						
Tortoise tracks	057tt			600812	3983224	X						
Tortoise tracks	060tt			601518	3983043	X						
Burrow	005B	1	32cm wide, 1-1.5m deep, active condition with tortoise tracks, 1 piece of NTY scat, can't see back of burrow.	599650	3984802		X					
Burrow	008B	1	34cm wide, +2m deep, active condition, can't see the back, no scat seen, 3 canid burrows in close proximity to tortoise burrow.	599614	3984786		X					
Burrow	063B	1	18cm wide, 1-1.5m deep, active condition, and end visible.	601579	3983041		X					
Burrow	074B	1	16cm, 1-1.5m deep, active condition with tracks present, and end visible.	601940	3982586		X					

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	081B	1	36cm wide, >2m deep, active condition with tracks present, and end not visible.	601181	3982411		X					
Burrow	085B	1	26cm wide, 1-1.5m deep, active condition with male tortoise resting on mound of burrow. TY scat present and end not visible.	601788	3982307		X					
Burrow	077B	2	37cm wide, .5-1m deep, fair condition with annuals present, and end visible. Next to another tortoise burrow.	602057	3982500		X					
Burrow	035B	2	23cm wide, .5-1m deep, fair condition with annuals present, and end visible.	600381	3984162		X					
Burrow	072B	2	19cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	601888	3982688		X					
Burrow	082B	2	28cm wide, >2m deep, fair condition with annuals present, NTY scat, and end not visible.	602181	3982370		X					
Burrow	083B	2	35cm wide, 1-1.5m deep, fair condition with annuals present, NTY scat, and end not visible.	601429	3982334		X					
Burrow	086B	2	31cm wide, .5-1m deep, fair condition, and end visible.	601934	3982297		X					
Burrow	105B	2	15cm wide, 0-.5m deep, fair condition, burrow under a *Lycium cooperi*, and end not visible.	597047	3984412		X					
Burrow	071B	3	16cm, 0-.5m deep, poor condition, partially collapsed in front, and end visible.	601757	3982708		X					
Burrow	075B	3	28cm wide, 1-1.5m deep, fair condition with debris in burrow, and end not visible.	602113	3982535		X					
Scat	061S	TY	This year's.	601518	3983043		X					
Tortoise	062T	AD-F	Female tortoise walking in open	601545	3983074		X					
Tortoise	089T	AD-F	Tortoise resting under cover of LARTRI.	600349	3981341		X					
Tortoise	084T	AD-M	Male tortoise resting on mound of burrow.	601788	3982307		X					
Tortoise	088T	AD-M	Male tortoise resting in open.	600314	3981313		X					
Tortoise	006T	IMM	Immature tortoise in burrow resting. Burrow width 16cm.	599653	3984818		X					
Tortoise	017T	JUV	Juvenile tortoise in open walking.	599795	3984557		X					
Tortoise tracks	020tt		Tracks from smaller tortoise, possible immature.	599890	3984456		X					
Tortoise tracks	009tt		Adult tortoise tracks.	599722	3984739		X					
Tortoise tracks	010tt		Adult tortoise tracks.	599774	3984724		X					

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Tortoise tracks	016tt		Tortoise tracks	599864	3984578		X					
Burrow	112B	1	32cm wide, 1.5-2m deep, active condition, tracks present, +2 pieces of NTY scat in burrow, and end not visible.	601652	3983071			X				
Burrow	108B	2	21cm wide, 1-1.5m deep, fair condition, 1 piece of TY scat in burrow, and end not visible.	596944	3984021			X				
Burrow	109B	2	27cm wide, 0-.5m deep, good condition, and end visible.	599838	3984759			X				
Burrow	110B	2	29cm wide, 0-.5m deep, good condition, and end visible.	599800	3984791			X				
Burrow	111B	2	33m wide, 1-1.5m deep, fair condition with annuals, and end visible.	599612	3984953			X				
Burrow	113B	2	31cm wide, >2m deep, good condition, +2pieces of NTY scat in burrow, and end not visible.	601711	3983011			X				
Tortoise	011T	AD-M	Male tortoise found resting next to a *Larrea tridentata*. Followed tracks outside project boundary and found tortoise. Close to ZOI transect.	599854	3984829			X				
Burrow	116B	1	20cm wide, 0-.5m deep, active condition, tracks present, and end visible.	600051	3984827				X			
Burrow	114B	2	26cm wide, 0-.5m deep, good condition, and end visible.	600682	3984236				X			
Tortoise	115T	IMM	Immature tortoise walking in open.	600030	3984830				X			
Burrow	117B	1	28cm wide, 1-1.5m deep, active condition, tortoise in tunnel face out, and end not visible.	600938	3984267					X		
Burrow	119B	2	24cm wide, 0-.5m deep, fair condition with annuals, front of burrow partially collapsed, and end visible.	600996	3984229					X		
Burrow	120B	3	19cm wide, 0-.5m deep, poor condition with annuals, front of burrow partially collapsed, and end visible.	601488	3983736					X		
Scat	121S	TY	1 piece of this year's scat.	600328	3984834					X		
Tortoise	118T	AD-UNK	Adult tortoise in burrow tunnel facing out.	600938	3984267					X		
Burrow	107B	2	Good condition. Not recently used. Old scat (6+ pieces), NTY. Partially buried in dried soil.	556358	3987323						X	
Scat	124S	NTY	2 pieces of not this year scat.	597110	3987391						X	
Tortoise	122T	AD-M	Adult tortoise under cover of shrub (LARTRI) with another adult tortoise. The other tortoise is a male and was pushing this tortoise.	597125	3987381						X	
Tortoise	123T	AD-UNK	Male tortoise under cover of a shrub (LARTRI) with another tortoise. This tortoise was pushing the other tortoise.	597125	3987381						X	

Table 5. Desert Tortoise and Sign Locations

Type of Sign	Ref. #	Cond. Class	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	132B	1	19cm wide, .5-1m deep, active condition, tracks present, and end not visible.	596601	3987798							X
Burrow	126B	2	20cm wide, 0-.5m deep, fair condition with annuals present, debris in burrow, and end visible.	595965	3987798							X
Burrow	131B	2	31cm wide, >2m deep, good condition, +2pieces of NTY scat in burrow, and end not visible.	596526	3987794							X
Burrow	133B	2	34cm wide, 1-1.5m deep, good condition, +4 pieces of TY and NTY scat inside and outside burrow, and end not visible.	597580	3987788							X
Burrow	134B	2	30cm wide, 1-1.5m deep, good condition, caliche burrow, 3 pieces of NTY scat in burrow, +5 pieces of NTY scat outside burrow, debris in burrow, and end not visible.	601562	3985045							X
Burrow	135B	2	40cm wide, 1-1.5m deep, good condition, caliche burrow, debris in burrow, 2 pieces of TY and NTY scat, end not visible.	601564	3985045							X
Burrow	136B	2	14cm wide, .5-1m deep, good condition, and end not visible.	601871	3984757							X
Burrow	137B	2	33cm wide, .5-1m deep, fair condition with annuals, +2pieces of scat in burrow, and end visible.	602246	3984424							X
Burrow	128B	3	20cm wide, .5-1m deep, fair condition with annuals, debris in burrow, and end not visible.	596102	3987795							X
Scat	127S	TY	1piece of this year's scat.	596048	3987795							X
Scat	129S	TY	1 piece of this year's scat found next (1m) to a smaller piece of scat.	596170	3987787							X
Scat	130S	TY	1 piece of this year's scat found next (1m) to a larger piece of scat.	596170	3987787							X
Tortoise	106T	AD-M	Male tortoise walking/eating, walked under shade of shrub(Lycium cooperi)	595640	3987334							X
Tortoise	125T	AD-M	Male tortoise resting under cover of LARTRI.	603615	3981879							X

(Datum NAD 83 CONUS)

Condition Class Key for Desert Tortoise sign:
1=currently active, with desert tortoise or recent sign
2=good condition, definitely tortoise, no evidence of recent use
3=deteriorated condition, includes collapsed burrows, definitely desert tortoise
AD-M=Adult male tortoise
AD-F=Adult female tortoise
AD-UNK=Adult of unknown sex
IMM=Immature tortoise
JUV=Juvenile tortoise
2-4 yrs TSD=2-4 years since time of death
TY=Tortoise scat laid down this year
NTY= Tortoise scat laid down prior to this year (not this year)

Ref. # refers to the sign locations on the attached large-scale maps (Figure DR68-1a through 1p) and to the sign recorded on field data forms

Table 6. American Badger Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Badger burrow	Steep burrow in good condition. .5-1m deep.	597520	3985625	X						
Badger burrow	Steep burrow in poor condition. Many annuals present. .5-1m deep.	598559	3985399	X						
Badger burrow	Steep burrow in fair condition. However, it may have been used this year. 1-1.5m deep.	598084	3985389	X						
Badger burrow	Fair condition.	598868	3983304	X						
Badger burrow	Good condition.	598425	3983549	X						
Badger burrow	Good condition.	598903	3983610	X						
Badger burrow	Good condition.	597550	3983596	X						
Badger burrow	Good condition.	597719	3983667	X						
Badger burrow	Fair condition.	599128	3983641	X						
Badger burrow	Fair condition.	598157	3983808	X						
Badger burrow	Fair condition.	597549	3984201	X						
Badger burrow	Fair condition, not used this year.	596968	3986134					X		

(Datum NAD 83 CONUS)

Table 7. Desert Kit Fox Burrow and Other Canid Burrow Locations

Type of Sign	Ref #	Condition Class	Description and comments	Easting	Northing
Kit Fox Burrow Complex	C-09	1	Four openings. One opening looks active, the other three openings are in fair condition with annuals present. Kit fox scat and skeletal remains found outside complex.	599322	3985047
Kit Fox Burrow Complex	C-13	1	Seven openings. Active complex with many canid tracks. Coyote scat from TY found outside complex.	599297	3984496
Kit Fox Burrow Complex	C-14	1	Four openings. One opening looks active others are in fair condition.	599579	3984821
Kit Fox Burrow Complex	C-15	1	Three openings. Active, tracks present, and kit fox scat found outside complex.	599504	3984815
Kit Fox Burrow Complex	C-21	1	Eleven openings. Active condition with canid tracks and kit fox scat.	599006	3984517
Kit Fox Burrow Complex	C-23	1	Active complex with some openings in good condition. Tracks present.	599315	3984422
Kit Fox Burrow Complex	C-24	1	Six openings. This year's kit fox scat present, end not visible.	599806	3984235
Kit Fox Burrow Complex	C-25	1	Six openings. Active complex with tracks present, end not visible	599526	3984254
Kit Fox Burrow Complex	C-26	1	Two openings, both active. End not visible. Saw live kit fox in the complex.	600491	3983933
Kit Fox Burrow Complex	C-31	1	Five openings, with two active, one good and two in fair condition. Kit fox scat present, end not visible.	599991	3983761
Kit Fox Burrow Complex	C-32	1	Nine openings, with eight being active and one in good condition. Kit fox scat present, end not visible. Fresh tracks visible.	599756	3983683
Kit Fox Burrow Complex	C-34	1	Two openings, one active. Kit fox scat and tracks present, end not visible.	600326	3983495
Kit Fox Burrow Complex	C-36	1	Six openings, all active. End not visible.	599586	3983457
Kit Fox Burrow Complex	C-40	1	Nine openings, with six active and three in fair condition. Kit fox and coyote scan present. End not visible.	600542	3983342
Kit Fox Burrow Complex	C-42	1	Three openings, all active. Kit fox scat present, end not visible.	600254	3983237
Kit Fox Burrow Complex	C-46	1	Two openings, one active and one in fair condition. This year's coyote scat present. End not visible.	597790	3982509
Kit Fox Burrow Complex	C-62	1	Three openings, active, good, and fair conditions. Kit fox and coyote scat present and end not visible.	598626	3984472
Kit Fox Burrow Complex	C-65	1	Two openings. One active and one good condition. Kit fox and coyote scat present and end not visible.	598473	3984494
Kit Fox Burrow Complex	C-59	1	Seven active openings, kit fox scat present, tracks present, saw two kit fox young in burrow, and end not visible.	599176	3984293
Kit Fox Burrow Complex	C-10	2	Four openings. Good condition, can't see back, kit fox and coyote scat present.	598854	3985031
Kit Fox Burrow Complex	C-11	2	Four openings. One opening in good condition with kit fox scat. Three openings poor condition. Can't see back.	598562	3985051
Kit Fox Burrow Complex	C-12	2	Six openings. Two openings in good condition. Four openings in fair condition. Kit fox scat outside complex. Can't see back.	599221	3984988
Kit Fox Burrow Complex	C-16	2	Five openings. Fair condition, coyote and kit fox scat found outside complex.	599251	3984779
Kit Fox Burrow Complex	C-17	2	Five openings. Fair condition with annuals present, and kit fox scat outside complex.	599382	3984743
Kit Fox Burrow Complex	C-18	2	Fair condition with kit fox scat outside complex.	599299	3984696
Kit Fox Burrow Complex	C-19	2	Four openings. Fair condition with kit fox scat outside complex.	599308	3984624
Kit Fox Burrow Complex	C-20	2	Fair condition with annuals present and kit fox scat outside complex.	598838	3984570

Table 7. Desert Kit Fox Burrow and Other Canid Burrow Locations

Type of Sign	Ref #	Condition Class	Description and comments	Easting	Northing
Kit Fox Burrow Complex	C-22	2	Fair condition with kit fox scat. Can't see back.	599933	3984493
Kit Fox Burrow Complex	C-27	2	Three opening s, all in fair condition. Kit fox scat present, end not visible.	599986	3983942
Kit Fox Burrow Complex	C-28	2	Two openings, one in good condition, one fair. Kit fox and coyote scat present as well as annuals. End not visible.	600175	3983856
Kit Fox Burrow Complex	C-29	2	Four openings in fair condition. Kit fox scat and annuals present. End not visible.	600278	3983782
Kit Fox Burrow Complex	C-30	2	Two openings in fair condition. Kit fox scat present, end not visible.	599651	3983777
Kit Fox Burrow Complex	C-35	2	Six openings, three in fair and three in poor condition. Kit fox scat present. End not visible.	600251	3983471
Kit Fox Burrow Complex	C-37	2	Three openings, all in fair condition. Kit fox and coyote scan present, with coyote scan being this years. End not visible.	600094	3983375
Kit Fox Burrow Complex	C-38	2	Three openings, two in good and one in fair condition. Kit fox and coyote scan present. End not visible.	599813	3983398
Kit Fox Burrow Complex	C-39	2	Three openings, two in good and one in fair condition. Kit fox scat present. End not visible.	600310	3983329
Kit Fox Burrow Complex	C-41	2	Three openings, all in fair condition. Kit fox scat present, end not visible.	599930	3983308
Kit Fox Burrow Complex	C-43	2	Five openings, with two in good and three in fair condition. Kit fox and coyote scat present. End not visible.	600697	3983086
Kit Fox Burrow Complex	C-44	2	Five openings, all in good condition. Kit fox and coyote present. End not visible.	601156	3982946
Kit Fox Burrow Complex	C-45	2	Two openings, both in fair condition. Kit fox and coyote scan present. End not visible.	600469	3982927
Kit Fox Burrow Complex	C-60	2	Four fair openings, kit fox scat present, and end not visible.	599141	3984341
Kit Fox Burrow Complex	C-61	2	Two good openings and end not visible.	599125	3984339
Kit Fox Burrow Complex	C-63	2	Five openings, two in good condition, three in fair condition. Kit fox scat present, and end not visible.	599174	3984476
Kit Fox Burrow Complex	C-64	2	Eleven openings. Five in good condition and 6 in fair condition. Kit fox and coyote scat present and end not visible.	599021	3984509
Kit Fox Burrow Complex	C-66	2	Four openings in fair condition. Kit fox scat and annuals present. End not visible.	598103	3984496
Kit Fox Burrow Complex	C-33	3	Seven openings, one fair and six poor condition. Kit fox and coyote scat present. End not visible.	599920	3983508
Single Kit Fox burrow	S-13	1	Active burrow with kit fox scat present. End not visible.	600327	3983483
Single Kit Fox burrow	S-13	1	Active burrow with kit fox scat present. End not visible.	600327	3983483
Single Kit Fox burrow	S-17	1	Active with kit fox scat present. End not visible.	600993	3982935
Single Kit Fox burrow	S-5	2	Good condition, can't see the back, and NTY kit fox scat	598533	3984771
Single Kit Fox burrow	S-6	2	Fair condition, kit fox scat found outside, and burrow next to tortoise burrow.	599720	3984564
Single Kit Fox burrow	S-9	2	Good condition, can't see the back, kit fox scat present.	599992	3983774
Single Kit Fox burrow	S-16	2	Good condition, with kit fox and coyote scan present. End not visible.	600007	3983125
Single Kit Fox burrow	S-22	2	Good condition, kit fox scat present, and end not visible.	597909	3983412
Single Kit Fox burrow	S-28	2	Fair condition, kit fox scat present, and end not visible.	598628	3983692
Single canid burrow	S-1	4	Active, fresh canid tracks, can't see back, and 1-1.m deep.	597624	3985789
Single canid burrow	S-2	4	Fair condition with annuals present. Can't see back. .5-1m deep.	598231	3984988
Single canid burrow	S-3	4	Good condition and can't see the back.	599610	3984781

Table 7. Desert Kit Fox Burrow and Other Canid Burrow Locations

Type of Sign	Ref #	Condition Class	Description and comments	Easting	Northing
Single canid burrow	S-4	4	Fair condition with annuals present and can't see back.	599171	3984829
Single canid burrow	S-7	4	Fair condition, can't see back, no scat present.	598342	3984572
Single canid burrow	S-8	4	Fair condition, can't see back, with annuals present.	599377	3984414
Single canid burrow	S-10	4	Fair condition, annuals present. End not visible.	599937	3983629
Single canid burrow	S-11	4	Good condition, end not visible.	599270	3983613
Single canid burrow	S-12	4	Fair condition with annuals present. End not visible.	599659	3983503
Single canid burrow	S-14	4	Fair condition. End not visible.	599816	3983356
Single canid burrow	S-18	4	Active with tracks present. End not visible.	600913	3982731
Single canid burrow	S-19	4	Active burrow with coyote scat present. Burrowing owl white wash, pellets and feathers present.	597554	3982741
Single canid burrow	S-20	4	Good condition and end not visible.	598800	3983294
Single canid burrow	S-21	4	Good condition and end not visible.	597641	3983411
Single canid burrow	S-23	4	Good condition and end not visible.	598644	3983422
Single canid burrow	S-24	4	Fair condition and end not visible.	599172	3983451
Single canid burrow	S-25	4	Fair condition and end not visible.	599143	3983457
Single canid burrow	S-26	4	Good condition and end not visible.	598903	3983604
Single canid burrow	S-27	4	Fair condition and end not visible.	598645	3983670
Single canid burrow	S-29	4	Good condition and end not visible.	597671	3984087
Single canid burrow	S-30	4	Good condition, end not visible.	598741	3984499
Single canid burrow	S-15	5	Poor condition, end not visible.	600284	3983351

(Datum NAD 83 CONUS)

Condition Class key for desert kit fox burrows:

1=currently active, with desert kit fox or recent desert kit fox sign
2=good condition, definitely desert kit fox; no evidence of recent use
3=deteriorated condition; this includes collapsed burrows; definitely desert kit fox
4=good condition; possibly desert kit fox
5=deteriorated condition; this includes collapsed burrows; possibly desert kit fox

Ref. # refers to the burrow locations on Figures 4 and 5

Table 8. Plant Species List

FAMILY *Genus Species*	Common Name	Frequency of Occurrence	Main	Zone-of-Influence				
			SITE	200	400	600	1200	1600
APIACEAE								
Lomatium mohavense	Mojave Desert Parsley	Incidental	X					

Table 8. Plant Species List

FAMILY / *Genus Species*	Common Name	Frequency of Occurrence	Main	Zone-of-Influence				
			SITE	200	400	600	1200	1600
ASCLEPIADACEAE								
Asclepias speciosa	Showy Milkweed	Only along roads	X	X	X	X	X	X
ASTERACEAE								
Acamptopappus sphaerocephalus	Rayless Goldenhead	Incidental	X					
Acamptopappus shockleyi	Shockley's Goldenhead	Common	X	X	X	X	X	X
Agoseris glauca	Pale Agoseris	Occasional	X					
Ambrosia dumosa	Burro-Weed	Common	X	X	X	X	X	X
Baccharis sergiloides	Desert Baccharis						X	
Baileya multiradiata	Desert Marigold	Common	X					
Baileya pleniradiata	Woolly Desert Marigold	Common	X	X	X	X	X	X
Chaenactis carphoclinia	Pebble Pincushion	Common	X	X	X	X	X	X
Chaenactis fremontii	Desert Pincushion	Occasional	X					
Chaenactis macrantha	Bighead Dustymaiden	Common	X	X	X	X	X	X
Chaenactis stevioides	Esteve's Pincushion	Common	X					
Ericameria nauseosa var. hololeucus	Rabbitbrush	Incidental	X					
Encelia virginensis	Virgin River Brittlebush	Common	X	X	X	X	X	X
Glyptopleura marginata	Carveseed	Common	X					
Gutierrezia microcephala	Sticky Snakeweed	Common	X			X	X	X
Hymenoclea salsola	Cheese Bush	Common	X		X	X		
Isocoma acradenia var. acradenia	Alkali Goldenbush	Rare	X					
Lygodesmia spinosa	Spiny Skeletonweed	Common	X	X	X	X	X	X
Malacothrix coulteri	Snake's Head	Occasional	X					
Malacothrix glabrata	Smooth Desert Dandelion	Occasional	X					
Prenanthella exigua	Brightwhite	Occasional	X	X	X	X	X	X
Psathyrotes ramosissima	Velvet Turtleback	Common	X		X	X	X	X
Psilostrophe cooperi	Paperflower	Common	X					
Rafinesquia neomexicana	Desert Chicory	Common	X		X	X		X
Stephanomeria exigua	Small Wirelettuce	Common	X					
Stephanomeria pauciflora	Brownplume Wirelettuce	Common	X					
Xylorhiza tortifolia	Mojave Woodyaster	Occasional	X	X	X	X	X	X

Table 8. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**	**Main**	**Zone-of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
BORAGINACEAE								
Amsinckia tessellata var. tessellata	Fiddleneck	Occasional	X					
Cryptantha angustifolia	Panamint Catseye	Common	X	X	X	X	X	X
Cryptantha circumscissa	Cushion Cryptantha	Common	X	X	X	X	X	X
Cryptantha micrantha	Purpleroot Cryptantha	Common	X					
Cryptantha nevadensis	Nevada Catseye	Common	X	X	X	X	X	X
Cryptantha pterocarya	Wingnut Cryptantha	Common	X					
Lappula redowskii var. cupulata	Western Stickseed	Common	X	X	X	X	X	X
Pectocarya heterocarpa	Chuckwalla Combseed	Common	X					
Pectocarya platycarpa	Broadfruit Combseed	Common	X					
BRASSICACEAE								
Chorispora tenella	Purple Mustard		X					
Descurainia sophia	Flixweed	Occasional	X					
Descurainia pinnata	Western Tansymustard	Common	X	X	X			
Guillenia lasiophylla	Slenderpod Jewelflower	Occasional	X					
Lepidium fremontii	Desert Alyssum	Common	X	X	X	X	X	X
Lepidium lasiocarpum	Shaggyfruit Pepperweed	Common	X	X	X	X	X	X
Malcolmia africana	African Mustard	Common	X	X	X	X	X	X
Sisymbrium altissimum	Tall Tumblemustard	Occasional	X					
Sisymbrium irio	London Rocket	Common	X	X				
Stanleya pinnata	Prince's Plume	Common	X	X	X	X	X	X
CACTACEAE								
Opuntia basilaris	Beavertail	Occasional	X	X	X	X	X	X
Opuntia echinocarpa	Silver Cholla	Occasional	X	X	X	X	X	X
CHENOPODIACEAE								
Atriplex canescens	Fourwing Saltbush			X	X	X	X	X
Atriplex confertifolia	Shadscale Saltbush	Common	X	X	X	X	X	X
Atriplex polycarpa	Cattle Spinach, Alkali Saltbush	Common	X	X	X	X	X	X
Grayia spinosa	Spiny Hop Sage	Common	X					
Halogeton glomeratus	Saltlover	Common	X	X	X	X	X	X
Krascheninnikovia lanata	Winter Fat	Common	X	X	X	X	X	X

Table 8. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**	**Main**	**Zone-of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
Salsola tragus	Prickly Russian Thistle	Common	X	X	X	X	X	X
Suaeda moquinii	Mojave Seablite	Incidental	X					
CUPRESSACEAE								
Juniperus osteosperma	Utah Juniper	Incidental	X					
CUSCUTACEAE								
Cuscuta sp.	Dodder	Incidental	X			X		
EPHEDRACEAE								
Ephedra funerea	Death Valley Jointfir	Common	X	X	X	X	X	X
Ephedra nevadensis	Nevada Ephedra			X	X	X	X	X
EUPHORBIACEAE								
Chamaesyce albomarginata	Rattlesnake Weed	Common	X	X	X	X	X	X
FABACEAE								
Astragalus geyeri var. geyeri	Geyer's Milkvetch	Rare	X					
Astragalus layneae	Widow's Milkvetch	Occasional	X	X	X	X	X	X
Astragalus lentiginosus var. fremontii	Spotted Locoweed	Common	X					
Astragalus nuttallianus var. imperfectus	Turkeypeas	Common	X					
Astragalus preussii var. preussii	Preuss' Milkvetch	Rare	X		X			
Hoffmannseggia glauca	Indian Rushpea	Common	X	X	X	X	X	X
Prosopis glandulosa	Honey Mesquite	Common	X	X	X	X	X	X
Psorothamnus fremontii	Indigo Bush	Occasional	X	X	X	X	X	X
Senna armata	Desert Senna	Occasional	X			X	X	X
GERANIACEAE								
Erodium cicutarium	Redstem Filaree	Common	X	X	X	X	X	X
HYDROPHYLLACEAE								
Nama demissum	Purplemat	Occasional	X	X	X	X	X	X
Phacelia crenulata var. ambigua	Purplestem Phacelia	Occasional	X	X	X	X	X	X
Phacelia fremontii	Fremont's Phacelia	Occasional	X	X	X	X		
Phacelia ivesiana	Ives' Phacelia	Incidental	X					
Phacelia neglecta	Alkali Phacelia				X			
Phacelia pachyphylla	Blacktack Phacelia	Common	X					

Table 8. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**	**Main**	**Zone-of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
KRAMERIACEAE								
Krameria erecta	Purple Heather	Common	X	X	X	X	X	X
LILIACEAE								
Androstephium breviflorum	Pink Funnel Lily	Rare	X					X
LOASACEAE								
Mentzelia obscura	Pacific Blazing Star	Common	X					
Mentzelia oreophila	Blazing Star	Rare					X	
MALVACEAE								
Eremalche rotundifolia	Desert Five Spot	Incidental		X	X	X	X	X
Sphaeralcea ambigua	Globe Mallow	Common	X	X	X	X	X	X
NYCTAGINACEAE								
Selinocarpus nevadensis	Desert Moonpod	Rare						X
Oleaceae								
Menodora spinescens	Spiny Menodora	Common	X	X	X	X	X	X
ONAGRACEAE								
Camissonia boothii	Booth's Evening Primrose	Common	X	X	X			
Camissonia brevipes	Yellow Cups	Common	X	X	X	X	X	X
Gaura coccinea	Scarlet Beeblossom			X	X	X	X	X
Oenothera primiveris ssp. bufonis	Desert Evening Primrose	Occasional	X	X	X	X	X	X
PAPAVERACEAE								
Eschscholzia californica	California Poppy	Common	X					
PLANTAGINACEAE								
Plantago ovata	Desert Indianwheat	Common	X		X	X		X
POACEAE								
Achnatherum hymenoides	Indian Ricegrass	Common	X	X	X	X	X	X
Achnatherum speciosum	Desert Needlegrass	Occasional	X					
Bothriochloa barbinodis	Cane Bluestem			X	X	X	X	X
Bromus madritensis ssp. rubens	Compact Brome	Common	X		X	X	X	X
Pleuraphis rigida	Big Galleta	Common	X	X	X	X	X	X
Hordeum murinum	Mouse Barley	Occasional	X					
Schismus arabicus	Arabian Schismus	Common	X	X	X	X	X	X

Table 8. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**	**Main SITE**	**Zone-of-Influence 200**	**400**	**600**	**1200**	**1600**
Sporobolus cryptandrus	Sand Dropseed	Occasional	X					
Vulpia octoflora	Sixweeks Fescue	Occasional	X					
POLYGONACEAE								
Chorizanthe brevicornu	Brittle Spineflower	Occasional	X					
Chorizanthe rigida	Devil's Spineflower	Occasional	X	X	X	X	X	X
Eriogonum bifurcatum	Pahrump Valley Buckwheat	Common (Rare plant)	X	X				
Eriogonum deflexum	Flatcrown Buckwheat	Occasional	X		X			
Eriogonum inflatum	Desert Trumpet	Occasional	X					
Eriogonum trichopes	Little Desert Trumpet	Common	X	X	X	X	X	X
POLEMONIACEAE								
Gilia brecciarum	Nevada Gilia	Occasional	X					
Gilia cana ssp. speciformis	Showy Gilia	Common	X	X	X	X	X	X
Gilia hutchinsifolia	Desert Pale Gilia	Common	X	X	X	X		X
Ipomopsis polycladon	Manybranched Ipomopsis	Common on desert pavement	X					
Langloisia setosissima ssp. setosissima	Bristly Langloisia	Common	X	X	X	X	X	X
RANUNCULACEAE								
Delphinium parishii	Parish's Larkspur	Occasional	X					
ROSACEAE								
Coleogyne ramosissima	Blackbrush	Incidental	X					
SCROPHULARIACEAE								
Castilleja angustifolia	Indian Paintbrush	Occasional	X					
SOLANACEAE								
Lycium andersonii	Anderson Thornbush	Common	X	X	X	X	X	X
Lycium cooperi	Peach Thorn	Common	X	X	X	X	X	X
TAMARICACEAE								
Tamarix ramosissima	Salt Cedar	Incidental	X					
VISCACEAE								
Phoradendron californicum	Desert Mistletoe	Common	X	X	X	X	X	X
ZYGOPHYLLACEAE								
Larrea tridentata	Creosote	Common	X	X	X	X	X	X

Table 9. Mammal Species List

Latin Name	Common Name	Notes	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200 m ZOI	1600 m ZOI
Lepus californicus	Black-tailed jackrabbit		X	X	X	X	X	X	X
Ammospermophilus leucurus	White-tailed Antelope Squirrel		X					X	
Taxidea taxus	American badger	CDFG-SSC, sign	X				X		
Canis latrans	Coyote	sign	X						
Vulpes macrotis	Desert kit fox	Sign, live animals	X						

Table 10. Reptile Species List

Scientific Name	Common Name	Notes	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Gopherus agassizii	Desert tortoise	USFWS/CDFG threatened	X						
Phrynosoma platyrhinos	Desert horned lizard		X						
Callisaurus draconoides	Zebra-tail lizard		X				X	X	
Aspidoscelis tigris	Western whiptail		X		X	X	X	X	X
Uta stansburiana	Side-blotched lizard		X		X	X	X	X	X
Gambelia wislizenii	Long-nosed leopard lizard		X						
Dipsosaurus dorsalis	Desert Iguana		X						
Pituophis catenifer	Gopher snake		X						
Masticophis flagellum	Coach whip		X						
Crotalus cerastes	Sidewinder		X		X		X		
Crotalus scutulatus	Mojave Green		X						
Arizona elegans	Glossy snake		X						

Table 11. Bird Species List

Scientific Name	Common Name	Notes	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Circus cyaneus	Northern Harrier	CDFG-SSC	X						
Aquila chrysaetos	Golden Eagle	USFWS-BCC	X						
Zenaida macroura	Mourning Doves		X				X	X	
Athene cunicularia	Burrowing owl	CDFG-SSC,USFWS-BCC	X						

Table 11. Bird Species List

Scientific Name	Common Name	Notes	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Phalaenoptilus nuttallii	Common poorwill		X						
Calypte costae	Costa's Hummingbird								X
Tyrannus verticalis	Western Kingbird		X						
Lanius ludovicianus	Loggerhead shrike	CDFG-SSC	X						X
Corvus brachyrhynchos	American Crow		X						
Corvus corax	Common raven		X		X	X	X	X	X
Eremophila alpestris	Horned lark		X		X	X	X	X	X
Progne subis	Purple Martin	CDFG-SSC	X						
Hirundo rustica	Barn Swallow								X
Salpinctes obsoletus	Rock Wren							X	X
Mimus polyglottos	Northern Mockingbird		X						
Toxostoma lecontei	LeConte's thrasher	USFWS-BCC	X						
Phainopepla nitens	Phainopepla		X				X		
Spizella breweri	Brewer's sparrow		X						
Amphispiza bilineata	Black-throated Sparrow		X		X	X	X	X	X
Zonotrichia leucophrys	White-crowned sparrow		X						

Figure 1. Hidden Hills SEGS Project Proposed Site Location, Inyo County, California

Figure 2. Hidden Hills SEGS Project Live Tortoise Sign, Inyo County, California (also see large-scale maps [Figure DR68-1a through 1p])

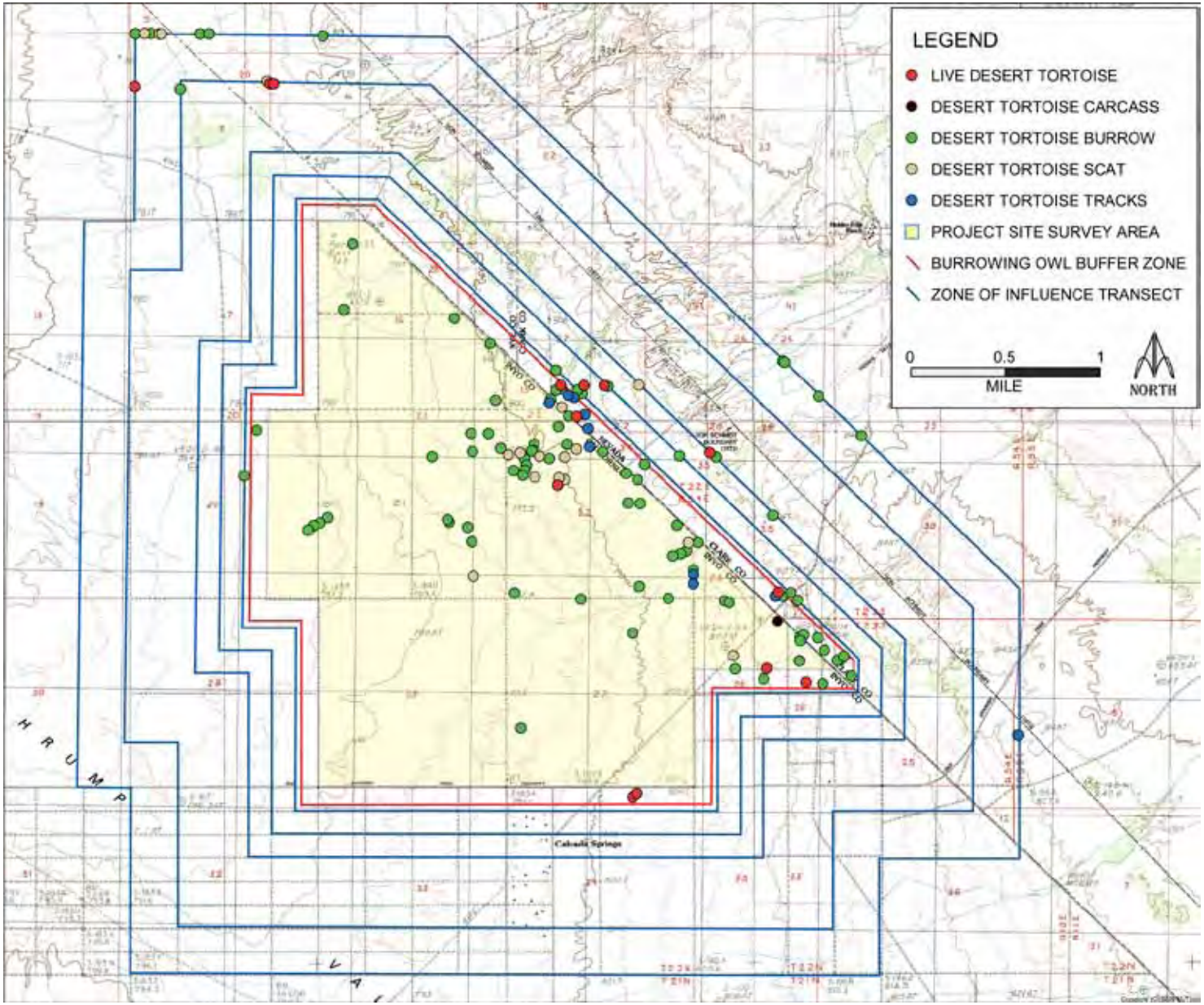

Figure 3. Hidden Hills SEGS Project American Badger Sign Locations, Inyo County, California

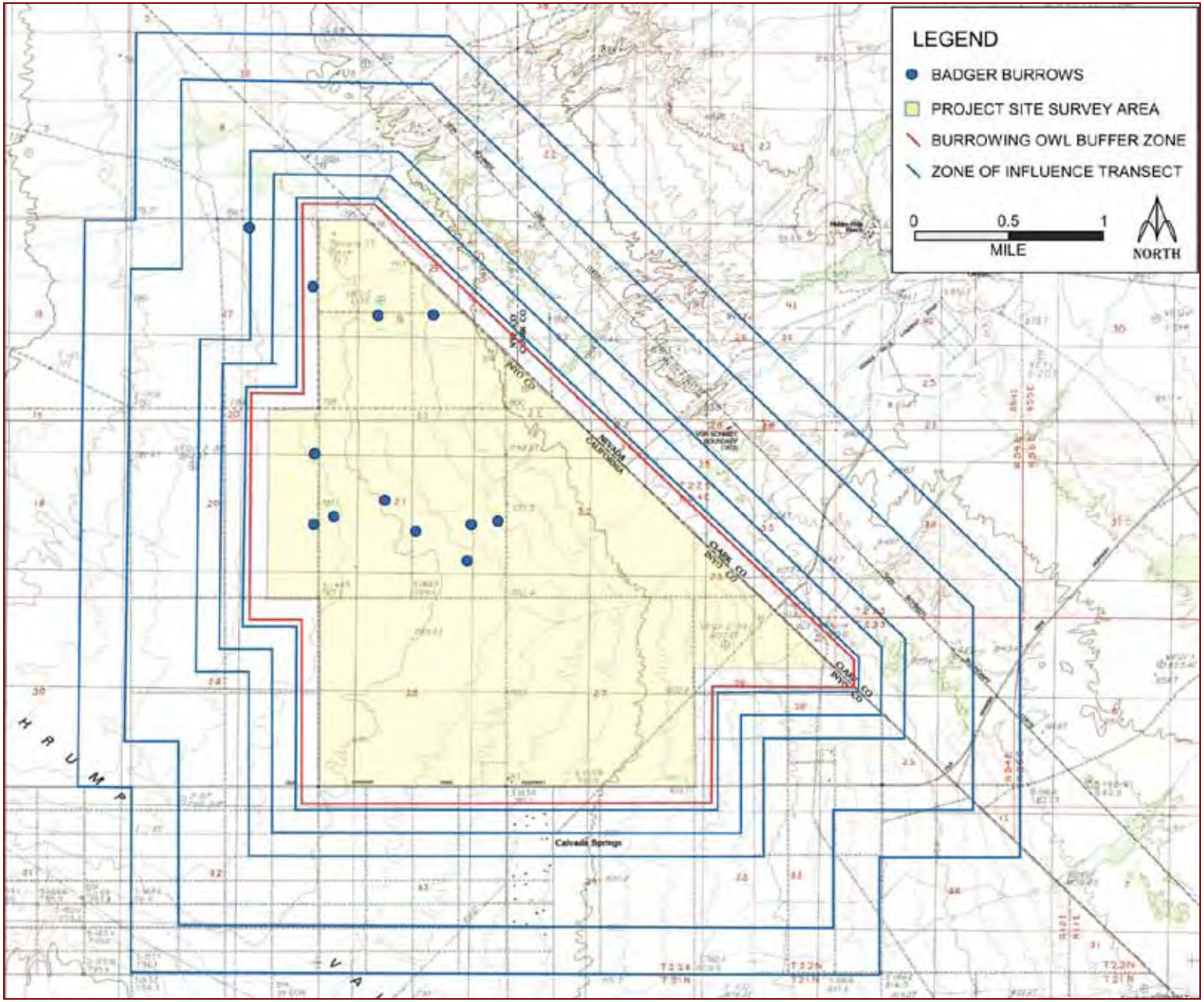

Figure 4. Hidden Hills SEGS Project, North Half, Desert Kit Fox and Other Canid Burrow Locations, Inyo County, California

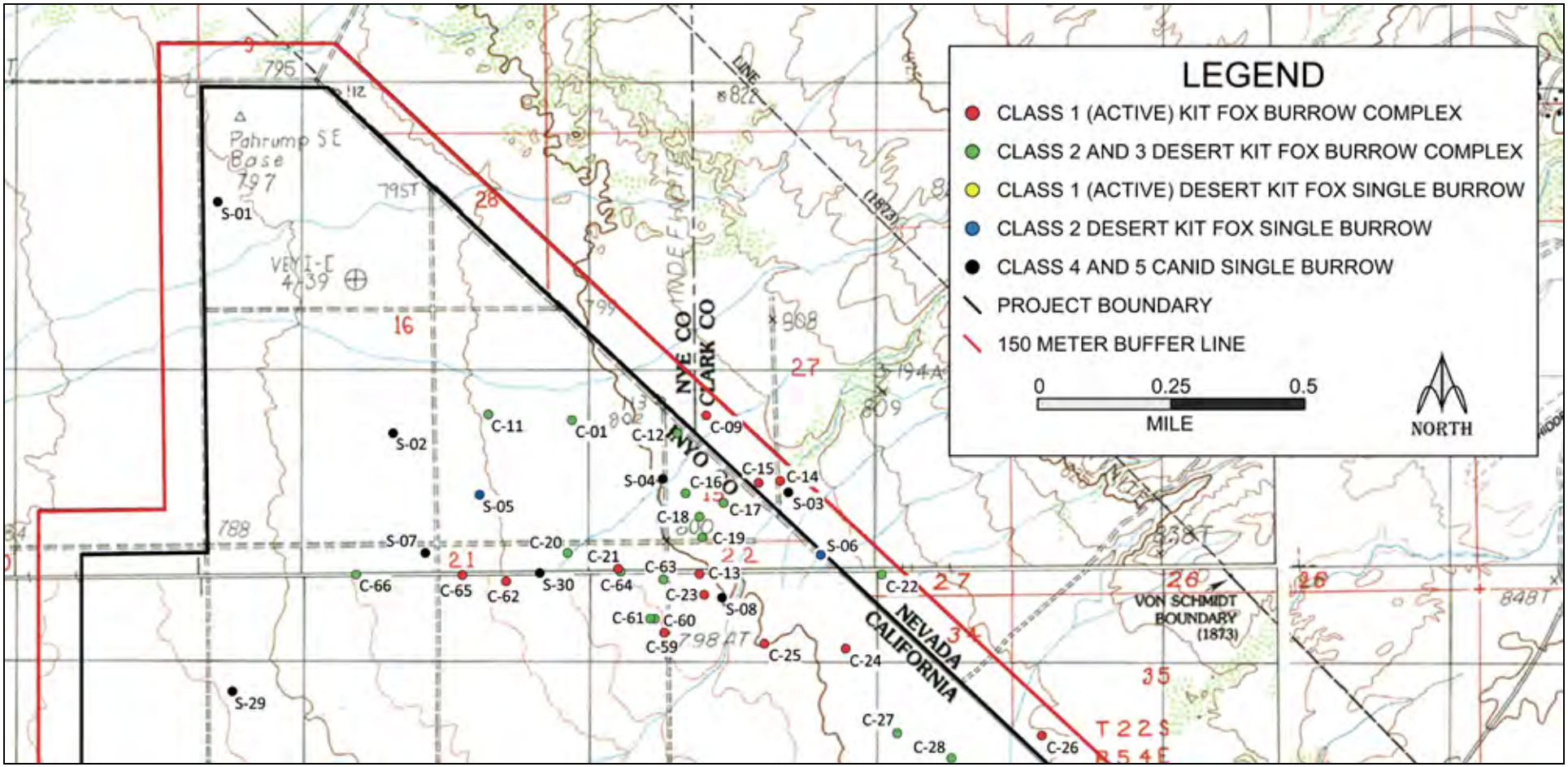

Figure 5. Hidden Hills SEGS Project, South Half, Desert Kit Fox and Other Canid Burrow Locations, Inyo County, California

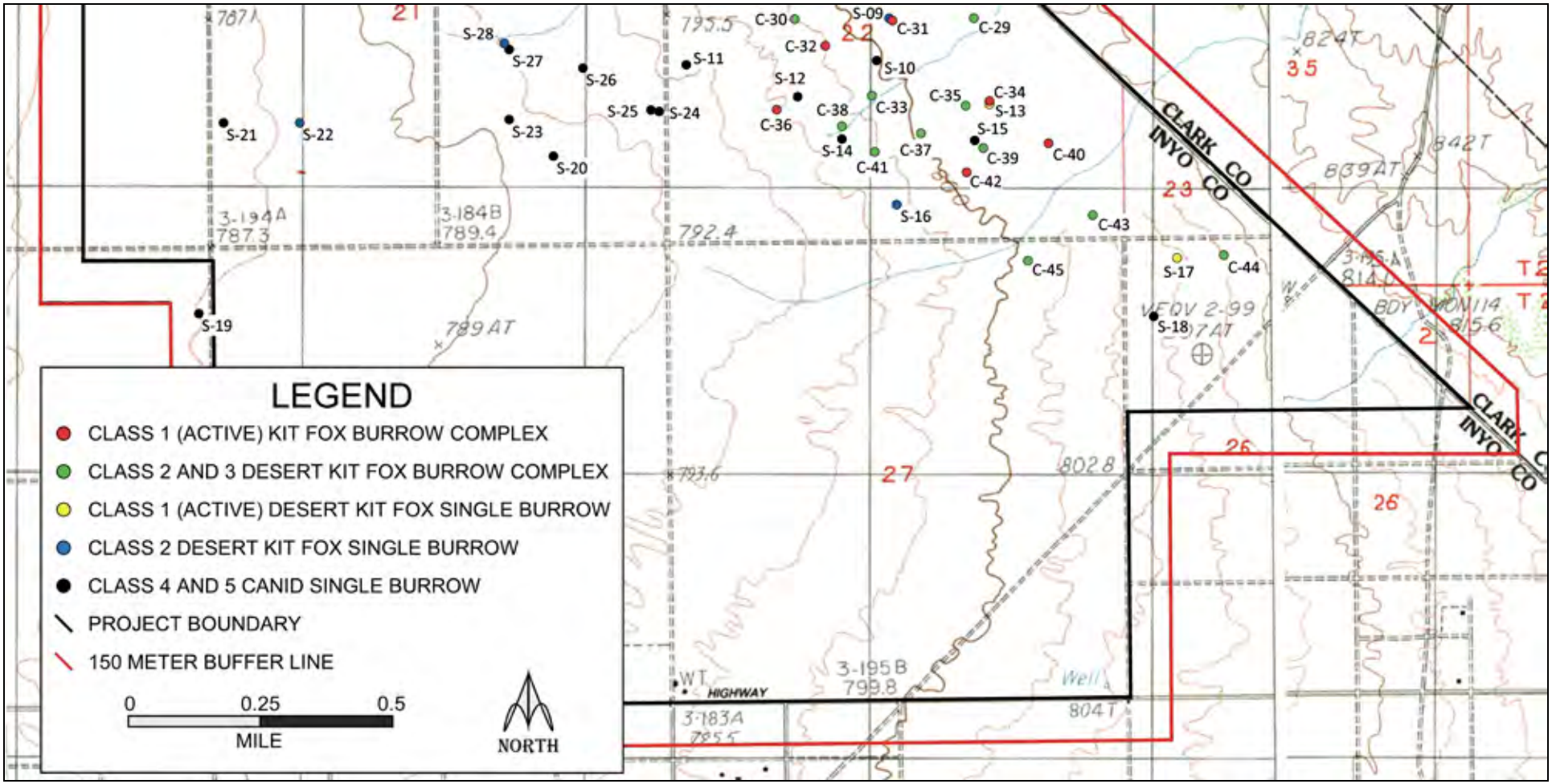

Figure 6. Habitat Photos, Hidden Hills SEGS Project Proposed Site and Zone-Of-Influence, Inyo County, California. (Datum NAD 83 CONUS)

MAIN SITE-ATRIPLEX, LYCIUM, BURROBUSH COMMUNITY
VIEW E UTM 597001E, 3983321N

MAIN SITE-CREOSOTE, ATRIPLEX, LYCIUM, AND BURROBUSH
VIEW E UTM 599108 E, 3983356 N

MAIN SITE-CREOSOTE BUSH SCRUB
VIEW W UTM 599193 E, 3984154 N

MAIN SITE-DESERT PAVEMENT
VIEW NE UTM 704028 E, 3769957 N

MAIN SITE-HEAVY GRAZING, DENUDED
VIEW E UTM 598550 E, 3984160 N

ZOI 600-STABILIZED DUNES
VIEW S UTM 602636 E, 3982681 N

ZOI 1600-INCISED WASH
VIEW S UTM 602859 E, 3983838 N

ZOI 600-STEEP TERRAIN
VIEW S UTM 602409 E, 3982894 N

Figure 7. Desert Tortoise and Sign Photos, Hidden Hills SEGS Project Proposed Site, Inyo County, California. (Datum NAD 83 CONUS)

ADULT DESERT TORTOISE

IMMATURE DESERT TORTOISE

DESERT TORTOISE BURROW

DESERT TORTOISE BURROW

Figure 8. Sensitive Species Photos, Hidden Hills SEGS Project Proposed Site, Inyo County, California.

BADGER BURROWS

KIT FOX BURROW COMPLEXES. TWO KIT FOX YOUNG SPOTTED AT COMPLEX IN PHOTO TO THE RIGHT

Figure 9. Desert Tortoise Abundance/Density Estimates from Table 3 of USFWS Desert Tortoise Pre-project Survey Protocol, 2010

What is the estimated number of tortoises and associated 95% confidence interval for the action area?		HIDDEN HILLS SEGS
INSTRUCTIONS *Use this tab when your transects were of unequal length.* *Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and associated 95% confidence interval for the action area will be calculated.*		TORTOISE DENSITY ESTIMATES
N =	13.8	0.9 per km^2
Lower 95%CI =	5.74	0.4 per km^2
Upper 95%CI =	33.02	2.1 per km^2
Total action area (acres)	3929	15.9 km^2
Probability that a tortoise is aboveground given winter rainfall (Pa from Table 2) =	0.800	
Total length of transects walked (km) =	1604	
Number of transects walked =	514	
Number of tortoises found during surveys (n) =	7	

Transects of various lengths

Transect	Length (km)	Tortoises within 5m of centerline
1	0.61	
2	0.62	
3	0.64	
4	0.65	
5	0.66	
6	0.67	
7	0.68	
8	0.69	
9	0.70	
10	0.71	
11	0.72	
12	0.73	
13	0.75	
14	0.76	
15	0.77	
16	0.78	
17	0.79	
18	0.80	
19	0.81	
20	0.82	
21	0.83	
22	0.84	
23	0.86	
24	0.87	
25	0.88	
26	0.89	
27	0.90	
28	0.91	

29	0.92
30	0.93
31	0.94
32	0.95
33	0.97
34	0.98
35	0.99
36	1.00
37	1.01
38	1.02
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178	2.95	
179	2.96	1.00
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EXHIBIT A

Field Forms

Daily Log: Hidden Hills ZOI

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
14APR2011	7:00 Am	5:00pm	—	—	1200 - 1600 zoi's	Kip Kermeain
Notes/Comments					Western side of site	Patty Kermeain

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
22APR2011			—	—	200, 400, 600, 1200,	Myles Traphagen
Notes/Comments					+1600 Southern ZOI's	

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
Notes/Comments						

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
Notes/Comments						

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
Notes/Comments						

Daily Log: Hidden Hills ZOI

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
14MAY2011	7:30Am	5:30Am	20.3°C	~~31~~ 34.6°C	ZOI's	Amanda Scheib

Notes/Comments

Western: 600, 400, 200, ~~[illegible]~~ Didn't complete longer portion of 200.

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
15MAY2011	7:00Am	5:00pm	13.4°C	17.7°C	ZOI's	Amanda Scheib

Notes/Comments

Longer portion of Western 200 zoi
Northern: 1600, 1200, 600, +400. > completed

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
16MAY2011	7:30Am	5:30pm	13.3°C	17.7°C	ZOI's	Amanda Scheib

Notes/Comments

Eastern 1600, 1200 zoi's completed

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
17MAY2011	7:00Am	5:00pm	13.8°C	21.1°C	ZOI's	Amanda Scheib

Notes/Comments

Eastern 600, 400 completed

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
18MAY2011	7:30	5:30pm	12.9°C	18.0°C	ZOI's	Amanda Scheib

Notes/Comments

~~E~~Northern, Eastern 200 completed
Eastern 1600, 1200, 600, +400 completed.

Daily Log: Hidden Hills

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
13APR2011	12:30 pm	6:30pm	—	—	1-19	Patty Kermoian
Notes/Comments						Kip Kermoian
						Tim Hockin
						~~Marcella Waggoner~~
						Amanda Scheib

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
14APR2011	10:00am	4:00pm	—	—	20-37	Amanda Scheib
Notes/Comments						Marcella Waggoner
						Tim Hockin
7:00-10:00am → Data/Logistics						

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
20APR2011	8:00Am	5:30pm	20.5°C	27.9°C	38-91	Amanda Scheib
Notes/Comments						Terry Baker
						Marcella Waggoner
						Alana Frost
						Christine Sterling
						Rich Crawford

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
21APR2011	8:30am	5:30pm	11.2°C	27.4°C	92-151	Amanda Scheib
Notes/Comments						Alana Frost
						Terry Baker
Myles Traphagen Started walking @ 10:30Am						Marcella Waggoner
						Christine Sterling
						Rich Crawford

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
22APR2011	6:30Am	6:30Am	9.1°C	23.5°C	152-185	Amanda Scheib
Notes/Comments						Alana Frost
						Terry Baker
Stopped at road on west side of site → UTM's 597579/3984567						Christine Sterling
						Rich Crawford

Daily Log: Hidden Hills

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
23APR2011	6:30Am	4:00pm	11.3°C	29.9°C	186 – 229	Amanda Scheib
Notes/Comments						Terry Baker
Walked to first major road and turned around to walk back east.						Alana Frost
Utm's 599193/3984471						Marcella Waggoner
						Rich Crawford
						Christine Sterling

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
24APR2011	6:30Am	10:30Am	11.5°C	24.6°C	230 – 245	Marcella Waggoner
Notes/Comments						Amanda Scheib
						Rich Crawford
						Christine Sterling

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
25APR2011	6:30Am	4:45pm	13.7°C	28.5°C	246 – 285	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
26APR2011	6:30Am	3:30pm	11.2°C	29.6°C	286 – 317	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
27APR2011	6:30am	5:00pm	9.3°C	25.3°C	318 – 349	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Daily Log: Hidden Hills

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
28APR2011	6:30Am	4:45pm	12.5°C	30.0°C	350 – 373	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
29APR2011	6:30Am	3:45pm	11.7°C	20.9°C	374 – 405	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
30APR2011	6:30am	3:45pm	5.8°C	—	406 – 413	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

~~Stopped~~ @ road on west side → UTM's 600826/3982209
Turned around

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
01MAY2011	6:30am	12:30pm	4.3°C	21.4°C	414 – 445	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Turned around at road on west side → 600830/3981918

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
03MAY2011	7:00Am	4:30pm	10.5°C	30.1°C	446 – 485	Amanda Scheib
Notes/Comments						Terry Baker
						Alana Frost
						Marcella Waggoner

Daily Log: Hidden Hills

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
04MAY2011	6:30Am	5:30pm	9.4°C	32.5°C	482 -487	Amanda Scheib Terry Baker ~~Alana Frost~~ Marcella Waggoner

Notes/Comments

Walked from eastern boundry to 599218/3981413 on line 501. Stopped walking due to Private land. Started at ~~road 599218/3981398~~ SW corner of private property (599014/3981384) and walked West. Then Started at road 599218/3981398 and walked west.

→ Quail Way

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
05MAY2011	6:30Am	4:45pm	10.8°C	35.1°C	488 -428	Amanda Scheib Terry Baker ~~Alana Frost~~ Marcella Waggoner

Notes/Comments

*Couldn't walk part of the following lines due to private property → 472-495.
* Line 496 is on Tecopa Road (Old Spanish Trail Hwy)

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
06MAY2011	6:30Am	2:00pm	~~40.0°C~~ 17.8°C	~~28.0°C~~ 35.4°C	427 -348	Amanda Scheib, Sage Clegg Terry Baker, Adam Drumme Alana Frost, Craig Knowles Marcella Waggoner Rich Crawford

Notes/Comments

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
08MAY2011	6:30Am	2:00pm	16.0°C	28°C	347 -316	Amanda Scheib Marcella Waggoner Terry Baker JJ Alana Frost

Notes/Comments

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
09MAY2011	6:30Am	12:30pm	12.0°C	13.9°C	315 -292	Amanda Scheib Marcella Waggoner Terry Baker JJ Alana Frost

Notes/Comments

Daily Log: Hidden Hills

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
10MAY2011	7:30Am	4:45pm	15.0°C	23.3°C	291- 260	Amanda Scheib
Notes/Comments						Marcella Waggoner
						Alana Frost
						Terry Baker

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
11MAY2011	6:30Am	1:00pm	8.9	29.2°C	259 - ~~260~~ 226	Amanda Scheib
Notes/Comments						Marcella Waggoner
						Alana Frost
						Terry Baker

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
12MAY2011	6:30Am	3:30pm	10.9°C	34.3°C	227-196	Amanda Scheib
Notes/Comments						Marcella Waggoner
						Alana Frost
						Terry Baker

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
13MAY2011	6:30Am	11:00Am	13.9°C	35.0	195-180	Amanda Scheib
Notes/Comments						Marcella Waggoner
						Alana Frost
						Terry Baker

Date	Start Time	End Time	Start Temp	End Temp	Trans #'s Walked	Biologist
Notes/Comments						

HH 201 data

SENSITIVE WILDLIFE Sign (live, burrows, scats, carcasses, etc.)

INCLUDE BADGER, BURROWING OWL, MAMMAL BURROW COMPLEXES, RAPTORS, BIG HORN SHEEP, FRINGE-TOED LIZARD

Detection number	GPS location Easting	Northing	Type of sign (live, burrows, scats, carcass, etc.)	Description and comments	Photo Reference
4MAY .12 600-201 14MAY2011	596 968	39 86 134	Badger burrow	Fair condition	Badger_100-1
14MAY2011 212 600-201	596 968	39 86 134	Burrowing owl whitewash outside badger burrow		B.Owl-100-HI

nA

1600 201

Field Worker: Amanda Scheib
Date: 24April2011

Canid Complex and Single Canid Burrows
Hidden Hills

15 MAY

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
Z19	596 102	39 87 795	6	Active 0 Good 1 Fair 5 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N		Canid_100_HH
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

SENSITIVE WILDLIFE Sign (live, burrows, scats, carcasses, etc.)

INCLUDE BADGER, BURROWING OWL, MAMMAL BURROW COMPLEXES, RAPTORS, BIG HORN SHEEP, FRINGE-TOED LIZARD

Detection number	GPS location Easting	GPS location Northing	Type of sign (live, burrows, scats, carcass, etc.)	Description and comments	Photo Reference
20APR badger1 20APR 11	597 520	39 85 625	Badger burrow	Steep burrow in good condition. .5-1m deep	No photo
20APR badger2 20APR 11	598 559	39 85 399	Badger burrow	Steep burrow in poor condition. Many annuals present. .5-1m deep.	No photo
20APR badger3 20APR11	598 084	39 85 389	Badger burrow	Steep burrow in fair condition. However it may have been used this year.	Badger_1_H
APR [redacted] 20APR 11	598 101	39 85 729	Burrowing owl whitewash, Pellets, and feathers.	1-1.5m deep. White wash found outside a single canid burrow. 2+ pellets inside the burrow and 1 outside burrow. Feathers inside burrow. Burrow in fair condition w/ annuals in runway. Burrow 1-1.5m deep	B_Owl_4_H; B_Owl_5_H
20APR B[redacted]3 20APR11	598 153	39 85 791	Burrowing Owl Whitewash	White wash found outside a single canid burrow. Burrow is in fair condition with annuals ~~present on runway~~. .5-1m deep.	X No photo
APR 5[redacted]4 20APR11	598 330	39 85 780	Burrowing Owl White wash and pellets	White wash found outside single canid burrow. 2 pellets found in burrow. Burrow is in fair condition w/ annuals present on runway. 1-1.5m deep Can't see back.	B_Owl_1_H; B_Owl_2_H; B_Owl_3_H
APR .5 20APR11	597 953	39 85 617	Burrowing Owl Whitewash	White wash found outside a single canid burrow. Burrow is in fair condition. 1-1.5m deep.	No photo
APR 3[redacted]7 21APR11	598 292	39 85 200	Burrowing Owl Whitewash and pellets	White wash found outside a single canid burrow. 1 pellet inside burrow and 1 pellet outside burrow. Burrow is in fair condition w/ annuals on runway. .5-1m deep.	No photo

SENSITIVE WILDLIFE Sign (live, burrows, scats, carcasses, etc.)

INCLUDE BADGER, BURROWING OWL, MAMMAL BURROW COMPLEXES, RAPTORS, BIG HORN SHEEP, FRINGE-TOED LIZARD

Detection number	GPS location Easting	Northing	Type of sign (live, burrows, scats, carcass, etc.)	Description and comments	Photo Reference
#89 ✓ 26APR11	600 094	3983375	Burrowing owl pellet and whitewash.	Pellets + white wash at canid complex - Pellet ## old - falling apart	B_Owl_6_HH 1. B_Owl_7HH
A-128 ✓ 29APR11	601 181	3982411	Burrowing owl 2 pellets and whitewash.	Pellets + white wash @ tortoise Burrow.	B_Owl_8_HH
#163 6MAY11 ✓	597 554	39 82 741	Burrowing owl Pellets white wash, feathers	Single canid burrow w/ whitewash, feathers, pellets.	B_Owl_9_HH B_Owl_16 HH B_Owl_11_HH
#166 9MAY ✓ 9MAY11	598 868	39 83 304	Badger burrow	Fair burrow, not used this year.	Badger_2_H
#178 10MAY ✓ 10MAY11	598 425	39 83 549	Badger burrow	Good condition, used this year. .5-1m deep	Badger_3_HH
#180 10MAY ✓ 10MAY11	598 903	39 83 610	Badger burrow	Good condition. .5-1m deep	Badger_4_H
#184 10MAY ✓ 10MAY11	597 550	39 83 596	Badger burrow	Good Condition Can't see back	Badger_5_H
#186 10MAY ✓ 10MAY11	597 719	39 83 667	Badger burrow	Good condition End visible. 0-.5m deep	Badger_6_H
#190 10MAY ✓ 10MAY11	599 128	39 83 641	Badger burrow	Fair condition debris in burrow.	Badger_7_H
#192 11MAY11 ✓ 11MAY11	598 157	3983808	Badger burrow	fair condition	Badger_8_H
#202 12MAY ✓ 12MAY11	597 514	39 84 200	Burrowing owl whitewash pellets	Pellets + white wash at single canid burrow.	B_Owl_12_H
#203 12MAY ✓ 12MAY11	597 549	39 84 201	Badger burrow	Fair condition	Badger_9_H

Field Worker: Amanda Scheib
Date: 20APR2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
	597 624	3985 789	1	Active 1 Good 0 Fair 0 Poor 0	KF C No	Y [✓ N]	Y [✓ N]	Fresh tracks.	No photo
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Field Worker: Amanda Scheib
Date: 21 APR 2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
~~B7~~	~~598 292~~	~~39 85 200~~		~~Active____ Good____~~ Fair____ Poor____	KF C No	Y N	Y N		
B8	599 322	39 85047	4	Active 1 Good 0 Fair 3 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N	Skeletal remains outside complex.	Canid_1-HH
B12	598 854	39 85031	4	Active 2 Good 4 Fair 0 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	Y [✓ N]		No photo
B10	598 562	39 85 051	4	Active 0 Good 1 Fair 0 Poor 3	[✓ KF] C No	Y [✓ N]	Y [✓ N]		No photo
B11	599 221	39 84 988	6	Active 0 Good 2 Fair 4 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]		No photo
B9	598 231	39 84 988	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]	Annuals present	No photo
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition[1]
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat[2]
KY-kit fox
C-coyote

End[3]
Y-end visible
N-end not visible

Entered____________

Field Worker: Amanda Scheib
Date: 22APR 2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A4	599 610	39 84 781	1	Active 1 Good 0 Fair 0 Poor 0	KF C No	Y (N)	(Y) N		Canid_2_HH
A5	599 579	39 84 821	4	Active 1 Good 0 Fair 3 Poor 0	KF C No	Y (N)	Y (N)		No photo
A6	599 504	39 84 815	3	Active 3 Good 0 Fair 0 Poor 0	(KF) C No	Y (N)	Y (N)	Tracks present	No photo
A7	599 251	39 84 779	5	Active 0 Good 0 Fair 5 Poor 0	(KF) C No	Y (N)	Y (N)		No photo
A8	599 171	39 84 829	1	Active 0 Good 0 Fair 1 Poor 0	KF C (No)	Y (N)	Y (N)	Annuals present	No photo
A10	598 533	3984 771	1	Active 0 Good 1 Fair 0 Poor 0	(KF) C No	Y (N)	Y (N)		No photo
A12	599 382	3984 743	5	Active 0 Good 0 Fair 5 Poor 0	(KF) C No	Y (N)	Y (N)		No photo
A18	599 299	39 84 696		Active Good Fair ✓ Poor	(KF) C No	Y (N)	Y (N)		No photo
A20	599 308	39 84 624	4	Active 0 Good 0 Fair 4 Poor 0	(KF) C No	Y (N)	Y (N)		No photo
A25	599 720	39 84 564	1	Active 0 Good 0 Fair 1 Poor 0	(KF) C No	Y (N)	Y (N)	Next to tortoise burrow.	No photo
A26	598 838	3984 570		Active Good Fair ✓ Poor	(KF) C No	Y (N)	Y (N)	Annuals present	No photo
A27	598 342	3984 572	1	Active 0 Good 0 Fair 1 Poor 0	KF C (No)	Y (N)	Y (N)		No photo
A28	599 006	3984 517	11	Active 11 Good 0 Fair 0 Poor 0	(KF) C No	Y (N)	Y (N)	Tracks present.	No photo
A29	599 297	39 84 496	7	Active 7 Good 0 Fair 0 Poor 0	KF (C) No	Y (N)	Y (N)	Tracks present.	No photo
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat2
KY-kit fox
C-coyote

End3
Y-end visible
N-end not visible

Entered_____

Field Worker: Amanda Scheib
Date: 23APR11

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
A 30	599 933	3984 493	Complex	Active____ Good____ Fair ✓ Poor____	[✓ KF] C No	Y [✓ N]	Y [✓ N]		No photo
A33	599 315	3984 422	Complex	Active ✓ Good ✓ Fair____ Poor____	KF C No	Y N	Y [✓ N]	Trackspresent	No photo
A34	599 377	3984 414	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]	Annuals present	Nophoto
A39	599 806	3984 235	6	Active____ Good____ Fair____ Poor____	[✓ KF] C No	Y [✓ N]	Y [✓ N]	Kit fox scat.	Nophoto
A41	599 526	3984254	6	Active 1 Good____ Fair____ Poor____	KF C No	Y [✓ N]	Y [✓ N]	Trackspresent	Nophoto
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat2
KY-kit fox
C-coyote

End3
Y-end visible
N-end not visible

Entered 7MAY11 AF

Field Worker: Amanda Scheib
Date: 24APR11

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
A58	600 491	39 83 933	2	Active 2 Good 0 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]	Saw Kit-fox in complex burrow.	No photo
A59	599 986	39 83 942	3	Active 0 Good 0 Fair 3 Poor 0	[✓ KF] C ~~[✓ No]~~	Y [✓ N]	Y [✓ N]		No photo
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		
				Active___ Good___ Fair___ Poor___	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat2
KY-kit fox
C-coyote

End3
Y-end visible
N-end not visible

Entered 7MAY11
AE

Field Worker: Amanda Scheib
Date: 25APR11

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
✓A61	600175	3983856	2	Active 0 Good 1 Fair 1 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N	Fair - annuals present	Canid-4-HH
✓A64	600278	3983782	4	Active 0 Good 0 Fair 4 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N	Annuals present	Canid-5-HH
✓A65	599992	3983774	1	Active 0 Good 1 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]		~~Canid-6-HH~~ No photo
✓A66	599651	3983777	2	Active 0 Good 0 Fair 2 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N		Canid-6-HH
✓A67	599991	3983761	5	Active 2 Good 1 Fair 2 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N		Canid-7-HH
✓A68	599756	3983683	9	Active 8 Good 1 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N	Fresh tracks	Canid-8-HH
✓A72	599937	3983629	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	[✓ Y] N	Annuals present	Canid-9-HH
✓A73	599270	3983613	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		No photo
✓A74	599659	3983503	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]	Annuals present	No photo
✓A75	599920	3983508	7	Active Good Fair 1 Poor 6	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y]		~~No photo~~ Canid-10-
✓A76	600326	3983495	2	Active 1 Good 0 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]	Tracks present	No photo
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition¹
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat²
KY-kit fox
C-coyote

End³
Y-end visible
N-end not visible

Entered 7MAY11

Field Worker: Amanda Scheib
Date: 26APR2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A79	600 327	3983 483	1	Active 1 Good 0 Fair 0 Poor 0	KF C No	Y N	Y N		~~No photo~~ No photo
A80	600 251	3983 471	6	Active 0 Good 0 Fair 3 Poor 3	KF C No	Y N	Y N		Canid_11_HH
A81	599 586	3983 457	6	Active 6 Good 0 Fair 0 Poor 0	KF C No	Y N	Y N		Canid_12_HH
A89	600 094	3983 375	3	Active 0 Good 0 Fair 3 Poor 0	KF C No	Y N	Y N	~~Fresh~~ Yr Coyote scat	Canid_13_HH
A89	600 094	3983 3		Active Good Fair Poor	KF C No	Y N	Y N		
A90	~~600~~ 599 813	3983 398	3	Active 0 Good 2 Fair 1 Poor 0	KF C No	Y N	Y N		Canid_14_HH
A91	599 816	3983 356	1	Active 0 Good 0 Fair 1 Poor 0	KF C No	Y N	Y N		No photo
A92	600 294	3983 351	1	Active 0 Good 0 Fair 0 Poor 1	KF C No	Y N	Y N		No photo
A93	600 310	3983 329	3	Active 0 Good 2 Fair 1 Poor 0	KF C No	Y N	Y N		Canid_15_HH
A94	600 542	3983 342	9	Active 6 Good 0 Fair 3 Poor 0	KF C No	Y N	Y N		Canid_16_HH
A95	599 930	3983 308	3	Active 0 Good 0 Fair 3 Poor 0	KF C No	Y N	Y N		Canid_17_HH
A97	600 254	3983 237	3	Active 3 Good 0 Fair 0 Poor 0	KF C No	Y N	~~Y~~ N		No photo
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		
				Active Good Fair Poor	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat2
KY-kit fox
C-coyote

End3
Y-end visible
N-end not visible

Entered 7MAY11
AF

Field Worker: Amanda Scheib
Date: 27APR11

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
A100	600 007	3983125	1	Active 0 Good 1 Fair 0 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	Y [✓ N]		No photo
A102	600 697	3983086	5	Active 0 Good 2 Fair 3 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid_18_HH
A112	600 993	3982935	1	Active 1 Good 0 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]		No photo
A113	601 156	3982946	5	Active 0 Good 5 Fair 0 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid_19_HH
A114	600 469	3982927	2	Active 0 Good 0 Fair 2 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid-20_HH
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

Scat2
KY-kit fox
C-coyote

End3
Y-end visible
N-end not visible

Entered 7MAY11
AS

Field Worker: Amanda Scheib
Date: 28APR2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A 117	600 913	3982731	1	Active 1 Good ~~8~~ Fair 0 Poor 8	KF C [✓ No]	Y [✓ N]	Y [✓ N]	Tracks	No photo
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

7MAY11
AF

Field Worker: Amanda Scheib
Date: 06MAY2011

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
A162	597 790	39 82 509	2	Active 1 Good 0 Fair 1 Poor 0	KF [✓ C] No	Y [✓ N]	[✓ Y] N	TY Scat	Canid-21-HH
A163	597 554	39 82 741	1	Active 1 Good 0 Fair 0 Poor 0	KF [✓ C] No	Y [✓ N]	[✓ Y] N	9 photos - Burrowing owl whitewash, pellets, feathers.	Canid-22-HH
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

7MAY 11
AF

Field Worker: Amanda Scheib
Date: 09MAY11

Canid Complex and Single Canid Burrows
Hidden Hills

5/2/2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A167	598 800	39 83 294	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	[✓ Y] N		Canid-23-HH
A169	597 641	39 83 411	1	Active 0 Good 1 Fair 0 Poor____	KF C [✓ No]	Y [✓ N]	Y [✓ N]		No photo
A172	597 909	3983412	1	Active 0 Good 1 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]		Nophoto
A173	598644	3983422	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		Nophoto
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated

Scat 2
KF-kit fox
C-coyote

AS
13MAY11

End 3
Y-end visible
N-end not visible

Field Worker: Amanda Scheib
Date: 10MAY11

Canid Complex and Single Canid Burrows
Hidden Hills

24April2011

Waypoint	Easting	Northing	Total Openings	Condition¹	Scat²	End³	Photos	Comments	File Name
A174	599 172	3983451	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
A175	599 143	3983457	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
A179	598 963	3983604	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
A187	598 645	3983670	1	Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
~~A190~~	~~599 128~~	~~3983~~		Active 0 Good 0 Fair 1 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
A191	598 628	3983692	1	Active 0 Good 0 Fair 1 Poor 0	[✓ KF] C No	Y [✓ N]	Y [✓ N]		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated such that it would require substantial remodeling to be useable.

AS
13MAY11

Field Worker: Amanda Scherb
Date: 12MAY2011

Canid Complex and Single Canid Burrows
Hidden Hills

5/2/2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A195	597 671	3984087	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		Nophoto
A207	599 176	39 84 293	7	Active 7 Good 0 Fair 0 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N	Tracks - Active Saw 2 youngin ~~[illegible]~~ complex.	Canid_24_HH
A208	599 141	39 84 341	4	Active 0 Good 0 Fair 4 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N		Canid-25-HH
A209	599 125	3984339	2	Active 0 Good 2 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	[✓ Y] N		Canid-26-HH
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition 1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated

Scat 2
KF-kit fox
C-coyote

AS
13MAY2011

End 3
Y-end visible
N-end not visible

Field Worker: Amanda Scheib
Date: 13MAY2011

Canid Complex and Single Canid Burrows
Hidden Hills

5/2/2011

Waypoint	Easting	Northing	Total Openings	Condition[1]	Scat[2]	End[3]	Photos	Comments	File Name
A213	598 626	39 84 472	3	Active 1 Good 1 Fair 1 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid_27_HH
A214	599 174	39 84 476	5	Active — Good 2 Fair 3 Poor —	[✓ KF] C No	Y [✓ N]	[✓ Y] N		Canid-28_HH
A215	599 021	39 84 509	11	Active 0 Good 5 Fair 6 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid-29_HH
A216	598 741	39 84 499	1	Active 0 Good 1 Fair 0 Poor 0	KF C [✓ No]	Y [✓ N]	Y [✓ N]		
A217	598 473	39 84 494	2	Active 1 Good 2 Fair 0 Poor 0	[✓ KF] [✓ C] No	Y [✓ N]	[✓ Y] N		Canid-30_HH
A218	598 103	39 84 496	4	Active 0 Good 0 Fair 4 Poor 0	[✓ KF] C No	Y [✓ N]	[✓ Y] N	Annuals present	Canid-31_HH
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		
				Active____ Good____ Fair____ Poor____	KF C No	Y N	Y N		

Condition1
Active-Fresh tracks, used recently.
Good-Used this season.
Fair-Not used this season.
Poor-Deteriorated

Scat 2
KF-kit fox
C-coyote

A.S.
13MAY11

End 3
Y-end visible
N-end not visible

Field Worker: Kip Kermoian + Patty Kermoian
Date: 14 APR 2011

Tortoise Sign and Detection
Hidden Hills

Z01

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
106T	13:22		201 1600	595 640	3987334	Tortoise	260	—	TY NTY No	—	—	Y N	Walking + eatting in open. Took cover under shrub. Male.	Tortoise-1-HH
107B			Z01 1200	556 358	3987323	Burrow		Good	TY [✓ NTY] No				Not used recently. Partially buried in dried soil.	No photo
									TY NTY No				6+ pieces of scat.	
									TY NTY No					
									TY NTY No					
									TY NTY No					
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Entered______________

200
201

Field Worker: Amanda Scheib
Date:

Tortoise Sign and Detection
Hidden Hills

Z01

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
108B	7:24	Z15	201 200	596 944	39 84 021	Burrow	—	Fair	(TY) NTY No	21	1-1.5	Y (N)	Annuals present 1 piece of scat in burrow.	Sign-100-HH
109B	7:52	Z49	201 200	599 838	39 84 759	Burrow	—	Good	TY NTY (No)	27	0-.5	(Y) N		Sign-118-HH
110B	7:58	Z50	201 200	599 800	39 84 791	Burrow	—	Good	TY NTY (No)	29	0-.5	(Y) N		Sign-119-HH
111B	8:10	Z51	201 200	599 612	39 84 953	Burrow	—	Fair	TY (NTY) No	33	1-1.5	(Y) N	Annuals present	Sign-120-HH
112B	11:38	Z54	201 200	601 652	39 83 071	Burrow	—	Active	TY (NTY) No	32	1.5-2	Y (N)	+2 Scat in burrow. Tracks present	Sign-121-HH
113B	11:48	Z55	201 200	601 711	39 83 011	Burrow	—	Good	TY (NTY) No	31	>2	Y (N)	+2 pieces of scat in burrow.	Sign-122-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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									TY NTY No			Y N		

~~200~~ 201

Date:

Tortoise Sign and Detection
Hidden Hills

Z01

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
114B	11:18	243	201 400	600 682	39 84 236	Burrow	—	Good	TY NTY (No)	26	0-.5	(Y) N		Sign-116-HH
115T	15:15	247	201 400	600 030	39 84 830	Tortoise	170	—	TY NTY No	—	—	Y N	Unknown sex. Tortoise walking in open	Tortoise-102
116B	15:21	248	201 400	600 051	3984827	Burrow	—	Active	TY NTY (No)	20	0-.5	(Y) N	Tracks present	~~No photo~~ Sign-123-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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600
Z01

Field Worker: Amanda Scheib
Date: 14MAY11

Tortoise Sign and Detection
Hidden Hills

Z01

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
117B	8:25	Z37	Z01 600	600 938	3984267	Burrow	—	Active	TY NTY (No)	28	1-1.5	Y (N)	Tortoise face out in tunnel.	Sign-113-HH
118T	8:25	Z37	Z01 600	600 938	3984267	Tortoise			TY NTY No			Y N	Adult tortoise in burrow tunnel face out	No photo
119B	8:34	Z38	Z01 600	600 996	3984 229	Burrow	—	Fair	TY NTY (No)	24	0-.5	(Y) N	Annuals present Front of burrow partial collapsed.	Sign-~~33~~ 114-HH
120B	9:09	Z39	Z01 600	601 488	3983736	Burrow	—	Poor	TY NTY (No)	19	0-.5	(Y) N	Annuals present, front of burrow partially collapsed	Sign-115-HH
121S	12:30	Z44	Z01 600	600 328	3984834	Scat			(TY) NTY No			Y N	1piece	Sign_117-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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									TY NTY No			Y N		
									TY NTY No			Y N		

1200 201 Field Worker: Amanda Scheib
Date:

Tortoise Sign and Detection
Hidden Hills

Z01

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
122T	14:29	2 26	201 1200	597 125	39 87 381	Tortoise	240	—	TY NTY No			Y N	Unsure of sex. Maybe female seemed unresponsive to pushy male.	Tortoise-100-HH
123T	14:29	2 26	201 1200	597 125	39 87 381	Tortoise	220	—	TY NTY No			Y N	Male tortoise ~~[illegible]~~ pushing other tortoise.	Tortoise-101-t
124S	14:42	227	201 1200	597 110	3987391	Scat	—		TY (NTY) No			Y N	2 pieces	Sign-108-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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1600
Z01

Field Worker:
Date:

Tortoise Sign and Detection
Hidden Hills Z01

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
126B	10:56	Z17	Z01 1600	595 965	3987 798	Burrow	—	Fair	TY NTY (No)	20	0-.5	(Y) N	Annuals + debris in burrow.	Sign_101_HH
127S	11:08	Z18	Z01 1600	596 048	3987 795	Scat	—	—	(TY) NTY No			Y N	1 piece	Sign_102_HH
128B	11:17	Z19	Z01 1600	596 102	3987 795	Burrow	—	Fair	TY NTY (No)	20	.5-1	Y (N)	Annuals present debris in burrow.	No photo ~~Sign_103_HH~~
129S	11:26	Z20	Z01 1600	596 170	3987 787	Scat	—		(TY) NTY No			Y N	Found next 1m to a smaller piece of scat	Sign_103_HH
130S	11:26	Z20	Z01 1600	596 170	3987 787	Scat	—		(TY) NTY No			Y N	found 1m away from larger piece of scat.	Sign_104_HH
131B	11:43	Z21	Z01 1600	596 526	3987 794	Burrow	—	Good	TY (NTY) No	31	72	Y (N)	+2 pieces of scat in burrow	Sign_105_HH
132B	11:55	Z22	Z01 1600	596 601	3987 798	Burrow	—	Active	TY NTY No	19	.5-1	Y (N)	Tracks present.	Sign_106_HH
133B	12:40	Z23	Z01 1600	597 580	3987 788	Burrow	—	Good	(TY) (NTY) No	34	1-1.5	Y (N)	~~5~~ +4 scat inside + outside burrow	Sign_107_HH
134B	9:00	Z31	Z01 1600	601 562	3985 045	Burrow	—	~~Good~~ Fair	TY (NTY) No	30	1-1.5	Y (N)	Caliche burrow. 3 pieces of scat. Debris in burrow.	in burrow Sign_109_HH
135B	9:11	Z32	Z01 1600	601 564	3985 045	Burrow	—	Good	(TY) (NTY) No	40	1-1.5	Y (N)	+5 piece of scat outside burrow Caliche burrow. 2 piece of scat.	Sign_110_HH
136B	9:45	Z33	Z01 1600	601 871	3984 757	Burrow	—	Good	TY NTY (No)	14	.5-1	Y (N)	debris in burrow.	Sign_111_HH
137B	10:16	Z34	Z01 1600	602 246	3984424	Burrow	—	Fair	TY (NTY) No	33	.5-1	(Y) N	+2 pieces of scat in burrow. Annuals present.	Sign_112_HH
125T	14:55	Z60	Z01 1600	603 615	3981879	Tortoise	265		TY NTY No			Y N	Male resting under cover of LAR TRI.	~~Sign_123_HH~~ Tortoise_103_t
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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Field Worker: Amanda Scheib
Date: 14APR 2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign¹	~MCL	Condition²	Scat³	Width(cm)	Depth⁴	End⁵	Description & Comments	File Name
001B			33	597 851	3986 018	Burrow		Fair	TY NTY No			[✓ Y] N	Adult inactive burrow w/deteriorated conditions. Annuals present in entrance to burrow	Sign_1_HH Sign_2_HH
									TY NTY No					
									TY NTY No					
									TY NTY No					
									TY NTY No					
									TY NTY No					
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									TY NTY No					

Entered_____________

Field Worker: Amanda Scheib
Date: 20APR2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
002B	5:00	B1	89	597 785	3985 451	Burrow		Fair	TY NTY [✓ No]	20	0-.5	Y N	Annuals on runway.	Sign-3-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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									TY NTY No			Y N		

Entered________________

Field Worker: Amanda Scheib
Date: 20 APR 2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
003B	7:02	B6	96	598 734	3985 391	Burrow	–	Fair	TY NTY [✓ No]	19	0-.5	[✓ Y] N	Annuals on runway	Sign-3-HH
004B	10:58	B13	118	599 046	3985 176	Burrow	–	Fair	TY NTY [✓ No]	28	.5-1	N	Annuals on runway	Sign-4-HH
									TY NTY No					
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Entered______________

Field Worker: Amanda Scherb
Date: 22APR2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
005B	7:30	A1	155	599 650	3984802	Burrow	—	Active	TY (NTY) No	32	1-1.5	(N)	Tortoise tracks present	Sign_6_HH
006T	7:34	A2	154	599 653	3984818	Tortoise	—	—	TY NTY No	—	—	—	Immature tortoise in burrow resting. Burrow width 16cm	No photo
007B	7:34	A2	154	599 653	3984818	Burrow	—	Active	TY NTY (No)	16	1-1.5	N	Live immature tortoise in burrow	Sign_7_HH
008B	7:48	A3	157	599 614	3984786	Burrow	—	Active	TY NTY (No)	34	>2	N	3 canid burrows in close proximity to burrow.	Sign_8_HH
009tt	10:42	A13	161	599 722	3984739	Tracks	—	—	TY NTY No	—	—	—	Adult tortoise tracks.	Sign_9_HH
010tt	10:51	A14	163	599 774	3984724	Tracks	—	—	TY NTY No	—	—	—	Adult tortoise tracks.	Sign_10_HH
011T	10:58	A15	201 (?)	599 854	3984829	Tortoise	235	—	TY NTY No	—	—	—	Male tortoise found resting next to LARTRI. Followed tracks.	Tortoise_2_HH
012tt	11:18	A16	167	599 557	3984 682	Tracks	—	—	TY NTY No	—	—	—	Adult tortoise tracks.	Sign_11_HH
013B	11:24	A17	165	599 568	3984701	Burrow	—	Fair	TY NTY (NO)	26	0-.5	Y	Annuals present. Partially collapsed.	Sign_12_HH
014B	11:51	A19	167	599 096	3984683	Burrow	—	Fair	TY NTY (No)	17	0-.5	Y	Annuals present. Partially collapsed.	Sign_13_HH
015S	15:04	A21	171	599 670	3984639	Scat	—	—	TY (NTY) No	—	—	—	—	Sign_14_HH
016tt	15:27	A22	177	599 864	3984 578	Tracks	—	—	TY NTY No	—	—	—	—	Sign_15_HH
017T	15:34	A23	179	599 795	3984 557	Tortoise	70	—	TY NTY No	—	—	—	Juvenile tortoise walking in open.	Tortoise_3_HH
018B	15:44	A24	178	599 722	3984 567	Burrow	—	Active	TY NTY (No)	32	0-.5	Y	Another tortoise burrow next to this tortoise burrow.	Sign_17_HH
019B	15:44	A24	178	599 722	3984 567	Burrow	—	Fair	TY NTY (No)	30	1-1.5	—	Another tortoise burrow next to this tortoise burrow.	Sign_16_HH
									TY NTY No					
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									TY NTY No					
									TY NTY No					

Entered_____

Field Worker: Amanda Scheib
Date: 23APR11

Tortoise Sign and Detection
Hidden Hills

24April2011

Det #

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
020tt	20 tt	A31	190	599 890	3984 456	Tortoise Tracks	—	—	TY NTY No			Y N	Tracks from smaller (immature) tortoise.	Sign_18_HH
021B	21 B	A32	188	599 641	3984 471	Burrow	—	Fair	TY NTY (No)	19	1.5-2	N	Annuals present. Branches from LARTR1 in runway.	Sign_19_HH
022B	22 B	A35	203	599 433	3984 320	Burrow	—	Poor	TY NTY (No)	23	0-.5	Y	Inactive - needs to be dug out to be used.	Sign_20_HH
023B	23 B	A36	203	599 714	3984 319	Burrow	—	Fair	TY NTY (No)	24	0-.5	Y	Burrow under LYCCOP. Not used this year.	Sign_21_HH
024tt	24 tt	A37	205	599 909	3984 299	Tortoise Tracks	—		TY NTY No				Most likely same tracks (tortoise) from earlier line 190.	Sign_22_HH
025B	25 B	A38	209	600 015	3984 263	Burrow	—	Fair	TY NTY (No)	12	0-.5	Y	No annuals present.	Sign_23_HH
026S	26 S	A40	209	599 795	3984 282	Scat	—		(TY) NTY No				3 pieces of scat	Sign_24_HH
027B	27 B	A42	209	599 406	3984 263	Burrow	—	Fair	TY NTY (No)	32	0-.5	Y	Not used this year.	Sign_25_HH
028B	28 B	A42	209	599 406	3984 263	Burrow	—	Fair	TY NTY (No)	25	>2	N	Not used this year.	Sign_26_HH
029B	29 B	A42	209	599 406	3984 263	Burrow	—	Fair	TY NTY (No)	20	0-.5	Y	Not used this year. Annuals present	Sign_27_HH
030S	30 S	A43	212	599 312	3984 246	Scat	—		(TY) NTY No				2 pieces of scat	Sign_28_HH
031B	31 B	A44	215	599 352	3984 197	Burrow	—	Fair	TY (NTY) No	28	1.5-2	N	2 pieces of scat outside burrow Annuals & Russian thistle in entrance.	Sign_29_HH
032S	32 S	A45	213	599 479	3984 218	Scat	—		(TY) NTY No				2 pieces of scat	Sign_30_HH
033B	33 B	A46	215	599 564	3984 199	Burrow	—	Fair	TY NTY (No)	21	0-.5	N	Annuals present.	No photo
034S	34 S	A47	212	599 694	3984 221	Scat	—		TY (NTY) No				1 piece of scat.	Sign_31_HH
035B	35 B	A48	219	600 381	3984 162	Burrow	—	Fair	TY NTY (No)	23	.5-1	Y	Annuals present.	Sign_32_HH
036B	36 B	A49	221	599 366	3984 139	Burrow	—	Good	TY NTY (No)	22	1.5-2	N		Sign_33_HH
037B	37 B	A50	225	599 260	3984 090	Burrow	—	Active	TY NTY (No)	30	1-1.5	N		Sign_34_HH
038B	38 B	A51	224	599 357	3984 097	Burrow	—	Active	TY NTY (No)	25	1-1.5	N	Tracks present	Sign_35_HH
039B	39 B	A52	227	600 221	3984 078	Burrow	—	Poor	TY NTY (No)	17	0-.5	Y	Annuals present.	Sign_36_HH
									TY NTY No					
									TY NTY No					

Sal TRAG

Entered 7MAY11
MH

Field Worker: Amanda Scherb
Date: 24APR2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
040B	40 B	A53	233	600 328	3984 025	Burrow	—	Fair	TY NTY (No)	25	.5-1	(Y) N	Front partially collapsed. Burrow under ATRCAN.	Sign_37_HH
041S	41 S	A54	233	599 692	3984 023	Scat	—		(TY) NTY No					Sign_38_HH
042S	42 S	A55	232	599 647	3984 032	Scat	—		(TY) NTY No					Sign_39_HH
043S	43 S	A56	231	599 440	3984041	Scat	—		(TY) NTY No					Sign_40_HH
044B	44 B	A57	230	599 338	3984 055	Burrow	—	Fair	TY NTY (No)	21	1-1.5	N	Russian thissel in mouth of burrow.	Sign_41_HH
045T	9:24	A60	238	599 641	3983990	Tortoise	220		TY NTY No				Female basking next to LARTRI	Tortoise_4_HH
									TY NTY No					
									TY NTY No					
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Entered 7MAY11 M.W

Field Worker: Amanda Scheib
Date: 25APR11

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign¹	~MCL	Condition²	Scat³	Width(cm)	Depth⁴	End⁵	Description & Comments	File Name
046B	8:28	A62	253	600 242	39 83826	Burrow	—	Fair	TY NTY [✓ No]	25	0-.5	[✓ Y] N	Annuals present. Burrow under LAR TRI	Sign-42-H
047B	8:35	A63	256	600 349	39 83820	Burrow	—	Poor	TY NTY [✓ No]	17	.5-1	Y	Burrow under LAR TRI	Sign-43-HH
048B	13:39	A70	273	600 736	39 83 631	Burrow	—	Fair	TY [✓ NTY] No	28	1.5-2	N	Annuals present	Sign-44-HH
049B	13:47	A71	271	600 668	39 83 640	Burrow	—	Fair	TY [✓ NTY] No	28	>2	N	+3 scat in burrow Annuals present	Sign-45-H
050B	16:37	A77	285	600 849	39 83 494	Burrow	—	Fair	TY NTY [✓ No]	18	0-.5	Y	Annuals present	Sign-46-HH
									TY NTY No					
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Entered 7MAY11MW

Field Worker: Amanda Scheib
Date: 26APR2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
051S	7:02	A78	268	600 768	3983492	Scat	—	—	TY (NTY) No	—	—	Y N	—	Sign-47-HH
052B	8:30	A86	293	600 748	3983421	Burrow	—	Fair	TY (NTY) No	29	72	N	Annuals present. +8 scat outside burrow. +2 scat inside burrow.	Sign-48-HH
053B	9:07	A87	295	600 702	3983396	Burrow	—	Poor	TY (NTY) No	30	1-1.5	N	Front of burrow collapse — tunnel + back open. 1 piece of scat outside	Sign-49-HH
054B	9:10	A88	297	600 634	3983397	Burrow	—	Poor	TY NTY (No)	32	1-1.5	N	Annuals present.	Sign-50-HH
055B	13:17	A96	309	600 809	3983358	Burrow	—	Active	(TY) NTY No	30	1-1.5	N	Fresh tracks + 6 pieces of scat in burrow & outside, Kitfox Coyote scat on mound.	Sign-51-HH
									TY NTY No					
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Entered 7MAY11 M.U

Field Worker: Amanda Schierb
Date: 27APR11

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
056tt	~~7:19~~ 10:25	A98	321	600 813	3983 143	Tortoise Tracks	—		TY NTY No			Y N		Sign-52-HH
057S	7:16	A99		600 812	3983 224	Tortoise Scat	—		TY (NTY) No					Sign-53-HH
058B	8:28	A101	~~324~~ 321	600 350	3983 111	Burrow	—	Fair	TY NTY (No)	18	.5-1	N	Annuals present.	Sign-54-HH
059B	10:07	A104	331	599 275	3983041	Juvie Burrow	—	Good	TY NTY (No)	8	0-.5	N		Sign-55HH
060tt	11:06	A105	331	601 518	3983043	Tortoise Tracks	—		TY NTY No					Sign-56-HH
061S	11:06	A105	331	601 518	3983043	Scat	—		(TY) NTY No					Sign-57HH
062B	11:10	A106		601 545	3983074	Tortoise	230		TY NTY No				Female tortoise walking in open.	Tortoise_5-HH
063B	11:24	A107	331	601 579	3983041	Burrow	—	Active	TY NTY (No)	18	1-1.5	Y		Sign-58-HH
064B	12:38	A108	337	601 121	3982 987	Burrow	—	Good	TY (NTY) No	40 .5-1 ~~1.5~~		Y	Annuals present but tracks present as well, Is cat in burrow	Sign-59-HH
065B	12:48	A109	335	601 083	3982 999	Burrow	—	Fair	TY NTY (No)	34	1-1.5	N	Annuals present	Sign-60-HH
066B	13:04	A110	334	600 601	3983 011	Burrow	—	Fair	TY NTY (No)	28	1-1.5	Y	Annuals present	Sign-61-HH
067B	13:27	A111	335	599 846	3982 998	Burrow	—	Good	TY NTY No	14	.5-1	Y		Sign-62-HH
	~~14:32~~	~~A112~~	~~33~~						TY NTY No					
	~~15:42~~	~~A114~~	~~342~~	~~600 409~~	~~3982927~~				TY NTY No					
									TY NTY No					
									TY NTY No					
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Entered 7MAY11 MW

Field Worker: Amanda Jurek
Date: 28APR11

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
068C	7:30	A115	352	601 539	3982832	Carcass	110	—	TY NTY No	—	—	Y N	7 2years old. Unknown cause of death. Possibly crushed-	Carcass_1-HH Carcass_2-HH
069B	12:15	A116	364	600 299	3982 710	Burrow	—	Fair	TY NTY (No)	18	.5-1	Y (N)	long fractures across carapace at plastron. No annuals but debris in burrow.	Sign_63
070B	13:58	A118	365	601 738	3982699	Burrow	—	Good	TY NTY (No)	13	0-.5	Y (N)	Plant.	Sign-64-HH
071B	14:05	A119	365	601 757	3982 708	Burrow	—	Poor	TY NTY (No)	16	0-.5	(Y) N	Partially collapsed in front	Sign-65-HH
072B	14:25	A120	366	601 888	3982 688	Burrow	—	Fair	TY NTY (No)	19	0-.5	(Y) N	Annuals present	Sign-66-HH
073B	14:36	A 121	368	601 737	3982 666	Burrow	—	Fair	TY NTY (No)	19	.5-1	Y (N)	Annuals present, debris in burrow.	Sign-67-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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Entered 7MAY11 MW

Field Worker: Amanda Scheid
Date: 29APR2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
074B	7:06	A122	377	601 940	39 82 586	~~Burrow 39 82 586~~	—	Active	TY NTY (No)	16	1-1.5	(Y) N	Tracks present	Sign-68-HH
075B	8:39	A123	381	602 113	39 82 535	Burrow	—	Fair	TY NTY (No)	28	1-1.5	Y (N)	Debris in burrow	Sign-69-HH
076B	8:57	A124	385	602 057	39 82 500	Burrow	—	Fair	TY NTY (No)	37	.5-1	(Y) N	Annuals present	Sign-70-HH
077B	8:57	A124	385	602 057	39 82 500	Burrow	—	Poor	TY NTY (No)	14	0.-.5	(Y) N	Collasped) Next to each other	Sign-71-HH
078B	9:27	A125	385	601 731	39 82 494	Burrow	—	Good	TY (NTY) No	32	72	Y (N)	Scat inside + outside burrow	Sign-72-HH
079S	9:52	A126	382	601 164	3982529	Scat	—		(TY) NTY No			Y N	2 pieces Sign-74-HH	Sign-73-HH
080T	11:23	A127	393	601 454	39 82 425	Tortoise	270		TY NTY No			Y N	male = Resting in open ~~burrow~~	Tortoise Sign-74-HH
081B	12:07	A128	394	601 181	3982411	Burrow	—	Active	TY (NTY) No	36	72	Y (N)	Tracks Sign-75-HH	~~Sign-No photo~~
082B	13:37	A129	397	602 181	3982370	Burrow	—	Fair	TY (NTY) No	28	>2	Y (N)	Annuals present Scat present	Sign-76-HH
083B	14:06	A130	401	601 429	3982 334	Burrow	—	Fair	TY (NTY) No	35	1-1.5	Y (N)	Annuals present Scat present	Sign-77-HH
084T	15:13	A133	404	601 788	3982 307	Tortoise	240	—	TY NTY No	~~240~~	~~1.5~~	Y (N)	male tortoise resting on mound	Tortoise-78-HH
085B	15:13	A133	404	601 788	3982 307	Burrow	—	Active	(TY) NTY No	26	1-1.5	Y (N)	male tortoise resting on mound scat present	Sign-78-HH
086B	15:24	A 134	405	601 934	39 82 297	Burrow	—	Fair	TY NTY (No)	31	.5-1	(Y) N		Sign-79-HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		

Entered 07MAY11 A.S.

Field Worker: Amandascheib
Date: 01MAY2011

Tortoise Sign and Detection
Hidden Hills

24April2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign¹	~MCL	Condition²	Scat³	Width(cm)	Depth⁴	End⁵	Description & Comments	File Name
087B	11:46	A138	445	599 345	39 81 889	Burrow	—	Fair	TY NTY [✓ No]	17	[illegible]	Y N	Entrance is collapsed.	Sign_80-H
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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									TY NTY No			Y N		

Entered 07MAY11 A.S.

Field Worker: Amanda Scheib
Date: 04MAY2011

Tortoise Sign and Detection
Hidden Hills

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
088T	9:54	A147	501	600 314	39 81313	Tortoise	220		TY NTY No			Y N	Male Tortoise, resting in open.	Tortoise_8_HH
089T	10:09	A148	501	600 349	39 81341	Tortoise	270		TY NTY No			Y N	Resting under cover of LAR TRI. Female	Tortoise-9_HH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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7MAY11 A.S.

Field Worker: Amanda Scheib
Date: 08MAY2011

Tortoise Sign and Detection
Hidden Hills

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
090S	13:55	A165	316	598 922	3983 187	Scat			TY [✓ NTY] No			Y N	1piece	Sign-8LHH
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
									TY NTY No			Y N		
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~~HAGT~~ A.S.
~~10MAY11~~ 13MAY11

Date: 10MAY11

Tortoise Sign and Detection
Hidden Hills

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
091B	10:12	A176	287	598 907	39 83 476	Burrow	—	Good	TY NTY (No)	20	0-.5	Y (N)	No annuals, some debris in burrow	Sign-82-HH
092B	11:20	A177	279	597 500	39 83555	Burrow	—	Poor	TY NTY (No)	23	0-.5	(Y) N	Annuals present	Sign-83-HH
093B	12:17	A181	275	598 870	3983 599	Burrow	—	Fair	TY NTY (No)	15	.5-1	Y (N)	Annuals present	Sign-84-HH
094B	12:47	A182	273	597 601	39 83622	Burrow	—	Poor	TY NTY (No)	19	0-.5	(Y)	Debris in burrow	Sign-85-HH
095B	12:52	A183	275	597 540	39 83599	Burrow	—	Poor	TY NTY (No)	25	.5-1	Y (N)		Sign-86-HH
096B	13:24	A185	268	597 670	39 83668	Burrow	—	Poor	TY NTY (No)	15	0-.5	Y (N)	Annuals present	Sign-87-HH
097B	13:56	A188	269	598 701	3983660	Burrow	—	Fair	TY NTY (No)	18	.5-1	Y (N)	Annuals present	Sign-88-HH
098B	14:42	A 189	270	598 712	39 83645	Burrow	—	Good	TY NTY (No)	21	1.5-2	Y (N)		Sign-89-HH
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A.S. 13MAY2011

Date: 12MAY2011.

Hidden Hills

5/2/2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
099B	8:59	A200	216	598 557	3984196	Burrow	—	Fair	TY NTY [✓ No]	21	>72	Y [✓ N]	Annuals present. Russian thistle in mouth of burrow	Sign_90_HH
100S	10:50	A204	212	599 210	3984228	Scat	—		[✓ TY] NTY No			Y N	1 piece	Sign_91_HH
101B	11:13	A 205	210	598 902	3984251	Burrow	—	Poor	TY NTY [✓ No]	15	0-.5	Y [✓ N]	Annuals in runway Debris in burrow	Sign_92_HH
102B	12:36	A206	205	599 143	3984281	Burrow	—	Poor	TY NTY [✓ No]	15	1.5-2	Y [✓ N]	Annuals present	Sign_93_HH
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A.S.
13MAY2011

Date: 13MAY2011

REF #	Time	Waypoint	Tran#	Easting	Northing	Type of Sign[1]	~MCL	Condition[2]	Scat[3]	Width(cm)	Depth[4]	End[5]	Description & Comments	File Name
103B	6:44	A210	195	599 042	39 84 400	Burrow	—	Fair	No	15	.5-1	N	Annual present	Sign_94_HH
104B	6:52	A 211	194	598 887	39 84 406	Burrow	—	Poor	No	13	0-.5	N	Annuals present. Under a Lyc cop.	Sign_95_HH
105B	7:44	A 212	194	597 047	39 84 412	Burrow	—	Fair	No	15	0-.5	N	Under a LYCCOP.	Sign_96_HH
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13MAY11

Attachment DR51-1
Golden Eagle Study Plan

Attachment DR51-1

Golden Eagle Study Plan

Hidden Hills Solar Electric Generating System

(11-AFC-2)

Submitted to

California Energy Commission

Submitted by

Hidden Hills Solar I, LLC; and

Hidden Hills Solar II, LLC

December 5, 2011

with Assistance from

CH2MHILL®

2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Acronyms and Abbreviations

ABPP	Avian and Bat Protection Plan
AFC	Application for Certification
BGEPA	Bald and Golden Eagle Protection Act
BLM	U.S. Bureau of Land Management
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
FESA	Federal Endangered Species Act
GIS	Geographic Information System
GPS	Global Positioning System
MBTA	Migratory Bird Treaty Act
MW	Megawatts
SSC	Species of Special Concern
U.S.	United States
USC	United States Code
USFWS	United States Fish and Wildlife Service

Introduction

This document provides a Golden Eagle Study Plan for the Hidden Hills Solar Electric Generating System (HHSEGS or Project). HHSEGS is being developed by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, the Applicant), wholly owned subsidiaries of Hidden Hills Solar Holdings, LLC, (their sole member) which is in turn a wholly owned subsidiary of BrightSource Energy, Inc. (its sole member), a Delaware corporation.

This Golden Eagle Study Plan is being provided in response to Data Request 51 of the Data Request, Set 1B submitted by the California Energy Commission (CEC) for the Hidden Hills SEGS (11-AFC-2) project. It reads:

> 51. Please provide staff and the resource agencies a draft Golden Eagle Study proposal that identifies the appropriate month(s) to conduct helicopter surveys for golden eagles during fall 2011 or winter 2012 so the surveys do not conflict with the start of Nelson's bighorn sheep (BHS) lambing season in the Nopah Range, Kingston Range, and surrounding ranges. Please also identify the appropriate time to conduct follow-up ground surveys of all potential golden eagle nests identified during the helicopter surveys based on breeding and non-breeding seasons for golden eagle and breeding season of BHS.
>
> Please also include a list and the resumes and qualifications of surveyors/observers proposed to conduct these surveys. The surveyors/observers must meet the qualifications specified in Pagel et al 2010, see Observer Qualifications. Please provide the information to staff for review, with copies to USFWS.

This Plan was developed in consultation with the Staff of the agencies responsible for reviewing the application for the HHSEGS project. As a note, significant portions of the fieldwork had been completed before this data request was received.

1.1 Project Description

HHSEGS will be located on privately owned land in Inyo County, California, adjacent to the Nevada border (Figures DR51-1 and DR51-2, figures are located at the end of each section). It will comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant will generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres, and Solar Plant 2 will occupy approximately 1,510 acres. A 103-acre common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres.

Each solar plant will use heliostats—elevated mirrors guided by a tracking system mounted on a pylon—to focus the sun's rays on a solar receiver steam generator (SRSG) atop a tower near the center of each solar field. The solar power tower technology for the HHSEGS project design incorporates an important technology advancement, the 750-foot-tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces

mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre and the design is more efficient overall.

The transmission and natural gas pipeline alignments will be located in Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission line in the vicinity of the Eldorado Substation, which is located within the city limits of Boulder City, Nevada. A detailed environmental impact analysis of the transmission and natural gas pipeline alignments will be prepared by BLM.

1.2 Study Objectives

The goal of this Golden Eagle Study Plan is to conduct studies to meet the intent of the Bald and Golden Eagle Protection Act (BGEPA) by reducing and managing risk to golden eagles.

The Applicant's primary Study objective is to have an environmentally sustainable Project that results in no significant project-specific impacts to golden eagles. With regard to this primary objective, the Project has the following specific objectives:

Reduce the potential for deaths or injuries to golden eagle to occur as a result of Project-related activities (both construction and operations).

Provide a framework for reporting the results of monitoring and adaptive management to federal and state wildlife management agencies.

Derive a scientifically valid estimate of occurrences of golden eagle within the Project vicinity.

The specific purpose of the Golden Eagle Study Plan is to collect data needed to provide a mechanism where the Applicant can voluntarily implement specific commitments to address interactions of concentrating solar operations and wildlife interactions in the form of an Avian and Bat Protection Plan (ABPP).

1.3 Legal Authorities and Permit Compliance

This Golden Eagle Study Plan was developed in accordance with guidelines and requirements from both state and federal wildlife management agencies. The regulatory framework for protecting birds includes the MBTA of 1918, as amended (16 United States Code [U.S.C.] 703 et. seq.) and Executive Order 13186. Executive Order 13186 directs federal agencies to promote the conservation of migratory bird populations. Additional direction comes from BLM Instruction Memorandum 2008-050 (*Migratory Bird Treaty Act – Interim Management Guidance*), dated December 18, 2007. At the state level, nesting and wintering golden eagles (*Aquila chrysaetos*) are considered fully-protected California Species of Special Concern (SSC) (California Department of Fish and Game [CDFG], 2010). In September 2010, the USFWS issued *Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities* (USFWS, 2010).

Migratory birds are covered under the MBTA, while the BGEPA specifically protects bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). Both the BGEPA and the MBTA prohibit "take." The BAGEPA regulations define "take" as follows: "Take means pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. " (50 CFR 22.3.) The MBTA does not include provisions for allowing unauthorized take.

On September 11, 2009 (Federal Register, 50 Code of Federal Regulations [CFR] 13 and 22), the USFWS set in place rules establishing two new permit types under the BGEPA: 1) take of bald eagles and golden eagles that is associated with, but not the purpose of, the activity; and 2) purposeful

take of eagle nests that pose a threat to human or eagle safety. At this time the USFWS is deferring implementation of these new permits for golden eagles—except for safety emergencies and programmatic permits—due to population decline concerns (Federal Register, 2009; Kochert et al., 2002). The USFWS recommends that project proponents prepare an Avian and Bat Protection Plan (ABPP) to avoid, minimize, and mitigate project-related impacts to birds and bats and specifically golden eagles to ensure no-net-loss to the golden eagle population. Other than FESA and CESA, there are no regulatory protections for bats.

FIGURE DR51-1
Regional Map
Hidden Hills Solar Electric Generating System

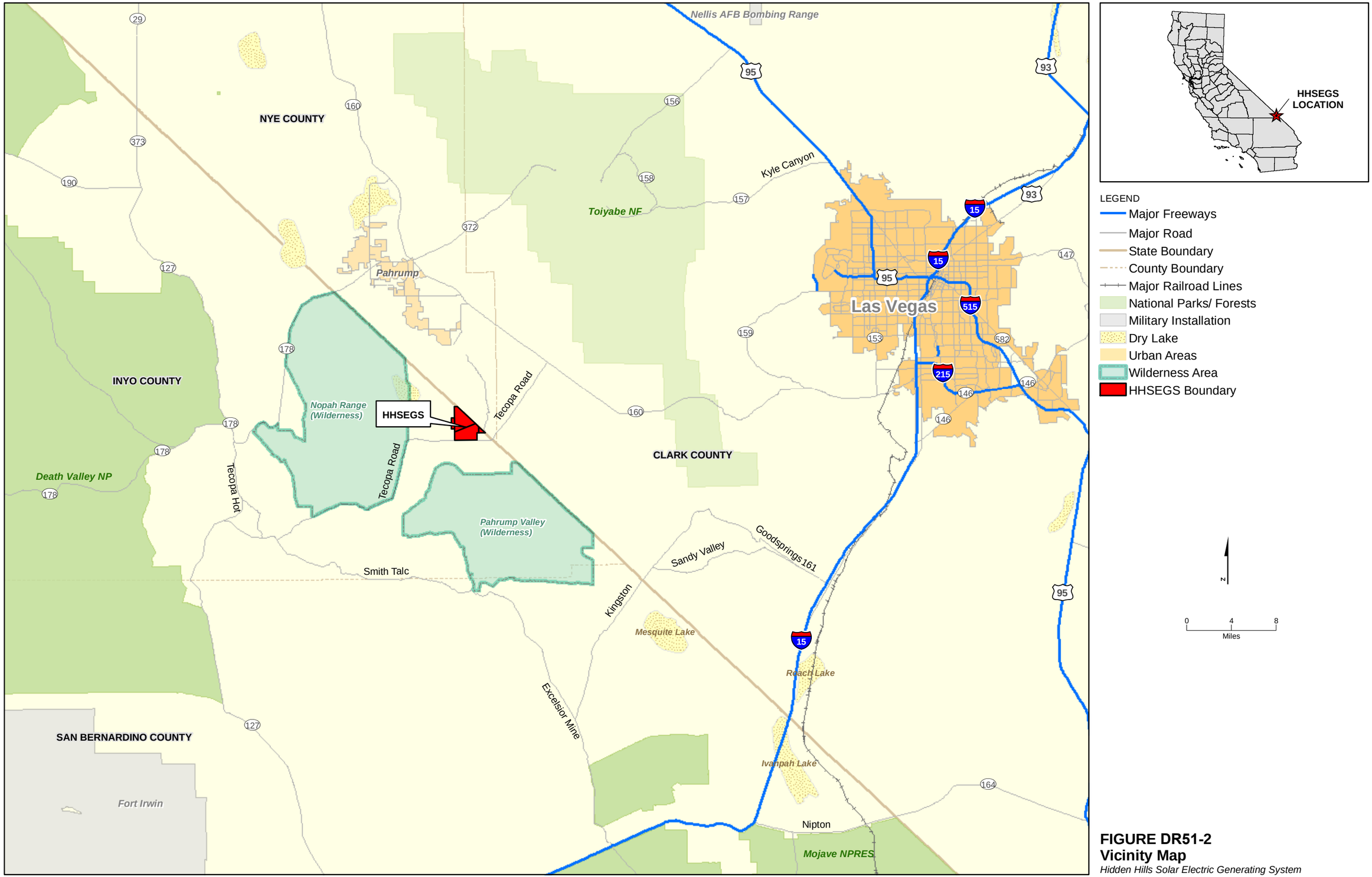


FIGURE DR51-2
Vicinity Map
Hidden Hills Solar Electric Generating System

Site Suitability

The Applicant is committed to building HHSEGS in an environmentally responsible way. HHSEGS was sited to best achieve that commitment based on intensive pre-site assessment, literature searches, and field studies. These studies show that bird and bat population level risk for this site is low relative to other existing and potential alternative energy sites. With respect to the golden eagle, implementation of species-specific conservation measures will ensure a net benefit for the population.

2.1 Habitat and Vegetation Communities

The vegetation communities described in the following subsections do not provide suitable nesting or roosting habitat, which is described in Section 2.2, Potential Raptor Habitats. No nests were observed on the HHSEGS project site. Native trees do not occur within the project area.

Two common natural vegetation types occur within the HHSEGS boundary: Mojave Desert scrub, which generally dominates the eastern half of the site, and shadscale scrub, which occurs throughout the western half of the site. The approximate limits of the vegetation onsite are depicted in Figure DR51-3. Numerous small washes occur scattered throughout the site. No distinctive wash vegetation was observed on the site or within the buffer.

Disturbed (ruderal) vegetation was identified in two areas onsite and in the 250-foot buffer. The first is within the southern boundary of the site, near an abandoned orchard, and the second is along Tecopa Road in the southeastern corner of the site. This disturbed (or ruderal) vegetation is not a natural vegetation type. Tamarisk (*Tamarix ramosissima*), a noxious weed, was identified within the 250 feet of the south boundary along Tecopa Road, within this habitat. Peach trees (*Prunus persica*) and planted blue Arizona cypress (*Cupressus arizonica* var. *glabra*) occur within the abandoned orchard. These are the only trees observed onsite.

Mesquite thickets dominated by honey mesquite (*Prosopis glandulosa*) with a shrub-like growth form occur on the sandy dunes within the 1-mile buffer, east of and adjacent to the HHSEGS site.

2.1.1 Mojave Desert Scrub

Mojave Desert scrub is dominated by evergreen and drought-deciduous shrubs 1 to 4 feet in height and is common throughout much of the Mojave Desert from 2,000 to 3,500 feet in elevation. It is found on many different soil types, on level and sloping terrain. The most common dominant shrubs are creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*).

Mojave Desert scrub is the dominant vegetation in the eastern half of the site. Within the site and the 250-foot buffer, it occurs mainly in sandy-gravelly gray or brown soils. Along with creosote bush and burrobush, associates include four-wing saltbush (*Atriplex canescens*), and rabbit-thorn (*Lycium pallidum* var. *oligospermum*). In some areas, rabbit-thorn dominates and creosote bush is an associate. The understory consists of a large variety of mainly native annual forbs, a few species of native perennial grasses, and a few species of non-native grasses. Included within this type are large pebble flats that can be sparsely vegetated or densely invaded by the non-native invasive plant, halogeton (*Halogeton glomeratus*). Non-native invasive plants are locally common along roads, especially red brome (*Bromus madritensis* ssp. *rubens*), halogeton, and African mustard (*Malcolmia africana*).

2.1.2 Shadscale Scrub

Shadscale scrub is composed of low-growing, gray-green shrubs with some tolerance for alkaline conditions. It is widespread in the sinks and basins of the northern Mojave Desert. It typically grows in pale, silty soils, usually in valleys, sometimes on the higher margins of dry lakes.

As shown in Figure 3, the western half of the site and the 250-foot buffer is dominated by shadscale scrub consisting of densely spaced gray-green evergreen shrubs, mainly 2 feet or less in height. The dominant shrub is shadscale. Associated shrubs include: winterfat (*Kraschenninikovia lanata*), desert allysum (*Lepidium fremontii*), Anderson's boxthorn (*Lycium andersonii*), rabbit-thorn, Emory's globemallow (*Sphaeralcea emoryi*), and Prince's plume (*Stanleya pinnata*). The understory varies from sparse to dense, depending on local hydrology. Drier sites are often barren, except for scattered annuals such as Pahrump Valley buckwheat and showy gilia (*Gilia cana*). Low areas where water ponds during the rainy season are densely vegetated with hog potato (*Hoffmannseggia glauca*), freckled milk-vetch (*Astragalus lentiginosus* var. *fremontii*), African mustard, and red brome. Weeds are abundant in shadscale scrub in ponded water areas, and along roads.

2.1.3 Mesquite Thicket

The vegetation within the 1-mile buffer was mapped during the reconnaissance-level survey. Mesquite thickets dominated by honey mesquite (*Prosopis glandulosa*) occur on the sandy dunes within the 1-mile buffer, east of and adjacent to the HHSEGS site Figure 3. These thickets do not include mesquite plants with a single main trunk or arborescent growth form. They are formed on large sandy dunes with unstable soils, and are not associated with washes. They do not qualify as mesquite bosque and are thus not a CDFG sensitive natural community type known from the project region.

2.1.4 Cactus and Yucca Counts

Cacti were rarely observed and are uncommon at the HHSEGS site and within the 250-foot buffer. Fewer than 100 individuals of cacti were observed during the protocol-level surveys. All of these were of common and widespread species such as: beavertail (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and pencil cholla (*Opuntia ramosissima*). No yucca occur on the site or within the 250-foot buffer.

2.2 Potential Raptor Habitats

No nests were observed on the HHSEGS project site. Native trees do not occur within the project area. The areas within and adjacent to the project area may provide suitable foraging habitat for this species. Golden eagle nesting habitat is not available on the project site but may be available in the higher elevations within 10 miles of the site. Potential eagle nesting habitats occur in the Nopah Range to the west and the Kingston Range to the south of the HHSEGS site in California.

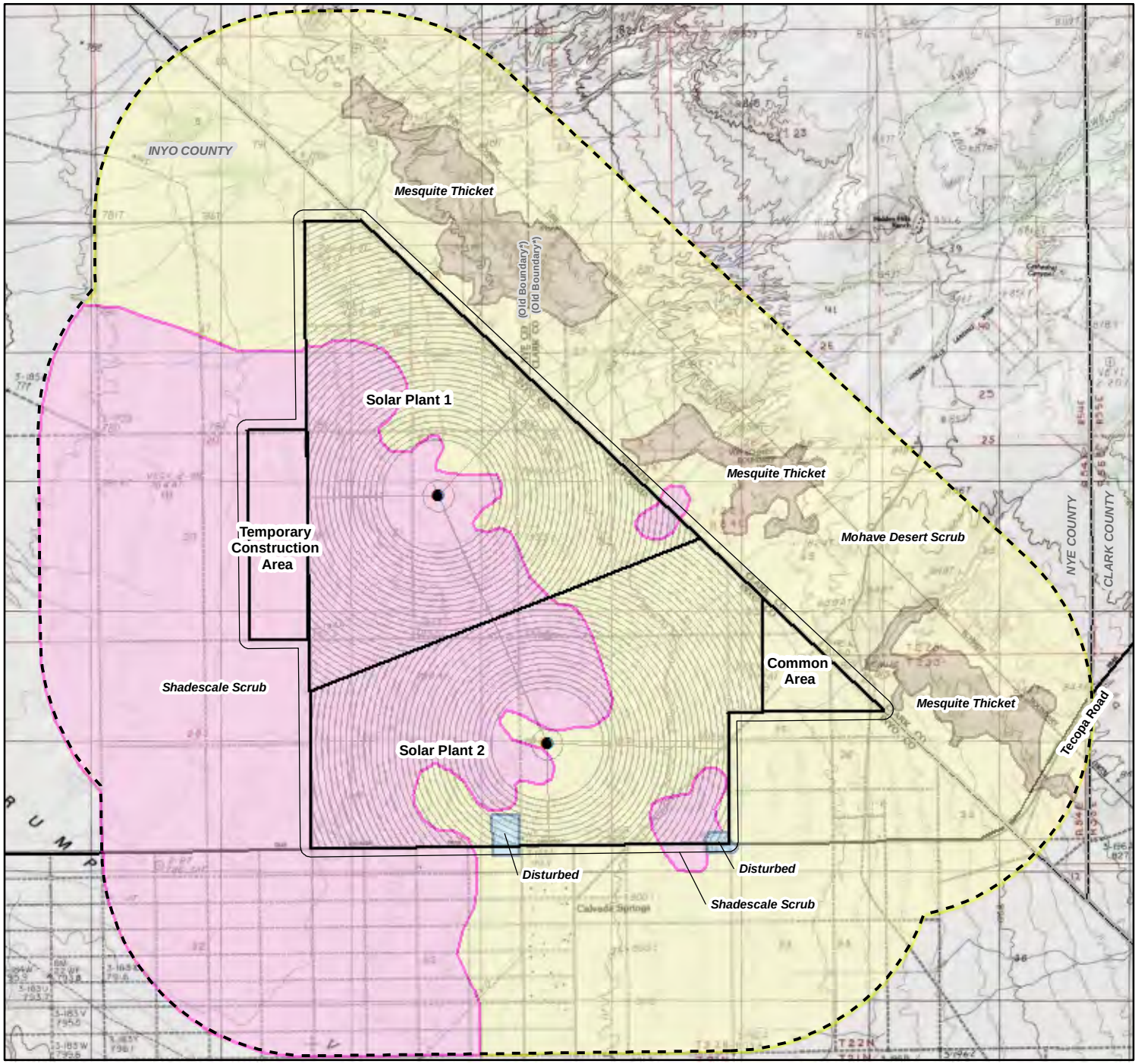
Habitat requirements are described in The Interim Golden Eagle Technical Guidance: Inventory And Monitoring Protocols; And Other Recommendations In Support Of Eagle Management And Permit Issuance (Pagel et al., 2010):

> Golden Eagles nest on cliffs, in the upper one third of deciduous and coniferous trees, or on artificial structures (windmills, electricity transmission towers, artificial nesting platforms, etc.; Phillips and Beske 1990, Kochert et al. 2002). Golden Eagles build nests on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat (Beecham 1970, Beecham and Kochert 1975, Menkens and Anderson 1987). Usually, sticks and soft material are

> added to existing nests, or new nests are constructed to create a strong, flat or bowl shaped platform for nesting (Palmer 1988, Watson 1997, Kochert et al. 2002). Sometimes Golden Eagle will decorate multiple nests in a single year; continuing to do so until they lay eggs in the selected nest. The completed nest structure(s) can vary from large and multi-layered; or a small augmentation of sticks in caves with little material other than extant detritus (Ellis et al. 2009). Most Golden Eagle territories have up to 6 nests, but they have been found to contain up to 14 nests (Palmer 1988, Watson 1997, Kochert et al. 2002). (Pagel et al., 2010)

Avian use of the Project site is expected to be low. This is a dry Mojave Desert area with no natural open water sources and light vegetation. Food sources for avian populations are very sparse. Community refuse may provide a food source for some bird species, particularly ravens.

Moreover, native trees do not occur within the project area and no raptor nests were observed during the course of the field surveys. Tamarisk (*Tamarix ramosissima*), a noxious weed, was identified within the 250 feet of the south boundary of the Project along Tecopa Road. Peach trees (*Prunus persica*) and planted blue Arizona cypress (*Cupressus arizonica* var. *glabra*) occur within the abandoned orchard. These are the only trees observed onsite.



LEGEND

- Solar Power Tower
- HHSEGS Boundary
- 250-foot Buffer of HHSEGS
- 1-mile Buffer of HHSEGS

Vegetation Coverage

- Mesquite Thicket
- Disturbed (excluding roads)
- Shadescale Scrub
- Mohave Desert Scrub

*County boundary moved due to annexation, 2001

Data Source:
GANDA Vegetation Survey, 2011

N

0 1,800 3,600
Feet

Figure DR51-3
Vegetation Map
Hidden Hills Solar Electric Generating System

Surveys

3.1 Existing Golden Eagle Survey Data

A ground survey of the area was conducted between May 12th and 13th, 2011. The survey examined potential habitat areas within 10 miles of the site, and identified 1 large nest, located on a cliff ledge in the Emigrant Pass, that had probably belonged to a pair of raptors earlier that season.

After the ground surveys, two CH2M HILL biologists completed 4 rounds of avian point count surveys at 39 survey points on the project site between March 23rd and April 14th, 2011. A single golden eagle observation was made during the survey (CH2M HILL, 2011a).Golden eagles were also seen foraging onsite during the desert tortoise presence/absence surveys (Sundance, 2011).

Helicopter surveys of the potential golden eagle nesting habitat within 10 miles of the project site were conducted on October 3 through 7, 2011. Locations of nests were recorded with a GPS device and photographed.

In addition to the field survey work, data from previous golden eagle reports was obtained from the Bureau of Land Management in California and Nevada. In addition, as discussed in Section 3.2 below, the Applicant consulted with the Staffs of California and Nevada federal and state agencies. Golden eagle did not appear in the results of the pre-survey query of the CNDDB.

3.2 Consultation History

Several agencies in California and Nevada were consulted concerning golden eagle protocol, existing data, conflicts and alternate survey strategies. Table DR51-1 summarizes the consultations.

TABLE DR51-1

Summary of Consultations

Date	Contact	Topic
3/16/2011	Katie Kleinick and Mark Slaughter BLM, Las Vegas	Need for golden eagle surveys
5/2/2011	William Quillman and Christopher Otahal BLM, Barstow	Golden eagle surveys and restrictions in wilderness areas and big horn sheep lambing areas
5/4/2011	Jeff Villepique, CDFG	Proscription of helicopter surveys before lambs wean timing of lambing and weaning
9/7/2011	Heather Beeler, USFWS	Concurrence on strategy of helicopter survey in the fall and ground surveys in the spring
9/8/2011	Brad Hardenbrook NDOW	Legal status of bighorn sheep in Nevada Voluntary avoidance of lambing season NDOW staff concurrence on survey strategy

TABLE DR51-1

Summary of Consultations

Date	Contact	Topic
9/12/2011	Mark Slaughter BLM, Las Vegas	Referral to Jason Barangan, BLM, LV and Brian A. Novosak, USFWS, NV
9/15/2011	Jayson Barangan BLM, NV	Golden eagle survey buffer Bighorn sheep lambing avoidance MEPA issues
9/19/2011	Brian Novosak USFWS, Las Vegas, NV	Golden eagle surveys and lambing season Referral to Pat Cummings, NDOW
9/19/2011	Ashleigh Blackford USFWS, Ventura, CA	Referral to Ray Bransfield, USFW, Ventura, CA No federal compensatory mitigation for desert kit fox or Nelson's big horn sheep Referral to CDFG on BHS lambing conflicts
9/26/2011	Jayson Barangan BLM, NV	Referral to Lew Brownfield, GIS Specialist, BLM, Las Vegas for existing golden eagle nest data
9/26/2011	Christopher Otahal CDFG	Request for golden eagle nest data Referred to BLM, Las Vegas, NV
9/27/2011	Lew Brownfield BLM, Las Vegas, NV	Referral to Chet VanDellen at NDOW for golden eagle GIS data set
9/28/2011	Dr. Larry LaPre BLM, CA	Request for golden eagle nest data Discussion of lambing restrictions Concurrence on survey strategy Mentioned future statewide nest survey
9/28/2011	Chet Van Dellen NDOW	Data request for nest locations
10/10/2011	Christine Klinger NDOW	Data sharing agreement Request for completion by 11-20-2011 to avoid the big horn sheep hunt Request for data results
10/20/2011	Raymond Bransfield USFWS, Ventura, CA	Golden eagle 10-mile buffer around the site 2-mile survey buffer along transmission line

3.3 Golden Eagle Survey Restrictions

Golden eagle breeding surveys are generally conducted during the nesting season, which ranges from January 1 to August 31 (Kochert et al., 2002). Helicopter surveys of mountainous potential nesting habitats were not conducted in the spring of 2011 because of the presence of lambing

bighorn sheep populations in the Kingston Mountain Range and the Nopah Mountain Range. CDFG prohibits helicopter surveys in known bighorn sheep lambing areas. However, they are permitted after lambs are weaned (Villepique, 2011). Ground observations are recommended to inventory cliff complexes and to monitor potential and known golden eagle territories in bighorn sheep lambing areas (Pagel et al., 2010).

3.4 HHSEGS Golden Eagle Survey Strategy

The HHSEGS survey approach was proposed by CH2M HILL and developed in consultation with CDFG, NDOW, BLM and USFWS (Barangan, 2011; Klinger, 2011; LaPre, 2011; Beeler, 2011). The purpose of the strategy is to avoid the use of helicopters in known bighorn sheep lambing areas and allow the efficient gathering of information.

The approved strategy involves surveys in the fall and spring. Fall nest inventories were conducted using a helicopter after big horn sheep had weaned. This time frame is from September to December, which allows efficient discovery and characterization of nests without harassing big horn sheep lambs. Data collected included GPS coordinates of nests, photographs of nests, observations of shell fragments, whitewash, feathers and other sign and assessment of whether the nest is an eagle nest or that of another raptor. (Of course, surveys cannot definitely determine whether the nest was active in the previous breeding season.) Helicopter surveys were completed before November 20, 2011, in order to not interfere with the bighorn hunting season (Klinger, 2011).

Additional ground surveys will be conducted during the spring nesting season of 2012. Observers will develop a detailed field plan based on the nest locations and nest conditions recorded in the fall 2011 helicopter survey.

These additional ground surveys will be conducted in the spring according to Pagel et al. (2010):

> A nesting territory or inventoried habitat should be designated as unoccupied by Golden Eagles ONLY after at least 2 complete aerial surveys in a single breeding season. In circumstances where ground observation occurs, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods should be at least 30 days apart for inventories to detect occupancy, and at least 30 days apart for monitoring of known territories. Intervals between observations at occupied nesting territories may need to be flexible and should be based on the behavior of the adults observed, the age of any young observed, and the data to be collected (see below, Section IX [in the original document]). Dates of starting and continuing inventory and monitoring surveys should be sensitive to local nesting (i.e. laying, incubating, and brooding) chronologies, and would be conducted during weather conditions favorable for aerial surveys from medium to long range distances (300 – 700 meters).
>
> The first inventory and monitoring surveys should be conducted during courtship when the adults are mobile and conspicuous. When a survey of historical territories is conducted, observers should focus their search on known alternative nests, and also carefully examine the habitat for additional nests which may have been overlooked or recently constructed. A ‘decorated’ nest will be sufficient evidence to indicate the probable location of a nesting attempt. If a decorated nest or pair of birds is located, the search can then be expanded to inventory likely habitat

adjacent to the discovered territory to see if additional golden eagle territories can be observed. (Pagel et al., 2010)

The first spring inventory and monitoring survey will be conducted during courtship when the adults are mobile and conspicuous. Nesting chronologies vary; however, there are some generalities. In California and in Texas, eagles start courtship in territories in mid to late December (Palmer 1988, Hunt et al. 1997). Therefore, surveys will be conducted at some time in January or February 2012.

Second nest surveys will be conducted when chicks can be expected to be observable in nests. This is generally in early March. Hatching can begin as early as late January in southern California (Dixon 1937, Hickman 1968). Dixon (1937) reported a mean laying date in California of February 20, but reported that the laying date is delayed by weather that is cooler than average. Watson (1997) reported that incubation periods have been observed to range from 41 to 45 days. In an average year, hatching can be expected between April 1 and 5.

Fledging success is best determined by observation greater than 51 days after hatching, which is after May 22 in an average year. These observations may not be necessary.

3.5 Ground Surveys

Ground surveys to detect golden eagle nests and the selected nest at known territories are effective in habitat where observation points are established to observe areas on cliffs, utility towers, or in trees suspected to be nesting habitat (Pagel et al., 2010). Observation points will be established, based on data collected in the fall helicopter survey, where ground observation is feasible. Many of the nest locations are not accessible or observable from the ground because of the steepness of the terrain. Monitoring to document nesting success at known territories may occur solely via ground observations. Observation of known territories should use the methodology described for ground monitoring of potential habitat (Pagel et al., 2010).

3.6 Observer Qualifications

Pagel et al. (2010) proposes that surveyors should have the equivalent of 2 seasons of intensive experience conducting survey and monitoring of Golden Eagle and/or cliff dwelling raptors. Experience should be detailed and confirmed with references, and provided to action and regulatory agencies. All surveyors should be well-versed with raptor research study design and Golden Eagle behavior and sign, including nests, perches, mutes, feathers, prey remains, flight patterns, disturbance behavior, vocalizations, age determination, etc. Aerial surveys should be conducted by raptor specialists who have at least 3 field seasons experience in helicopter-borne raptor surveys around cliff ecosystems.

Consistent with guidance, ground surveyors with limited or no Golden Eagle experience should attend at least a 2-day Golden Eagle training session convened with classroom and field components. Trainers will be designated by the USFWS/USGS. Inexperienced or limited experience surveyors will be mentored by Golden Eagle specialists for at least 1-2 field seasons, depending on their experience level, and should assist with the preparation of at least 3 surveys and reports over at least 3 years. A Golden Eagle specialist is defined as a biologist or ecologist with 5 or more years of Golden Eagle or cliff dwelling raptor research/survey experience, possession of state/federal permit allowing capture, handling, and/or translocation of Golden Eagles and/or cliff dwelling raptors; and/or relevant research on raptors published in the peer reviewed literature (Pagel et al., 2010).

Mr. William J. Lukins conducted fall helicopter surveys. His professional qualifications satisfy the Observer Qualifications recommended for "helicopter-borne raptor surveys around cliff ecosystems," as presented in the USFWS Interim GOEA Monitoring Protocol Guidelines (March 2010) for the golden eagle (*Aquila chrysaetos*). His qualifying experience is described in the following section and in his resume in Exhibit DR51-1.

3.6.1 Helicopter Surveyor

Mr. Lukins is an experienced raptor biologist. He has conducted ground and aerial surveys for western North American raptor species in Wyoming, Montana, Idaho, Colorado, and California. For more than 7 years, he has executed protocol-level surveys in a variety of western habitats from fixed-wing aircraft and helicopters in accordance with protocols, direction, and guidelines from BLM, U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service, and state agencies. He has practical experience in the handling and banding of raptors. He has professional training and certification from the USFWS to conduct identification and surveys for a number of listed species and has been certified by the USFWS to work in and around aircraft.

Mr. Lukins has authored more than 25 survey reports and technical memorandums for industrial clients and agency reviews related specifically to raptor nesting and productivity. Due to the length and quality of his survey experience with cliff-dwelling raptors, he is appropriately considered a technical specialist for ground and aerial raptor nesting and productivity surveys. His resume is included in Attachment A.

3.6.2 Ground Surveyors

Potential ground surveyors include Mr. Lukins and Dan Williams. The resume of each is included in Exhibit DR51-1.

Mr. Williams is a staff biologist at CH2M HILL with experience conducting surveys for burrowing owls, Swainson's hawk and other raptors, riparian avian point counts, and general wildlife. He has more than 7 years of professional experience and more than 12 years of general field experience in avian ecology. He conducts general wildlife surveys in a wide variety of habitats throughout North America. He is experienced in using Global Positioning System technology for various mapping projects.

References

Barangan, Jayson. 2011. Personal communications on September 15, 2011 and September 26, 2011. Biologist, BLM, Nevada.

Beeler, Heather. 2011. Personal communication September 7, 2011. Regional Eagle Permit Biologist, US Fish and Wildlife Service, Sacramento, California.

Blackford, Ashleigh. 2011. Personal communication on September 19, 2011. Biologist, USFWS, Ventura, California.

Bransfield, Raymond, 2011. Personal communication on October 20, 2011. Biologist, USFWS, Ventura, California.

Brownfield, Lew. 2011. Personal Communication on September 27, 2011. GIOS Specialist, BLM, Las Vegas, Nevada.

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Dixon, J.B. 1937. The Golden Eagle in San Diego County, California. Condor 39:49-58.

Hardenbrook, Brad. 2011. Personal conversation September 8, 2011. Supervising Habitat Biologist, Nevada Department of Wildlife, Las Vegas, Nevada.

Hickman, G.L. 1968. The ecology and breeding biology of the golden eagle in southwestern Idaho and southeastern Oregon. Draft number 2, U.S. Dept. Int. Bur. Sport Fish. and Wildl. Washington, D.C.

Hunt, G.W., R.E. Jackman, T.L. Brown, D.E. Driscoll, and L. Culp. 1997. A population study of golden eagles in the Altamont Pass Wind Resource Area; second-year progress report. Predatory Bird Research Group, Long Marine Lab., UC Santa Cruz.

Kleinick, Katie and Mark Slaughter. 2011. Personal communication March 16, 2011. Biologists, BLM, Las Vegas, Nevada.

Klinger, Christine, 2011. Personal Conversation October 10, 2011. Diversity Biologist, Nevada Department of Wildlife.

Kochert, M.N., K. Steenhof, C.L. McIntyre and E.H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*). In A. Poole and F. Gill (eds). The Birds of North America, # 684. The Birds of North America, Inc. Philadelphia, Pennsylvania.

LaPre, Larry. 2011. Personal communication on September 28, 2011. Biologist, BLM, California.

Novosak, Brian. 2011. Personal communication on September 19, 2011. Biologist, USFWS, Las Vegas, Nevada.

Otahal, Christopher. 2011. Personal communication on September 26, 2011. Biologist, CDFG.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird Management, U.S. Fish and Wildlife Service.

Palmer, R.S. 1988. Golden eagle. IN R.S. Palmer (ed.). Handbook of North American Birds. Yale Univ. Press.

Quillman, William and Christopher Otahal. 2011. Personal communication May 2, 2011. Biologists, BLM, Barstow, California.

Slaughter, Mark. Personal communication on September 12, 2011. Biologist, BLM, Las Vegas, Nevada.

Sundance Biology, Inc. (Sundance). 2011. Presence/Absence Survey for the Desert Tortoise (Gopherus agassizii) and other Sensitive Wildlife on the Proposed Hidden Hills SEGS Project, Inyo County, California. November 30, 2011. Provided as Appendix 5.2F-R1 in Data Response Set 1B.

U.S. Fish and Wildlife Service (USFWS). 2010. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities.

Van Dellen, Chet. 2011. Personal communication on September 28, 2011. GIS Specialist, Nevada Department of Wildlife.

Villepique, Jeff, 2011. Personal communication on May 4, 2011. Wildlife Biologist, CDFG.

Watson, J. 1997. The Golden Eagle. T&AD Poyser, London.

Exhibit DR51-1
Resumes

William Lukins
William (BJ) Lukins
Wildlife Biologist

Education

B.S., Fish and Wildlife Management, Montana State University, Bozeman, 2000

Distinguishing Qualifications

- ArcGIS: Fully competent in collecting, managing, and analyzing spatial data, and producing high-quality maps
- Global Positioning System (GPS): Fully competent in utilizing hand-held Garmin and Trimble GPS units, as well as in applying mobile GPS applications for spatial data collection
- Endangered Species Act (ESA): Provides guidance for compliance with Section 7 on projects involving the Bureau of Land Management (BLM), and with Section 10 habitat conservation plans (HCPs) on private land projects
- Highly motivated, results-oriented individual with excellent communication, technical, and leadership skills

Relevant Experience

Mr. Lukins is an experienced raptor biologist currently working for CH2M HILL's Ecological Systems Group out of its Southern California, Santa Ana office. He has conducted ground and aerial surveys for western North American raptor species in Wyoming, Montana, Idaho, Colorado, and California. For more than 7 years, he has executed protocol-level surveys in a variety of western habitats, including both forested and non-forested mountainous and cliff topography. Surveys have been conducted from fixed-wing aircraft and helicopters for oil and gas development, pipelines, mining, and renewable energy projects in accordance with protocols, direction, and guidelines from BLM, U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service, and state agencies.

Mr. Lukins has practical experience in the handling and banding of red-tailed hawks (*Buteo jamaicensis*), rough-legged hawks (*Buteo lagopus*), and American kestrels (*Falco sparverius*) and in mist netting for northern saw whet owls (*Aegolius acadicus*). He has extensive experience in the handling of greater sage-grouse (*Centrocercus urophasianus*) and affixing individuals with solar GPS technology.

He has professional training and certification from the USFWS to conduct identification and surveys for Mexican spotted owl (*Strix* sp.), has completed the USFWS desert tortoise handling workshop, has been certified by the USFWS to identify and survey for black-footed ferret, has completed the USFWS mountain plover habitat assessment and identification workshop, has been certified by the USFWS to work in and around aircraft. His professional qualifications satisfy the Observer Qualifications recommended for "helicopter-borne raptor surveys around cliff ecosystems," as presented in the USFWS *Interim GOEA Monitoring Protocol Guidelines* (March 2010) for the golden eagle (*Aquila chrysaetos*).

Mr. Lukins has authored more than 25 survey reports and technical memorandums for industrial clients and agency reviews related specifically to raptor nesting and productivity. Due to the length and quality of his survey experience with cliff-dwelling raptors, he is appropriately considered a technical specialist for ground and aerial raptor nesting and productivity surveys.

Representative Projects and Dates of Involvement

Biologist; Emma and Will Wind Farm Projects; Wyoming Wind and Power, LLC; Wheatland, Wyoming; 2011. Conducted helicopter aerial surveys to document nest locations of raptor species, primarily golden eagles, on approximately 432,586 acres in support of a proposed facility for generating wind energy.

Biologist; River Bluffs Project; Calico Solar; Barstow, California; April 2011. Conducted pedestrian and windshield surveys to evaluate potential eagle nesting habitat and to document activity status of observed nests. The survey area consisted of approximately 245,387 acres. Of that area 10,154 acres were determined to be suitable potential eagle nesting habitat, and 52,119 acres were marginally suitable. The remaining 183,114 acres were determined to be unsuitable habitat.

Biologist; Alpine Solar Project; NRG Energy; Neenach, California; March 2011. Provided professional assistance to the lead biologist and project manager for a Los Angeles County solar energy project regarding a compliance hearing for the California Environmental Quality Act (CEQA). The process included technical oversight and review of biological resource studies and preparation to address opposition by a local conservation organization. Conducted assessments of habitat suitability for burrowing owl (*Athene cunicularia*).

Biologist; North Sky River Wind Energy; NextEra; Mohave Desert, California; June 2010 - ongoing. Lead biologist in support of baseline data collection efforts for multiple species and concerns for both state- and federal-listed species including burrowing owl, American badger, and Mohave ground squirrel. Conducted a series of three helicopter aerial surveys to document raptor nest locations and nesting status, including golden eagle within 10 miles (project covered a total of 356,815 acres or 558 square miles) and Swainson's hawk within 5 miles of a proposed facility for generating wind energy.

Biologist; Blue Sky Wind Energy; NextEra; Lancaster, California; March 2011 - ongoing. Conducted a series of three helicopter aerial surveys to document raptor nest locations and nesting status, including golden eagle within 10 miles (project covered a total of 378,426 acres) and Swainson's hawk within 5 miles of the proposed facility for generating wind energy.

Biologist; Vernon Renewable Energy Lands; City of Vernon; California; May 2011 - ongoing. Conducted helicopter aerial surveys to document locations of raptor nests and nesting status, including golden eagle within 10 miles (project encompassed a total of 678,139 acres or 1,060 square miles) of proposed renewable energy lands.

Biologist; Beacon Solar; NextEra; California City, California; May 2011 - ongoing. Conducted helicopter aerial surveys to document locations of raptor nests and nesting status, including golden eagle within 10 miles (project covered a total of 252,304 acres or 394 square miles) of proposed solar electric generating facility.

Biologist; Wind Project; Confidential Client; California; 2011. Conducted an aerial assessment of potential golden eagle nesting habitat and documented the status of a known golden eagle nest in support of preliminary baseline data collection efforts.

Experience Prior to CH2M HILL

Lead Biologist; Natural Gas Resource Development; Anadarko Petroleum Company; Wyoming, Montana, and Colorado; 2004-2009. Biological lead on a variety of yearly state and federal wildlife compliance monitoring and habitat delineation efforts. Included in these efforts were visual and acoustical surveys for mountain plover (*Charadrius montanus*), along with habitat identification and delineation for the species. Performed counts and documentation of leks for the greater sage-grouse. Also, performed identification and delineation for mountain plover habitat and presence/absence surveys for the species. Performed identification and delineation of white-tailed and black-tailed prairie dog habitats. Performed identification and delineation of burrowing owl habitat and presence/absence surveys for the species. Conducted annual aerial and ground surveys to document raptor nest locations and annual nesting status including golden eagles at development sites in Wyoming, Montana, and Colorado.

Lead Biologist; Natural Gas Resource Development; EnCana Oil and Gas; Wyoming, Montana, and Colorado; 2004-2009. Biological lead on a variety of state and federal wildlife compliance monitoring and habitat delineation efforts. Included in these efforts were visual and acoustical surveys for mountain plover (*Charadrius montanus*), as well as habitat identification and delineation for the species. Performed lek counts and documentation for greater sage-grouse. Performed identification and delineation of habitats of white-tailed and black-tailed prairie dog. Performed identification and delineation of burrowing owl habitat, as well as presence/absence surveys for the species. Conducted inventories of special-status plant species. Performed annual aerial and ground surveys to document raptor nest locations and annual nesting status, including golden eagles, at development sites in Wyoming, Montana, and Colorado.

Project Manager; Natural Gas Resource Development; ConocoPhillips Company; Wyoming; 2004-2009. Project manager for an expanding natural gas project within central Wyoming. This project included yearly state and federal compliance monitoring, as well as identification and delineation of habitat for a variety of wildlife species, including greater sage-grouse lek counts. Performed a multi-year greater sage-grouse telemetry study to identify

landscape-level and local-level habitat use and seasonality movements across the landscape. More than 100 birds were trapped and affixed with solar GPS technology. Performed visual and acoustical surveys for mountain plover, along with habitat identification and delineation for the species. Conducted a big game study to identify landscape-level habitat use for mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*). Identified and delineated white-tailed prairie dog habitats. Performed identification and delineation of burrowing owl habitat, as well as presence/absence surveys for the species. Conducted annual aerial and ground surveys to document raptor nest locations and to evaluate annual nesting status, including golden eagles.

Biologist; Natural Gas Resource Development; ExxonMobil; Wyoming; 2005-2007. Team leader on a 2-year study to identify and delineate suitable Canada lynx (*Lynx canadensis*) habitat in western Wyoming, including visual and acoustical surveys to document nesting northern goshawk (*Accipiter gentilis*) on a proposed gas development site. Because of vast mountainous terrain, much of this work was conducted with the aid of helicopter resources for shuttle from site to site.

Lead Biologist; Natural Gas Resource Development; Fidelity Oil and Gas, Inc.; Wyoming, Montana, and Colorado; 2004-2009. Performed yearly state and federal compliance monitoring and habitat delineation for a variety of wildlife species, including greater sage-grouse lek counts and documentation. Conducted identification and delineation of white-tailed and black-tailed prairie dog habitats. Performed identification and delineation of burrowing owl habitat, as well as presence/absence surveys for the species. Conducted annual aerial and ground surveys to document raptor nest locations and annual nesting status, including golden eagles, at development sites in Wyoming, Montana, and Colorado. Conducted extensive habitat clearance surveys for black-footed ferret in Wyoming.

Biologist; Waterfowl Assessment; State of Idaho; Duck Valley, Idaho; 2005. Performed study of potential impacts of water development projects to migrating waterfowl on the Shoshoni Paiute Indian Reservation. Employed aerial and ground surveys to quantify baseline use and evaluate potential impacts resulting from the proposed action. Conducted point-count surveys to identify migrating passerine species.

Biologist; Rocky Mountain Front Institute of Natural History; Bozeman, Montana; June-July 2003. Assisted in the trapping and banding of red-tailed and rough-legged hawks for a study of seasonal migrants and density per linear mile. Assisted in the mist netting of northern saw-whet owls for an ongoing effort to better identify current distribution range of the species.

Field Biologist; Innoko National Wildlife Refuge; USFWS; Alaska; May-August 1998. Worked as a field biologist conducting point-count surveys for passerine species, moose browse surveys, aquatic vegetation mapping, and aerial surveys to document sandbar locations along the Kuskokwim River.

Certifications

Aviation Occupational Safety-certified to work in and around aircraft (USFWS)
Watercraft operation, navigation, and safety training (USFWS)
Firearms safety and handling certification (USFWS)
All Terrain Vehicle (ATV) operation and safety training (U.S. Geological Survey [USGS])
Bear Awareness training and protection (USGS)
Mexican Spotted Owl identification and survey qualifications certification (USFWS)
Black-footed ferret identification and survey qualifications certification (USFWS)
Desert Tortoise Training and Handling Workshop (Desert Tortoise Working Group)

Publications and Presentations

Lukins, William J., Scott Creel, Brent Erbes, Goran Spong. 2004. "An Assessment of the Tobacco Root Mountain Range in Southwestern Montana as a Linkage Zone for Grizzly Bears." *Northwest Science*. Washington State University, Pullman, WA. Vol. 78, No. 2, pp. 168-172.

Ouren, Douglas S., Robert A. Garrot, Raymond D. Watts, William J. Lukins. 2003. "The Impacts of Human Use on Grizzly Bear Habitat Selection." International Conference on Ecology and Transportation Proceedings.

Thompson, K., H. Lukins, and W. Lukins. (In press). 2007. "*Myxobolus cerebralis* Triactinomyxon Filtration and Concentration: A Comparison of Methods." *Journal of Aquatic Animal Health*.

Daniel Williams
Staff Biologist

Education
B.S., Geography (Environmental Studies Minor), 2004

Distinguishing Qualifications
Experience conducting surveys for burrowing owls, Swainson's hawk and other raptors, riparian avian point counts, and general wildlife

Performs biological monitoring within project sites and construction zones

Relevant Experience
Mr. Williams is a staff biologist with 5 years of professional experience and more than 10 years of general field experience in avian ecology. He conducts general wildlife surveys in a wide variety of habitats throughout North America. He is experienced in using Global Positioning System technology for various mapping projects.

Representative Projects

Project Biologist; Potential Solar Site Studies; Bright Source; San Bernardino County; California; 3/2009 to 4/2009. Helped develop an avian point count transect protocol with Bureau of Land Management (BLM) biologists, then implemented said protocol at a proposed solar site in southern California.

Project Biologist; Lodi Energy Center; Northern California Power Agency; San Joaquin County, California; 2/2009 to 7/2009. Performed pre-construction biological surveys on a proposed pipeline route which included mapping and monitoring nests of the California Threatened Swainson's hawk, and checking irrigation canals for the Federal Threatened giant garter snake.

Project Biologist; Plant 42; U.S. Air Force; Palmdale, California; 11/2008. Performed burrowing owl clearance surveys prior to disturbance of concrete rubble piles near military flight line.

Project Biologist; Bird Surveys; City of Las Vegas; Las Vegas, Nevada; 5/2008 and 5/2009. Performed two annual surveys for nesting birds along an urban creek corridor, marked creek with flagging, and drafted a report describing locations of bird nests prior to yearly mowing of the vegetation along creek.

Project Biologist; Line 406/Line 407 Pipeline Project; Pacific Gas and Electric; Sacramento, California; 4/2008 to 5/2008 and 4/2009 to 5/2009. Conducted Swainson's hawk nesting survey according to California Department of Fish and Game guidelines. Suitable nest trees located within 0.5 miles of the approximately 44-mile pipeline route were surveyed for Swainson's hawk or other raptor use.

Project Biologist; Kinder Morgan Energy Partners; Rocklin, California; 6/2008. Conducted preconstruction surveys prior to pipeline maintenance work. Surveys included identification of nesting birds and other sensitive wildlife species. Performed biological monitoring during vegetation removal to minimize disturbances to riparian vegetation and waterways.

Project Biologist; Confidential Project; Owl Surveys; Niland, California; 7/2009 to 8/2009. Performed western burrowing owl surveys according to 1993 California Burrowing Owl Consortium survey protocol on two proposed geothermal sites near the Salton Sea.

Biological Monitor; Worker Environmental Awareness (WEAP) Training; Dow Chemical; Pittsburg, California; 6/2009 to Present. Delivered Worker Environmental Awareness (WEAP) training to contractors before they started ground disturbance work on a transmission line project, and conducted pre-disturbance biological investigations on the project site.

Project Biologist; Bridge Replacement; Union Pacific Railroad; Cottonwood, California; 7/2009 to 9/2008. Performed preconstruction surveys for western pond turtle, white-tailed kite, and silky cryptantha. Monitored bridge construction crews during construction of a new concrete bridge as well as demolition of the old structure. Maintained compliance with measures set forth in the California Department of Fish and Game's Streambed Alteration Agreement, U.S. Army Corps of Engineers Nationwide Permit 14 conditions, and the Regional Water Quality Control Board's Water Quality Certification conditions.

Project Biologist; Annual Compliance Monitoring; Cosumnes Power Plant; Sacramento, California; 4/2008. Performed annual survey of plant laydown, water pipeline, and concrete batch plant construction areas to determine success of re-vegetation efforts after construction.

Project Biologist; Wind Corridor Studies; First Wind; Milford, Utah; 4/2008. Performed burrowing owl transect surveys of an 18,000-acre project site for a wind farm and utility corridor. Duties included mapping mammal burrows and documenting burrowing owl and kit fox observations, as well as identifying general wildlife resources.

Project Biologist; Camp Parks RFTA Biological Compliance—Oakland RPX, OMS and AMSA Construction; U.S. Army Corps of Engineers; Dublin, California; 3/2008 to 4/2008. Performed burrowing owl clearance surveys and conducted biological monitoring of burrowing owl populations within construction zones.

Experience Prior to CH2M HILL

Burrowing Owl Survey Crew Leader; Western Riverside County Multiple Species Habitat Conservation Plan; 3/2006 to 2/2008. Responsible for organizing and supervising a burrowing owl survey crew and a colony census crew. Conducted riparian avian point counts, coastal sage avian transects, and burrowing owl colony census in accordance with regulatory agency protocols. Also conducted Delhi Sands Flower-loving Fly surveys, baiting of small mammal traps for Stephens' Kangaroo-Rat grids, and vegetation surveys associated with all avian protocols. Completed data entry in Access and Excel formats and drafted seasonal reports of survey and census results.

Avian Biologist; North Carolina Wildlife Resources Commission; 1/2005 to 9/2005. Conducted state-wide winter bird transect surveys, vegetation surveys, Bald Eagle nest monitoring, avian point counts, and songbird nest searches. Established frog and bobwhite call routes.

Avian Field Technician; Iowa State University; 5/2002 to 8/2002. In support of a graduate research investigation, performed avian point counts and nest search protocol and assisted with mist netting and territory mapping of Bobolinks for a student in northern Iowa and southern Minnesota. Also conducted vegetation surveys and completed data entry of survey results.

Park Naturalist; Sandy Hook Bird Observatory; New Jersey Audubon; 3/2002 to 5/2002. At Sandy Hook Bird Observatory, served as park naturalist and conducted a spring migration census.

Avian Field Technician; University of Wisconsin; 5/2001 to 8/2001. Performed avian point count and nest search protocol, assisted with mist netting Grasshopper Sparrows and conducted vegetation surveys and data entry duties as part of a graduate research investigation conducted at Fort McCoy Military Reservation in western Wisconsin.

Biological Field Technician; Iowa State University; 5/2000 to 8/2000. Conducted avian point count protocol and butterfly surveys as part of a graduate research investigation conducted in the Grand Teton/Yellowstone Park region.

Specialized Training

OSHA-SARA 40-hour Health and Safety Course
OSHA 10-hour Construction Safety
CPR Certification, American Red Cross
Standard First Aid Certification, American Red Cross

Attachment DR55-1
HHSEGS Spring 2011 Bat Surveys
Technical Memorandum

ATTACHMENT DR55-1

TECHNICAL MEMORANDUM CH2MHILL

Hidden Hills SEGS Spring 2011 Bat Surveys

PREPARED FOR: James Marble/SCO

PREPARED BY: Rebecca Allen/DFW

DATE: November 14, 2011

PROJECT NUMBER:

The Hidden Hills Solar Electric Generating System (HHSEGS) Project Site area is being considered by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC as a solar thermal power site. As part of the ecological investigation for the site, bat surveys were conducted. Two CH2M HILL biologists completed four rounds of bat observations at various boundary points on the HHSEGS project site near the Calvada Springs/Charleston View area in Inyo County, California. The observations were conducted at dusk on evenings of the avian surveys, from March 23rd to April 14th, 2011, from 30 minutes prior to sunset until dark. The purpose of the bat survey is to determine the use and diversity of any potential bats within the HHSEGS project site during the spring.

Methodology

Four locations were accessed along the boundary of the HHSEGS project site, visited on sequential nights. Three locations were at the corner points of the site to cover the northwest, southwest and southeast areas. The final location was next to the abandoned orchard at Silver Street and Tecopa Road. CH2M Hill Biologists arrived 30 minutes prior to sunset at the night's observation point. The vehicle was turned off at arrival to allow activity to return to pre-disturbance conditions. Emphasis was put on the mountains, trees and residences in the area for sightings, and open skies were also observed. Surveys concluded when it became dark.

Site Description

The habitat on the site could generally be described as open desert scrub populated extensively with creosote and sagebrush, crossed by a few intermittent washes, and sitting in a wide valley framed by mountains. Scattered homesteads, some occupied and some abandoned, are present near the site. Not all structures are adequately secured to prevent bats or other species from occupying them. Non-native trees, such as *Cupressus arizonica* var. *glabr*a (blue Arizona cypress), *Gleditsia triacanthos* (honey locust), *Prunus persica* (peach - planted), *Tamarix ramosissima* (tamarisk) with a maximum height of 25 feet, are scattered among the scattered residences and around the perimeter of an abandoned orchard within the project boundary. Elevation on the site ranges from approximately 2,585 to 2,685 feet, while peaks over 6,000 feet high stand within 10 miles to the west, and peaks over 11,000 feet high stand within 25 miles to the northeast.

During observations, the temperature was primarily in the low 70 degrees Fahrenheit (°F) but dropped to the low 60s °F during one visit. The wind typically ranged from calm to 10 mph, but during one visit was gusting to 20 mph.

Results

During the eight surveys conducted between March 23rd and April 14th, 2011 no bats were observed. Typical roost locations such as trees, residences and mountain cliffs are present in the general vicinity (i.e., within 10 miles from the site), but no bat activity was identified. There is no water onsite or immediately adjacent to the project area to attract bats. There were a variety of insects observed within the project boundary but not in very dense populations.

Attachment DR57-1
CFD Analysis

ATTACHMENT DR57-1

Temperature Distribution of the Air that Flows along the SRSG

CFD ANALYSIS

November 2011

Side View of the Tower

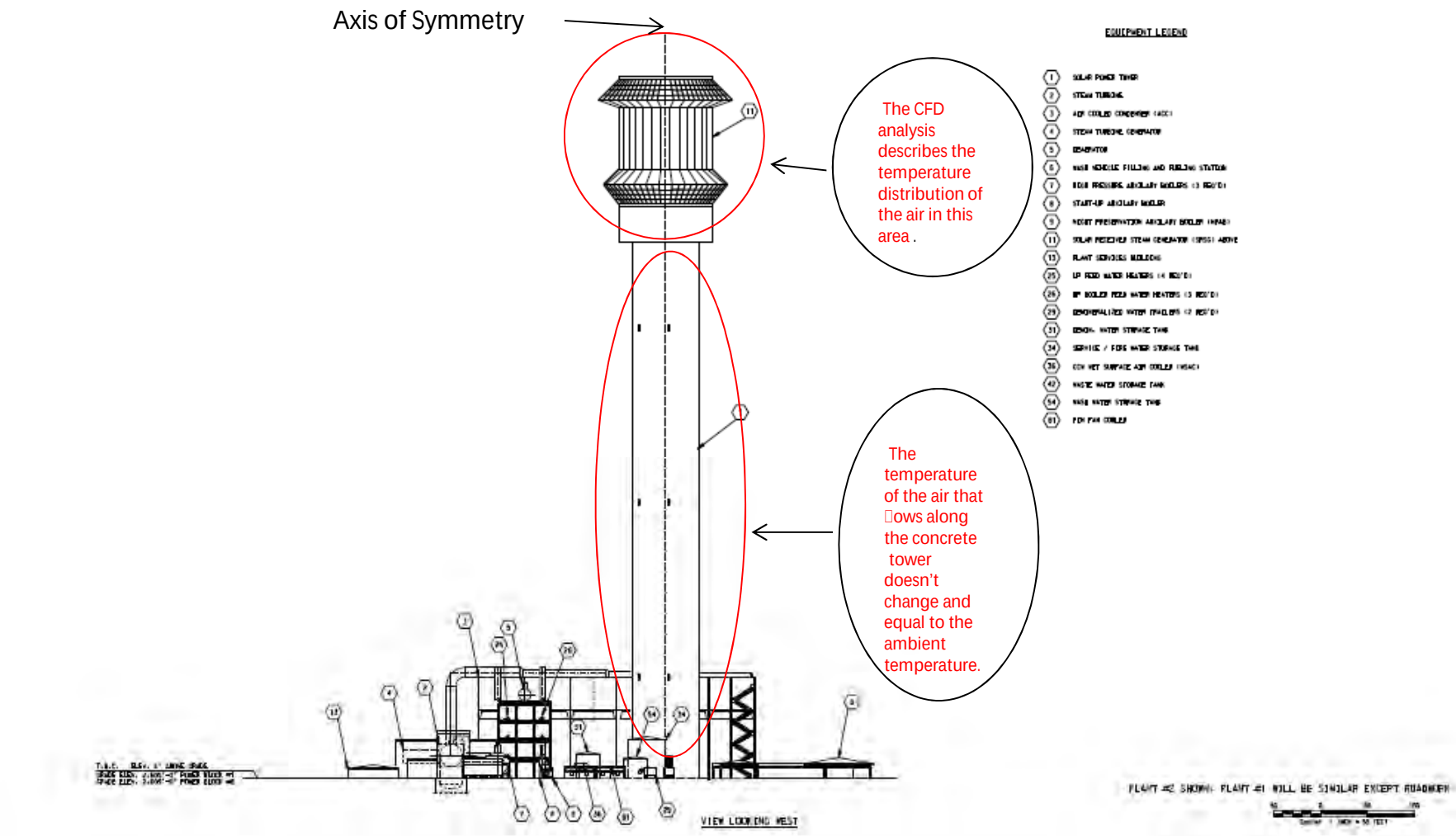
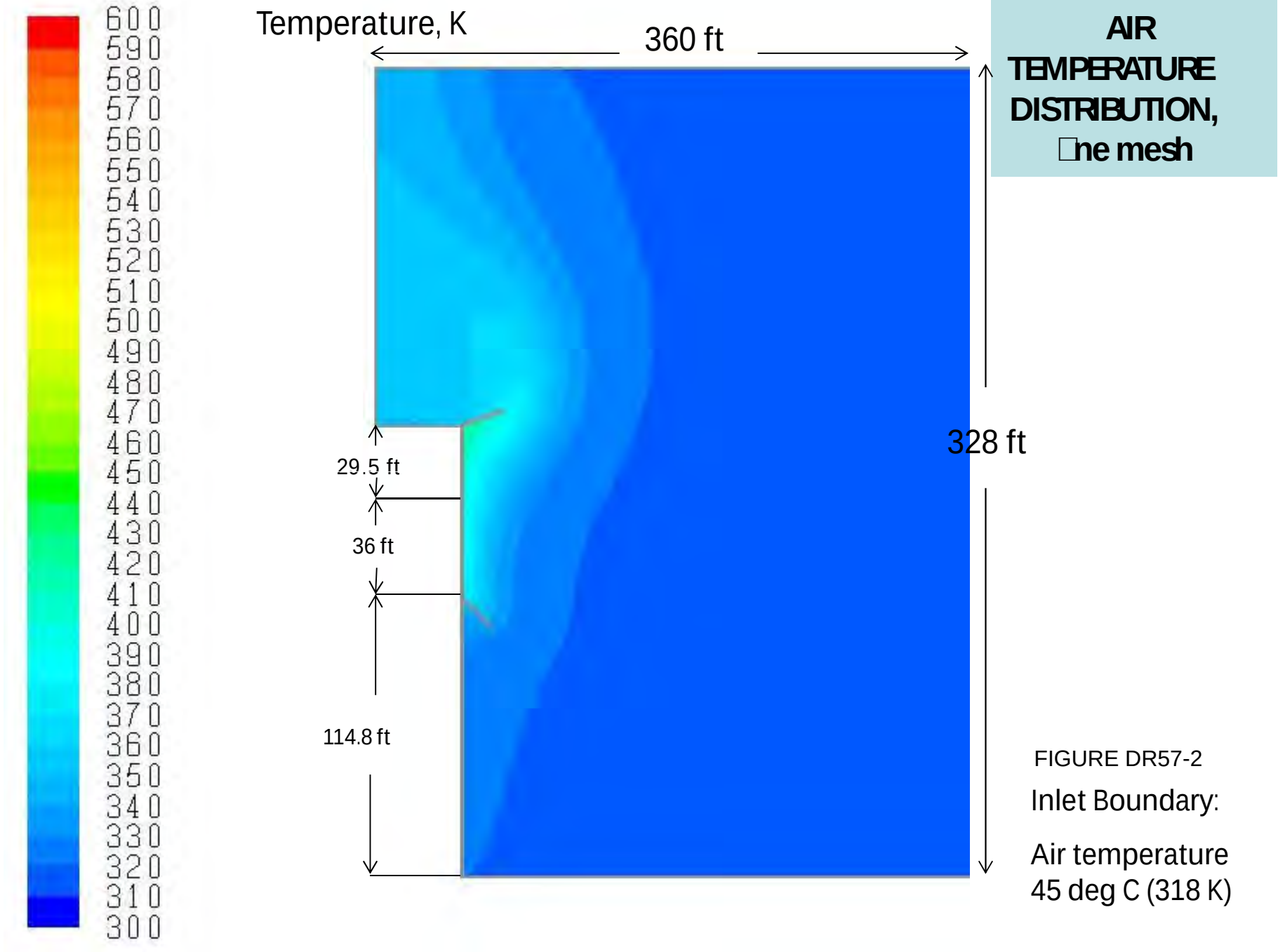


FIGURE DR57-1
Solar Plant 2, Elevation
Hidden Hills Solar Electric Generating System

Source: Drawing p1006 V8 rev2, 7/20/2011.

CH2MHILL



AIR TEMPERATURE DISTRIBUTION, □ne mesh

FIGURE DR57-2

Inlet Boundary:

Air temperature
45 deg C (318 K)

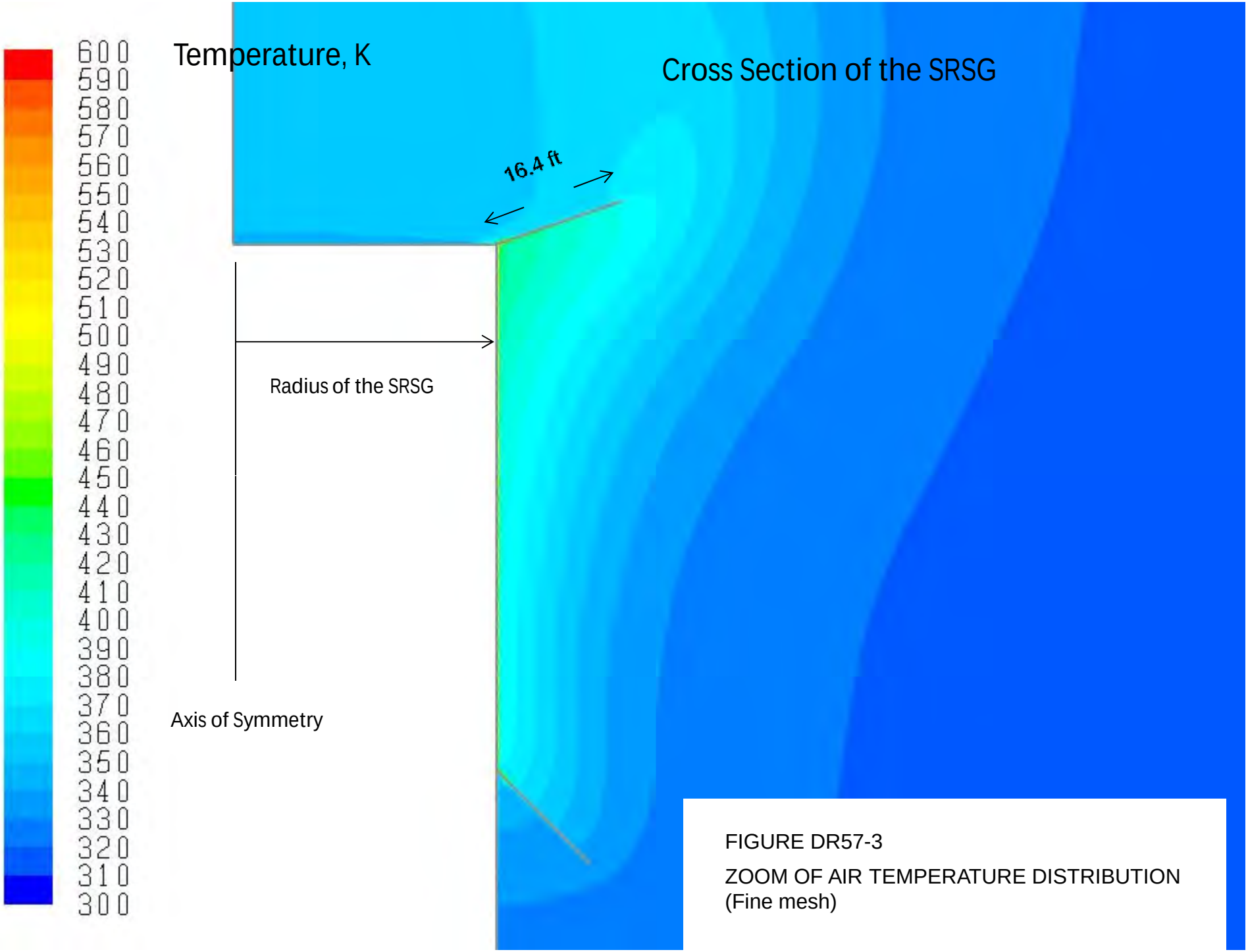


FIGURE DR57-3

ZOOM OF AIR TEMPERATURE DISTRIBUTION
(Fine mesh)

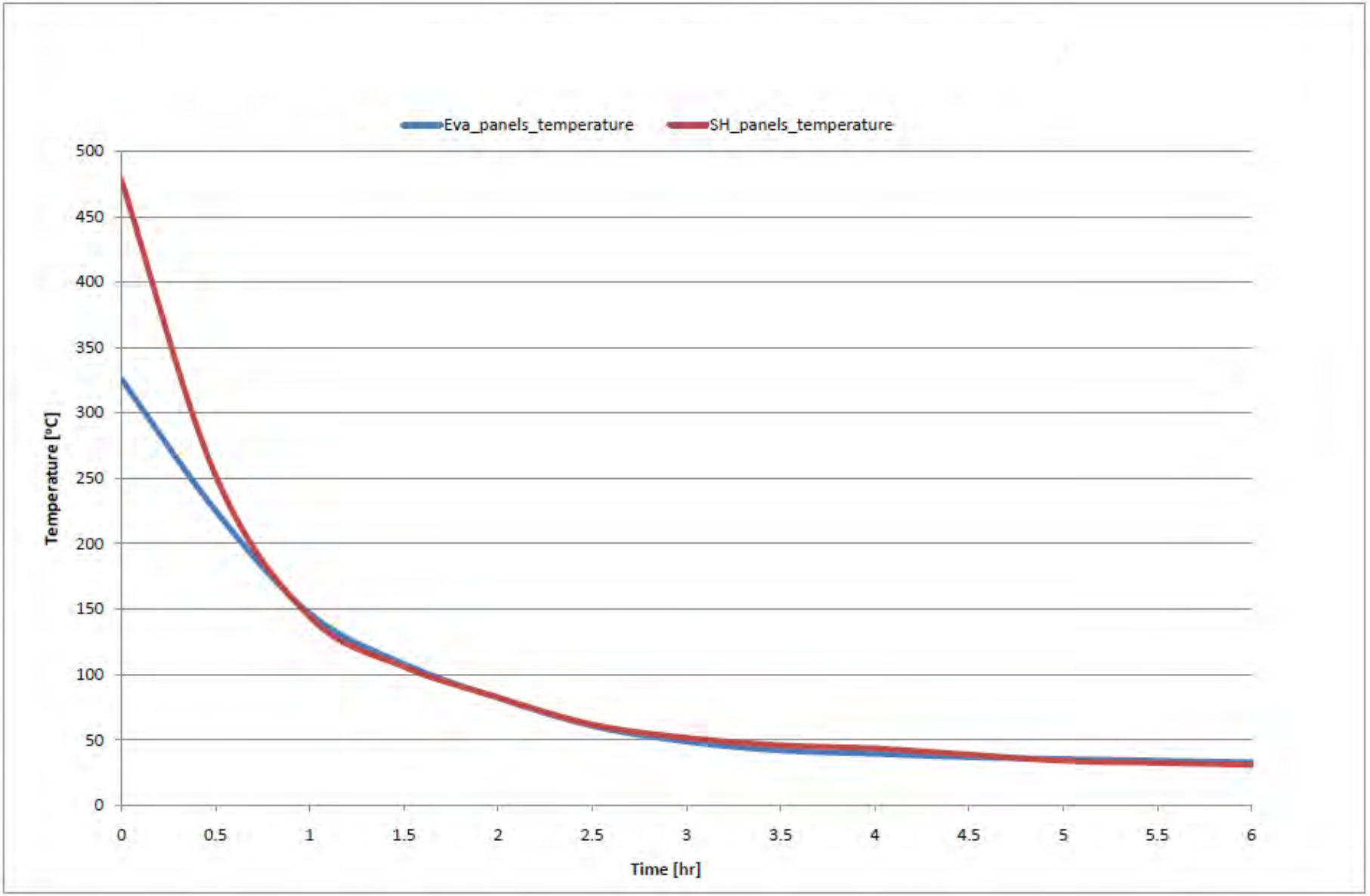


FIGURE DR57-4
EXPECTED TEMPERATURE DROP OF THE SRSG PANELS AFTER SHUTDOWN (AT 30°C AMBIENT)

Attachment DR58-1
Resource Summary for Phase I and Phase II Burrowing Owl Surveys
November 2011, Sundance Biology, Inc.

Attachment DR58-1

Resource Summary for Phase I and Phase II Burrowing Owl (*Athene cunicularia*) Surveys on the Proposed Hidden Hills SEGS Project, Inyo County, California

November 30, 2011

Prepared for:

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Executive Summary

As recommended in the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC), Burrowing Owl (*Athene cunicularia*) Phase I and Phase II surveys were conducted on the proposed 3,277-acre Hidden Hills SEGS Project site, Inyo County, CA located 15 miles south of Pahrump, NV.

Approximately 3,277 acres were surveyed for burrowing owl habitat and burrows. An additional 150-meter buffer (652 acres) outside the proposed project boundary was also surveyed for a total of 3,929 acres.

Observations were recorded for Burrowing owl (*Athene cunicularia*) and its sign. Eight canid burrows were found with burrowing owl whitewash and/or pellets and feathers on the project site. One badger burrow and one canid burrow were found with burrowing owl sign in the desert tortoise zone-of-influence and 150-meter buffer zone, respectively.

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Introduction

This report addresses the results of a Phase I and Phase II survey for the burrowing owl on the proposed Hidden Hills SEGS Project site, Inyo County, California. Potential burrowing owl habitat was delineated considering vegetation, elevation, and topography.

The proposed project site is located in Inyo County, CA in the East Mojave Desert approximately 15 miles south of Pahrump, NV and approximately 40 miles west-southwest of Las Vegas, NV (Figure 1). The site is bounded by the California-Nevada state line to the northeast; Tecopa Road to the south; Rosie Avenue to the west, and the north edge of Section 16, T22N, R10E, SBBM. An additional 180-acre strip of land immediately adjacent to and west of Rosie Avenue in Section 20 is planned for use as a construction area. The total project site comprises 3,277 acres (5.1 mi^2) and occurs within Sections 15, 16, 20-23, 27, and 28 of Township 22N, Range 10E, SBBM (Figure 2). The site lies within the North-East Mojave: South Recovery Unit but does not lie within a Desert Wildlife Management Area (DWMA).

Legal Status

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The Burrowing owl is designated as a Bird of Conservation Concern by the USFWS (2002) and a Bird Species of Special Concern by the CDFG (2006a). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs except as otherwise provided by the Code or any regulation made pursuant thereto. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend may be considered a take. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

The burrowing owl is a CDFG Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. The California Environmental Quality Act (CEQA) provides that potentially significant impacts, if any, must be avoided or minimized where feasible, to less than significant levels, absent a Statement of Overriding Considerations.

Phase I Habitat Assessment

Assessment of potential burrowing owl habitat was done prior to commencing the survey during a ground reconnaissance on April 12, 2011. The survey was conducted from 0900-1400 hours. Temperatures ranged from 61°-70° Fahrenheit (°F). Wind speed

was less than 5 miles per hour (mph) with direction variable through the day. Cloud cover was less than 10%. Visibility was good. Existing dirt roads every ½ mile in an east-west and north-south grid pattern were utilized to access the site by vehicle for habitat assessment.

Phase II Burrow Survey

Surveys were conducted between 13 April 2011 and 18 May 2011. A team consisting of 13 experienced biologists conducted the survey by walking a set of transects that covered the 3,277 acre main site, and 150 meters beyond the site (650 acres) in burrowing owl buffer zone. Transect spacing was at 30 feet between transect centerlines. No more than five biologists surveyed together in a team, as larger team sizes decrease efficiency and accuracy.

A set of UTM coordinates establishing transect endpoints for virtual east-west transects were calculated for the main site and burrowing owl buffer zone. This resulted in 514 transects ranging from 0.38 to 2.95 miles in length. For navigation of transects Lowrance iFinder handheld global positioning system (GPS) units were used. Each team was equipped with an iFinder GPS unit. One member of each team was responsible to navigate the center transect. When the end of each transect was reached, the team shifted five transects (for a five person team) and the navigator navigated the team center transect for the next trip. Team members focused on a search area that included 15 feet on either side of them. The members of each team remained close to one another without leading or lagging in order to increase the precision of searching. When one member of the team stopped to investigate an observation, all members of the team stopped.

All surveys were conducted during daylight hours. Temperatures during the survey between 13 April 2011 and 18 May 2011 ranged from a low of 40°F at 6:30 AM on 01 May to 96°F in the afternoon on 06 May, 2011. Winds ranged from calm to 20 mph. One day of rain, on 10 May 2011, provided approximately 0.5 inch of rainfall. Visibility was generally good.

Site Description

The elevation of the HHSEGS project site, including the 150-meter buffer, ranges between 2,570 and 2,715 feet above mean sea level and is characterized by creosote-bursage desert scrub vegetation in the eastern portions of the site transitioning into grassland with creosote bush in the west and saltbush scrub towards the southwest. Figure 2 generalizes these habitat type boundaries although patches of each type do occur throughout the site. Common species include creosote bush (*Larrea tridentata*), bursage (*Ambrosia dumosa*), allscale (*Atriplex polycarpa*), and spiny hop-sage (*Grayia spinosa*). Common grasses, particularly in the western portion of the site include Indian ricegrass (*Achnatherum hymenoides*), brome (*Bromus madritensis ssp. Rubens*), and big galleta (*Pleuraphis rigida*). Shrub density is generally moderate to low. A complete list of plants found on the site is shown in Table 2.

Geomorphology is middle to lower bajada with a westerly aspect and slope gradient of 1-3%. Soils are generally silty loam to clay soils. North, west, and south of the site is lower bajada grading into the playa at the low point in Pahrump Valley northwest of the site. East of the site are stabilized sand dunes and dissected bajada sloping up northeast to the Spring Mountains.

No permanent natural water sources for burrowing owls were found on the site or within one mile of the site. Ephemeral sources exist in the canyons northeast of the site along the bluffs in the drainages. Additionally, small puddles occur in the central region of the site that may provide temporary water sources after rain events.

Human impacts on the project site include a grid pattern of graded dirt roads that generally occur every ¼ section. Evidence of cattle and sheep grazing were found in the western and central portions of the site. Some areas in the central portion were denuded of vegetation due extensive grazing or previous clearing.

Data Recorded

Any tortoise, large mammal, or ground squirrel burrows encountered that could potentially be used by burrowing owls were visually checked. All burrowing owl sign was recorded with UTM locations and photographs.

Biological Field Team

The survey was managed by Stephen Boland and Mercy Vaughn. The biological team for the survey was as follows:

ADAM DRUMMER	CRAIG KNOWLES	RICH CRAWFORD
ALANA FROST	KIP KERMOIAN	SAGE CLEGG
AMANDA SCHEIB	MARCELLA WAGGONER	TERRY BAKER
CHRISTINE STIRLING	PATTY KERMOIAN	TIM HOCKIN

Results

No burrowing owls were seen onsite. Seventy-seven canid complexes or single canid burrows were found onsite, providing suitable burrows for burrowing owls. All sign observed was recorded, which included burrows with sign (i.e., whitewash droppings, feathers, and diagnostic pellets). Eight canid burrows were found with burrowing owl whitewash and/or pellets and feathers on the project site. One badger burrow and one canid burrow were found with burrowing owl sign in the desert tortoise ZOI and 150-meter buffer zone respectively. The proposed project may have direct impacts on the burrowing owl population on the site as burrowing owl sign was detected (Table 1, Figure 2).

Discussion

The habitat types found on the site are all habitats that burrowing owls will use. Sign found on the site indicates the presence of burrowing owls for wintering and/or nesting

purposes. No owls were seen on site. Sign was concentrated in the northern portion of the site.

The proposed project may have direct impacts on the burrowing owl population on the site. Although burrowing owl sign was observed onsite, there was no conclusive evidence nesting occurred onsite. However, Phase III burrowing owl census and mapping surveys could be conducted in the spring of 2012 to verify whether or not nesting is occurring onsite.

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Table 1. Burrowing Owl Sign Locations

Map Ref.	Type of Sign	Description and Comments	Easting	Northing
01	Burrowing Owl whitewash	Whitewash found outside of badger burrow.	596968	3986134
02	Burrowing owl white wash.	White wash found outside a single canid burrow. Burrow is in fair condition with annuals present on runway. Length of burrow 5.-1m	598153	3985791
03	Burrowing owl white wash and pellets.	White wash found outside single canid burrow. 2 pellets found in burrow. Burrow is in fair condition with annuals present on runway. Burrow 1-1.5m deep. Can't see back of burrow.	598330	3985780
04	Burrowing owl white wash, pellets, and feathers.	White wash found outside a single canid burrow. 2+ pellet inside the burrow and one pellet outside burrow. Feathers found in burrow. Burrow is in fair condition with annuals in runway. Burrow 1-1.5m deep.	598101	3985729
05	Burrowing owl white wash	White wash found outside a single canid burrow. Burrow is in fair condition. Length of burrow 1-1.5m.	597953	3985617
06	Burrowing owl white wash and pellets.	White wash found outside a single canid burrow. One pellet inside the burrow and one pellet outside burrow. Burrow is in fair condition with annuals on runway. Burrow .5-1m deep.	598292	3985200
07	Burrowing owl white wash and pellets.	Pellets and white wash at a single canid burrow.	597514	3984200
08	Burrowing owl white wash and pellets.	Pellets and white wash at canid complex. Pellet old and falling apart.	600094	3983375
09	Burrowing owl white wash, pellets, and feathers.	Single Canid burrow with white wash, pellets, and feathers.	597554	3982741
10	Burrowing owl white wash and pellets.	Pellets and white wash at tortoise burrow.	601181	3982411

Table 2. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**
APIACEAE		
Lomatium mohavense	Mojave Desert Parsley	Incidental
ASCLEPIADACEAE		
Asclepias speciosa	Showy Milkweed	Only along roads
ASTERACEAE		
Acamptopappus sphaerocephalus	Rayless Goldenhead	Incidental
Acamptopappus shockleyi	Shockley's Goldenhead	Common
Agoseris glauca	Pale Agoseris	Occasional
Ambrosia dumosa	Bursage	Common
Baccharis sergiloides	Desert Baccharis	
Baileya multiradiata	Desert Marigold	Common
Baileya pleniradiata	Woolly Desert Marigold	Common
Chaenactis carphoclinia	Pebble Pincushion	Common
Chaenactis fremontii	Desert Pincushion	Occasional

Table 2. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**
Chaenactis macrantha	Bighead Dustymaiden	Common
Chaenactis stevioides	Esteve's Pincushion	Common
Ericameria nauseosa var. hololeucus	Rabbitbrush	Incidental
Encelia virginensis	Virgin River Brittlebush	Common
Glyptopleura marginata	Carveseed	Common
Gutierrezia microcephala	Sticky Snakeweed	Common
Hymenoclea salsola	Cheese Bush	Common
Isocoma acradenia var. acradenia	Alkali Goldenbush	Rare
Lygodesmia spinosa	Spiny Skeletonweed	Common
Malacothrix coulteri	Snake's Head	Occasional
Malacothrix glabrata	Smooth Desert Dandelion	Occasional
Prenanthella exigua	Brightwhite	Occasional
Psathyrotes ramosissima	Velvet Turtleback	Common
Psilostrophe cooperi	Paperflower	Common
Rafinesquia neomexicana	Desert Chicory	Common
Stephanomeria exigua	Small Wirelettuce	Common
Stephanomeria pauciflora	Brownplume Wirelettuce	Common
Xylorhiza tortifolia	Mojave Woodyaster	Occasional
BORAGINACEAE		
Amsinckia tessellata var. tessellata	Fiddleneck	Occasional
Cryptantha angustifolia	Panamint Catseye	Common
Cryptantha circumscissa	Cushion Cryptantha	Common
Cryptantha micrantha	Purpleroot Cryptantha	Common
Cryptantha nevadensis	Nevada Catseye	Common
Cryptantha pterocarya	Wingnut Cryptantha	Common
Cryptantha sp. (perennial)	Cryptantha	Mature nutlets needed for identification.
Lappula redowskii var. cupulata	Western Stickseed	Common
Pectocarya heterocarpa	Chuckwalla Combseed	Common
Pectocarya platycarpa	Broadfruit Combseed	Common
BRASSICACEAE		
Chorispora tenella	Purple Mustard	
Descurainia sophia	Flixweed	Occasional
Descurainia pinnata	Western Tansymustard	Common
Guillenia lasiophylla	Slenderpod Jewelflower	Occasional
Lepidium fremontii	Desert Alyssum	Common
Lepidium lasiocarpum	Shaggyfruit Pepperweed	Common
Malcolmia africana	African Mustard	Common
Sisymbrium altissimum	Tall Tumblemustard	Occasional
Sisymbrium irio	London Rocket	Common
Stanleya pinnata	Prince's Plume	Common
CACTACEAE		
Opuntia basilaris	Beavertail	Occasional
Opuntia echinocarpa	Silver Cholla	Occasional
CHENOPODIACEAE		
Atriplex canescens	Fourwing Saltbush	

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FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**
Atriplex confertifolia	Shadscale Saltbush	Common
Atriplex polycarpa	Allscale, Cattle Spinach, Alkali Saltbush	Common
Grayia spinosa	Spiny Hop Sage	Common
Halogeton glomeratus	Saltlover	Common
Krascheninnikovia lanata	Winter Fat	Common
Salsola tragus	Prickly Russian Thistle	Common
Suaeda moquinii	Mojave Seablite	Incidental
CUPRESSACEAE		
Juniperus osteosperma	Utah Juniper	Incidental
CUSCUTACEAE		
Cuscuta sp.	Dodder	Incidental
EPHEDRACEAE		
Ephedra funerea	Death Valley Jointfir	Common
Ephedra nevadensis	Nevada Ephedra	
EUPHORBIACEAE		
Chamaesyce albomarginata	Rattlesnake Weed	Common
FABACEAE		
Astragalus geyeri var. geyeri	Geyer's Milkvetch	Rare
Astragalus layneae	Widow's Milkvetch	Occasional
Astragalus lentiginosus var. fremontii	Spotted Locoweed	Common
Astragalus nuttallianus var. imperfectus	Turkeypeas	Common
Astragalus preussii var. preussii	Preuss' Milkvetch	Rare
Hoffmannseggia glauca	Indian Rushpea	Common
Prosopis glandulosa	Honey Mesquite	Common
Psorothamnus fremontii	Indigo Bush	Occasional
Senna armata	Desert Senna	Occasional
GERANIACEAE		
Erodium cicutarium	Redstem Filaree	Common
HYDROPHYLLACEAE		
Nama demissum	Purplemat	Occasional
Phacelia crenulata var. ambigua	Purplestem Phacelia	Occasional
Phacelia fremontii	Fremont's Phacelia	Occasional
Phacelia ivesiana	Ives' Phacelia	Incidental
Phacelia neglecta	Alkali Phacelia	
Phacelia pachyphylla	Blacktack Phacelia	Common
KRAMERIACEAE		
Krameria erecta	Purple Heather	Common
LILIACEAE		
Androstephium breviflorum	Pink Funnel Lily	rare
LOASACEAE		
Mentzelia obscura	Pacific Blazing Star	Common
Mentzelia oreophila	Blazing Star	Rare
MALVACEAE		
Eremalche rotundifolia	Desert Five Spot	Incidental
Sphaeralcea ambigua	Globe Mallow	Common

Table 2. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**
NYCTAGINACEAE		
Selinocarpus nevadensis	Desert Moonpod	Rare
Oleaceae		
Menodora spinescens	Spiny Menodora	Common
ONAGRACEAE		
Camissonia boothii	Booth's Evening Primrose	Common
Camissonia brevipes	Yellow Cups	Common
Gaura coccinea	Scarlet Beeblossom	
Oenothera primiveris ssp. bufonis	Desert Evening Primrose	Occasional
PAPAVERACEAE		
Eschscholzia californica	California Poppy	Common
PLANTAGINACEAE		
Plantago ovata	Desert Indianwheat	Common
POACEAE		
Achnatherum hymenoides	Indian Ricegrass	Common
Achnatherum speciosum	Desert Needlegrass	Occasional
Bothriochloa barbinodis	Cane Bluestem	
Bromus madritensis ssp. rubens	Compact Brome	Common
Pleuraphis rigida	Big Galleta	Common
Hordeum murinum	Mouse Barley	Occasional
Schismus arabicus	Arabian Schismus	Common
Sporobolus cryptandrus	Sand Dropseed	Occasional
Vulpia octoflora	Sixweeks Fescue	Occasional
POLYGONACEAE		
Chorizanthe brevicornu	Brittle Spineflower	Occasional
Chorizanthe rigida	Devil's Spineflower	Occasional
Eriogonum bifurcatum	Pahrump Valley Buckwheat	Common (Rare plant)
Eriogonum deflexum	Flatcrown Buckwheat	Occasional
Eriogonum inflatum	Desert Trumpet	Occasional
Eriogonum trichopes	Little Desert Trumpet	Common
POLEMONIACEAE		
Gilia brecciarum	Nevada Gilia	Occasional
Gilia cana ssp. speciformis	Showy Gilia	Common
Gilia hutchinsifolia	Desert Pale Gilia	Common
Ipomopsis polycladon	Manybranched Ipomopsis	Common on desert pavement
Langloisia setosissima ssp. setosissima	Bristly Langloisia	Common
RANUNCULACEAE		
Delphinium parishii	Parish's Larkspur	Occasional
ROSACEAE		
Coleogyne ramosissima	Blackbrush	Incidental
SCROPHULARIACEAE		
Castilleja angustifolia	Indian Paintbrush	Occasional
SOLANACEAE		
Lycium andersonii	Anderson Thornbush	Common
Lycium cooperi	Peach Thorn	Common

Table 2. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Frequency of Occurrence**
TAMARICACEAE		
Tamarix ramosissima	Salt Cedar	Incidental
VISCACEAE		
Phoradendron californicum	Desert Mistletoe	Common
ZYGOPHYLLACEAE		
Larrea tridentata	Creosote	Common

Figure 1. Hidden Hills SEGS Project Proposed Site Location, Inyo County, California

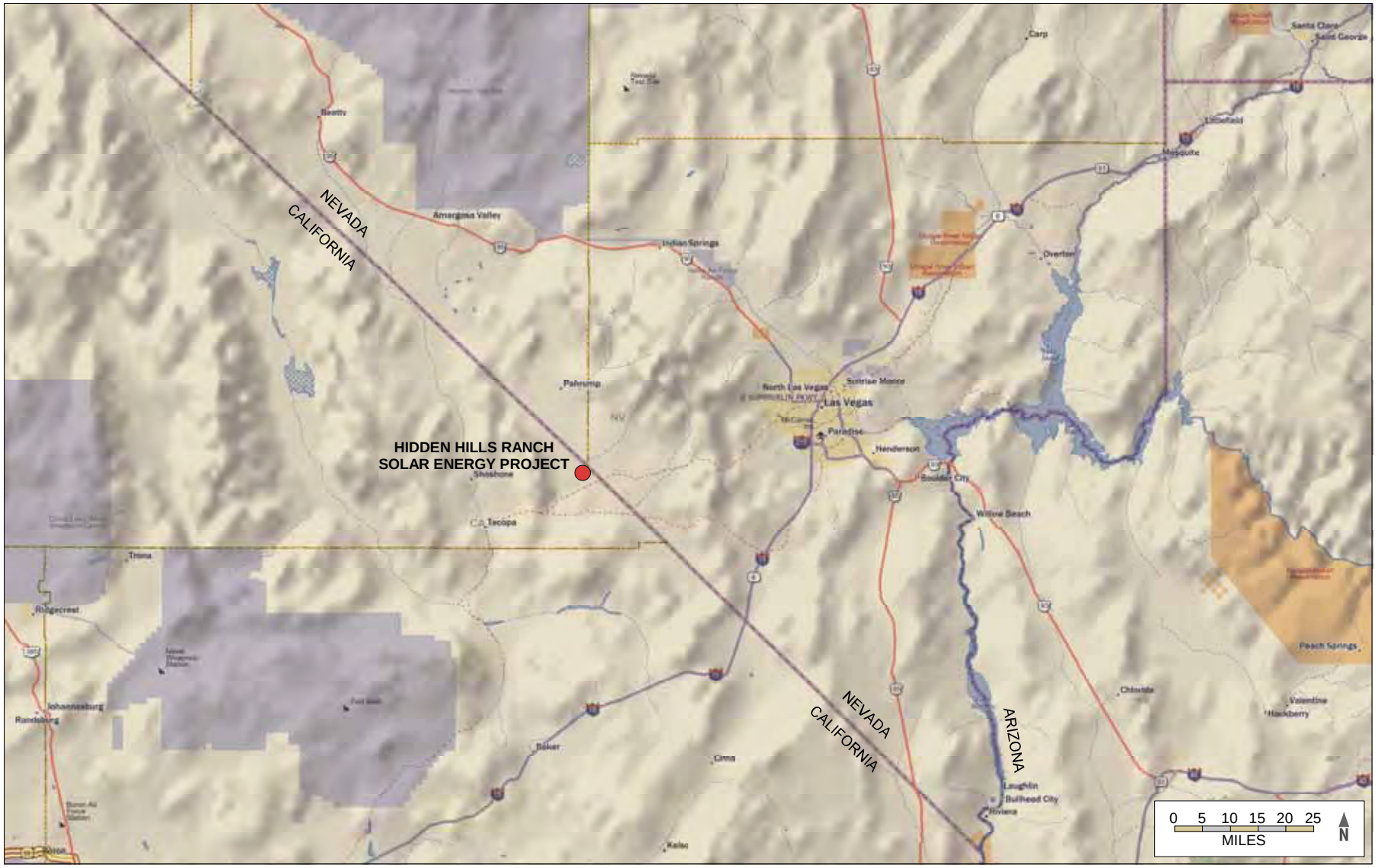

Figure 2. Hidden Hills SEGS Project Habitat Map and Burrowing Owl Sign Locations, Inyo County, California

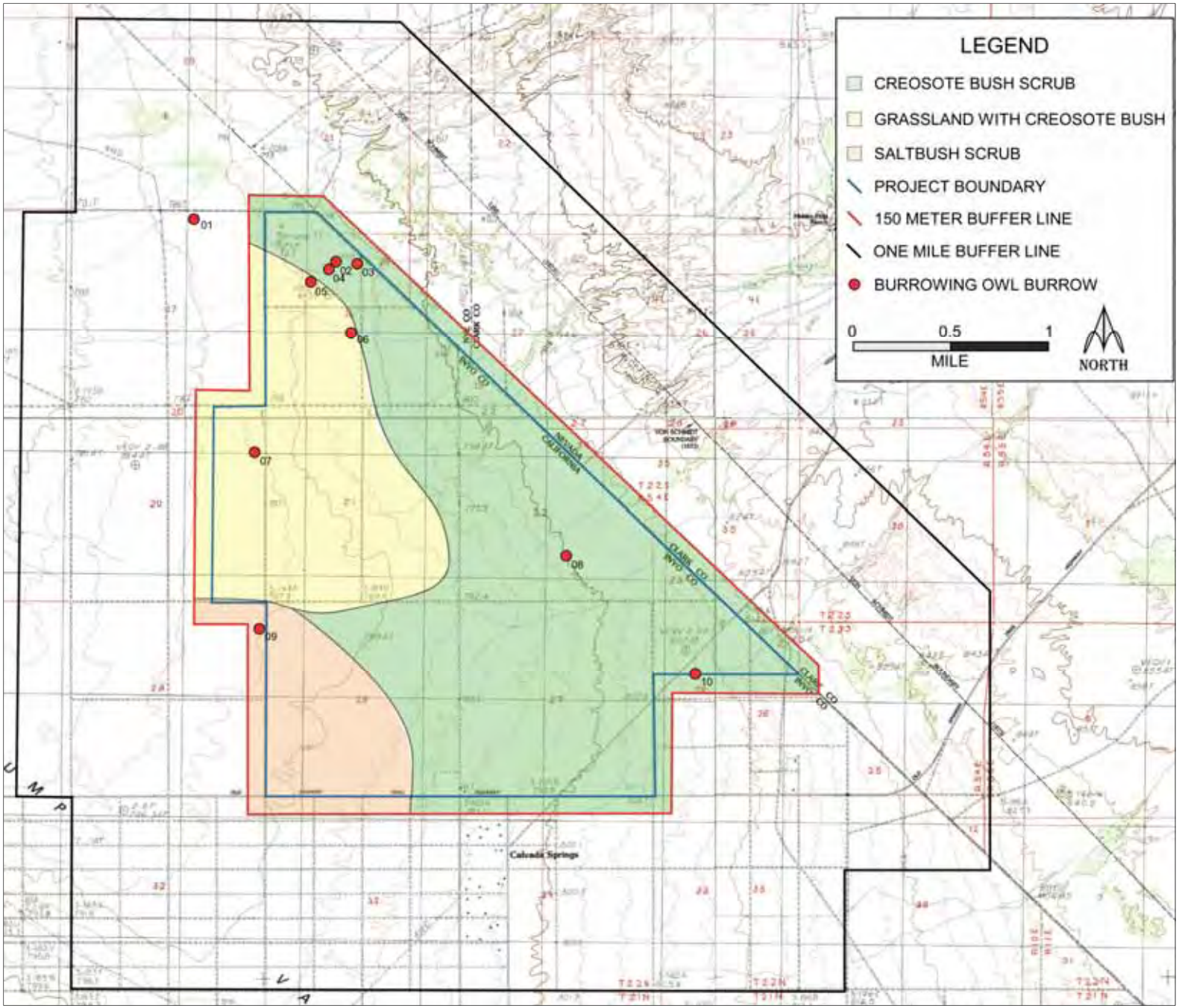

Figure 3. Habitat Photos, Hidden Hills SEGS Project Proposed Site and Zone-of-Influence, Inyo County, California. (Datum NAD 83 CONUS)

MAIN SITE-ATRIPLEX, LYCIUM, BURROBUSH COMMUNITY
VIEW E UTM 597001E, 3983321N

MAIN SITE-CREOSOTE, ATRIPLEX, LYCIUM, AND BURROBUSH
VIEW E UTM 599108 E, 3983356 N

MAIN SITE-CREOSOTE BUSH SCRUB
VIEW W UTM 599193 E, 3984154 N

MAIN SITE-DESERT PAVEMENT
VIEW NE UTM 704028 E, 3769957 N

MAIN SITE-HEAVY GRAZING, DENUDED
VIEW E UTM 598550 E, 3984160 N

3/8 MILE NE OF SITE-STABILIZED DUNES
VIEW S UTM 602636 E, 3982681 N

1 MILE NE OF SITE-INCISED WASH
VIEW S UTM 602859 E, 3983838 N

3/8 MILE NE OF SITE -STEEP TERRAIN
VIEW S UTM 602409 E, 3982894 N

Figure 4. Burrowing Owl Sign Photos, Hidden Hills SEGS Project Proposed Site, Inyo County, California.

BURROWING OWL BURROW WITH WHITE WASH AND PELLETS

BURROWING OWL PELLETS

Attachment DR66-1
Preliminary Draft Desert Tortoise Translocation Plan

Attachment DR66-1

Preliminary Draft Desert Tortoise Translocation Plan Hidden Hills Solar Electric Generating System

(11-AFC-02)

Submitted to the

California Energy Commission

Submitted by

Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC

December 5, 2011

with Assistance from

CH2MHILL®
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Contents

1.0 Introduction

The Hidden Hills Solar Electric Generating System (HHSEGS) is being developed by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, the Applicant, or project owners), wholly owned subsidiaries of Hidden Hills Solar Holdings, LLC, (their sole member) which is in turn a wholly owned subsidiary of BrightSource Energy, Inc. (its sole member), a Delaware corporation, are developing a solar power project consisting of two solar energy fields and associated facilities to be located between Nevada State Route (SR) 160 and California SR 127 on Tecopa Road[1] in Inyo County, California, adjacent to the Nevada border (see Figure DR66-1). The project site is located on privately owned land. It is approximately 18 miles south of Pahrump, Nevada, and approximately 45 miles west of Las Vegas, Nevada.

1.1 Background

The project site is located along the California-Nevada border in Township 22N, Range 10E, sections (or portions thereof) 15, 16, 20, 21, 22, 23, 26, 27 and 28 on privately owned land. The assessor parcel numbers (APNs) for the site are: 048-110-002; 048-120-010; Book 048, page 30, parcels 03 to 06 and 12 to 14; Book 048, page 62, parcels 03 to 06 and 11 to 14, and all parcels in Book 048 pages 50, 60, 61, and 64 through 71. Access to the site is via Tecopa Road from SR 160 or SR 127. The project will be comprised of two solar fields. The first nominal 270-megawatt (MW) gross (250 MW net) plant at the north end of the project, known as Solar Plant 1, would be owned by Hidden Hills Solar I, LLC. Hidden Hills Solar II, LLC, would own the second nominal 270-megawatt (MW) gross (250 MW net) southern plant known as Solar Plant 2. The facility (net output of 500 MW) is known as the Hidden Hills Solar Electric Generating System (HHSEGS) (see Figure DR66-2).

The Mojave population of the desert tortoise is listed as a threatened species by both state and federal governments. In order to permit the solar plants and common facilities, the Applicant has consulted with US Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and the California Energy Commission (CEC)—the state lead agency under the CEC's California Environmental Quality Act-equivalent certified regulatory program. There is no critical habitat within the project area.

The HHSEGS project consists of approximately 3,277 acres of new development. Solar Plant 1 will require approximately 1,483 acres; Solar Plant 2 will require approximately 1,510 acres. A 103-acre common area will be established on the southeast corner of the site to accommodate an administration, warehouse, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres.

Construction of the generating facility, from perimeter fencing to site preparation and grading to commercial operation, is expected to take place from the third quarter of 2012 to the second quarter of 2015 (29 months total) with the target completion by fourth quarter 2014/ first quarter 2015). It is anticipated to have a commercial on-line date of first quarter 2015 for Solar Plant 1 and second quarter 2015 for Solar Plant 2.

[1] Also referred to as the Old Spanish Trail Highway

1.2 Plan Purpose

This Desert Tortoise Translocation Plan[2] will be incorporated into the HHSEGS Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), as part of the proposed action. This plan conforms to the Translocation Guidelines specified in Appendix B of the *Desert Tortoise Recovery Plan* (USFWS, 1994), as well as current guidelines.

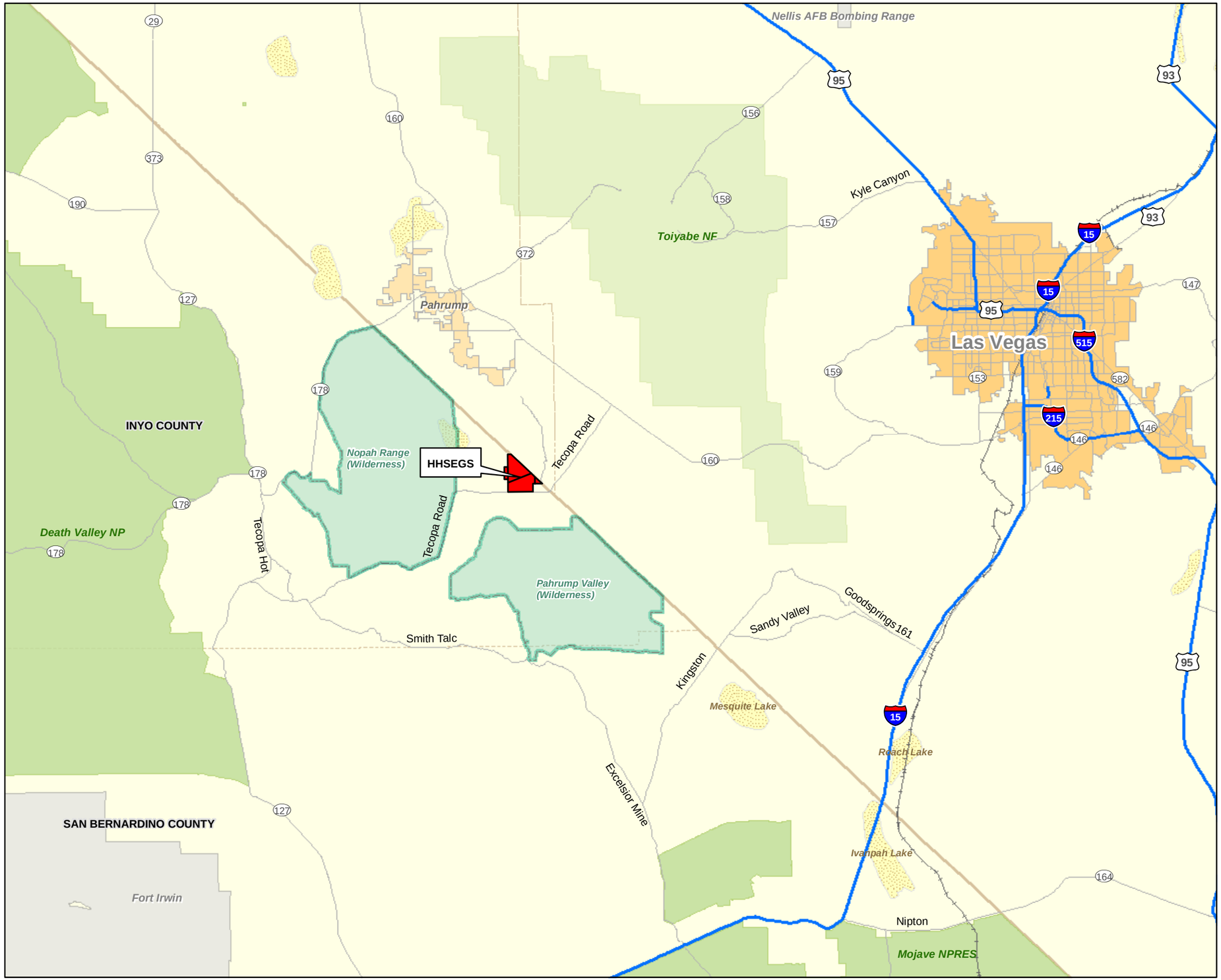
In the long-term interests of the tortoises requiring clearance from the site, the preference of all stakeholders is to relocate tortoises as short a distance as possible as long as all other conditions can be met; for example, density constraints and health assessments stipulated in the Biological Opinion (USFWS, 201X).

1.3 Plan Goals

The translocation effort has the following goals:

- Minimize impacts on resident desert tortoises outside fenced areas
- Minimize stress, disturbance, and injuries to translocated tortoises

[2] In this plan, no differentiation is made between the terms “translocation” and “relocation.”



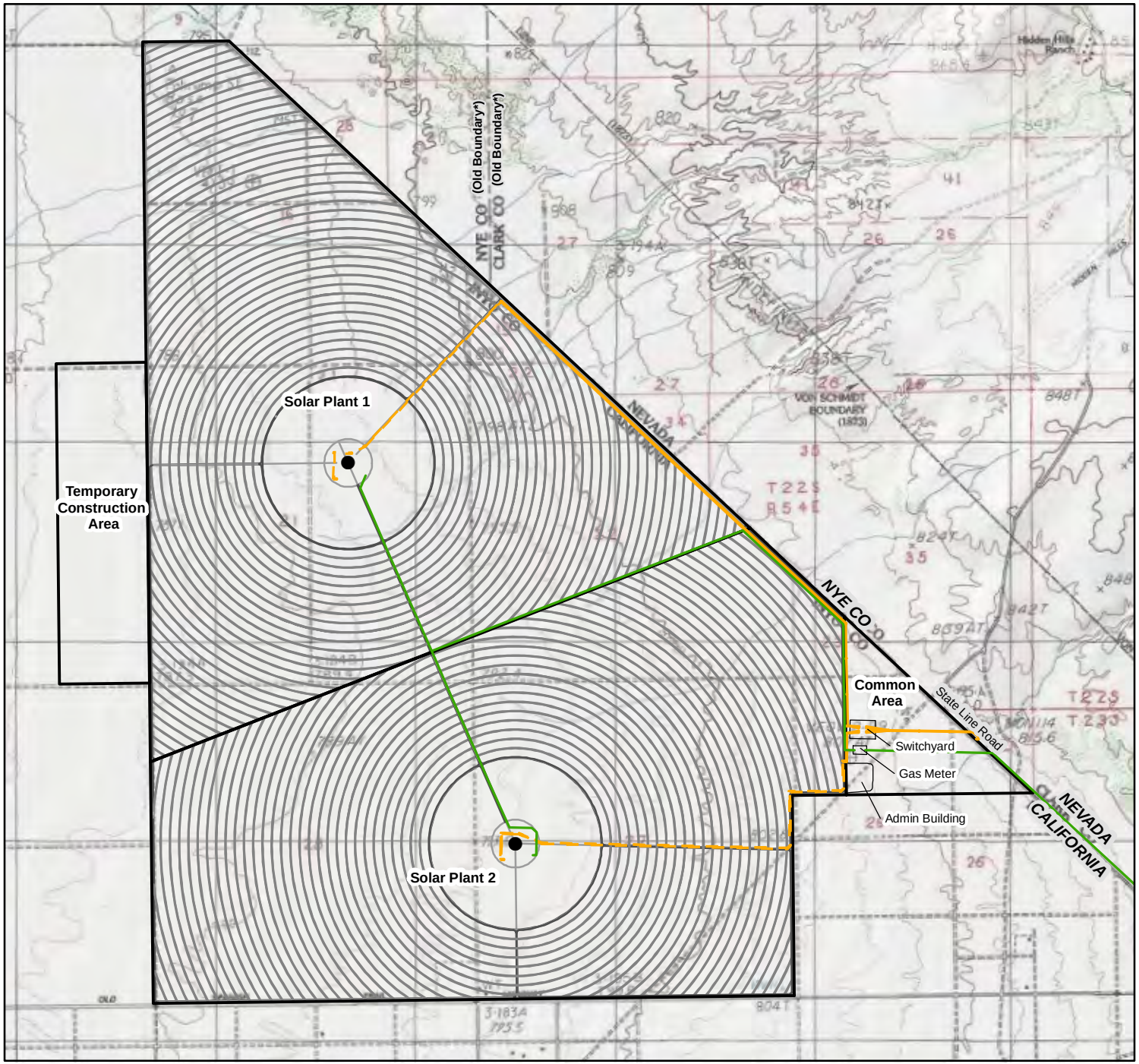
LEGEND

- Major Freeways
- Major Road
- State Boundary
- County Boundary
- Major Railroad Lines
- National Parks/ Forests
- Military Installation
- Dry Lake
- Urban Areas
- Wilderness Area
- HHSEGS Boundary

N

0 4 8
Miles

FIGURE DR66-1
Vicinity Map
Hidden Hills Solar Electric Generating System



LEGEND

- Solar Power Towers
- Proposed Gasline
- Transmission Line
- Underground Transmission Line
- Solar Field Heliostat Arrays
- Access Roads
- HHSEGS Boundary

*County boundary moved due to annexation, 2001

N

0 1,200 2,400
Feet

Figure DR66-2
Site Plan and Linear Facilities
Hidden Hills Solar Electric Generating System

2.0 Translocation Plan

2.1 Permanent Fencing

The Project owners will install permanent fencing and tortoise fencing to prevent the re-entry of desert tortoises onto the property. Fences will be maintained for the life of the project.

2.1.1 Fencing and Clearance

Prior to the start of construction, the project owners will complete fencing around the boundary of Solar Plants 1 and 2, the Common Area, and the Temporary Construction Area. The project owners will install desert tortoise guards, as described in Appendix DR66-1, at gated entries to prevent desert tortoises from gaining entry to the project site.

Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, the Designated Biologist will conduct two complete desert tortoise clearance surveys of the fence line segment and associated disturbance right-of-way that will be fenced that day. During these surveys, an authorized biologist will inspect all burrows to determine occupancy and collapse all unoccupied burrows.

Following construction of the desert tortoise exclusion fence around a given portion of the HHSEGS project site, the Designated Biologist will perform a clearance survey pass of the fenced area during the spring or fall and excavate all burrows that could house a desert tortoise (including rodent holes). This pass will not count as one of the clearance passes described in the USFWS' translocation guidance. Following completion of this initial pass, the Designated Biologist will perform a full clearance survey of the fenced area, in accordance with the USFWS' desert tortoise translocation guidance. If the USFWS releases revised guidance on desert tortoise translocation prior to initiation of clearance surveys, the Designated Biologist will perform surveys in accordance with the revised guidance. The Designated Biologist may request an extension of its survey window outside of the times outlined in the USFWS guidance (that is, spring and fall) for clearance of the fence line construction around the boundary of Solar Plant 1 and 2, the Common Area, and the Temporary Construction Area.

2.1.2 Provisions of the Biological Opinion [To be updated once BiOp is issued]

Prior to the start of construction activities, the site boundary of the unit being developed, or area being used, will be fenced with a permanent desert tortoise exclusion fence. A security fence will be installed either with the tortoise exclusion fence or adjacent to the tortoise fence installation. The tortoise fence will either be attached to the base of the security fence or installed prior to, and outside of, the security fence.

The boundaries of all areas to be disturbed will be flagged before beginning any activities in those areas, and all disturbances will be confined to the flagged areas. All project vehicles and equipment will be confined to the flagged areas. To reduce the potential for tortoise strikes by vehicles, a 30 mph speed limit will be enforced on paved roads and a 10 mph speed limit on dirt roads. Disturbance beyond the construction zone will be prohibited except to complete a specific task within designated areas or during emergency situations.

After an area is flagged, prior to any site clearance work, the perimeter of the area to be cleared will be fenced. Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion

fence, two complete desert tortoise clearance surveys of the proposed perimeter fence line and associated disturbance right-of-way (ROW) will be conducted using techniques providing 100 percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide, centered on the fence alignment. Transects will be no greater than 30 feet apart. During these surveys, an authorized biologist will inspect all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, to determine occupancy. Any burrow within the fence line corridor will be collapsed after confirmation that it is not occupied by a desert tortoise, or if occupied, the desert tortoise has been removed. Two complete passes with complete coverage will be conducted as described above. If no desert tortoises are observed during two consecutive second passes, a third pass would not be conducted.

A linear swath of vegetation along the outer edge of each heliostat field will be cleared to create a perimeter path for installation and maintenance of the tortoise and security fence and associated external perimeter inspection roads. To allow for external roads, the setback area will be a minimum of 20 feet wide within the ROW boundaries between the tortoise fence and the ROW boundary on the upslope boundary of the ROW, and a minimum 8 to 12 feet wide between the tortoise fence and ROW boundary on the side and downslope boundaries. Additional setbacks may be required for installation of gas and electric utilities.

All permanent fencing, including permanent tortoise fencing along roadways, will be constructed with durable materials (11 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Permanent tortoise exclusionary fence material will consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches high. This fence material will be buried a minimum of 12 inches below the ground surface, leaving 22 to 24 inches aboveground. A trench will be dug to allow 12 inches of fence to be buried below the natural level of the ground. Specifications for desert tortoise-proof fencing are provided in Appendix DR66-A and can be found at the following website: http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt/DT_ExclusionFence_2005.pdf. The project owner will, if necessary, modify the current design of all desert tortoise exclusion fencing to comply with the most up-to-date USFWS guidance. The USFWS is currently using guidance provided in the *Desert Tortoise Field Manual* (USFWS, 2009).

Where a combined security/tortoise fence is needed, a standard chain link fence will be installed with approximately 2 feet of tortoise fence overlapping the chain link fence creating a combined security/tortoise fence. The top end of the tortoise fence will be secured to the security fence with hog rings at 12-to 18-inch intervals. Distance between posts will not exceed 10 feet. Concrete footings for metal posts will not be required. The fence will be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed, excavated soil will be replaced and compacted to minimize soil erosion. Fence installation will be monitored by an authorized biologist or a biological monitor, and an authorized biologist will be available at all times to move any desert tortoises that are within the path of the fence line work.

Permanent I-beam-design desert tortoise guards will be installed across roadways to allow equipment access to the fenced sites and exclude desert tortoises. The specifications for the proposed desert tortoise guard are included in Appendix DR66-A. If monitoring indicates that the proposed permanent I-beam barriers are ineffective or problematic, the barriers will be replaced with another means of exclusion with input from the permitting agencies. Tortoise guards will be maintained and monitored as part of the permanent fence inspections and maintenance.

The following areas will require permanent tortoise exclusion fencing:

- The individual heliostat fields
- The Common Area
- The Temporary Construction Laydown and Parking Area
- [List any road segments]

The location of all permanent tortoise exclusion fencing will be identified on construction drawings and preapproved by the permitting agencies prior to the start of construction activities.

Any damage to the permanent tortoise exclusion fencing will be promptly repaired. Following installation, the permanent exclusion fencing will be inspected by a qualified biological monitor at least once per month during construction and bimonthly (every other month) during operation, and after major rainfall events. A major rainfall event is defined as any rainfall that causes the ephemeral washes in the project vicinity to flow and thereby potentially damage the fencing. Extra fencing material will be kept onsite to accommodate needed repairs.

2.2 Temporary Exclusion Fencing

Temporary fencing, such as chicken wire, snow fencing, chain link, and other suitable materials will be used in designated areas to reduce encounters with tortoises during short-term projects. The fencing material will be securely attached to posts. The grid opening of the fencing material will not exceed 1 inch by 2 inches and the fence height will be no less than 24 inches. Concrete footings for posts will not be required. Because of the short duration of the work, temporary metal fencing need not be buried but any high or low points along the wire mesh fence line will be hand-excavated to maintain integrity with the ground. If non-metal fencing is used, it will be staked to the ground at intervals of sufficient distance to maintain fence integrity.

The following areas will require temporary exclusion fencing:

- Construction of any facilities outside of the permanently fenced areas that are specifically attributable to the HHSEGS project. The location of temporary exclusion fencing will be identified on construction drawings and approved by the permitting agencies prior to the start of construction activities.

The following conditions apply to the use of temporary exclusion fencing:

- Within 24 hours prior to the initiation of construction of the temporary exclusion fence, a desert tortoise survey will be conducted using techniques providing 100 percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide centered on the fence alignment. Authorized biologists will conduct at least three complete sweeps of the construction are using transects no wider than 30 feet. Surveyors will conduct transects for each sweep in different directions to allow for opposing angles of observation. The site will be considered cleared after two complete passes have discovered no new desert tortoises.
- All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, will be examined to determine occupancy. Any burrow within the fence line corridor will be collapsed after confirmation that it is not occupied by a desert tortoise, or if occupied, the desert tortoise has been removed by an authorized biologist.
- An authorized biologist, or biological monitor, will monitor the installation of the temporary exclusion fence. If installation of temporary fencing, surveying or clearing is occurring at

more than one location, more than one authorized biologist may need to be onsite to provide appropriate supervision. After installation of the temporary fencing and prior to initiation of construction activities, an authorized biologist and/or biological monitor will perform a pre-construction sweep for desert tortoises. An authorized biologist will translocate any desert tortoises found in the project impact area pursuant to the procedures set forth in Section 2.4, Tortoise Handling Guidelines.

- Biological monitors will monitor construction activities in areas where only temporary tortoise fencing is being used. An authorized biologist will also be available to relocate any desert tortoises that may wander into the impact area during construction.
- All construction activities will be confined within the fenced project impact area. Equipment or construction personnel will not be allowed to work outside fenced areas without a biological monitor.
- Once temporary exclusion fencing has been installed, the area within the temporary fencing may be mowed to facilitate access by the construction equipment. Vegetation clearing will be limited to the areas required for construction.
- At the end of each working day, the biological monitor will inspect the integrity of all temporary desert tortoise fencing within the work area to ensure that desert tortoises are prohibited from entry. If the fence is compromised, repairs must be completed at that time. Extra fencing material will be kept onsite during periods when construction requiring the use of temporary fencing is occurring.
- Prior to the start of work each day the authorized biologist or biological monitor will recheck the construction area to ensure that it is clear of tortoises. If work in the area has been delayed more than 24 hours (for example, weekend or due to a storm), a more detailed search for tortoises will be required prior to the start of work.

2.3 Minimization Measures

The following minimization measures will be implemented during all construction activities, including fence construction:

- All personnel involved in the construction project will participate in Worker Environmental Awareness Program (WEAP) training that includes desert tortoise protection training approved by the permitting agencies. At a minimum, training will include discussion of the fragility of desert habitats, the importance of the desert tortoise to the environment, the protections afforded to the desert tortoise by the Endangered Species Act, locations of Environmentally Sensitive Areas (as defined in the training), and the correct protocol to follow when encountering a desert tortoise.
- Open trenches, auger holes, or other excavations that may act as pit-fall traps will be inspected by an authorized biologist (or biological monitor) before backfilling. Any desert tortoise found will be safely removed and relocated out of harm's way by an authorized biologist. For open trenches located outside of fenced areas, earthen escape ramps will be maintained at intervals of no greater than 0.25 mile. The open trenches will be inspected three times per day (four times per day during the spring and fall seasons when tortoise are active) by an authorized biologist or biological monitor. Other excavations outside the fenced areas that remain open overnight will be covered to prevent them from becoming wildlife traps.

- Project personnel will check under parked vehicles and equipment located outside of fenced and cleared areas for desert tortoises before operation. An authorized biologist will move desert tortoises found within the parking, staging, construction, or other traffic areas to a location away from danger and only as specified in the Biological Opinion.
- At water and garbage/trash sources, measures will be implemented by the authorized biologist to preclude access by common ravens (*Corvus corax*) and other tortoise predators. Garbage (waste with organic content) will be placed in closed containers and emptied at the end of business each day. Each water source will be caged. Fencing and netting will prevent desert tortoises and common ravens from accessing water sources in construction areas.
- If a desert tortoise that is either dead, injured, or entrapped, is found, the contractor will immediately notify the designated biologist/authorized biologist/biological monitor so the designated biologist/project proponent can notify the permitting agencies (USFWS, CDFG, and CEC) directly or through the CEC's biology staff. Any entrapped desert tortoise will be permitted to escape. The disposition of any carcasses or recovery of dead animals will be coordinated with the permitting agencies.
- If a desert tortoise is injured during the course of construction, the CEC will be notified and the authorized biologist will transport the animal to a qualified veterinarian.

2.4 Clearance Surveys of Permanent Exclusion Areas

2.4.1 Translocation Activities

The project owners will fence all portions of the site, including the Common Area and the Temporary Construction Laydown and Parking Area prior to the start of construction. During fence installation, the Designated Biologist will move desert tortoises out of harm's way if they are within the fence line right-of-way or associated perimeter access route.

2.4.2 Clearance Surveys

Prior to the clearance of desert tortoises, any work conducted on the site must either be done on-foot or under the guidance of a biological monitor.

Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, the Designated Biologist will conduct two complete desert tortoise clearance surveys of the fence line segment and associated disturbance right-of-way that will be fenced that day. During these surveys, an authorized biologist will inspect all burrows to determine occupancy and collapse all unoccupied burrows. If the fence line cannot avoid a given desert tortoise burrow, an authorized biologist will remove the individual and place it in a sheltered location outside of the area being fenced. If the project owners fence a given project phase and do not plan on immediately clearing the area, they may collapse all unoccupied burrows, but will leave gaps in the fence in locations where occupied desert tortoise burrows are found in the path of the fence line right-of-way. These gaps will buffer the burrow by a distance of 50 meters (25 meters on each side) and will remain open until the time that the project owners are ready to commence with clearance surveys. The project owners will not have the Designated Biologist excavate and clear these occupied burrows until it is ready to perform clearance surveys.

After construction of the desert tortoise exclusion fence around each portion of the HHSEGS site, the Designated Biologist will lead teams in performing a full clearance survey of the fenced area during the spring (typically April and May) or fall (typically, September and October). The Designated

Biologist may extend this survey window if pre-approved by the USFWS, CDFG, and CEC given appropriate temperatures and tortoise activity,

When performing clearance surveys, authorized biologists and supervised desert tortoise monitors will conduct at least three complete clearance sweeps within the fenced area with transects no wider than 30 feet. Surveyors will conduct transects for each sweep in different directions to allow for opposing angles of observation. Authorized biologists will excavate all potential desert tortoise burrows by hand to confirm occupancy status. The site will be considered cleared after two complete passes have discovered no new desert tortoises.

The authorized biologists will have primary responsible for the clearance surveys. Some authorized biologists may be substituted with biological monitors placed between authorized biologists during the surveys. Once the sites are deemed free of desert tortoises, after at least two consecutive clearance surveys have discovered no new desert tortoises, then heavy equipment will be allowed to enter the construction site to perform earth work such as clearing or cutting vegetation, grubbing, leveling, and trenching. A biological monitor will monitor initial clearing and grading activities to find and move any tortoises missed during the initial tortoise clearance survey. If a tortoise is discovered, the authorized biologist will be responsible for relocating it according to the requirements in this plan.

The specific instructions for handling and processing of tortoises as established in the *Desert Tortoise Field Manual* (USFWS, 2009) will be followed. The authorized biologists will maintain a record of all desert tortoises encountered and translocated during project surveys and monitoring. This includes the following information for each individual: the location (narrative, vegetation type, and maps) and dates of observations; burrow data; general conditions and health; measurements; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released; whether the animal voided its bladder; and diagnostic markings (for example, identification numbers).

All potential desert tortoise burrows located during clearance surveys will be excavated by hand by an authorized biologist, desert tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. A fiber optic scope may be used to determine presence or absence within a deep burrow. The authorized biologist will also search for desert tortoise nests/eggs, which are typically located near the entrance to burrows. All desert tortoise handling and removal, and burrow excavations, including nests, will be conducted by authorized biologists in accordance with the most current USFWS-approved protocol; currently the *Desert Tortoise Field Manual* (USFWS, 2009).

All USFWS Guidelines for clearance surveys stipulated in the Biological Opinion (USFWS, 201X) will be followed as detailed in this plan.

To minimize adverse effects to the desert tortoise, the project owners will implement the following protective measures when implementing clearance surveys:

1. All permanent desert tortoise exclusion fencing will be maintained in accordance with the USFWS guidance. The USFWS is currently using guidance provided in the *Desert Tortoise Field Manual* (USFWS, 2009).
2. Comply with the most up-to-date guidance for performing clearance surveys and handling desert tortoises. The USFWS is currently using the *Desert Tortoise Field Manual* (USFWS, 2009).
3. Use authorized biologists for the performance of clearance surveys and for any other activities that require the handling of desert tortoises. If desert tortoise monitors are used

during clearance surveys or for other activities that require identification of sign or handling of desert tortoises, they will do so under the direct supervision of an authorized biologist.

4. Following clearance of the fenced project sites, an authorized biologist will be onsite during grading to move any desert tortoises missed during the initial clearance surveys.
5. If a desert tortoise is identified as having clinical signs of disease, the Designated Biologist will contact the USFWS to determine appropriate disposition of the animal.
6. No clearance surveys will occur when ambient air temperature are above 95 degrees Fahrenheit (°F) or are anticipated to exceed 95 °F before handling or processing can be completed. They will not perform any clearance surveys when ambient air temperatures are below 65 °F or are anticipate going below 50 °F during the week after release. They will not release any desert tortoises if ambient air temperatures are above or are expected to reach 90 °F within 3 hours of release. Ambient air temperature will be measured in shade, protected from wind, at a height of 2 inches above the ground surface.
7. They will only perform clearance surveys during the spring and fall, as stipulated in the Biological Opinion. The clearance window may be extended if approved by the resource agencies (USFWS, CDFG, and CEC) so long as climatic conditions allow. They will only perform release of cleared desert tortoises in to a translocation area in the spring and fall as stipulated in the Biological Opinion
8. They will maintain a record of all desert tortoises encountered during project surveys and monitoring. The record will include the following information for each desert tortoise: the location (narrative, vegetation type, and maps) and dates of observations; burrow data; general conditions and health; measurements; any apparent injuries and state of healing; the location from which it was captured and the location in which it was released; whether animals voided their bladders; diagnostic markings (i.e., identification numbers); results of health assessments; ELISA test results as applicable.
9. Only USFWS trained individuals will perform health assessments. They must have training and experience identifying the clinical signs of upper respiratory tract disease, herpes virus, and cutaneous dyskeratosis for the performance of health assessments. Project owners will provide the USFWS with the qualifications of any authorized biologists who will perform health assessments on desert tortoises during clearance and translocation activities. The USFWS should receive these qualifications at least 30 days prior to the need for the health assessment.

2.5 Tortoise Handling Guidelines

Tortoise excavation, handling, artificial burrow construction, and other procedures will follow those described in the current guidance provided by the Biological Opinion.

No desert tortoise will be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 °F (35 °C). Ambient air temperature will be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise will be captured if the ambient air temperature is anticipated to exceed 95 °F (35 °C) before handling and translocation can be completed. If the ambient air temperature exceeds 95 °F (35 °C) during handling or processing, desert tortoises will be kept shaded in an environment that does not exceed 95 °F (35 °C), and the animals will not be released until ambient air temperature declines to below 95 °F (35 °C). Further,

desert tortoises will not be released at translocation sites if ambient air temperatures are above or are expected to reach 90 °F (32 °C) within 3 hours of release. Desert tortoises will be transported in clean cardboard boxes or plastic totes. If a cardboard box is used, a new box will be used for each individual tortoise and will be properly discarded after a single use. If a plastic tote is used, it will be sterilized with a 20 percent bleach solution between each use. The authorized biologists will wear disposable surgical gloves when handling desert tortoises. A new pair will be donned for each tortoise handled to avoid the transmission of upper respiratory tract disease. Any equipment used to handle tortoises will be sterilized with a 20 percent bleach solution between each use.

3.0 References

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2009. Desert Tortoise Field Manual. http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/U.S. Fish and Wildlife

USFWS. 201X. Biological Opinion

Attachment DR73-1
Draft 2081 Permit Application

Attachment DR73-1

Hidden Hills Solar Electric Generating System

Draft Application for Incidental Take of Threatened and Endangered Species Section 2081 of the California Endangered Species Act

In Accordance with the California Code of Regulations, Title 14, Division 1, Subdivision 3, Chapter 6, Article 1, Section 783.2

Prepared for

California Energy Commission and

California Department of Fish and Game

December 5, 2011

Submitted by

Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC

with Assistance from

CH2MHILL®

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Hidden Hills Solar Electric Generating System

Application for
Incidental Take of Threatened and Endangered Species
Section 2081 of the California Endangered Species Act

CALIFORNIA CODE OF REGULATIONS

TITLE 14.- NATURAL RESOURCES
DIVISION 1.- FISH AND GAME COMMISSION -DEPARTMENT OF FISH AND GAME
SUBDIVISION 3.- GENERAL REGULATIONS
CHAPTER 6 - REGULATIONS FOR IMPLEMENTATION OF THE CALIFORNIA ENDANGERED SPECIES ACT
ARTICLE 1 - TAKE PROHIBITION; PERMITS FOR INCIDENTAL TAKE OF ENDANGERED SPECIES, THREATENED SPECIES AND CANDIDATE SPECIES
§ 783.2 - INCIDENTAL TAKE PERMIT APPLICATIONS

The following application for incidental take of endangered and threatened species under the California Endangered Species Act is being submitted to:

California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

and

California Department of Fish and Game
407 West Line Street, Rm 1
Bishop, CA 93514

§783.2. Incidental Take Permit Applications.

(a) Permit applications. Applications for permits under this article must be submitted to the Regional Manager. Each application must include all of the following:

(1) Applicant's full name, mailing address, and telephone number(s). If the applicant is a corporation, firm, partnership, association, institution, or public or private agency, the name and address of the person responsible for the project or activity requiring the permit, the president or principal officer, and the registered agent for the service of process.

Applicant:	Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC
Name and Title of Principal Officer:	XXXX
(XXX) XXX-XXXX	
Mailing Address:	XXXXXX
XXXXXX	

(2) The common and scientific names of the species to be covered by the permit and the species' status under CESA, including whether the species is the subject of rules and guidelines pursuant to Section 2112 and Section 2114 of the Fish and Game Code.

Species:	Desert tortoise, Mojave population (Gopherus agassizii; DT)
Status:	Threatened

(3) A complete description of the project or activity for which the permit is sought.

This draft is prepared in response to CEC Data Request # 73. The Hidden Hills Solar Electric Generating System (HHSEGS) is being developed by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, "the Applicant"), wholly owned subsidiaries of Hidden Hills Solar Holdings, LLC, (their sole member), which is in turn a wholly owned subsidiary of BrightSource Energy, Inc. (BrightSource) (its sole member), a Delaware corporation. The Applicant proposes to develop approximately 3,277 acres of privately-owned lands in Inyo County, California, for a net 500-megawatt solar energy facility, comprised of two solar plants. The project site is approximately 18 miles south of Pahrump, Nevada, and approximately 45 miles west of Las Vegas, Nevada (Figure 1- Regional Map – Note: all figures are located in Exhibit 1). Following completion of project licensing and close of financing, HHSEGS will be constructed in approximately 29 months (target

completion by fourth quarter 2014 / first quarter 2015). The project will be designed for an operating life of 25 to 30 years.

Solar Plants and Associated Facilities

The project will comprise two solar fields and associated facilities on privately-owned lands: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant will generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 will occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres (Figure 2- Site Plan and Linear Facilities).

Each solar plant will use heliostats—elevated mirrors guided by a tracking system mounted on a pylon—to focus the sun's rays on a solar receiver steam generator (SRSG) atop a solar power tower near the center of each solar field. The solar power tower technology for the HHSEGS project design incorporates an important technology advancement, a 750-foot-tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre and the design is more efficient overall.

In each solar plant, one Rankine-cycle steam turbine will receive steam from the SRSG (or solar boiler) to generate electricity. The solar field and power generation equipment will start each morning after sunrise and, unless augmented, will shut down when insolation drops below the level required to keep the turbine online. Each solar plant will include a natural-gas-fired auxiliary boiler, used to augment the solar operation when solar energy diminishes or during transient cloudy conditions, a startup boiler, used during the morning startup cycle, and a nighttime preservation boiler, used to maintain system temperatures overnight. On an annual basis heat input from natural gas will be limited by fuel use and other conditions to less than 10 percent of the heat input from the sun. To reduce water consumption in the site's desert environment, each solar plant will use a dry-cooling condenser. Cooling will be provided by air-cooled condensers, supplemented by a partial dry-cooling system for auxiliary equipment cooling. Raw water will be drawn daily from onsite wells located in each power block and at the administration complex. Groundwater will be treated in an onsite treatment system for use as boiler make-up water and to wash the heliostats.

Linear Corridors

The transmission and natural gas pipeline alignments will be located in Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission line in the vicinity of the Eldorado Substation, which is located within the city limits of Boulder City, Nevada (Figure 3- Linear Corridors). A detailed environmental impact analysis of the transmission and natural gas pipeline alignments will be prepared by the BLM as part of the environmental impact statement (EIS) for the linears and the HHSEGS site as a connected action under NEPA.

A 12- to 16-inch-diameter natural gas pipeline will be required for the project. It will exit the HHSEGS site at the California-Nevada border and travel on the Nevada side southeast along the state line, then northeast along Tecopa Road until it crosses under SR 160. From this location a 36-inch line will turn southeast and continue approximately 26 miles, following one of the proposed transmission

line corridors, to intersect with the Kern River Gas Transmission (KRGT) pipeline. A tap station will be constructed at that point to connect it to the KRGT line. The total length of the natural gas pipeline will be approximately 35.3 miles.

(4) The location where the project or activity is to occur or to be conducted.

HHSEGS will be located on approximately 3,277 acres of privately owned land in Inyo County, California, adjacent to the Nevada border. The project site is approximately 18 miles south of Pahrump, Nevada, and approximately 45 miles west of Las Vegas, Nevada (Figure 1- Regional Map). Once offsite, the transmission line and natural gas pipeline are both located wholly within the state of Nevada, primarily on federal land managed by BLM, except for small segments of the transmission line in the vicinity of the Eldorado Substation, which are located within the city limits of Boulder City, Nevada (Figure 3- Linear Corridors). Project access will be from Tecopa Road to the project entrance road on the east side of the project. Secondary access will be from Tecopa Road along the west side of HHSEGS, then along the paved road between the two solar plants.

The project area lies at the toe of the alluvial fan complex, or bajada, extending from the Spring Mountains about 13 miles to the northeast. It occupies the east side of a mid-valley basin that runs northwest-southeast, defining the axis of the Pahrump Valley. This valley system includes Sandy (Mesquite) Valley to the southeast and the Stewart Valley to the northwest of Pahrump Valley. Biogeographically and climatically, the project area lies within the Mojave Desert, and the Pahrump Valley climate is typical of the northeastern Mojave Desert.

The elevation of the project site ranges between 2,580 and 2,680 feet above mean sea level. The project site is characterized by creosote-bursage desert scrub vegetation in the eastern portions of the site transitioning into saltbush scrub towards the west, with mesquite thickets occurring along the sandy dunes east of and adjacent to the HHSEGS (Figure 4- Vegetation Map). Shadscale scrub is common on the pale-colored, carbonate-rich silty soils of the basin fill. Mojave Desert scrub is common in areas with sandy to gravelly soils with better drainage. Shrub density within the project site is generally moderate to low. Geomorphology is middle to lower bajada with a westerly aspect and slope gradient of 1 to 3 percent. North, west, and south of the site is lower bajada grading into the playa at the low point in Pahrump Valley northwest of the site. East of the site are stabilized sand dunes and dissected bajada sloping up northeast to the Spring Mountains. Human impacts include dirt roads around every quarter section. Evidence of cattle and sheep grazing were found in the western and central portions of the site. Some areas in the central portion were denuded of vegetation due to extensive grazing or previous clearing (Sundance, 2011- Note: literature cited are listed in Exhibit 2).

The project site is located in a rural area and is currently undeveloped and unoccupied. The unincorporated Charleston View settlement near the HHSEGS site is sparsely populated. The largest community in the area is the unincorporated town of Pahrump, approximately 18 miles north of the site on the Nevada side of the state line. Portions of three wilderness areas administered by the BLM lie in California within 10 miles of the HHSEGS site: 1) the Nopah Wilderness Area boundary is approximately 4 miles to the west, 2) the Pahrump Valley Wilderness Area boundary is approximately 3 miles south of the site, and 3) the South Nopah Wilderness Area boundary is approximately 8 miles to the southwest (Figure 5- Wilderness Areas).

(5) An analysis of whether and to what extent the project or activity for which the permit is sought could result in the taking of species to be covered by the permit.

Desert tortoise (*Gopherus agassizii*) is the only federal Endangered Species Act (FESA) or California Endangered Species Act (CESA) listed species that has been identified at the HHSEGS site. The desert tortoise was listed by the U.S. Fish and Wildlife Service (USFWS) as threatened on August 20, 1980, and by the California Department of Fish and Game (CDFG) as threatened on August 3, 1989. The site is on privately-owned lands within the North-East Mojave: South Recovery Unit but does not lie within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA). The nearest critical habitat unit is located more than 20 miles south of the site, in Shadow Valley.

Desert Tortoise Presence/Absence Survey and Methodology

Pursuant to the California Energy Commission (CEC) and USFWS guidelines (USFWS, 2010), the proposed site and five Zone-of-Influence transects out to 1 mile from the project boundary were surveyed for desert tortoises and tortoise sign as well as other species. Delineation of the potential desert tortoise habitat was done prior to commencing the survey during a ground reconnaissance in April 2011 (Sundance, 2011). The desert tortoise presence/absence survey report is provided in Appendix 5.2F-R1 contained in Applicant's Responses to California Energy Commission Data Request Set 1B.

The project area is defined as any area that will be cleared or partially cleared, with vehicles on or adjacent to it, temporarily or permanently used for equipment or materials storage, loading or unloading, or sites where soils/vegetation is damaged, fragmented, or disturbed (for example, driving overland). The HHSEGS site covers approximately 3,277 acres, or approximately 5.12 square miles.

Wildlife biologists from Sundance Biology, Inc., conducted pedestrian transect surveys of the project area between April 13, 2011, and May 18, 2011 (Sundance, 2011). Surveys on the HHSEGS site were a set of walking transects that covered about 3,280 acres. Desert tortoise and tortoise sign within the project boundary and along the ZOI transects was recorded using Lowrance iFinder handheld global positioning system (GPS) units, which are accurate to within 3 meters.

Transect spacing was at 30 feet between transect centerlines (100 percent coverage), the standard width for desert tortoise presence/absence surveys according to the cited protocol (USFWS, 1990, 1992). ZOI transect surveys around HHSEGS were conducted in suitable tortoise habitat along all sides of the main project site at 200 meters, 400 meters, 600 meters, 1,200 meters, and 1,600 meters from the survey area perimeter (Figure 6- Desert Tortoise and Tortoise Sign). No ZOI transects were conducted south of the site because of the presence of private residences and unoccupied private land.

Team members focused on a search area that included 15 feet on either side of them. The members of each team remained close to one another without leading or lagging in order to increase the precision of searching. When one member of the team stopped to investigate an observation, all members of the team stopped. Team members were instructed to search beneath every shrub. Any tortoise or large mammal burrows encountered that could potentially be used by tortoises were visually checked. When the burrow could not be checked visually because the end was not visible, burrow entrances were gated with small sticks placed vertically in the soil at the entrance and checked periodically during the survey for tortoise activity. Very small burrows that could be potentially used by juvenile tortoises but are much more often rodent burrows were also visually checked when encountered. Only definitive tortoise sign was recorded with UTM locations and photographs.

All surveys were conducted while air temperature was below 40°C measured approximately 5-cm from the soil surface in an area of full sun, but in the shade of the observer. Actual temperatures during the survey between 13 April 2011 and 18 May 2011 ranged from a low of 4.3°C at 6:30 AM on 01 May to 35.4°C in the afternoon on 06 May, 2011. Winds ranged from calm to 20 mph. One day of rain on 10 May 2011 provided approximately 0.5 inch of rainfall.

Results

On the main project site, 2 tortoises were detected as well as 1 shell-skeletal remain, 58 burrows, 12 scat events, and 6 sets of tracks. All but 3 scat events occurred in 2011. The shell-skeletal remains were 2 to 4 years since time of death. It was an immature that appears to have been crushed. Within 150 meters of the site (burrowing owl buffer zone) 6 tortoises, 15 burrows, 1 scat event, and 3 sets of tracks were found. During surveys along the ZOI transects, 7 tortoises were located, 21 burrows, and 5 scat events. All but one scat event occurred in 2011. Results of the desert tortoise protocol survey are summarized in Table 1 below and illustrated in Figure 6- Desert Tortoise and Tortoise Sign (Sundance, 2011).

TABLE 1
Summary of Desert Tortoise Survey Results

Survey Area	Live Tortoise	Burrows	Scat Sites	Sets of Tracks	Other
HHSEGS Site	2	58	12	6	1 skeletal remains
150-m Burrowing Owl Buffer Area	6*	15	1	3	
Offsite ZOI	7	21	5		

*Includes two juveniles

Discussion

The proposed HHSEGS site 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. Juvenile through adult size classes were represented in the recent tortoise sign found in the survey area and in the ZOI.

Recent sign was found throughout the site, but was concentrated in the central and eastern portions, predominantly in creosote bush scrub. Evidence of tortoise activity diminished from east to west on the project site. Sign was scattered in a similar pattern in the ZOI with recent sign found mostly to the north and east of the site, predominantly in creosote bush scrub.

Density estimates for tortoises using the site, were calculated using the USFWS *Desert Tortoise Pre-project Survey Protocol 2010 Field Season* (USFWS, 2010). Calculations are summarized in the following table. In general, the habitat on the site appeared to be low quality for desert tortoise, and there is currently a moderate to low density population of tortoises utilizing the project site (Sundance, 2011).

TABLE 2
Estimated Abundance and Density of Desert Tortoise on the Project Site

	Abundance	Density	
N =	13.8	0.9 per km^2	2.3 per mi^2
Lower 95% CI =	5.75	0.4 per km^2	1.0 per mi^2
Upper 95% CI =	33.02	2.1 per km^2	5.4 per mi^2

CI =Confidence Interval

(6) An analysis of the impacts of the proposed taking on the species.

Desert tortoise is the only federally or state listed species that would be affected by the project. HHSEGS construction will affect approximately 3,277 acres of on privately-owned lands that is suitable desert tortoise habitat through the clearing, grubbing, and mowing of vegetation for the installation of project facilities and structures. Without the implementation of appropriate mitigation measures, these actions could result in take of individuals. Several impacts have the potential for occurring in the HHSEGS project area, which have the potential to result in take. In accordance with the FESA and NEPA, a formal consultation with USFWS will be required through a federal nexus as part of the EIS to be prepared by BLM for the HHSEGS site and the linear facilities as connected actions under NEPA. HHSEGS proposes mitigation measures, outlined below in Item (8), which will reduce these impacts to less-than-significant levels.

Without implementation of the mitigation measures, impact could occur as a result of encounters with vehicles or heavy equipment. Traffic control and low speed limits will reduce the potential for these impacts. Also, tortoises may take shelter under parked vehicles, which could result in take when the vehicle is moved. Routine inspections under parked vehicles will reduce the potential for this impact.

Human activities in the HHSEGS project area potentially provide food in the form of garbage and litter, or water, which may attract tortoise predators such as the common raven, kit fox, and coyote (Berry, 1985). Trash control and removal will reduce the potential for this impact.

(7) An analysis of whether issuance of the incidental take permit would jeopardize the continued existence of a species. This analysis shall include consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (A) known population trends; (B) known threats to the species; and (C) reasonably foreseeable impacts on the species from other related projects and activities.

As explained in detail below, issuance of the incidental take permit would not jeopardize the continued existence of the desert tortoise.

(A) Status and Trends of Desert Tortoise Population in the Northeastern Mojave Recovery Unit

This section presents information on the status and trends of the desert tortoise population in the Northeastern Mojave Recovery Unit, where the proposed action is located. The table below summarizes the population density information from the 1994 desert tortoise recovery plan (USFWS, 1994) and the population density information collected through the USFWS's range-wide monitoring program (USFWS, 2009, 2010c, 2010d). Estimates of density vary between years for a

number of reasons unrelated to actual changes in the population, such as differences in the intensity of sampling from year to year. A reasonably accurate estimate can be made by averaging the years 2001 to 2010. The estimated density is 7.5 desert tortoises per square mile in the recovery unit. This estimate is biased because data is from critical habitat units and other desert tortoise conservation areas rather than across all portions of the recovery unit. Desert tortoise densities in unsurveyed areas are likely lower than the estimate above because of the effects of human disturbance in unprotected areas.

TABLE 3
Desert Tortoise Density Estimates in Various Desert Wildlife Management Areas

Desert Wildlife Management Area	Density Estimates (desert tortoises per square mile)									
	1994 Recovery Plan	2001	2002	2003	2004	2005	2007	2008	2009	2010
Northeastern Mojave Recovery Unit		6.2	--	9.6	--	--	4.4	--	8.8	8.3
Beaver Dam Slope DWMA	5 to 60	14.5	--	--	--	2.3	3.1	2.9	8.3	8.6
Gold Butte-Pakoon DWMA	5 to 60	3.1	--	4.7	1.8	0.52	3.1	0	5.7	4.7
Mormon Mesa DWMA	40 to 90	4.7	--	9.9	6	12.7	8.6	4.9	18.9	14.3
Coyote Springs DWMA	up to 90	5.7	9.1	14.2	3.4	8.6	3.7	3.1	5.2	9.4
Ivanpah Critical Habitat Unit	5 to 250	7.3	14	--	12.2	11.9	16.9	18.4	10.4	2.9

Table 4 displays the estimated number of desert tortoises in the desert wildlife management areas in the Northeastern Mojave Recovery Unit, based on the USFWS's range-wide monitoring program (USFWS, 2010c, 2010d).

TABLE 4
Estimated Number of Desert Tortoises In the Desert Wildlife Management Areas of the Northeastern Mojave Recovery Unit

Desert Wildlife Management Area	Estimated Population Abundance		
	2008	2009	2010
Northeastern Mojave Recovery Unit	---	---	---
Beaver Dam Slope DWMA	778 (295-2047)	2251 (902-5621)	2323 (1342-4019)
Gold Butte-Pakoon DWMA	---	3284 (1287-8379)	2640 (1327-5250)
Mormon Mesa DWMA	1521 (737-3136)	5954 (2903-12210)	4486 (2976-6759)
Coyote Springs DWMA	1180 (658-2117)	1847 (921-3703)	3412 (2132-5460)
Ivanpah Critical Habitat Unit	16301 (6143-43248)	9272 (3990-21547)	2622 (1075-6390)

Nussear et al. (2009) modeled desert tortoise habitat across the range of the desert tortoise. This model, which is based on 3,753 desert tortoise locations, uses 16 environmental variables, such as precipitation, geology, vegetation, and slope. In addition, Nussear et al. used 938 additional

occurrence locations to test the model's accuracy. Using this model, it is estimated that the Northeastern Mojave Recovery Unit contains approximately 4,853,368 acres of potential desert tortoise habitat (Darst 2010). Although this analysis likely omits some marginal desert tortoise habitat, it explains the occurrence of 95 percent of the 938 test points used in the Nussear et al. (2009) model. This modeling and mapping analysis does not consider habitat loss, fragmentation, or degradation associated with human-caused impacts; however, it provides a reference point relative to the amount of desert tortoise habitat within the Northeastern Mojave Recovery Unit.

Based on the work by Nussear et al. (2009), the USFWS calculated, in a 2010 biological opinion, that the Northeastern Mojave Recovery Unit contained approximately 4,853,120 acres of modeled desert tortoise habitat (USFWS, 2010b). The model is an estimate of the desert tortoise population and its distribution based on available data. Because the model does not take into account existing human disturbance, USFWS used data on highly converted lands from The Nature Conservancy's ecoregional assessment (Randall et al., 2010) to remove areas from which desert tortoises are known to be extirpated (for example., Las Vegas, Pahrump) and to characterize the amount of remaining habitat that is currently degraded by human impacts. Based on this analysis, the USFWS estimated that the Northeastern Mojave Recovery Unit contains approximately 4,426,240 acres of habitat with the potential to support desert tortoises in the absence of habitat degradation (Waln, 2011a). In addition, wildfire burned approximately 300,800 acres of desert tortoise habitat in the Northeastern Mojave Recovery Unit in 2005 (Burroughs 2005).

Therefore, USFWS estimated that approximately 4,096,000 acres of modeled desert tortoise habitat remains in the recovery unit. Of this total, moderately degraded habitat, which Randall et al. (2010) define as lands that are fragmented by roads or off-road vehicle trails or are in close proximity to urban, agricultural, or other developments, comprises approximately 850 square miles (Waln 2011b); these areas likely contain lower density populations than the habitat historically supported. These estimates likely overstate the amount of extant desert tortoise habitat because the Randall et al. (2010) data on human disturbance are mapped at a coarse scale that does not allow for analysis of smaller scale disturbances and do not take into account spatially explicit information on threats, such as invasive species, that can also degrade habitat.

A kernel analysis was conducted in 2003 and 2004 for the desert tortoise (Tracy et al., 2004) as part of the reassessment of the 1994 recovery plan. The kernel analyses revealed several areas in which live desert tortoises and carcasses did not overlap. The pattern of non-overlapping kernels that is of greatest concern is that in which large areas encompassed carcasses but not live animals. These regions represent areas within desert wildlife management areas where recent die-offs or declines in desert tortoise populations likely occurred. The kernel analyses indicated large areas in the Piute-Eldorado Valley where carcasses were found but no live desert tortoises. For this entire area in 2001, workers found 6 live and 15 dead desert tortoises along 103 miles of transects, resulting in a live encounter rate of 0.06 desert tortoise per mile of transect for this area. This encounter rate was among the lowest that year for any of the areas sampled in the range of the Mojave Desert tortoise (Tracy et al., 2004).

Results of desert tortoise surveys at three survey plots in Arizona indicate that all three sites have experienced significant die-offs. Six live desert tortoises were located in a 2001 survey of the Beaver Dam Slope exclosure plot (Walker and Woodman, 2001). Three had definitive signs of upper respiratory tract disease, and two of those animals also had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 31 live desert tortoises in 1996, 20 in 1989, and 19 in 1980. The 2001 survey report indicated that a reproductively viable population of desert tortoises likely no longer persisted on this study plot. Thirty-seven live desert tortoises were located

in a 2002 survey of the Littlefield plot (Young et al., 2002). None had definitive signs of upper respiratory tract disease. Twenty-three desert tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 80 live desert tortoises in 1998 and 46 live desert tortoises in 1993. The survey report indicated that the site might be in the middle of a die-off due to the high number of carcasses found since the site was last surveyed in 1998. Nine live desert tortoises were located during the mark phase of a 2003 survey of the Virgin Slope Plot (Goodlett and Woodman, 2003). The surveyors determined that the confidence intervals of the population estimate would be excessively wide and not lead to an accurate population estimate, so the recapture phase was not conducted. One desert tortoise had definitive signs of upper respiratory tract disease. Seven desert tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 41 live desert tortoises in 1997 and 15 live desert tortoises in 1992. The survey report indicated that the site may be at the end of a die-off that began around 1996 or 1997.

(B) Known Threats to the Species

Fires, Drought, Human Activities and Non-native Plants

Fires

Wildfire is a major threat to the species. For example, fires burned approximately 470 square miles of the Northeastern Mojave Recovery Unit in 2005. The fires adversely affected the status of the desert tortoise by direct mortality, which is expected to reduce reproductive rates by reducing forage in burned areas, and by resulting degradation of some portion of the habitat available to the species by various processes (soil erosion, reduced infiltration, etc.).

Drought

Another threat is drought, which is a factor in reducing survival rates of desert tortoises in local areas (Longshore et al., 2003). Researchers compared two “closely situated, but physiographically different, sites” in the Lake Mead National Recreation Area, Nevada over a period of 9 years. Survival rates were stable in the early years. However, the survival rate declined on one of the sites after a period of drought in 3 out of 4 years. The authors hypothesize that if such local incidents occur on a regular basis, then “source-sink population dynamics may be an important factor” in the density of desert tortoise populations.

Human Activities

The revised draft recovery plan for the desert tortoise (USFWS, 2008) presents a general discussion of human threats to the desert tortoise that affect their ability to meet their nutritional needs. All references in the following excerpts are in the draft recovery plan (USFWS, 2008). Literature cited in the excerpts is not included in the reference section of this document (Exhibit 2).

> Surface disturbance from off-highway vehicle activity can cause erosion and large amounts of dust to be discharged into the air. Recent studies on surface dust impacts on gas exchanges in Mojave Desert shrubs showed that plants encrusted by dust have reduced photosynthesis and decreased water-use efficiency, which may decrease primary production during seasons when photosynthesis occurs (Sharifi et al., 1997). Sharifi et al. (1997) also showed reduction in maximum leaf conductance, transpiration, and water-use efficiency due to dust. Leaf and stem temperatures were also shown to be higher in plants with leaf-surface dust. These effects may also impact desert annuals, an important food source for (desert) tortoises.

Off-highway vehicle activity can also disturb fragile cyanobacterial-lichen soil crusts, a dominant source of nitrogen in desert ecosystems (Belnap, 1996). Belnap (1996) showed that anthropogenic surface disturbances may have serious implications for nitrogen budgets in cold desert ecosystems, and this may also hold true for the hot deserts that (desert) tortoises occupy. Soil crusts also appear to be an important source of water for plants, as crusts were shown to have 53 percent greater volumetric water content than bare soils during the late fall when winter annuals are becoming established (DeFalco et al., 2001). DeFalco et al. (2001) found that non-native plant species comprised greater shoot biomass on crusted soils than native species, which demonstrates their ability to exploit available nutrient and water resources. Once the soil crusts are disturbed, non-native plants may colonize, become established, and out-compete native perennial and annual plant species (DeFalco et al., 2001, D'Antonio and Vitousek, 1992). Invasion of non-native plants can affect the quality and quantity of plant foods available to desert tortoises. Increased presence of invasive plants can also contribute to increased fire frequency.

Proliferation of invasive plants is increasing in the Mojave and Sonoran deserts and is recognized as a significant threat to desert tortoise habitat. Many species of non-native plants from Europe and Asia have become common to abundant in some areas, particularly where disturbance has occurred and is ongoing. As non-native plant species become established, native perennial and annual plant species may decrease, diminish, or die out (D'Antonio and Vitousek, 1992). Land managers and field scientists identified 116 species of non-native plants in the Mojave and Colorado deserts (Brooks and Esque, 2002).

Increased levels of atmospheric pollution and nitrogen deposition related to increased human presence and combustion of fossil fuels can cause increased levels of soil nitrogen, which in turn may result in significant changes in plant communities (Aber et al., 1989). Many of the non-native annual plant taxa in the Mojave region evolved in more fertile Mediterranean regions and benefit from increased levels of soil nitrogen, which gives them a competitive edge over native annuals. Studies at three sites within the central, southern, and western Mojave Desert indicated that increased levels of soil nitrogen can increase the dominance of non-native annual plants and promote the invasion of new species in desert regions. Furthermore, increased dominance by non-native annuals may decrease the diversity of native annual plants, and increased biomass of non-native annual grasses may increase fire frequency (Brooks, 2003)."

Nutritional intake affects growth rates in juvenile desert tortoises (Medica et al., 1975) and female reproductive output (Turner et al,. 1986, 1987; Henen, 1992). Invasion of non-native plants can affect the quality and quantity of plant foods available to desert tortoises, and thereby affect nutritional intake. Desert tortoises are generally quite selective in their choices of foods (Burge 1977; Nagy and Medica 1986; Turner et al. 1987; Avery 1992; Henen 1992; Jennings 1992, 1993; Esque 1992, 1994), and in some areas the preferences are clearly for native plants over the weedy non-natives.

As native plants are displaced by non-native invasive species in some areas of the Mojave Desert, non-native plants can be a necessary food source for some desert

> tortoises. However, non-native plants may not be as nutritious as native plants. Recent studies have shown that calcium and phosphorus availability are higher in forbs than in grasses and that desert tortoises lose phosphorus when feeding on grasses but gain phosphorus when eating forbs (Hazard et al., 2002). Nagy et al. (1998), in a comparative study on the nutritional qualities of native versus nonnative grasses and forbs commonly consumed by desert tortoises (*Achnatherum hymenoides* [Indian ricegrass] vs. *Schismus barbatus*; *Malacothrix spp.* [desert dandelion] vs. *Erodium cicutarium*), found that the nutritional value of the two grasses was similar, but both grasses had much lower nutritional value than the forbs. This suggests that the proliferation of non-native grasses such as Schismus to the exclusion of native forbs and other plants (D'Antonio and Vitousek, 1992) places desert tortoises at a nutritional disadvantage. Furthermore, if (desert) tortoises consume just enough food to satisfy their energy needs (as commonly noted in other vertebrate groups), then the native forbs provide significantly more nitrogen and water than the non-native forbs (Nagy et al., 1998).

Non-native Plants

Changes in the abundance and distribution of plants also may affect desert nutrition and survival. Researchers suggest that desert tortoises may be vulnerable to upper respiratory tract disease or other diseases because of their need for sufficient water and nitrogen from food plants to negate the stress of excessive dietary potassium (Oftedal, 2002). Many food plants in the Mojave Desert contain high levels of potassium (Minnich, 1979). Excretion of potassium is difficult for desert tortoises because they lack salt glands that other reptilian herbivores have (such as chuckwallas [*Sauromalus obesus*]) and desert iguanas (*Dipsosaurus dorsalis)* (Minnich, 1970; Nagy, 1972). Reptiles in general cannot osmotically concentrate urine, which further reduces the ability of desert tortoises to excrete excess potassium (Oftedal and Allen, 1996). The quality of tortoise food plants is ranked by the Potassium Excretion Potential (PEP) index, which measures how much it allows substantial storage of protein (nitrogen) that is used for growth, reproduction, and drought survival. Non-native, annual grasses have lower PEP indices than most native forbs (Oftedal, 2002; Oftedal et al., 2002). Foraging studies have demonstrated that juvenile Mojave tortoises are highly selective while foraging, selecting both the plant species and plant parts that are have the highest PEP value. Impacts to vegetation (such as livestock grazing, invasion of non-native plants, or other causes of soil disturbance) that reduce the abundance and distribution of high PEP plants may result in additional challenges for foraging desert tortoises (Oftedal et al., 2002).

(C) Reasonably Foreseeable Impacts on the Species from Other Related Projects and Activities

The applicant requested information for a cumulative impact analysis from the Great Basin Unified APCD (GBUAPCD), Clark County Department of Air Quality and Environmental Management, and the Nevada Department of Air Quality Management, Bureau of Air Pollution Control. The GBUAPCD responded that "[t]here are no facilities in the District, other than the St. Therese project, within 6 miles of the perimeter of the Hidden Hills Ranch project." Nevada DEP responded with a list of active permits in the general project area. The request letters and the agency responses were included in Attachment 5.1G-1 to Appendix 5.1G of the AFC. The attachment includes the list provided by Nevada DEP and a description of the analysis used to determine that none of the projects on the list is within 6 miles of the project site.

The Clark County response to the request for information regarding potential sources to be included in a cumulative impacts analysis was received on August 25, after the AFC had been filed, and was docketed on August 29. Clark County responded, "We have five permitted sources in, or near, that

hydrographic area, but, none of these are within the 6 miles perimeter of the site you have identified. In fact, it appears the closest permitted source is over 20 miles away. Our search of our records did not indicate any proposed authority to construct projects within the area for which we have received an application."

As discussed in the Application for Certification filed with the CEC, the following three projects, located within 20 miles from the project site, were determined to be reasonably foreseeable future actions.

- Pahrump Valley General Aviation Airport
- Element Power Solar Project
- St. Therese Mission, a commercial facility

Pahrump Valley General Aviation Airport

The Pahrump Valley General Aviation Airport is proposed to be located approximately 10 miles northwest of the HHSEGS site in Nye County on BLM land. The airport would primarily serve small aircraft of less than 12,500 pounds, with wingspans of 49 feet or less. The 2008 Pahrump Valley Airport Master Plan outlines an initial phase of development that would last 3 years and include the design and construction of essential airport facilities such as the runway, taxiway, parking apron, access roads, airplane hangars, and fuel tanks. Additional phases of construction are scheduled to last through 2025. According to Pahrump Town Manager Bill Kohbarger, an EIS is currently being prepared for the airport. As of June 2011, it is anticipated to be completed in 20 months. The process for conveyance of BLM land for the proposed airport will begin following the certification of the EIS. The project has not yet been serialized by the BLM (Kohbarger, 2011).The Applicant's representatives have met with the airport design firm and members of the Federal Aviation Administration, and who have jointly determined that HHSEGS will not adversely impact the proposed airport operations.

Element Power Solar Project

Element Power filed an ROW application with the BLM Las Vegas Field Office on September 9, 2010, for the development of a solar photovoltaic project approximately 6 miles north of HHSEGS. This ROW covers 2,560 acres of BLM-managed land. The application status is currently incomplete, pending additional data required by BLM. Once the application is deemed complete, the NEPA scoping process may begin and an NOI will be issued (Wilhight, 2011).

St. Therese Mission

The St. Therese Mission will be located at 881 E. Old Spanish Trail (Tecopa Road), Charleston View, approximately 0.5 mile southeast of HHSEGS. The 17.5-acre site will consist of a chapel, a meditation garden, columbarium buildings for the storage of cremation remains, a visitor's center, restaurant, outdoor garden, and an onsite caretaker home. The project proposes to be LEED certified for energy efficiency and will make use of many energy and resource conservation measures such as solar panels, grey-water recycling, drought-tolerant desert landscaping, a greenhouse and nursery to grow and maintain vegetation for the facility.

The mission land is designated Resort/Recreational (REC) under the Inyo County General Plan, and is zoned Open Space, 40-acre minimum (OS-40) under the Inyo County Zoning Ordinance. A Notice of Determination for the Conditional Use Permit was filed on June 23, 2010. The first phase of construction began in early May 2011. Inyo County has not received a construction schedule or timeline from the developer. However, at least four phases of construction are expected. Once

completed, the project developer estimates that as many as 1,200 visitors per month could visit the facility.

Potential Actions in the Vicinity of HHSEGS That Are Known But Are Not Reasonably Foreseeable at this Time

There is some anecdotal information about potential projects within the vicinity of the HHSEGS site; however at this time, these projects have either not proceeded or they have not proceeded in the normal course to the point that there is enough publicly available information to determine their potential impacts as well as provide assurance that they will proceed. Accordingly, these potential projects are considered speculative and thus not reasonably foreseeable.

The HHSEGS site is located entirely on private land in California. The associated linear features are located in Nevada, primarily on federal land under BLM's jurisdiction, and are therefore not subject to the provisions of BLM's CDCA Plan (BLM, 1980). Therefore, the actions of the HHSEGS are consistent with both the CDCA Plan and the Northern and Eastern Mojave (NEMO) Coordinated Management Plan. Likewise, because the HHSEGS site is located outside of USFWS-designated critical habitat and the DWMAs, this project does not conflict with the Desert Tortoise Recovery Plan, a recovery plan that describes a strategy for the recovery and delisting of the desert tortoise. Furthermore, implementation of the outlined mitigation measures for the HHSEGS project will reduce any potential impacts to less-than-significant levels, and will comply with all applicable laws, ordinances, regulations, and standards. Loss of individual species of plants and animals is expected to be less than significant from the development of this project because special-status species considerations were integrated into all parts of the planning process, and avoidance and minimization measures have been identified to help reduce the risk and potential losses.

(8) Proposed measures to minimize and fully mitigate the impacts of the proposed taking.

The following section describes the proposed measures that are intended to avoid or minimize potential adverse effects of the project to the desert tortoise, and monitor and document the effectiveness of the measures. Mitigation measures in the Biological Opinion that will be issued by the USFWS may modify the mitigation measures described below.

1. Worker Environmental Awareness Program

    - A site-specific Worker Environmental Awareness Program (WEAP) will be administered by the project biologists and botanists as part of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). It will be designed to educate all site workers on the identified resources in the area, including desert tortoise, and the measures that will be undertaken to avoid or minimize impacts to these resources.

2. Desert Tortoise Mitigation Measures

    - Authorized Biologists (aka Designated Biologist) (AB) and Biological Monitor(s) (BM) will be appointed to oversee compliance with the protection measures for the desert tortoise and other species. The AB or BM will be onsite during all ground-disturbing project activities. The AB or BM will have the right to halt all activities that are in violation of the measures. Work will proceed only after hazards to the desert tortoise are removed, the species is no longer at risk, or the individual has been moved from harm's way by the AB. The AB and BM will have a copy of all the compliance measures when work is being conducted onsite.

- The project owner will submit the names and statement of qualifications of all proposed ABs and BMs to the California Energy Commission's Compliance Program Manager (CPM) for review and approval in consultation with CDFG and USFWS at least 30 days prior to initiation of any tortoise handling, clearance, and preactivity surveys. Project activities will not begin until the ABs and BMs are approved by the CPM, in consultation with CDFG and USFWS. Biological monitors will ensure compliance with the protection measures, but will not be allowed to survey for or handle desert tortoises. Workers will notify the AB or BM of all desert tortoise observations.
- The AB and BM will be responsible for awareness training, surveys, compliance monitoring and reporting. A desert tortoise clearance survey per USFWS protocol (USFWS, 2010) will be performed at the HHSEGS site. The site boundary will be enclosed with chain-link fencing for security purposes and desert tortoise exclusionary fencing will be attached to the bottom of the chain link fencing. Prior to fencing and grubbing of the fencing corridor, the AB will direct clearance surveys for tortoise within the fence corridor. This will include the clearance of any tortoise burrows within this corridor to ensure that any tortoise present are moved out of harm's way prior to grubbing and fence construction. The bottom 20 to 24 inches of the exclusionary fencing will be constructed of 1-inch by 2-inch galvanized vertical mesh fence material. The fence will be buried between 6 to 12 inches below ground or bent at a right angle toward the outside of the fence and covered with dirt, rocks or gravel to prevent the tortoise from digging under the fence. Gates will provide minimal ground clearance to deter ingress by tortoises. Once the site is fully enclosed with fencing, the ABs will relocate tortoises pursuant to the Desert Tortoise Translocation Plan. Once the areas are deemed free of desert tortoises after two consecutive surveys, then heavy equipment will be allowed to enter the site to perform earth work such as clearing, grubbing, leveling, and trenching. Following installation, the fencing will be inspected quarterly and after major rainfall events. Any damage to the fencing will be repaired immediately. Any pre-activity surveys for other construction areas will be performed within 72 hours of work activities.
- Unavoidable burrows inhabited by tortoises will be excavated by ABs using hand tools. To prevent reentry by a tortoise, all burrows that do not contain tortoises will be collapsed. Tortoises excavated from burrows will be relocated pursuant to the Desert Tortoise Translocation Plan. The new burrow will be located at least 300 feet from the outside of the fenced project areas and will be of similar size, shape and orientation to the original burrow. Relocated tortoises will not be placed in existing occupied burrows. The ABs will wear disposable surgical gloves when handling tortoises. A new pair will be donned for each tortoise handled to avoid the transmission of upper respiratory tract disease. Equipment will be sterilized between each use. Tortoise handling, burrow construction, egg handling, and other procedures will follow those described in the Guidelines for Handling Desert Tortoise During Construction Projects (Desert Tortoise Council, 1994).
- Existing routes of travel to and from the project site will be used. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Personnel will exercise caution when traveling to and from the site.
- A trash abatement program will be established. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.

- Workers will be prohibited from bringing pets and firearms (other than security personnel) to the project site.
- Any time a vehicle or construction equipment is parked for longer than 2 minutes in desert tortoise habitat, the ground under the vehicle will be inspected for the presence of desert tortoise before it is moved. If a desert tortoise is observed, the AB will immediately be contacted and the tortoise will be left to move on its own. If it does not move within 15 minutes, the AB will remove and relocate the animal to a safe location. In any event, the AB will ensure that the tortoise is relocated to a safe area and out of harm's way.
- Activities will be restricted to pre-determined boundaries. If unforeseen circumstances require project expansion, the potential expanded work areas will be approved by the CPM. The new area will be surveyed for desert tortoises prior to use of the area. All appropriate protection measures will be implemented within the expanded work areas based on the judgment of the CPM and AB.
- Trenches, bores and other excavations that constitute wildlife pitfalls will be immediately backfilled, sloped at a 3:1 ratio at the ends, covered, or fully enclosed with fencing to prevent any entrapment by the end of each work day. All excavations in tortoise habitat will be inspected periodically throughout and at the end of each workday by the AB or BM. If a tortoise becomes entrapped, the AB will remove and relocate the tortoise to a safe location.
- Within desert tortoise habitat, any construction pipe, culvert, or similar structure with a diameter greater than 3 inches stored less than 8 inches aboveground on the construction site for one or more nights will be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored on the construction site or placed on pipe racks. These materials will not need to be inspected or capped if they are stored within the fenced project areas after the clearance surveys have been completed.
- All vehicles and equipment will be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB, BM, and CPM will be informed within 24 hours of any hazardous spills. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility.
- Intentional killing or collection of wildlife species including listed species (such as the desert tortoise) at the project site and surrounding areas will be prohibited. The AB, BM and CPM will be notified of any such occurrences within 24 hours
- Water may be applied to the construction right-of-way, dirt roads, trenches, spoil piles and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. During the desert tortoise active season, a BM will patrol these areas to ensure water does not puddle for long periods of time and attract desert tortoises, common ravens, and other wildlife to the site.
- To mitigate impacts on the desert tortoise resulting from construction and operation of the project, project owner will offset these effects through acquisition, an in lieu fee based on the final construction footprint, and/or other mitigation measures. The ratio proposed is 1:1 for land of equal habitat quality, but the ratio may be reduced if acquired or managed lands are of higher quality habitat.

- Upon locating a dead or injured desert tortoise, the AB will make initial notification to the CPM within 24 hours of its finding. The notification must be made by telephone and writing to CPM. The report will include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information.
- On an annual basis until construction is completed, the AB will prepare a report for the USFWS, CDFG, and the CPM documenting the effectiveness and practicality of the protection measure and making recommendations for modifying the measures to enhance species protection. The report will also provide information on the biological support including the awareness training, clearance/pre-activity surveys, monitoring activities and any observed desert tortoises including injuries and fatalities.

(9) A proposed plan to monitor compliance with the minimization and mitigation measures and the effectiveness of the measures.

A Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) will be prepared prior to the start of construction that outlines how the Applicant will implement the mitigation measures.

The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Translocation Plan, the Raven Management Plan, the Burrowing Owl Mitigation and Monitoring Plan, and the Weed Management Plan. The BRMIMP shall be prepared in consultation with the Designated Biologist and include the following:

a. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;

b. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;

c. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;

d. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

e. All required mitigation measures for each sensitive biological resource;

f. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;

g. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction and operation;

h. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;

i. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

j. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

k. All performance standards and remedial measures to be implemented if performance standards are not met;

l. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s); and

m. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval

(10) A description of the funding source and the level of funding available for implementation of the minimization and mitigation measures.

The Applicant will develop funding sources with the permitting agencies, consistent with approvals for similar projects and consistent with the State of California objectives being developed in the DRECP process. In particular, the Applicant believes that the DRECP process may result in an in-lieu fee program or similar mitigation program that would satisfy the applicable legal requirements and provide greater certainty for developers.

(11) Certification in the following language:

I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.

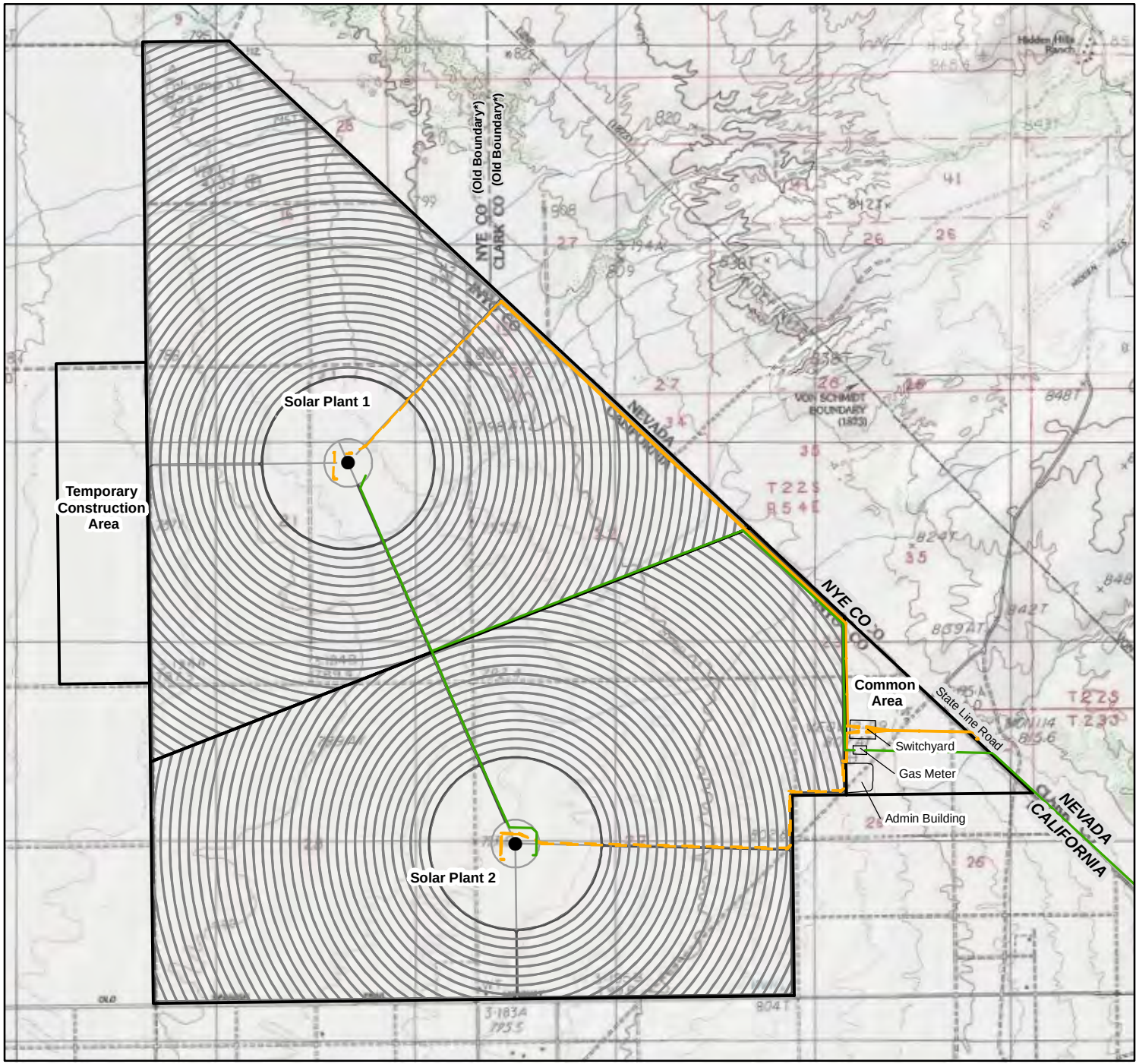
_____

[insert name], Hidden Hills Solar Holdings, LLC

(b) Information requirements; consultation with Department. Responses to the requirements of section 783.2(a)(5)-(a)(9) shall be based on the best scientific and other information that is reasonably available. At an applicant's request, the Department shall, to the greatest extent practicable, consult with the applicant regarding the preparation of a permit application in order to ensure that it will meet the requirements of this article when submitted to the Department. An analysis prepared pursuant to state or federal laws other than CESA that meets the requirements of section 783.2 and 783.3 may be submitted in an incidental take permit application.

Exhibit 1
Figures

FIGURE 1
Regional Map
Hidden Hills Solar Electric Generating System



LEGEND

- Solar Power Towers
- Proposed Gasline
- Transmission Line
- Underground Transmission Line
- Solar Field Heliostat Arrays
- Access Roads
- HHSEGS Boundary

*County boundary moved due to annexation, 2001

N

0 1,200 2,400
Feet

Figure 2
Site Plan and Linear Facilities
Hidden Hills Solar Electric Generating System

VICINITY MAP

LEGEND

- Substation
- Proposed Gasline
- Tecopa Road/ SR-160 Corridor
- Eldorado Corridor
- Double-circuit 230kv
- Kern River Gasline

Existing Transmission Lines (Platts)

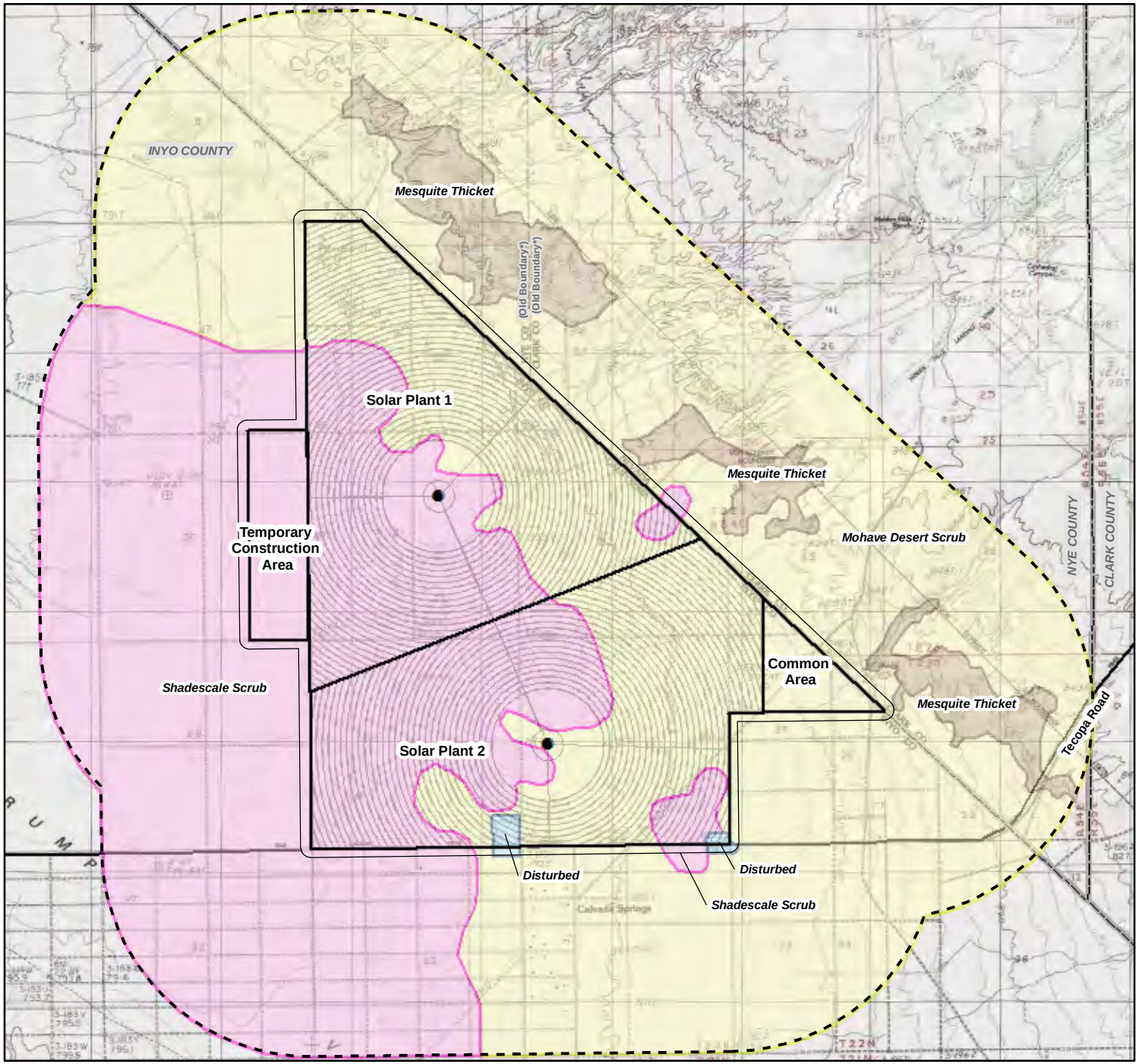
- Below 230kV
- 230kV - 344kV
- 500kV - 734kV
- 735kV - 999kV
- DC
- HHSEGS Boundary
- Wilderness Areas
- City Boundary

N

0 13,000 26,000

Feet

FIGURE 3
Linear Corridors
Hidden Hills Solar Electric Generating System



LEGEND

- Solar Power Tower
- HHSEGS Boundary
- 250-foot Buffer of HHSEGS
- 1-mile Buffer of HHSEGS

Vegetation Coverage

- Mesquite Thicket
- Disturbed (excluding roads)
- Shadescale Scrub
- Mohave Desert Scrub

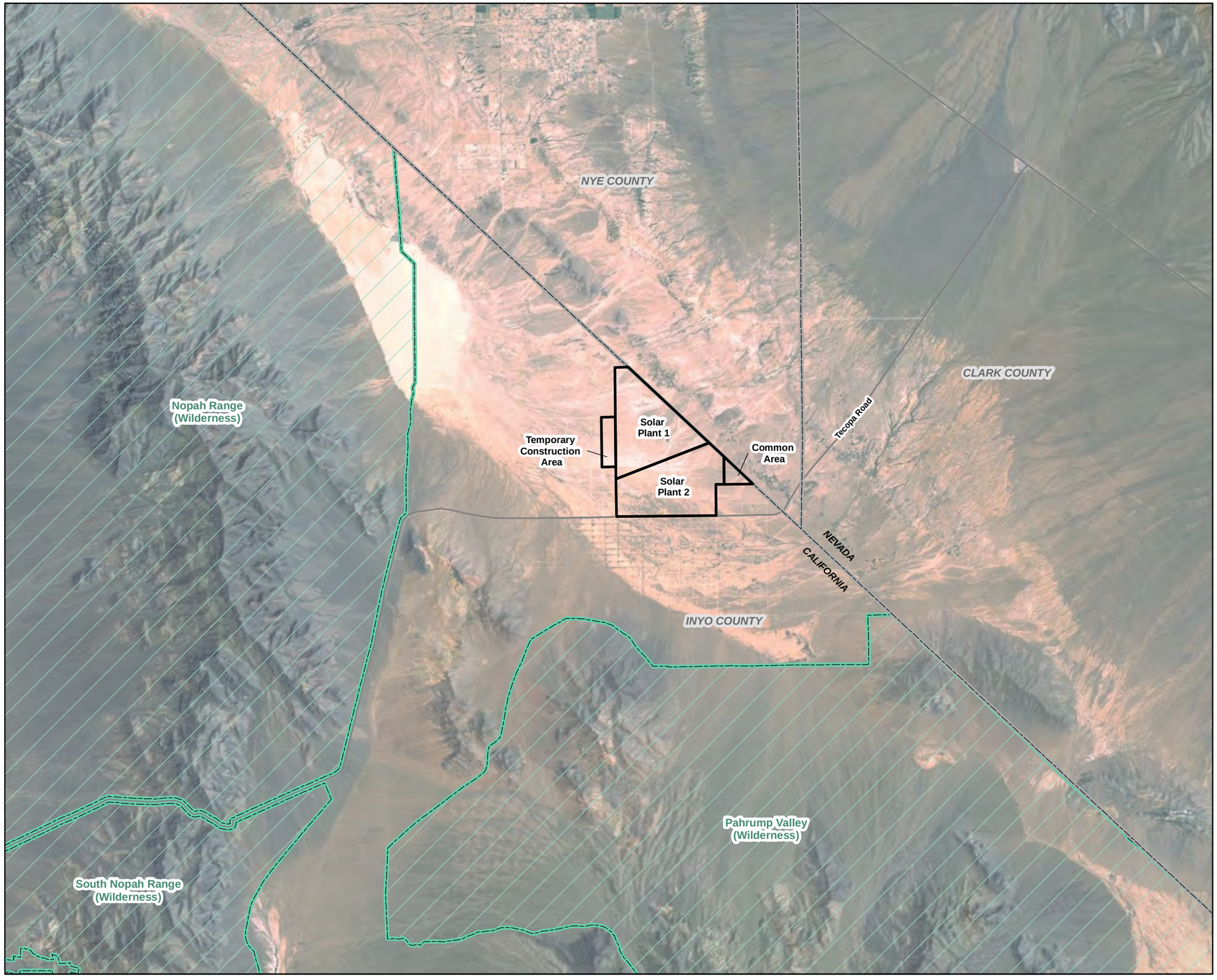
*County boundary moved due to annexation, 2001

Data Source:
GANDA Vegetation Survey, 2011

N

0 1,800 3,600
Feet

Figure 4
Vegetation Map
Hidden Hills Solar Electric Generating System



VICINITY MAP

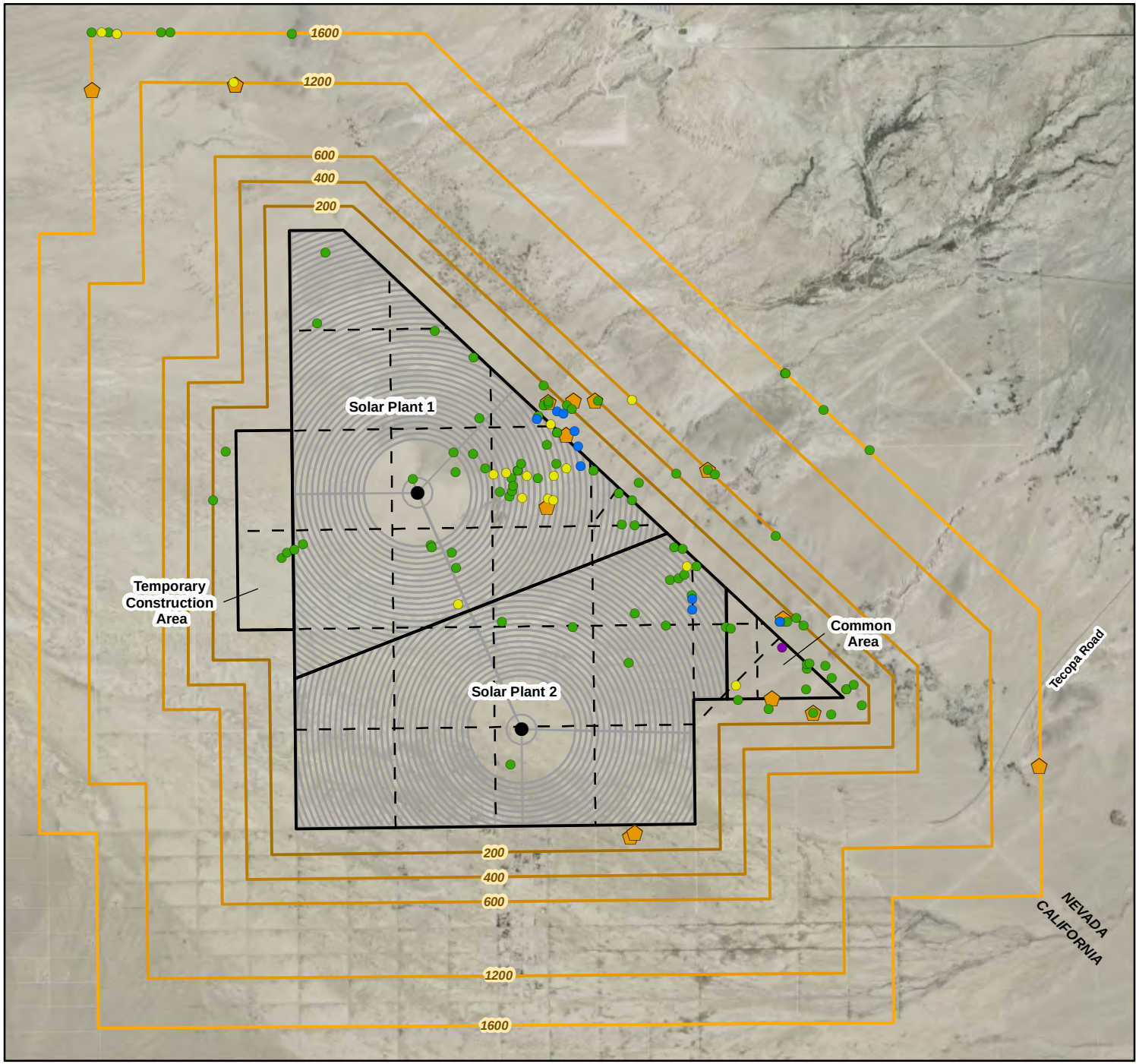
LEGEND

- Wilderness Areas
- HHSEGS Boundary
- County Boundary

N

0 1 2
Miles

Figure 5
Wilderness Areas
Hidden Hills Solar Electric Generating System



LEGEND

- Solar Power Tower

Tortoise Data

- Live Tortoise
- Tortoise Tracks
- Tortoise Scat
- Tortoise Carcass
- Tortoise Burrows

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters
- Site Road
- Solar Field Heliostat Arrays
- HHSEGS Boundary

Source: Sundance Biology, Inc.

N

0 2,000 4,000

Feet

Figure 6
Desert Tortoise and Tortoise Sign
Hidden Hills Solar Electric Generating System

Exhibit 2
Literature Cited

Literature Cited

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126B
127S
128B
129S
130S
131B
132B
133B
106T
124S
123T
122T

VICINITY MAP

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Page 1 of 16

Figure DR68-1a
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

VICINITY MAP

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200

Feet

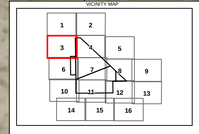
1:2,400

Figure DR68-1b
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

Solar Plant 1

Temporary Construction Laydown Area

VICINITY MAP



LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200

Feet

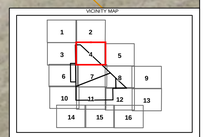
1:2,400

Page 3 of 16

Figure DR68-1c
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

001B
002B
003B
004B
Solar Plant 1
NYE COUNTY NEVADA
INYO COUNTY CALIFORNIA
111B
011T
006T
007B
005B
008B
110B
109B
009tt
010tt
013B
012tt
014B
015S
016tt
018B
019B
017T
021B
020tt

VICINITY MAP



LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1d
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

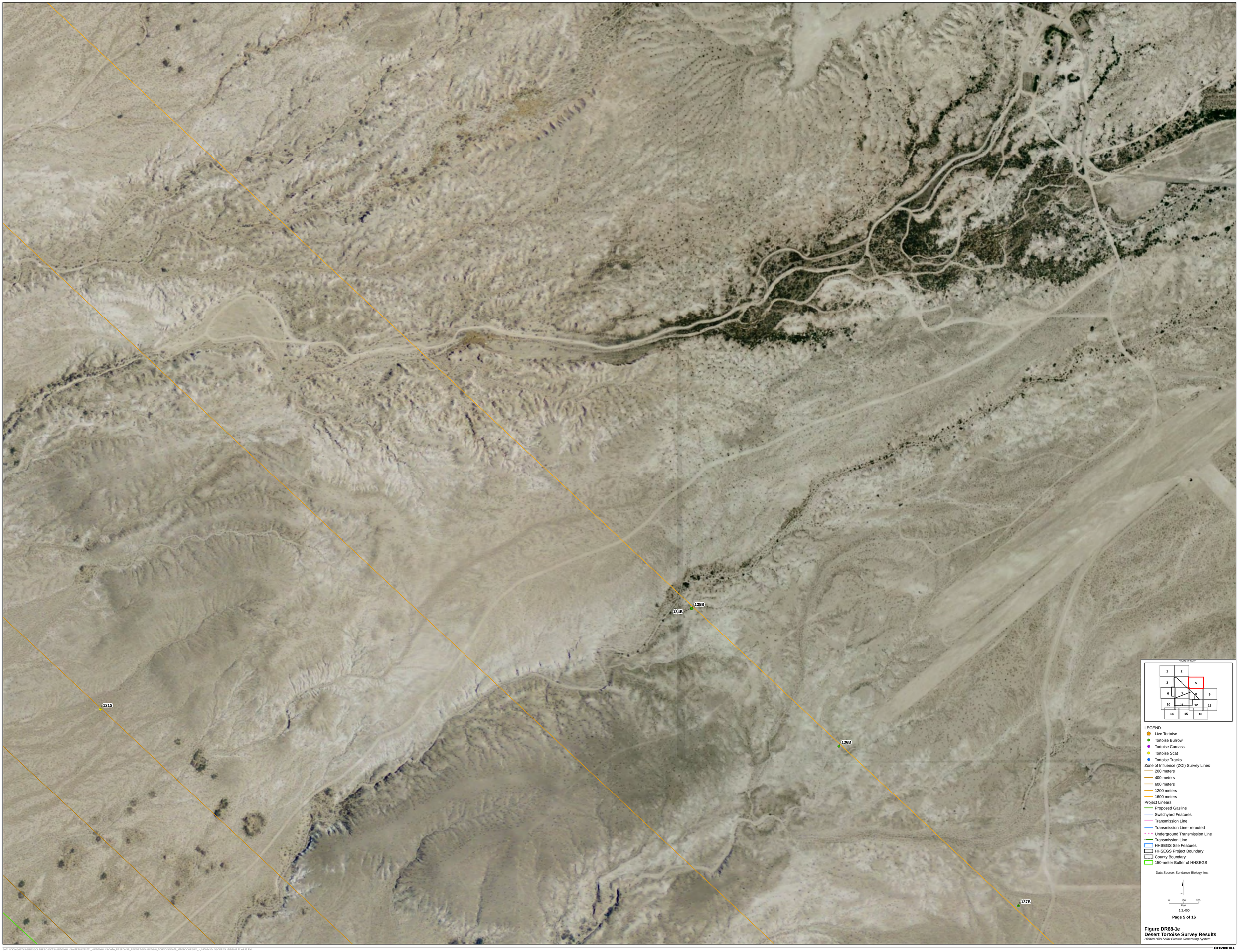


Figure DR68-1e
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

105B

108B

Temporary Construction Laydown Area

096B

094B

095B

092B

Solar Plant 1

VICINITY MAP

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

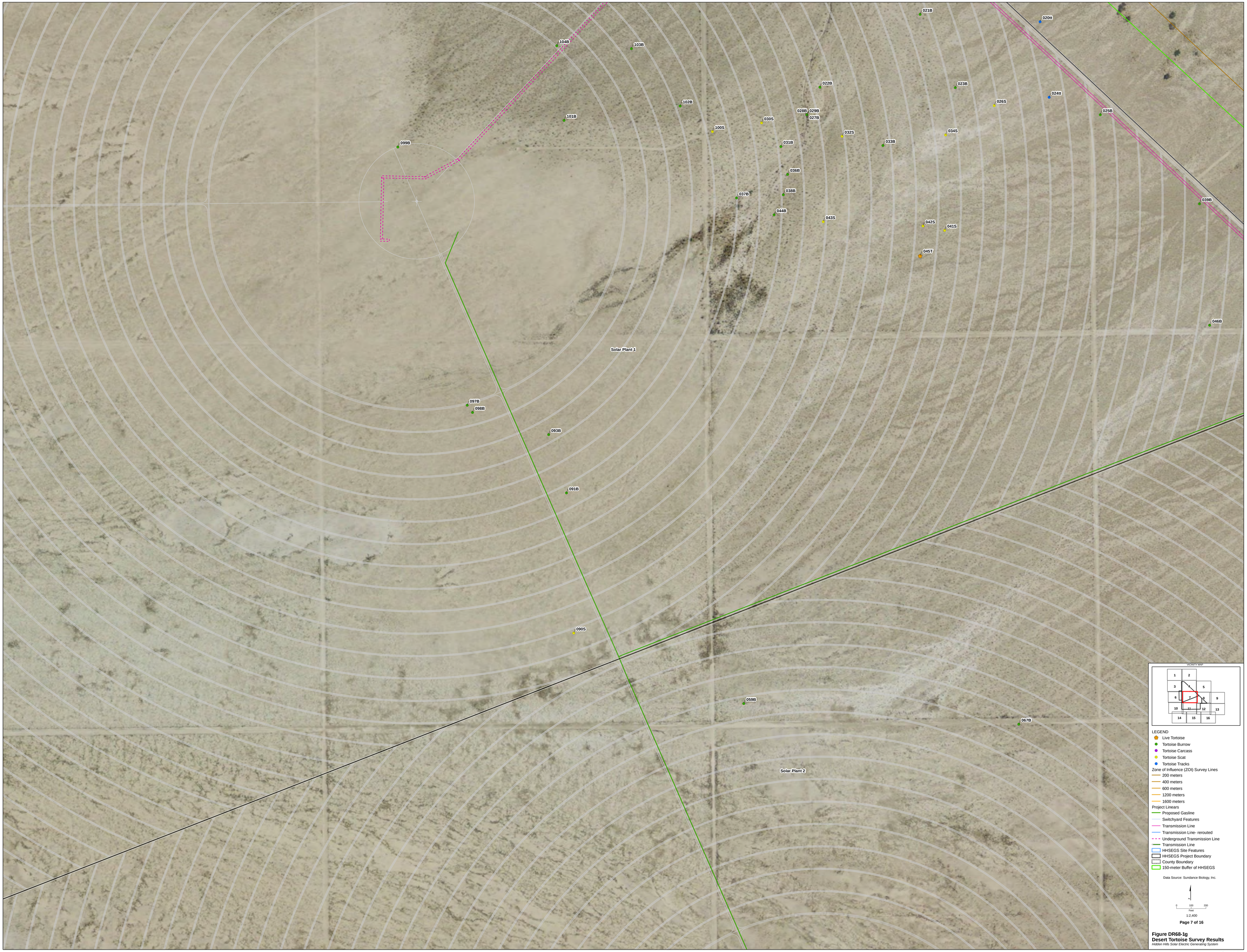
Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1f
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System



VICINITY MAP

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Lineers

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1g
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

117B
118T
114B
119B
035B
039B
040B
Solar Plant 1
046B
047B
120B
049B
048B
051S
050B
052B
053B
054B
055B
057tt
056tt
058B
062T
112B
060tt
061S
063B
113B
066B
Solar Plant 2
065B
064B
068C
069B
Switchyard
Common Area
071B
070B
072B
073B
Tap Station?
Gas Metering and Pressure Reduction Station
074B
075B
079S
Admin Building
078B
076B
077B
080T
081B

VICINITY MAP

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1h
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

VICINITY MAP

LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

- Proposed Gasline
- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

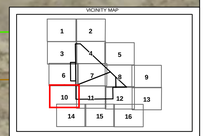
1:2,400

Figure DR68-1i
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

Solar Plant 1

Solar Plant 2

VICINITY MAP



LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

Zone of Influence (ZOI) Survey Lines

- 200 meters
- 400 meters
- 600 meters
- 1200 meters
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- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
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Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

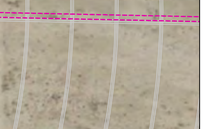
1:2,400

Figure DR68-1j
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

Solar Plant 2

087B

VICINITY MAP



LEGEND

- Live Tortoise
- Tortoise Burrow
- Tortoise Carcass
- Tortoise Scat
- Tortoise Tracks

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- 400 meters
- 600 meters
- 1200 meters
- 1600 meters

Project Linears

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- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200

Feet

1:2,400

Figure DR68-1k
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

Common Area

Solar Plant 2

080T
081B
082B
083B
084T
085B
086B
088T
089T

VICINITY MAP

LEGEND

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- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1l
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

Figure DR68-1m
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

VICINITY MAP

LEGEND

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- Switchyard Features
- Transmission Line
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- Transmission Line
- HHSEGS Site Features
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Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1n
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

VICINITY MAP

LEGEND

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- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

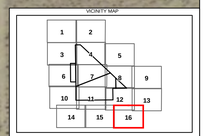
N

0 100 200
Feet

1:2,400

Figure DR68-1o
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System

VICINITY MAP



LEGEND

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- Tortoise Scat
- Tortoise Tracks

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- 1600 meters

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- Switchyard Features
- Transmission Line
- Transmission Line- rerouted
- Underground Transmission Line
- Transmission Line
- HHSEGS Site Features
- HHSEGS Project Boundary
- County Boundary
- 150-meter Buffer of HHSEGS

Data Source: Sundance Biology, Inc.

N

0 100 200
Feet

1:2,400

Figure DR68-1p
Desert Tortoise Survey Results
Hidden Hills Solar Electric Generating System