Jaton LLC

Mohave Ground Squirrel Trapping Results for Sheep Creek Solar Project San Bernardino County, CA

August 2018

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Building a Sustainable Future

Mohave Ground Squirrel
(*Xerospermophilus mohavensis*) Trapping Results
For Sheep Creek Solar Project

(APN #0457-174-01-0000)
Shadow Mountains SE 7.5 Minute Quadrangle,
N ½, NW ¼, NW ¼, Section 36, Township 6 N, Range 7 W
San Bernardino County, California

Prepared for

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Prepared by

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Executive Summary:

Phoenix Biological Consulting (Phoenix) conducted a Mohave ground squirrel (MGS; *Xerospermophilus mohavensis*) trapping survey for the Jaton Sheep Creek Solar Power Generating Project (hereafter, "project") located west of Adelanto, San Bernardino County, California, at the southeast corner of the intersection of Sheep Creek Road and Parkdale Road. Sheep Creek Renewable Solar Plant (SCRSP) is developing a photovoltaic (PV) solar energy generation facilities (the Projects), up to 3 megawatts (MW).

The total parcel area is 20.1 acres (APN 045717401; Figure 2). The parcel is relatively undisturbed creosote scrub and is unfenced. Parkdale is an unpaved dirt road. Sheep Creek Road is a paved one lane rural road. Representative photographs and maps of the site are included in this report (Figures 1-4). At the request of Panorama Environmental, Inc. (Panorama), Phoenix initiated a MGS survey within the parcel boundary because the site has suitable MGS habitat and the site is within the range of the MGS.

Phoenix biologist, Alex Brown, performed the field work under the auspices of a Memorandum of Understanding (MOU) between the CDFW and Phoenix. ***The results of the visual survey and trapping sessions were negative for MGS, and thus for CEQA purposes, the Sheep Creek Solar project is not expected to have a significant impact on MGS.*** The results of the field work are good for up to one year from June 27, 2018, the final trap date (Table 1).

Introduction and Purpose:

The SCRSP project constitutes a project pursuant to the California Environmental Quality Act (CEQA) as they are located on private lands in the unincorporated San Bernardino County. Acting in its capacity as a lead agency under CEQA, the county is required to determine the potential for the projects to result in significant impacts, consider mitigation measures and alternatives capable of avoiding significant impacts, and consider the environmental effects of the projects as part of its decision-making process.

At the request of Panorama, LLC, Phoenix conducted Mohave ground squirrel trapping surveys within the parcel boundary. One grid was established within the parcel (Figure 3) which is situated within the MGS range (Figure 4). The MGS was listed as a rare species in 1971 under the authority of the State Endangered Species Act of 1970. It was re-designated as a state threatened species under the California Endangered Species Act (CESA) in 1985 (Gustafson, 1993). Due to its sensitive status, presence/absence pre-project surveys are typically required to determine if MGS are present within the project boundaries. Alternatively, mitigation,

through an incidental take permit, may be obtained, in lieu of trapping. Typically, protocol trapping, using the January 2003 Survey Guidelines (revised 2010 & 2016), is implemented to satisfy the California Department of Fish and Wildlife (CDFW) requirements. The principal investigator, Alex Brown, performed the field work under the auspices of a Memorandum of Understanding (MOU) between the CDFW and Phoenix. The visual survey was conducted on April 14th by Ryan Young. The trapping dates are listed on Table 1. The trapping schedule consisted of three trapping sessions per grid, and took place during the months of April to June. ***The results of the visual survey and trapping sessions were negative for MGS, and thus for CEQA purposes, the Sheep Creek Solar project is not expected to have a significant impact on MGS.***

Location:

The parcel is located in El Mirage Valley, approximately 4 miles south of El Mirage Dry Lake Bed in unincorporated northwestern portion of San Bernardino County, California, at the southeast corner of the intersection of Sheep Creek Road and Parkdale Road (Figure 1). The parcel encompasses approximately 20 acres. The proposed initial solar array will only impact approximately the western half of the parcel (Figure 5). Representative photographs and maps of the site are included in this report.

The site is situated within the Shadow Mountains SE Quadrangle 7.5 minute series topographic map. The legal description of the site is a portion of N ½, NW ¼, NW ¼, Section 36, Township 6 N, and Range 7 W Unincorporated San Bernardino County. The site is located within the MGS range boundary. There are several California Natural Diversity Database (CNDDB) records in the vicinity (Figure 4). Due to the suitable habitat on the project sites and relatively proximity of known occurrences, protocol MGS trapping surveys were implemented.

Habitat and Land Use

The parcel is situated at approximately 3,010 feet within the El Mirage Dry Lake Valley. Undisturbed land persists to the north, east and south of the parcel. Previously disturbed land is situated to the west. There is an active dairy farm to the northwest. Otherwise, there is no significant disturbance or signs of disturbance for 2 to 3 miles in any direction.

The undisturbed area consists of creosote bush scrub with very low density Joshua trees (*Yucca brevifolia*). There are no true trees in or bordering the sites. Evidence of creosote rings are noticeable in aerial photos of the project area as are intermittent dry desert drainages along the eastern border of the parcel. The initial project siting is situated along the western parcel

boundary (Figure 5). The soils consist predominantly of Manet loamy sand and Manet coarse sand (USDA, 2018). Existing vegetation is sparsely distributed throughout the parcel and is nearly monotypic in vegetation diversity; very few other shrubs types are present.

Mohave Ground Squirrel Natural History

The Mohave ground squirrel is small, grayish, diurnal squirrel that is currently listed under the California Endangered Species Act as a threatened species. The California Department of Fish and Wildlife is the responsible agency that provides oversight through the California Environmental Quality Act (CEQA) for project related activities. MGS occur in the western half of the Mojave Desert. Its historical range encompasses an area between Antelope Valley and Lucerne Valley, in the south. However, MGS occurrences in the southern portion of its range are very rare. The northern limits of the range are near Owens Dry Lake bed, in the north, and through China Lake Naval Weapons Station and Fort Irwin Military base, in the east. The eastern limits extend to Barstow and south along the Mojave River. The western limits loosely follow highway 14 and the foothills of the southern Sierra Nevada escarpment. MGS are dormant in the fall and winter months. They emerge from hibernation in February and begin pair bonding and mating during March. If rainfall is adequate, MGS will reproduce. If rainfall levels do not provide sufficient rainfall to support significant annual plant growth then MGS will merely forage on herbaceous perennials and shrubs in order to gain enough body mass to survive another prolonged period of dormancy and will not reproduce in that year. The adult males can enter dormancy as early as late May. Juveniles will remain above-ground until August in order to gain sufficient fat reserves prior to entering dormancy.

Several other common squirrels occur within their range: antelope ground squirrel (AGS; *Ammospermophilus leucurus*), round-tailed ground squirrel (RTGS; Xeros*permophilus tereticaudus*) and the California ground squirrel (CGS; *Spermophilus beecheyi*). RTGS and CGS are commonly mistaken as MGS. AGS occur throughout the range of the MGS but are easily distinguished by a lateral white stripe on each side. RTGS occur along a contact zone that exists in the Barstow and Lucerne Valley area of the MGS range. Within the contact zone the range of RTGS and MGS overlap. RTGS also occur throughout the eastern Mojave Desert. CGS is typically found near human habitation with scattered populations throughout the MGS range but primarily in the southern portion of the range or in irrigated areas.

Methodologies

The visual survey was conducted on April 13th. All potential MGS habitat within the grid locations was surveyed during this visit. A list of animal species detected during the initial visit and during the trapping sessions was compiled (Table 5). Within the grid location, traps were deployed at protocol thirty-five meter spacing over the suitable habitat (Table 2). The grid covered approximately twenty-five acres. Typically, a grid is required for every eighty acres of habitat. Grid placement was determined by suitable vegetation cover, proximity to surrounding habitat and availability of access roads. Standard, small-mammal, aluminum, foldable, ventilated 12" Sherman Traps were used. Cardboard boxes were used as shade covers for each trap. Traps and shade covers were placed on the north side of the nearest bush on a north-south axis to provide the greatest shade cover possible. The shade covers were covered with dirt on both sides and on the roof to provide better temperature insulation and to prevent the boxes from blowing away in the wind. Temperature readings were taken and recorded every hour at one foot and at ground level in the shade of a bush. Traps were checked every two to four hours depending on temperature and other influential factors such as potential pregnant or lactating females in traps, dogs on grids, ravens, cold weather, expected juveniles etc. Traps were open within one hour after sunrise and closed within one hour before sunset. Traps were closed when air temperature reached 90 °F, when temperature fell below 50 °F or during periods of rainy weather. The bait used consisted of crushed four-way grains with molasses and mixed with peanut butter and water.

Table 1: Trap Dates

Grid Name/#	First Session	Second Session	Third Session
Grid 1	04/24/18 to 04/28/18	05/26/18 to 05/30/18	06/23/18 to 06/27/18

Results

MGS were not seen nor heard during the visual survey. Furthermore, MGS were not trapped on the grid. A total of one species was trapped on the grid: Antelope ground squirrels (AGS; *Ammospermophilus leucurus*). The above-named species is a commonly occurring, non-listed species. Total trap hours were 9,375 for the total of the project site. Total captures were 43 individuals. The results of the survey are good for up to one year from June 27, 2018, the final trap date (Table 1).

Table 2: Grid Locations

Grid #	**Grid Corners (Easting/Northing) WGS 83**
Grid 1	**NW: 446978 E, 3825822 N** **NE: 447372 E, 3825817 N** **SE: 447369 E, 3825621 N** **SW: 446976 E, 3825622 N**

Table 3: Trap Results

	Grid 1
Trap Hours	9,375 hours
Total Captures	43
Total AGS	43
Incidental captures (excluding AGS)	0
Number of species captured	1

Table 4: List of vertebrate species trapped

	Captures per grid
Mammals	**Grid 1**
Antelope ground squirrel (*Ammospermophilus leucurus*)	43
Total animals trapped	43

Figure 1: Regional Map for the Sheep Creek Renewable Solar Site

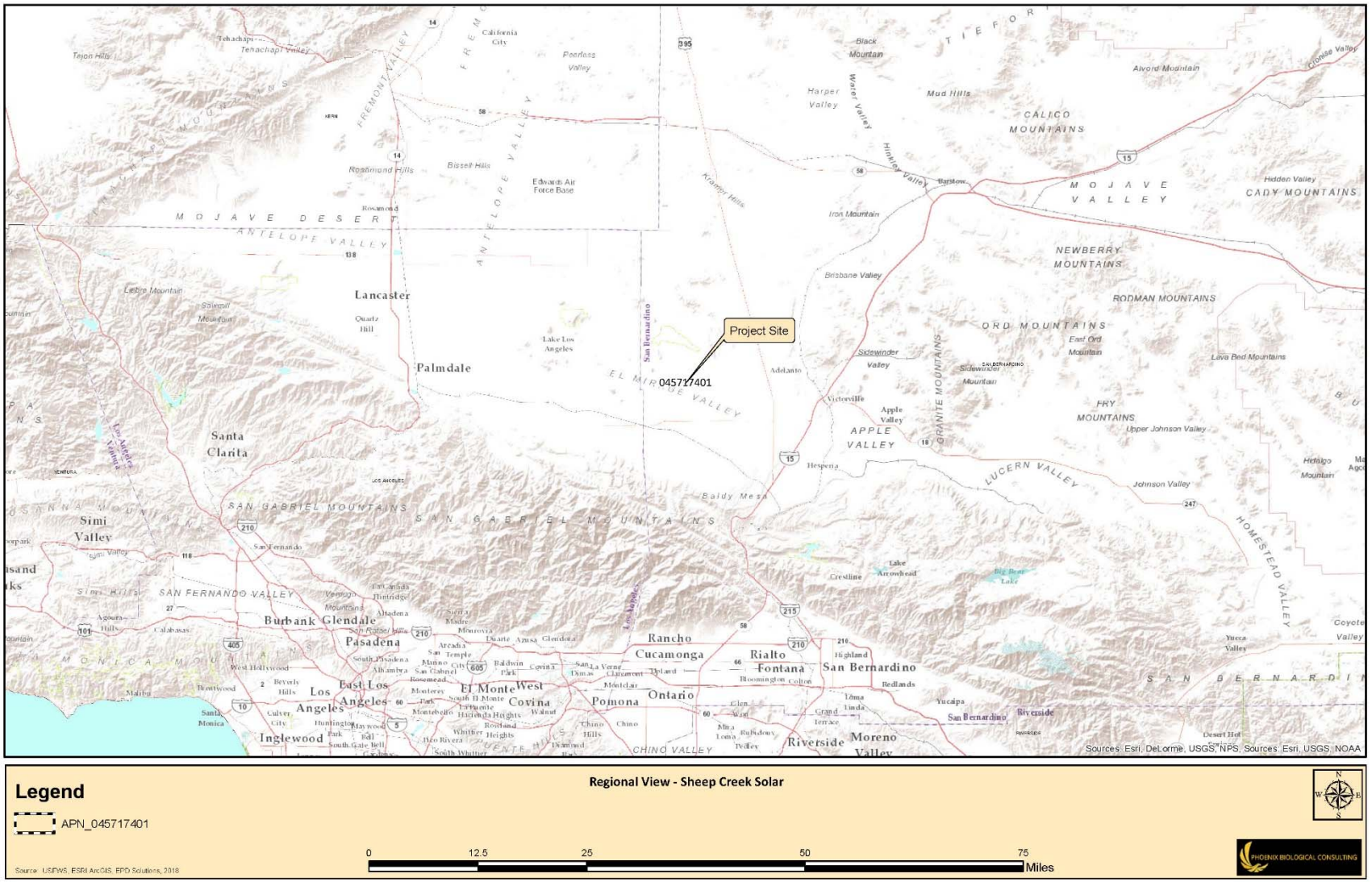

Figure 2: Topographic View of Project Sites and Grid Location for Sheep Creek Renewable Solar Site

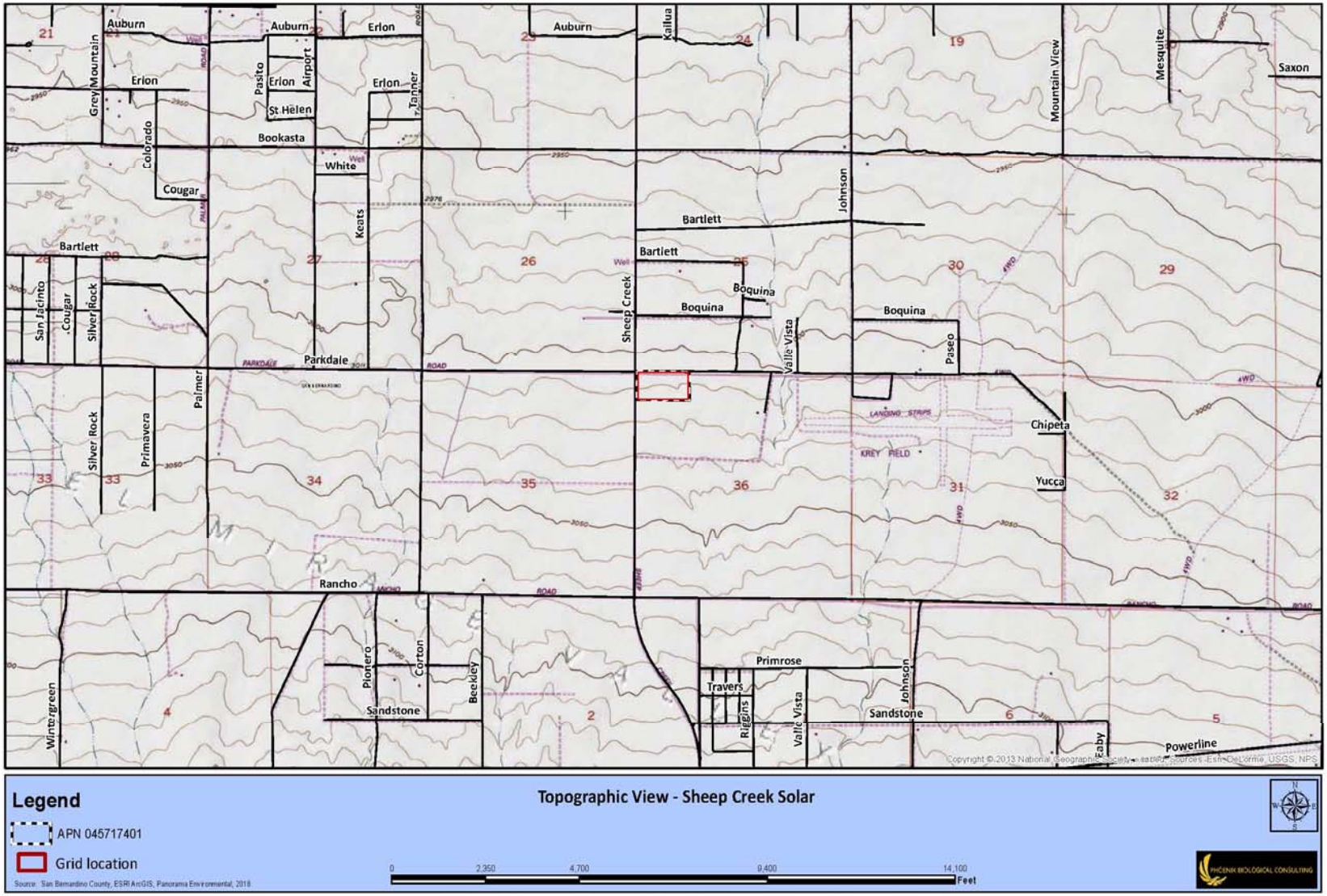

Figure 3: Aerial View of Project Sites and Grid Location for Sheep Creek Renewable Solar Site

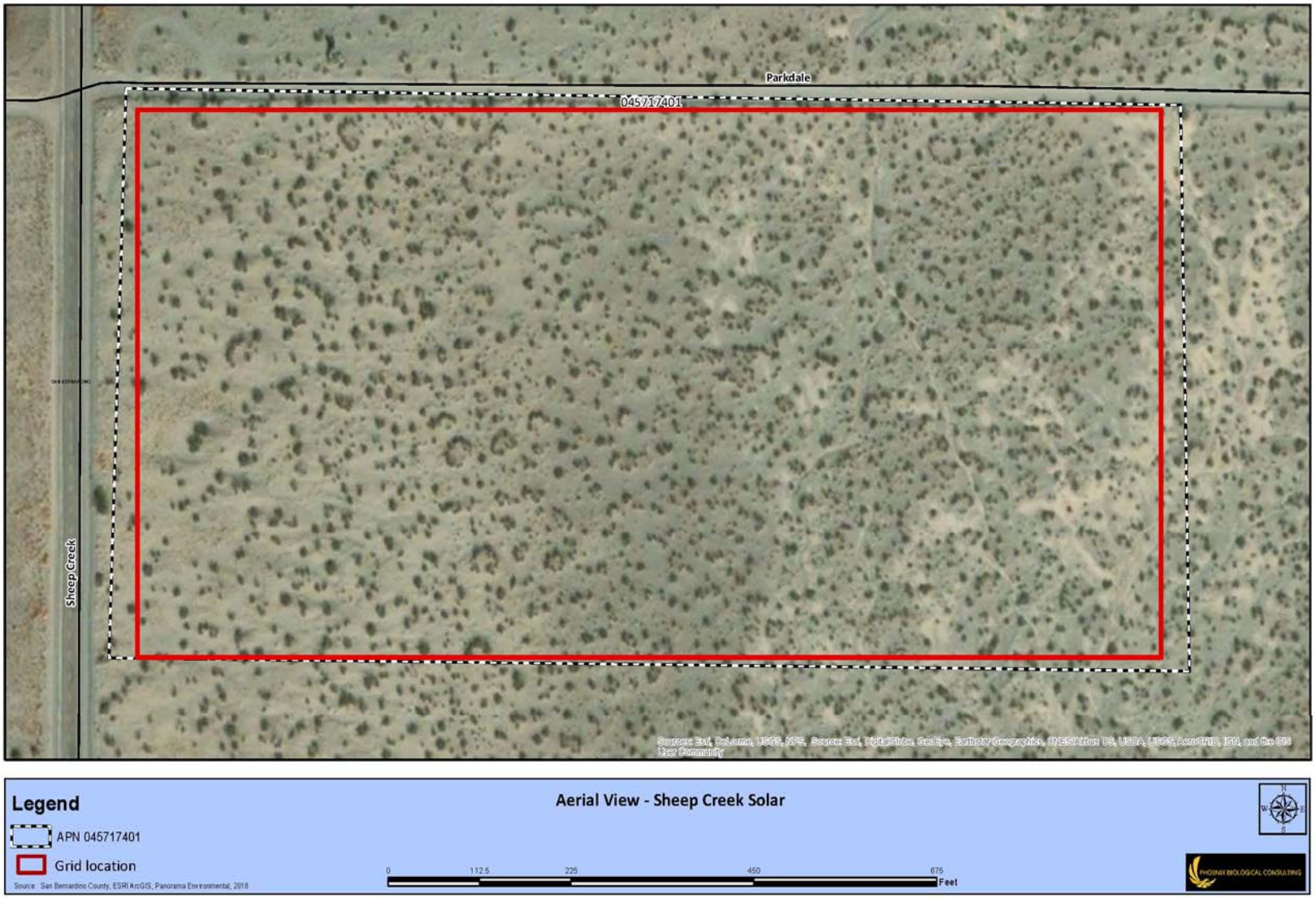

Figure 4: CNDDB MGS Database Search Results and MGS Boundary for Sheep Creek Renewable Solar Site

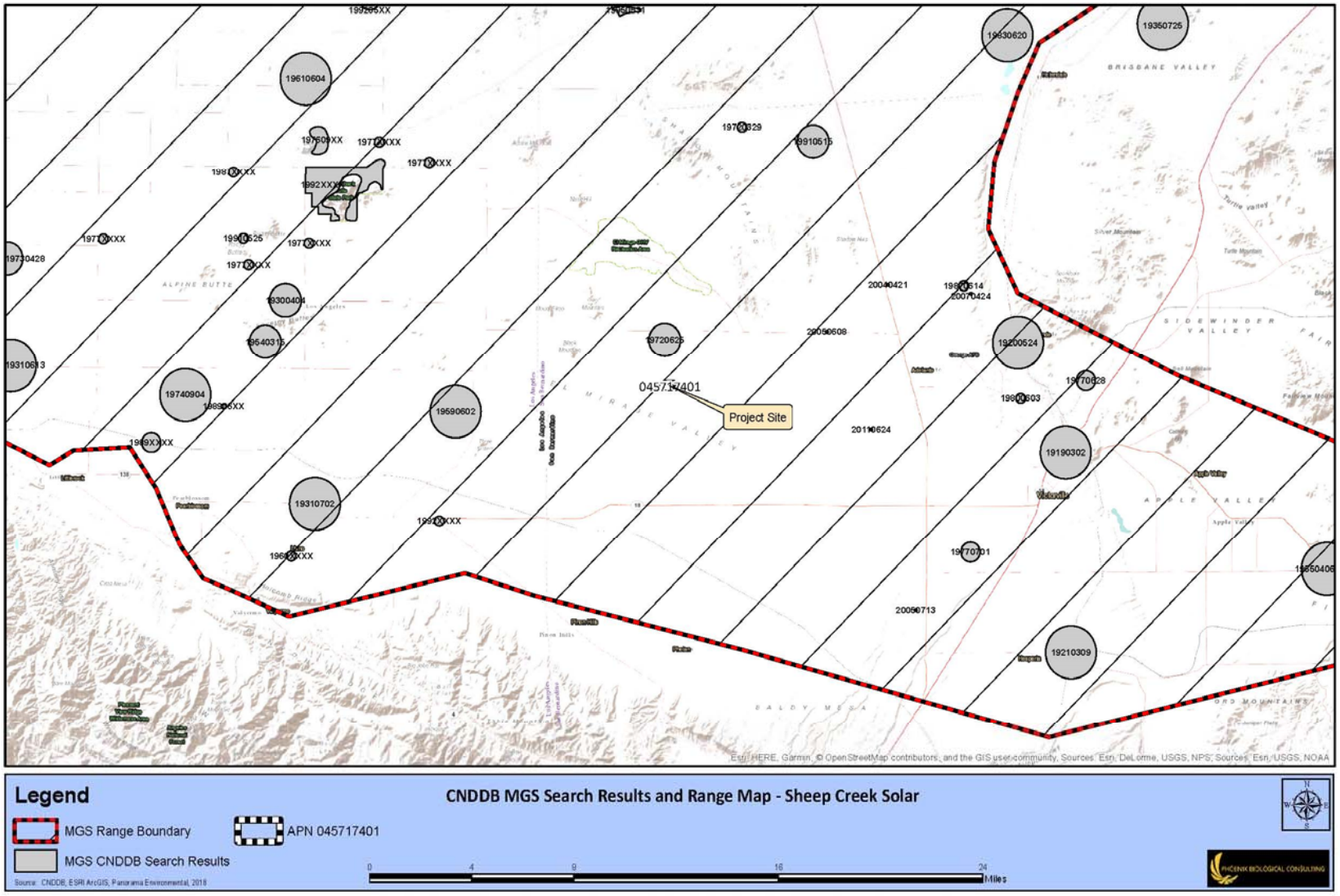

Figure 5: Initial Site Plan for Sheep Creek Renewable Solar Site

Table 5: List of vertebrate species visual/aurally detected on site

Mammals	**Present on Grid**
Antelope Squirrel (*Ammospermophilus leucurus*)	Yes
Black tailed jack rabbit (*Lepus californicus*)	Yes
Coyote (*Canis latrans*)-scat only	Yes
Desert cottontail (*Sylvilagus audubonii*)	Yes
Merriam's kangaroo rat (*Dipodomys merriami*)-sign only	Yes
Birds	
Ash throated flycatcher (*Myiarchus cinerascens*)	Yes
Common Raven (*Corvus corax*)	Yes
European starling (*Sturnus vulgaris*)	Yes
Horned lark (*Eremophila alpestris*)	Yes
Mourning dove (*Zenaida macroura*)	Yes
Northern mockingbird (*Mimus polyglottos*)	Adjacent property
Red-tailed Hawk (*Buteo jamacensis*)	overhead
Sage sparrow (*Amphispiza belli*)	Yes
Western kingbird (*Tyrannus verticalis*)	Yes
Western meadowlark (*Sturnella neglecta*)	Adjacent property
White crowned sparrow (*Zonotrichia leucophrys*)-migrant	Yes
Reptiles	
Western Whiptail (*Cnemidophorus tigris*)	Yes
Side-Blotched Lizard (*Uta stanisburiana*)	Yes
Gopher snake	Yes

Figure 6: Habitat MGS Trapping Grid Corner Photos

NW Grid Corner

NE Grid Corner

SE Grid Corner

SW Grid Corner

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Bureau of Land Management. January 2005. Final Environmental Impact Report and Statement for the West Mojave Plan. Vol. 1A.

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Gustafson, John. A Status Review of the Mojave Ground Squirrel (*Spermophilus mohavensis*). Department of Fish and Game. Wildlife Management Division. March 1993.

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

United States Department of Agriculture (USDA). Natural Resource Conservation Service. 2018. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Certification:

I hereby certify that the statements furnished above and in the attached exhibits present the data and information presented are true and correct to the best of my knowledge and belief. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

Field Work Performed by:

Date: August 14, 2018 Signed: _____

Alex Brown

Report Prepared by:

Date: August 14, 2018 Signed: _____

Report Author

Appendix A: Mohave ground squirrel survey form

Mohave Ground Squirrel Survey Guidelines
January 2003

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Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: Sheep Creek Renewable Solar Property owner: Jaton LLC

Location: Township 6 N ; Range 7 W ; Section 36 ; ¼ Section N½, NW¼, NW¼

Quad map/series: Shadow Mtns. SE UTM coordinates: 447164 E, 3825718 N (parcel cab
GPS coordinates of trapping-grid corners
See Report For Corner

Acreage of Project Site: 8.6 Acreage of potential MGS habitat on site: 20 Acres

Total acreage visually surveyed on project site: 20 Acres Date(s): 4/13/18
visual surveys

Visual surveys conducted by: Ryan Young
names of all persons by ~~date~~ (use back of form, if needed)

Total acres trapped: _____ Number of sampling grids: One

Trapping conducted by: Alex Brown
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST 4/24-4/28 SECOND 5/26-5/30 THIRD 6/23-6/27
if required if required

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)

Vegetation: dominant perennials: Creosote scrub.
other perennials: ~~N/A~~ Joshua Tree
dominant annuals: Amsinkia tesselata
other annuals: _____

Land forms (mesa, bajada, wash): Valley

Soils description: Sand - Coarse Sand

Elevation: 3,010 Slope: 0-1%

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day)

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM

Appendix B: Weather Data, Session 1 - Sheep Creek Renewable Solar Site

PART III – WEATHER

Project Name: Sheep Creek
Property Owner: Sheep Creek

Year: 2018(Trapping Period 1)

Grid Number: 1

WEATHER (temperature = °F; cloud cover = %; wind speed = mph)

DATE: 4/24/18 **ACTIVITY:** trapping Day 1

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	50	0600
AIR TEMPERATURE, MAX.	90	1430
SOIL TEMPERATURE, MIN.	61	0600
SOIL TEMPERATURE, MAX.	73	1430
CLOUD COVER, AM	0	0600
CLOUD COVER, PM	0	1430
WIND SPEED, AM	4	0600
WIND SPEED, PM	15	1430

DATE:4/25/18 **ACTIVITY:** trapping Day 2

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	52	0600
AIR TEMPERATURE, MAX.	90	1430
SOIL TEMPERATURE, MIN.	61	0600
SOIL TEMPERATURE, MAX.	73	1430
CLOUD COVER, AM	0	0600
CLOUD COVER, PM	0	1430
WIND SPEED, AM	3	0600
WIND SPEED, PM	16	1430

DATE:4/26/18 **ACTIVITY:** trapping Day 3

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	56	0600
AIR TEMPERATURE, MAX.	90	1330
SOIL TEMPERATURE, MIN.	65	0600
SOIL TEMPERATURE, MAX.	75	1330
CLOUD COVER, AM	0	0600
CLOUD COVER, PM	25	1330
WIND SPEED, AM	5	0600
WIND SPEED, PM	18	1330

DATE:4/27/18 **ACTIVITY:** trapping Day 4

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	57	0600
AIR TEMPERATURE, MAX.	90	1300
SOIL TEMPERATURE, MIN.	67	0600
SOIL TEMPERATURE, MAX.	76	1300
CLOUD COVER, AM	0	0600
CLOUD COVER, PM	15	1300
WIND SPEED, AM	4	0600
WIND SPEED, PM	24	1300

DATE:4/28/18 **ACTIVITY:** trapping Day 5

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	56	0600
AIR TEMPERATURE, MAX.	90	1530
SOIL TEMPERATURE, MIN.	63	0600
SOIL TEMPERATURE, MAX.	73	1530
CLOUD COVER, AM	0	0600
CLOUD COVER, PM	25	1530
WIND SPEED, AM	0	0600
WIND SPEED, PM	22	1530

Project Name: Sheep Creek
Property Owner: Sheep Creek

Year: 2018 (Trapping Period 2)

Grid Number: 1

WEATHER (temperature = °F; cloud cover = %; wind speed = mph)

DATE: 5/26/18 **ACTIVITY:** trapping Day 1

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	53	0545
AIR TEMPERATURE, MAX.	75	1630
SOIL TEMPERATURE, MIN.	67	0545
SOIL TEMPERATURE, MAX.	89	1630
CLOUD COVER, AM	10	0545
CLOUD COVER, PM	20	1300
WIND SPEED, AM	3	0545
WIND SPEED, PM	9	1630

DATE:5/27/18 **ACTIVITY:** trapping Day 2

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	54	0545
AIR TEMPERATURE, MAX.	90	1200
SOIL TEMPERATURE, MIN.	64	0545
SOIL TEMPERATURE, MAX.	92	1200
CLOUD COVER, AM	0	0545
CLOUD COVER, PM	0	1200
WIND SPEED, AM	3	0545
WIND SPEED, PM	5	1200

DATE:5/28/18 **ACTIVITY:** trapping Day 3

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	55	0545
AIR TEMPERATURE, MAX.	90	1030
SOIL TEMPERATURE, MIN.	67	0545
SOIL TEMPERATURE, MAX.	81	1030
CLOUD COVER, AM	0	0545
CLOUD COVER, PM	0	1030
WIND SPEED, AM	0	0545
WIND SPEED, PM	7	1030

DATE:5/29/18 **ACTIVITY:** trapping Day 4

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	61	0545
AIR TEMPERATURE, MAX.	90	1130
SOIL TEMPERATURE, MIN.	68	0545
SOIL TEMPERATURE, MAX.	101	1130
CLOUD COVER, AM	5	0600
CLOUD COVER, PM	0	1130
WIND SPEED, AM	5	0545
WIND SPEED, PM	3	1130

DATE:5/30/18 **ACTIVITY:** trapping Day 5

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	63	0545
AIR TEMPERATURE, MAX.	90	1330
SOIL TEMPERATURE, MIN.	65	0545
SOIL TEMPERATURE, MAX.	88	1330
CLOUD COVER, AM	5	0545
CLOUD COVER, PM	0	1330
WIND SPEED, AM	3	0545
WIND SPEED, PM	7	1330

Project Name: Sheep Creek
Property Owner: Sheep Creek

Year: 2018 (Trapping Period 3)

Grid Number: 1

WEATHER (temperature = °F; cloud cover = %; wind speed = mph)

DATE:6/23/18 **ACTIVITY:** trapping Day 1

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	70	0530
AIR TEMPERATURE, MAX.	90	0830
SOIL TEMPERATURE, MIN.	80	0530
SOIL TEMPERATURE, MAX.	99	0830
CLOUD COVER, AM	0	0530
CLOUD COVER, PM	0	0830
WIND SPEED, AM	3	0530
WIND SPEED, PM	2	0830

DATE:6/24/18 **ACTIVITY:** trapping Day 2

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	72	0530
AIR TEMPERATURE, MAX.	90	0845
SOIL TEMPERATURE, MIN.	82	0530
SOIL TEMPERATURE, MAX.	103	0845
CLOUD COVER, AM	0	0530
CLOUD COVER, PM	0	0845
WIND SPEED, AM	4	0530
WIND SPEED, PM	2	0845

DATE:6/25/18 **ACTIVITY:** trapping Day 3

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	73	0530
AIR TEMPERATURE, MAX.	90	0900
SOIL TEMPERATURE, MIN.	81	0530
SOIL TEMPERATURE, MAX.	102	0900
CLOUD COVER, AM	0	0530
CLOUD COVER, PM	0	0900
WIND SPEED, AM	5	0530
WIND SPEED, PM	2	0900

DATE:6/26/18 **ACTIVITY:** trapping Day 4

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	73	0530
AIR TEMPERATURE, MAX.	90	0930
SOIL TEMPERATURE, MIN.	83	0530
SOIL TEMPERATURE, MAX.	100	0930
CLOUD COVER, AM	0	0530
CLOUD COVER, PM	0	0930
WIND SPEED, AM	3	0530
WIND SPEED, PM	4	0930

DATE:6/27/18 **ACTIVITY:** trapping Day 5

WEATHER CONDITION	VALUE	TIME
AIR TEMPERATURE, MIN.	71	0530
AIR TEMPERATURE, MAX.	90	0945
SOIL TEMPERATURE, MIN.	78	0530
SOIL TEMPERATURE, MAX.	82	0945
CLOUD COVER, AM	0	0530
CLOUD COVER, PM	0	0945
WIND SPEED, AM	3	0530
WIND SPEED, PM	5	0945