APPENDIX E-2
2018 SPRING/SUMMER SURVEY REPORT

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Administrative Draft Biological Resources 2018 Spring/Summer Survey Report

Daggett Solar Power Facility

San Bernardino County, California

December 14, 2018

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Acronyms and Abbreviations

Applicant	Daggett Solar Power 1 LLC, a subsidiary of NRG Renew LLC
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranking
FP	fully protected
Project	Daggett Solar Power Facility
SSC	species of special concern
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
°	Degrees

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1 Introduction

1.1 Purpose

This report presents the results of surveys for and observations of special status biological resources that have occurred between March and June 2018, within the project area of the Daggett Solar Power Facility in San Bernardino County, east of Daggett (

Figure 1). Specifically, this report summarizes information on the presence of the following species:

- Mojave fringe-toed lizards;
- Burrowing owls;
- Nesting raptors, including Swainson's hawks and golden eagles;
- Special status birds, including loggerhead shrikes, LeConte's thrashers, and tricolored blackbirds; and
- Desert kit fox and American badger

In addition, this report includes appendices containing a list all plant and animal species observed within the project area (Appendix A), photographs of the project area (Appendix B), and summary of information on the risk of birds being attracted to and being injured or killed at solar energy facilities (i.e., the lake effect) (Appendix C).

The following reports also have been completed for the Daggett Solar Power Facility in 2017 and 2018, and are not discussed here except as noted:

- Administrative Draft Biological Technical Report (HDR 2018a)
- Draft Jurisdictional Delineation Report (HDR 2018b);
- Administrative Draft Desert Tortoise Pre-Project Survey Report (HDR 2018c); and
- Administrative Draft Special-Status Plant Species Survey Report (HDR 2018d).

1.2 Project Description

The proposed project consists of constructing and operating a utility-scale, solar photovoltaic, electricity generation and energy storage facility that would produce up to 650 megawatts of power and include up to 450 megawatts of battery storage capacity on approximately 3,500 acres of land (Figure 2 and Figure 3). The project would utilize existing electrical transmission infrastructure adjacent to the existing Coolwater Generating Station, a recently retired natural gas-fired power plant, to deliver renewable energy to the electric grid.

Figure 1. Project Location

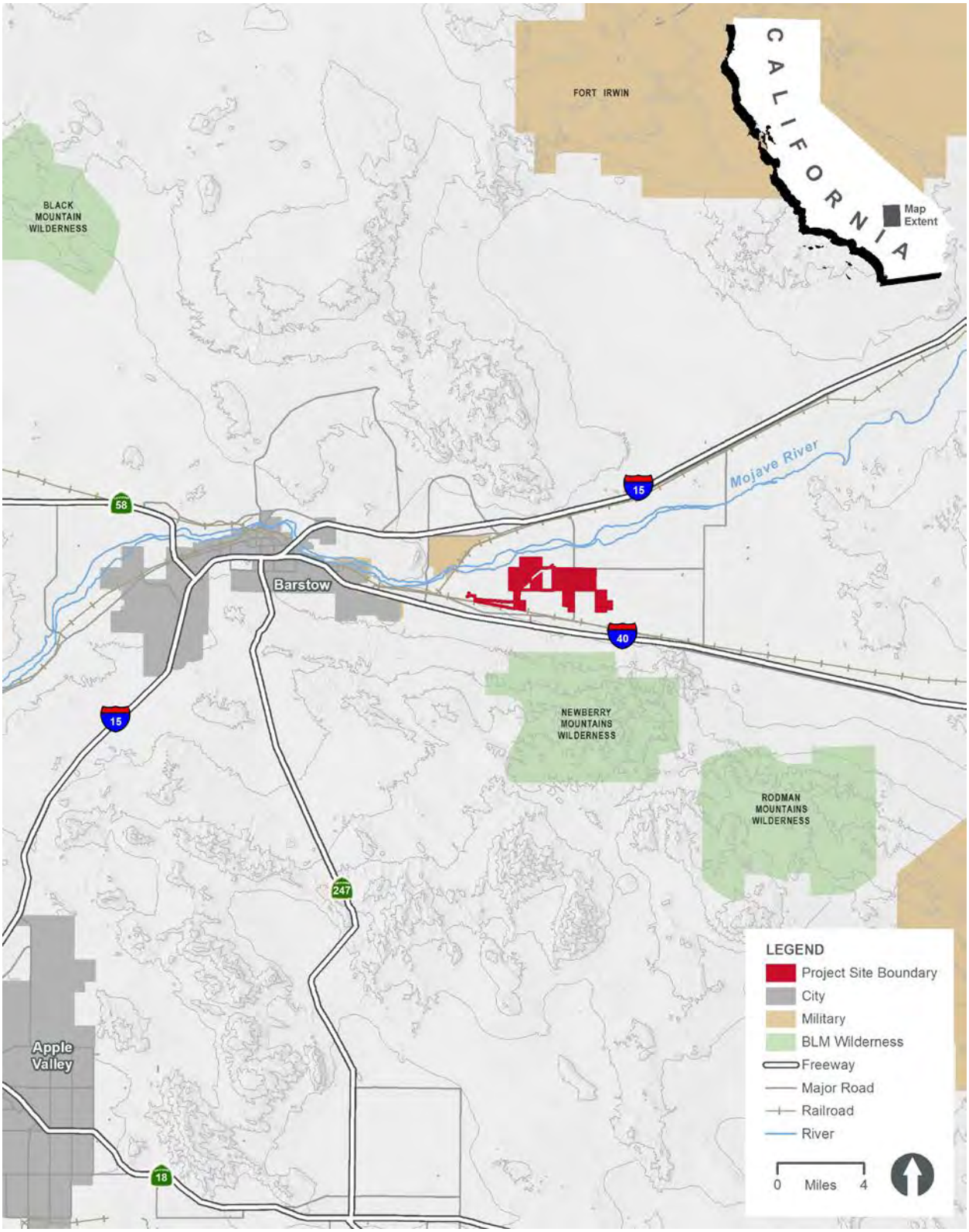


Figure 2. Project Site on USGS Quadrangles

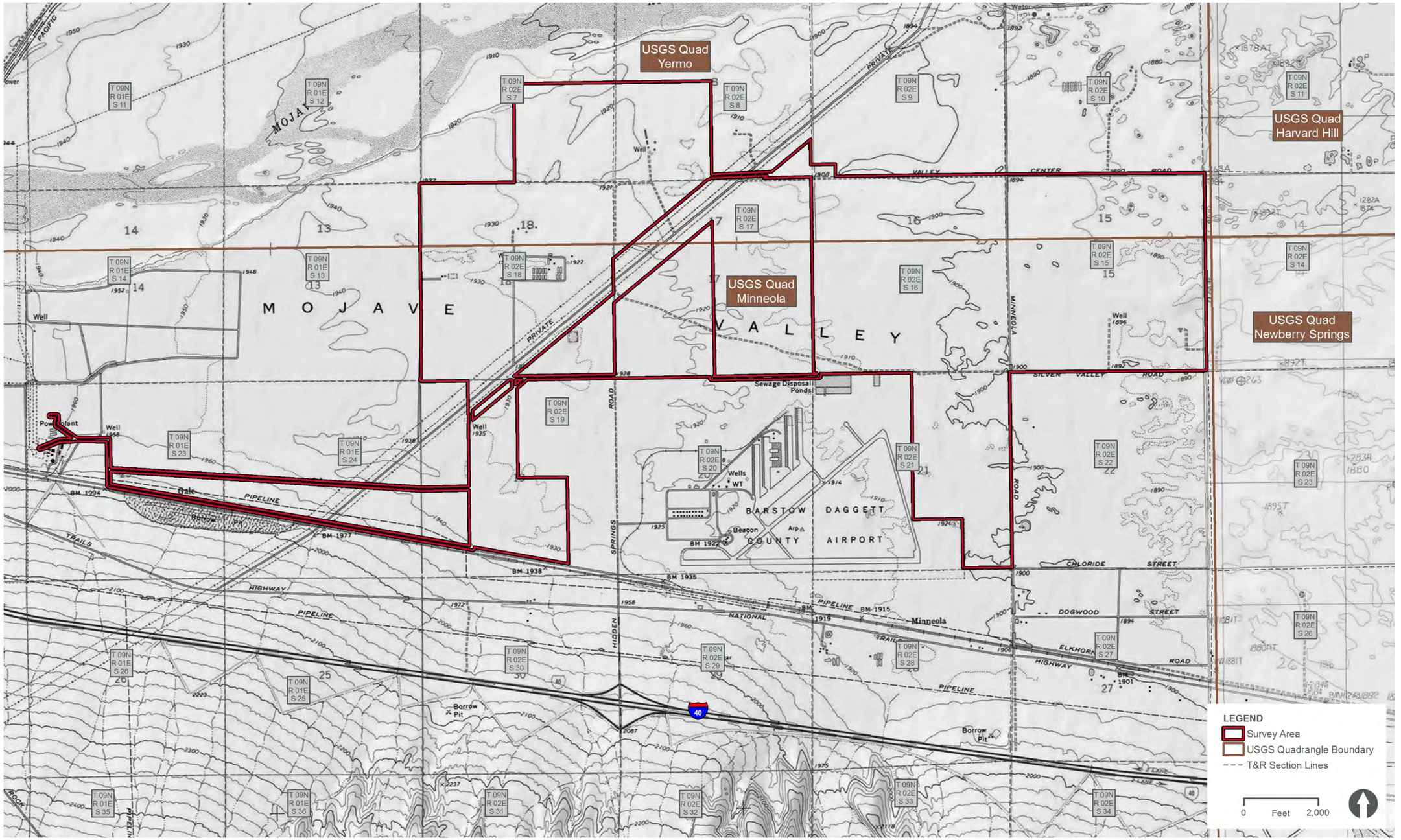
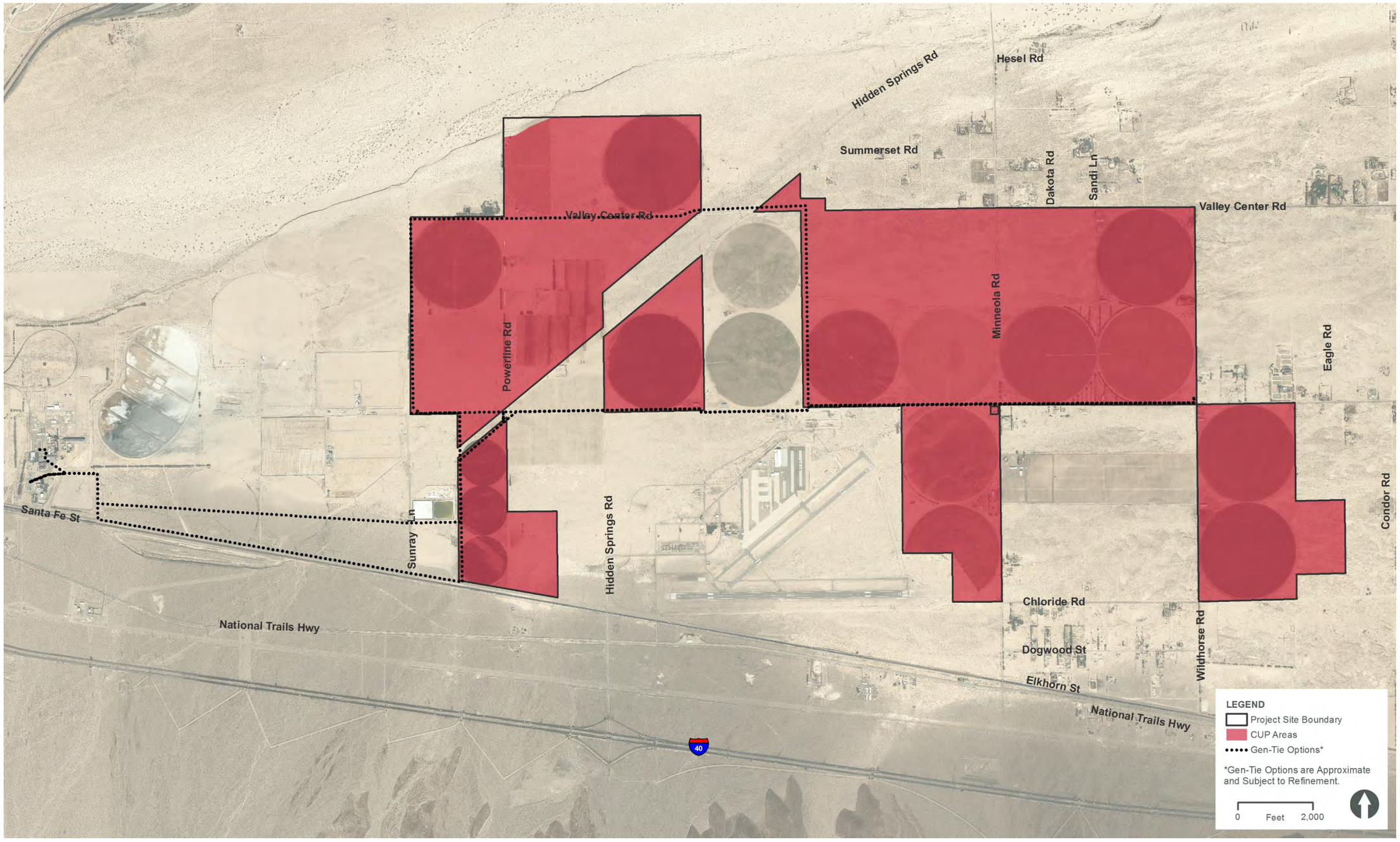


Figure 3. Project Site on Aerial Imagery



1.3 Site Description

The project site is flat and is generally bounded by the town of Daggett approximately 0.5 mile to the west; the Mojave River, Yermo, and Interstate 15 to the north; Barstow-Daggett Airport, Route 66, and Interstate 40 to the south; and Newberry Springs and Mojave Valley to the east. It is shown on four USGS 7.5-minute topographic quadrangles in California: *Yermo, Minneola, Harvard Hill*, and *Newberry Springs*.

Figure 1 shows the project location.

The project site consists of a mix of industrial sites, developed land associated with residential and agricultural uses, and disturbed and undisturbed desert scrub areas. Agricultural areas consist of active and fallow agricultural fields, orchards with disturbed saltbush scrub, ornamental tamarisk windrows, and ruderal vegetation adjacent to the fields. Portions of the project site that are less disturbed consist of saltbush scrub and creosote bush scrub with low shrub variety and sparse understories. The southeastern portion of the project site supports sand dunes with creosote bush scrub vegetation (HDR 2018a). Detailed descriptions of each land cover type are provided in the *2017 Biological Resources Technical Report*. Acreage of land cover types mapped within the project site is included in Table 1, and distribution of land cover types is depicted on Figure 4.

There are no wildlife management areas, important bird areas, or other protected or special-status areas managed for wildlife within the project area. The nearest such area is Camp Cady Wildlife Area, located along the dry riverbed of the Mojave River about 5 miles northeast of the project area. That 1,900 acre area is managed by CDFW and has man-made ponds where Mojave tui chub (*Gila bicolor spp. mojavensis*) have been introduced. That species is classified as endangered under the federal and state Endangered Species Acts.

Table 1. Vegetation Communities and Cover Types in the Project site

Plant Community	Acres
Larrea tridentata (creosote bush scrub) Alliance	831.9
Atriplex polycarpa (allscale scrub) Alliance	139.7
Disturbed saltbush scrub	136.2
Agriculture	1,770.7
Windrows or Tamarix spp. (Tamarisk Thickets) Semi-natural stands	19.9
Developed/Disturbed/Ruderal Habitat	452.0
Total	**3,350.4**

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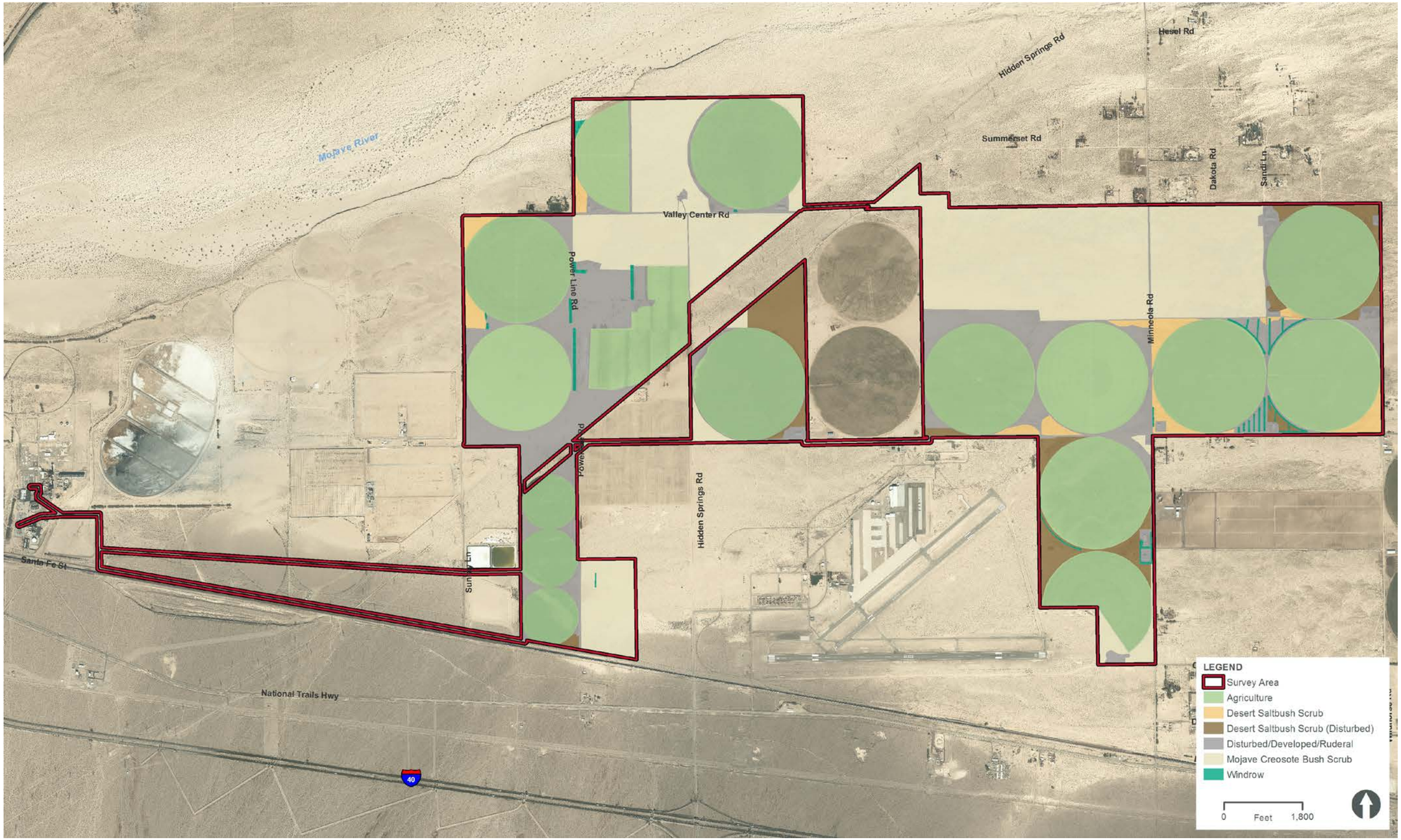
Figure 4. Vegetation Communities within the Project Site



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2 Special Status Species

HDR biologists examined relevant databases and other sources of information, consulted with staff of the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), and conducted field surveys on August 22 and 23 and September 12, 2017 to identify special status species that could occur within the project site. Based on that evaluation, and as documented in the *2017 Biological Resources Technical Report* (HDR 2018a), the following species were determined to require further surveys to determine if they occur in the project site:

- Rare Plants
  - Mojave monkeyflower (*Diplacus [Mimulus] mohavensis)* – CNPS 1B[1]
  - Barstow woolly sunflower (*Eriophyllum mohavense*) – CNPS 1B
  - Darlington's blazing star (*Mentzelia puberula*) – CNPS 2B
  - Beaver Dam breadroot (*Pediomelum castoreum*) – CNPS 1B
  - White-margined beardtongue (*Penstemon albomarginatus*) – CNPS 1B
  - Parish's phacelia (*Phacelia parishii*) – CNPS 1B.
- Desert Tortoise (*Gopherus agasizzii*) – FT/ST[2]
- Mojave fringe-toed lizard (*Uma scoparia*) – SSC
- Burrowing owl (*Athene cunicularia*) – SSC
- Raptors
  - Swainson's hawk [(*Buteo swainsoni*) nesting] – ST
  - Golden eagle (*Aquila chrysaetos*) – FP
  - White-tailed kite (*Elanus leucurus*) - SSC
- Other Special Status Species
  - Tricolored blackbird *(Agelaius tricolor*) – ST
  - Loggerhead shrike (*Lanius ludovicianus*) – SSC
  - LeConte's thrasher (*Toxostoma lecontei*) – SSC
  - Townsend's Big-Eared Bat (*Corynorhinus townsendii*) - SSC
  - Desert kit fox (*Vulpes macrotis arsipus*) – No designated status[3]
  - American badger (*Taxidea taxus*) – SSC

[1] CNPS = California Native Plant Society. CNPS Rare Plant Ranking: List 1B = Plants rare, threatened or endangered in California and elsewhere. List 2B = Plants rare, threatened or endangered in California but more common elsewhere.

[2] FE = Federally endangered; FT = Federally threatened; ST = State threatened; SSC = Species of special concern; FP = fully protected.

[3] Desert kit fox is not listed by USFWS or CDFW under any special-status designation and was included in the special-status species list and surveys per request of CDFW staff. It is considered a "furbearing mammal", protected from take under the California Fish and Game Commission's 2017-2018 Mammal Hunting Regulations (Subdivision 2, Chapter 5).

Surveys for rare plants and desert tortoises have been completed and are described in separate stand-alone reports (HDR 2018b,c). This report summarizes the results of 2018 surveys for, and observations of, the other special status species listed above.

3 Survey Methods

The dates and weather conditions for all 2018 surveys for special-status species are listed in **Error! Reference source not found.** Although not discussed in this report, the dates of surveys for rare plants, desert tortoise, and jurisdictional waters are included in Table 2 to provide a comprehensive list of surveys conducted to develop the list of plants and animals observed within the project area and listed in Appendix A.

3.1 Mojave Fringe-Toed Lizard

The project site includes 80 acres in the southeastern portion of the project site that has loose, sandy soils and could be suitable habitat for Mojave fringe-toed lizards (Figure 5). Because there is no established presence/absence survey protocol for Mojave fringe-toed lizards, survey methods used were based upon those for Coachella Valley fringe-toed lizard (*Uma inornata*) because these species occupy similar habitat and exhibit similar behavior. Mojave fringe-toed lizards are typically active between March and September when ground temperatures are between approximately 80 and 104 degrees Fahrenheit (Cablk and Heaton 2002).

Three surveys for Mojave fringe-toed lizards were conducted between April and June 2018 (Table 2). Each survey consisted of pedestrian transects throughout 100 percent of suitable habitat within the project site. Transects were spaced 15 feet apart where shrub density is greater than 30 percent, and 30 feet apart where shrub density is 30 percent or less. The first survey pass was started when temperatures at ground level reached at least 90 degrees Fahrenheit and did not exceed 110 degrees Fahrenheit. Temperatures and reptile activity were checked at the end of each transect to determine when to terminate surveys. Surveyors noted that general reptile observations decreased substantially after ambient temperatures reached approximately 95° Fahrenheit, and adjusted survey start times to coincide with lower site temperatures for last two survey passes. Biologists surveyed in pairs; one tapped vegetation and focused on the immediate area, while the other focused on the substrate/habitat 30-40 meters to the front. When three surveyors were present, two biologists walked adjacent transects and one surveyor focused on the substrate/habitat 30-40 meters to the front. Surveys were conducted only when winds were 10 mph or less and it was not raining.

3.2 Burrowing Owl

The project site has approximately 1,500 acres of suitable habitat for burrowing owl in the Mojave Creosote Bush Scrub, Desert Saltbush Scrub, and Disturbed Desert Saltbush Scrub communities (Figure 5).

Survey methods were based upon Appendix D of the *California Department of Fish and Game 2012 Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Per guidelines for

breeding season surveys presented in the 2012 Staff Report, four separate surveys were completed between March and June 2018.

Table 2. Survey Dates, Surveyors, and Weather Conditions

Date	Purpose	Surveyors*	Start/Stop Time/ Weather Conditions[1]
8/22/17	General Survey	SB/MS	Not Applicable – Surveys not contingent upon daily weather conditions
8/23/17	General Survey	SB/MS	Not Applicable – Surveys not contingent upon daily weather conditions
9/12/17	General Survey	SB/MS	Not Applicable – Surveys not contingent upon daily weather conditions
3/5/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS	1115 Start: 62°F, 0-2 mph wind, clear skies 1730 End: 59°F, 0-2 mph wind, clear skies
3/6/18	Burrow Survey/ BUOW #1	SB/AN/RS	0840 Start: 59°F, 0-2 mph wind, clear skies 1700 End: 60°F, 3-5 mph wind, clear skies
3/7/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS	0845 Start: 52°F, 3-5 mph wind, clear skies 1715 End: 62°F, 0-2 mph wind, clear skies
3/8/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS/AL	0845 Start: 61°F, 5-6 mph wind, clear skies 1700 End: 74°F, 10-12 mph wind, clear skies
3/9/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS/AL	0850 Start: 65°F, 7-8 mph wind, clear skies 1800 End: 72°F, 6-8 mph wind, clear skies
3/12/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS	1045 Start: 57°F, 5-7 mph wind, clear skies 1715 End: 75°F, 3-4 mph wind, clear skies
3/13/18	Burrow Survey/ BUOW #1	SB/AN/RS/MS	0840 Start: 62°F, 0-2 mph wind, clear skies 1830 End: 72°F, 8-10 mph wind, clear skies
3/21/18	Raptor	SB/MS	0830 Start: 56°F, 8-10 mph wind, light drizzle 1440 End: 62°F, 8-10 mph wind, cloudy skies
3/23/18	Raptor	SB/MS	0830 Start: 62°F, 2-5 mph wind, cloudy skies 1315 End: 70°F, 5-8 mph wind, cloudy skies
4/2/18	Desert Tortoise	AL/AN/RS/MS/TG	1245 Start: 89°F, 4 mph wind, clear skies 1630 End: 84°F, 12 mph wind, clear skies
4/3/18	Desert Tortoise	AL/AN/RS/MS/TG/SB	0910 Start: 67.6°F, 4.7 mph wind 1645 End: 82°F, 6 mph wind
4/4/18	Desert Tortoise	AL/AN/RS/MS/TG/SB	0910 Start: 66°F, 10 mph wind, overcast 1535 End: 88°F, 12 mph wind, clear
4/5/18	Jurisdictional Delineation	SB/IE	Not Applicable – Surveys not contingent upon daily weather conditions
4/6/18	Raptor	SB	0845 Start: 64°F, 5-8 mph wind, clear skies 1420 End: 76°F, 5-8 mph wind, clear skies
4/9/18	Rare Plant	SA/SB/AE/MS	Not Applicable – Surveys not contingent upon daily weather conditions
4/10/18	Rare Plant	SA/SB/AE/MS	Not Applicable – Surveys not contingent upon daily weather conditions
4/11/18	Rare Plant	SA/SB/AE/MS	Not Applicable – Surveys not contingent upon daily weather conditions
4/12/18	Rare Plant	SA/SB/AE	Not Applicable – Surveys not contingent upon daily weather conditions

Date	Purpose	Surveyors*	Start/Stop Time/ Weather Conditions[1]
4/13/18	Raptor	SB/MS	0900 Start: 56°F, 0-2 mph wind, clear skies 1230 End: 69°F, 0-2 mph wind, clear skies
4/17/18	Desert Tortoise	AL/AN/RS/MS/TG/SB	0845 Start: 58°F, 3.3 mph wind, clear 1630 End: 66°F, 3 mph wind, clear
4/18/18	Desert Tortoise	AL/AN/RS/MS/TG/SB	0900 Start: 61°F, 1.6 mph wind, clear 1600 End: 78°F, 1 mph wind, clear
4/19/18	Desert Tortoise	AL/AN/RS/MS/TG	48°F, >30 mph wind No surveys conducted
4/20/18	Rare Plant (AM)/ Raptor (PM)	SB/MS	0930 Start: 66°F, 0-2 mph wind, clear skies 1520 End: 82°F, 0-2 mph wind, clear skies
4/23/18	Rare Plant	TG/RS/MS	Not Applicable – Surveys not contingent upon daily weather conditions
4/24/18	Rare Plant	SBTG/RS/MS	Not Applicable – Surveys not contingent upon daily weather conditions
4/25/18	Rare Plant (AM)/ MFTL #1 (PM)	/SB/TG/RS/MS	MFTL 1221 Start: 95°F, X mph wind, clear MFTL XX End: 110°F, 0-5 mph wind, clear
4/26/18	Desert Tortoise (AM)/ MFTL # 1 (PM)	SB/TG/RS/MS	MFTL 1215 Start: 97.1°F, clear MFTL 1430 End: 101°F, clear
5/1/18	Desert Tortoise	AL/AN/RS/MS/TG/SB	0900 Start: 66°F, 15 mph wind, partly cloudy 1515 End: 73°F, 18 mph wind, cloudy/storming
5/2/18	Desert Tortoise	AL/AN/RS/MS/TG	0830 Start: 58°F, 7 mph wind, cloudy/light rain 1600 End: 79°F, 2-4 mph wind, partly cloudy
5/3/18	BUOW #2	AN/TG/RS/AL/SB	0915 Start: 63.1°F, 6 mph wind, clear 1620 End: 82°F, 6 mph wind, clear
5/7/18	BUOW #2/ MFTL #1	RS/SB/TG/MS	BUOW: 1000 Start: 83.6°F, 9 mph wind, clear BUOW: 1215 End: 83°F, light wind, clear MFTL 1300 Start: 97.4°F, light wind, clear MFTL 1430 End: 111.2°F, light wind, clear
5/8/18	BUOW #2/ MFTL #1	RS/SB/TG	BUOW: 0845 Start: 73.4°F, 0-2 mph wind, clear BUOW: 1000 End: 78°F, X mph wind, clear
5/9/18	BUOW #2/ MFTL #1	RS/ /TG/MS	BUOW: 0700 Start: 72.4°F, 0-2 mph wind BUOW: 1000 End MFTL: 1030 start: 94.0°F, 5-8 mph wind, clear skies MFTL: 1330 End: 110.8°F
5/10/18	BUOW #2/ MFTL #1	RS/SB/TG	BUOW: 0715 Start: 73.6°F, 14 - 20 mph wind, clear BUOW: 0940 End MFTL: 1000 Start: 94.4°F, 0-2 mph wind, clear skies: MFTL: 1320 End: 109.6°F, 0-2 mph wind, clear skies
5/14/18	MFTL #1/Raptor	SB/MS	MFTL 1130 Start: 95.2°F, 5 wind, clear MFTL 300 End: 110.6°F, 5 mph wind, clear
5/16/16	Raptor	SB/MS	0920 Start: 67°F, no wind, clear skies 1330 End: 85°F, light wind, clear skies

Date	Purpose	Surveyors*	Start/Stop Time/ Weather Conditions[1]
5/29/18	BUOW #3	AN/RS/MS	1300 Start: 99°F, no wind, 5% cc 1730 End: 91°F, no wind, 5% cc
5/30/18	BUOW #3/ MFTL #2	AN/RS/SB/MS	MFTL: 0900 Start: 94.6°F, 4-5 mph wind, MFTL: 1145 End: 110.4°F, BUOW: 1235 Start: 98°F, BUOW: 1445 End: 90°F, 4 mph wind, 5% cc
5/31/18	BUOW #3	AN/RS/SB/MS	0830 Start: 73°F, 16-20 mph wind, clear 1230 End: 81°F, 20-30 mph wind, clear
6/1/18	BUOW #3/ MFTL #2	AN/RS/SB/MS	BUOW: 0830 Start: 67.1°F, 3 mph wind, clear BUOW: 1100 End: 88°F, 0-1 mph wind, clear MFTL 1120 Start: 94.6°F, 0-1 mph wind, clear MFTL 1315 End: 114.1°F, 0-1 mph wind, clear
6/4/18	MFTL #2	SB/MS	MFTL: 0835 Start: 94°F, 10-12 mph wind, clear MFTL: 1130 End: 110°F, X mph wind, clear
6/5/18	BUOW #3/ MFTL #2	SB/MS	BUOW: 0550 Start: 67°F, 4-8 mph wind, clear BUOW: 0745 End: 77°F, 5-8 mph wind, clear MFTL 800 Start: 86°F, 5-8 mph wind, clear MFTL 1140 End: 109.7°F, 2-5 mph wind, clear
6/6/18	MFTL #2	SB/MS/AN/RS	0815 Start: 95.4°F, 0.7 mph wind, clear 1120 End: 110.3°F, 0.5 mph wind, clear
6/13/18	Raptor	SB/MS	0900 Start: 88.4°F, 1.6mph wind, clear 1220 End: 92.1°F, 1.4 mph wind, clear
6/25/18	MFTL #3	SB/BS/RS	0700 Start: 82.4°F, 2.0 mph wind, clear 1210 End: 109.6°F, 2.7 mph wind, clear
6/26/18	MFTL # 3 / BUOW #4	SB/BS/RS	MFTL: 0730 Start: 81.1°F, 4.5 mph wind, clear MFTL: 1025 Start: 94.5°F, 3.4 mph wind, clear BUOW: 1130 Start: 92.0°F, 3.0 mph wind, clear BUOW: 1400 End: 98°F, 2.7 mph wind, clear
6/27/18	MFTL # 3 / BUOW #4	SB/BS/RS	BUOW: 0530 Start: 76.0°F, 3.2 mph wind, clear BUOW: 0745 End: 86.2°F, 2.8 mph wind, clear MFTL: 0800 Start: 89.2°F, 2.8 mph wind, clear MFTL: 1015 End: 100.8°F, 2.0 mph wind, clear
6/28/18	BUOW #4	BS/RS	0530 Start: 76°F, 2.5 mph wind, clear 1100 End: 94°F, 12 mph wind, clear

*Surveyors: AL: Adam Lockyer; AN: Aaron Newton; RS: Ronell Santos; MS: McKenna Smith; TG: Tracy Goyak; SB: Sarah Barrera; IE: Ingrid Eich; BS: Barrett Scurlock

[1] Temperatures for MFTL were recorded at 1cm above ground level

cc = cloud cover

NA = Not Applicable – surveys which are not contingent upon daily weather conditions

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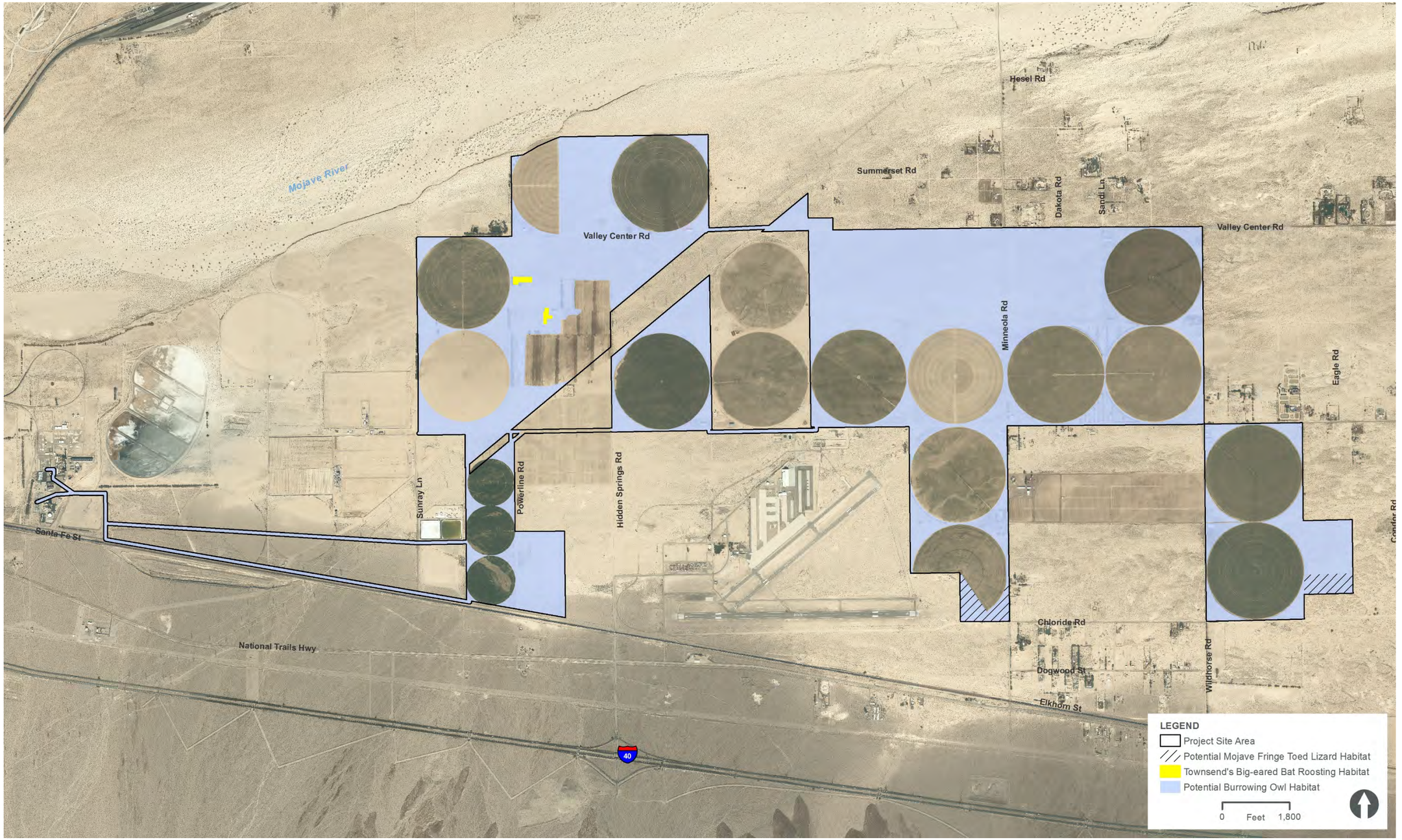
Figure 5: Special Status Species Habitat



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Based on the low density of vegetative cover and the correlating long sight distances, initial survey transects were spaced from 65 feet to 130 feet apart depending on visibility at each transect location. During the first and second survey passes, temperatures in the hours around sunrise were below recommended survey temperatures. Because of this, survey start times were delayed at times until the temperature reached a minimum of 55 degrees Fahrenheit. During the first survey pass, pedestrian transects covered 100 percent of all potentially suitable habitat in the project site. Surveyors stopped at intervals along the transects to observe with binoculars. During that initial habitat assessment, biologists examined the ground for the presence of burrows, burrow surrogates, fossorial mammal dens, well-drained soils, available prey, and short or sparse vegetation. Locations of all burrowing owls, as well as potential burrows and signs (pellets, feathers, whitewash, prey remains, or decoration), were mapped. Right of entry for surveys was limited to the project site in most cases. Therefore, binoculars were used to inspect adjacent areas in order to inspect for signs of burrowing owls that could be indirectly affected by the project. On the following site visits, surveyors focused on areas with suitable burrows and recorded burrowing owl observations as well as signs of active use (pellets, feathers, whitewash, prey remains, or decoration) at each potential burrow. Any burrows not previously mapped were also recorded. All burrows with burrowing owls or burrowing owl sign were visited at least once during crepuscular hours during each survey.

3.3 Raptor Nesting and Site Use

Surveys for nesting raptors were conducted within the project site and a 1-mile buffer around that area. Biologists drove through the entire area once per month during March, April, and June to locate raptors. All raptors, nests, and signs of raptor use were documented. Biologists collected data on raptor observations, including date and time of observation, identification of the raptor species, behavior, and number of individuals. At the request of USFWS, active raven nests were also recorded.

In addition to surveys for nests within and adjacent to the project site, the following was conducted:

- The CDFW's California Natural Diversity Database (CNDDB) was queried for information on observations of golden eagles and their nests within and near the project area.
- The BLM, CDFW, and USFWS were contacted to request data from surveys and monitoring of golden eagles that might not be included in the CCDDB. Staff from those agencies were not aware of any additional, relevant information.
- Accessible historic golden eagle nest locations, documented in CDFW's California Natural Diversity Database (CNDDB), were visited to evaluate current use.
    - Two nearby CNDDB-documented golden eagle nests were visited to determine if these nests were active. These nests are identified in CNDDB as Occurrence numbers 274 and 277 (CDFW 2018).

      Occurrence number 274 is located near the town of Newberry Springs, about 5 miles southeast of the project site. Eagles have not been documented nesting at this location since 1979 (CDFW 2018). During the 2018 surveys, spotting

scopes were used to view the approximate nest location from approximately 0.4 mile away, due to limited access.

Occurrence number 277 is located on Elephant Mountain, approximately 3 miles northwest of the Coolwater Electric Generating Facility. Eagles have not been documented at this nesting location since 1978 (CDFW 2018). During the 2018 surveys, spotting scopes were used to view the nest location from approximately 0.3 mile away, due to limited access.

- All accessible lattice structures and other large transmission-line structures within 5-miles of the project site were examined at least one time during the spring of 2018 for eagle nests.

3.4 Other Special-Status Species

3.4.1 Special-Status Birds

Birds observed during all biological resources surveys were identified to determine the presence of special-status bird species nesting or foraging on or near the project site. Opportunistic observations of special-status bird species were noted and mapped when possible.

3.4.2 Desert Kit Fox and American Badger

All dens and other burrows found during surveys for desert tortoises and burrowing owls were examined for sign of kit fox and badgers. Wildlife camera traps were set up on three occasions in May and June at some of the potential kit fox burrow complexes and badger burrows. Burrows with signs indicating that they could be used by kit fox or badgers were visited one additional time in June to search additional signs of use by these species.

3.4.3 Townsend’s Big-Eared Bat

Townsend’s big-eared bat roosts most commonly in caves or mines, but is also known to roost in abandoned buildings (Zeiner et al. 1988). The project site does not contain any caves or mines, but several abandoned buildings that could provide suitable roosting sites for this species were noted.

4 Survey Results

Information regarding the potential habitat of each species and results of the 2018 surveys follows. Specific and general locations of special status species observations, where applicable, are shown in Figure 6. A complete list of botanical and zoological species observed during all biological resources surveys conducted in 2017 and 2018 for the project site is included in Appendix A. Site photographs and photographs of some wildlife species observed during these surveys are included in Appendix B. Species descriptions are included in the *2017 General Biological Resources Report* (HDR 2018a).

4.1 Mojave Fringe-toed Lizard

No Mojave fringe-toed lizards were observed in the project site during the 2018 surveys. Several other species of reptiles were observed during these surveys (Appendix A).

Habitat within the project site is marginally suitable for Mojave fringe-toed lizards, and is unlikely to be an important part of any dispersal corridor between areas with better quality habitat because (1) the sites do not have extensive or well developed sand sheets (relative to areas farther east in the Mojave Valley), (2) are partially disturbed, and (3) are adjacent to cultivated fields. The sites surveyed are on the western edge of deeper and more extensive sandy soils and dunes that extend along the Mojave River and into the lower Mojave Valley (USDA 1937, 1986, 2017). Sand transport in this region generally is to the east along the Mojave River toward Soda Lake, Devil's Playground, and Kelso Dunes (Muhs et al. 2003).

4.2 Burrowing Owl

Burrowing owls, sign, and active/inactive burrows were observed within the project site during 2018 burrowing owl surveys. Approximately 90 burrows or burrow complexes with a diameter of 3-4 inches or greater were mapped throughout suitable burrowing owl habitat. Locations of these burrows are shown on Figure 7. Of these, 27 burrows had potential burrowing owl sign (whitewash, pellets or scat) or were actively used by owls, as listed in Table 3.

Six individual burrowing owls were observed during the first survey, conducted between March 5 and March 13 (Figure 6). All of these owls occupied burrow complexes with larger burrows (6-inch openings or greater) that also had canid scat nearby. Burrowing owl sign was observed at these occupied complexes.

A pair of burrowing owls was incidentally observed during desert tortoise surveys on April 18, 2018. The pair was flushed from a burrow complex adjacent to an active agriculture field. The pair flew into the agriculture field and one of the pair exhibited alarm calls as surveyors approached. The burrow was revisited on May 29 and June 5 and the pair was not observed.

No burrowing owls were seen during the May and June surveys, and no new burrows, pellets, whitewash, feathers, or other signs were observed during those visits. Because the owls observed in March and April were not found during May and June, when nesting

occurs in the region, it is likely that the observed owls were wintering or migrating through the area.

Table 3. Burrows With Sign of Burrowing Owl or Kit Fox

Burrow Points ID	Date First Observed	Notes
1	3/5/2018	Potential BUOW burrows. Kit fox burrows, tracks observed, scat observed. No new sign observed on subsequent visits.
10/11	3/6/2018	Active burrow. Owl observed, flew off as observer got closer. Owl not observed on subsequent visits. No new sign observed on subsequent visits.
12	3/6/2018	Potential burrow complex. No new sign observed on subsequent visits.
13	3/6/2018	Possible old kit fox den, scat observed at entrance. No new sign observed on subsequent visits.
17	3/7/2018	Possible kit fox den, scat observed. No new sign observed on subsequent visits.
18	3/8/2018	Potential burrow. Feathers and scat observed. No new sign observed on subsequent visits.
19	3/8/2018	Potential burrow. Various bird droppings observed, burrows observed. No new sign observed on subsequent visits.
20	3/8/2018	Active burrow. No owl observed. Fresh scat and white wash observed. No new sign observed on subsequent visits.
21	3/8/2018	Potential burrow. Possible old whitewash, scat observed. No new sign observed on subsequent visits.
22	3/8/2018	Potential burrow complex with 5 entrances. No owl sign observed. No new sign observed on subsequent visits.
26	3/8/2018	Possible coyote or kit fox den complex, 5m radius. No new sign observed on subsequent visits.
27	3/8/2018	Active burrow. Owl observed. Flew off to a previously mapped burrow as surveyors approached. 5m radius of burrows, pellets observed. Owl not observed on subsequent visits. No new sign observed on subsequent visits.
29	3/9/2018	Potential burrow complex. 5m radius. Pellets observed. No new sign observed on subsequent visits.
30	3/9/2018	Potential burrow, pellets observed. No new sign observed on subsequent visits.
31	3/9/2018	Active burrow. Pellets observed, owl flew off when we got closer. Owl not observed on subsequent visits. No new sign observed on subsequent visits.
32	3/9/2018	Active burrows. Pellets observed, insect remains in pellets. 3 burrows. No new sign observed on subsequent visits.
33	3/9/2018	Active burrows, pellets observed. 3 burrows. No new sign observed on subsequent visits.
34	3/9/2018	Potential burrow complex, 5m radius, old pellets observed near one burrow. No new sign observed on subsequent visits.
46	3/9/2018	Active burrow. Owl observed. Flew out from near burrow, whitewash and feathers observed. Owl not observed on subsequent visits. No new sign observed on subsequent visits.
49	3/9/2018	Potential burrows, pellets observed. No new sign observed on subsequent visits.

Table 3. Burrows With Sign of Burrowing Owl or Kit Fox

Burrow Points ID	Date First Observed	Notes
55	3/9/2018	Potential burrow complex, 10m radius. Whitewash and pellets found nearby.
63	3/12/2018	Potential burrow complex, 2 burrows with whitewash, 4 without. No new sign observed on subsequent visits.
64	3/12/2018	Active burrow complex, 4 burrows, whitewash, half eaten beetle observed. No new sign observed on subsequent visits.
65	3/12/2018	Active burrow complex, 6 burrows, whitewash observed. No new sign observed on subsequent visits.
66	3/13/2018	Potential burrows, scat observed. No new sign observed on subsequent visits.
68	3/13/2018	Potential burrow complex, lots of cast pellets. No new sign observed on subsequent visits.
76	3/13/2018	Potential burrow, whitewash observed. No new sign observed on subsequent visits.
82	4/18/2018	Active burrow complex. Two owls observed, both flew off into adjacent agriculture field as surveyors approached. One made alarm calls and bobbed head. Other remained quiet. No owls observed at this complex on any of the subsequent site visits.
99	3/6/2018	Potential burrow complex. Kit fox scat observed. No new sign observed on subsequent visits.
106	3/8/2018	Potential burrow complex. Whitewash observed, feathers observed, 8 burrows. No new sign, most burrow entrances covered with burrows on 5/30/2018 site visit.
109	3/8/2018	Potential burrow complex. Possible BUOW pellets observed. No new sign observed on subsequent visits.
108	3/5/2018	Potential kit fox of burrowing owl burrow complex. Cluster of 5 burrows. Some old pellets with insect parts observed. No new sign observed on subsequent visits.
113	3/6/2018	Potential kit fox of burrowing owl burrow complex. Potential burrow complex, kit fox or burrowing owl pellets observed. No new sign observed on subsequent visits.

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Figure 6. Special Status Species Observations

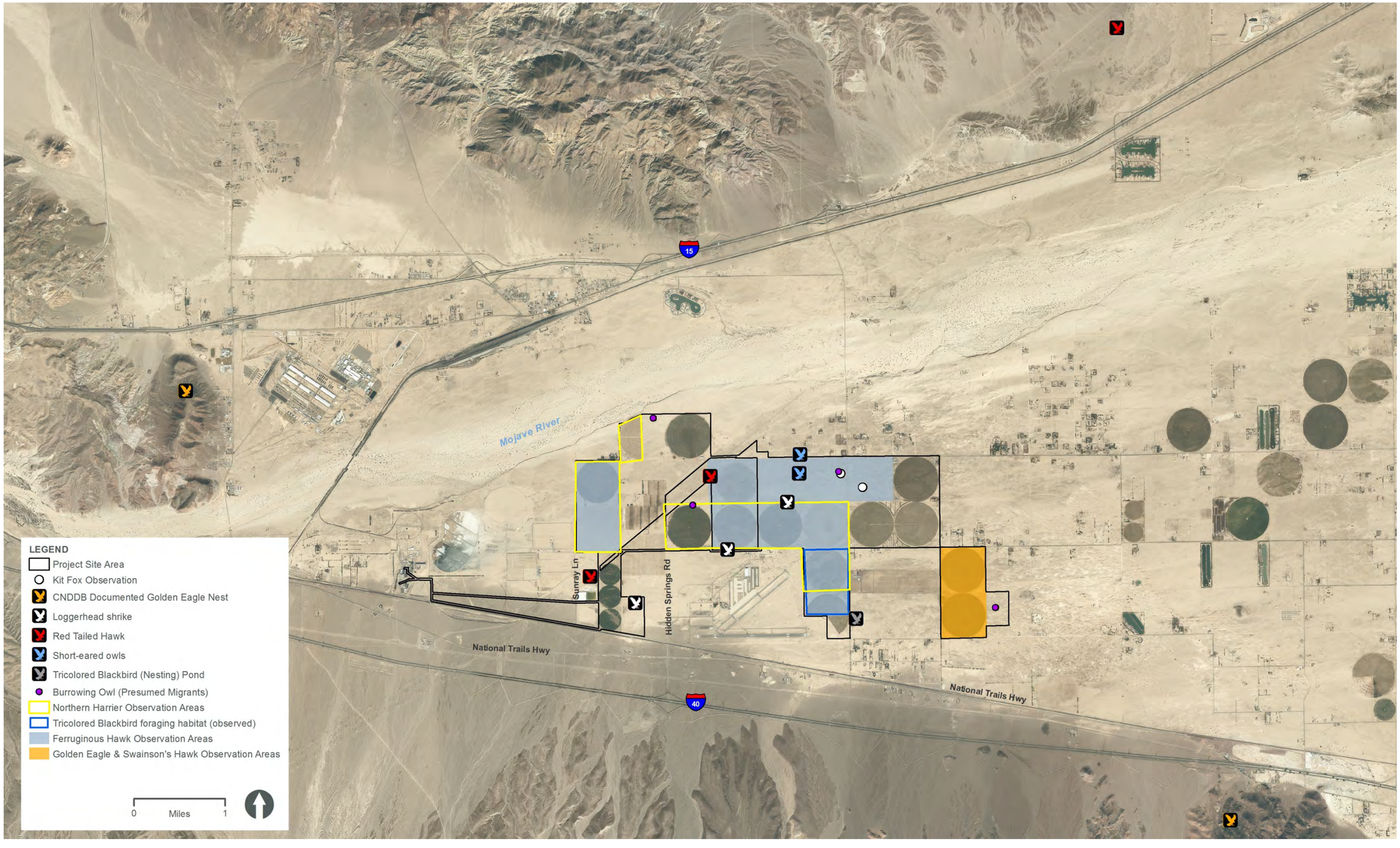
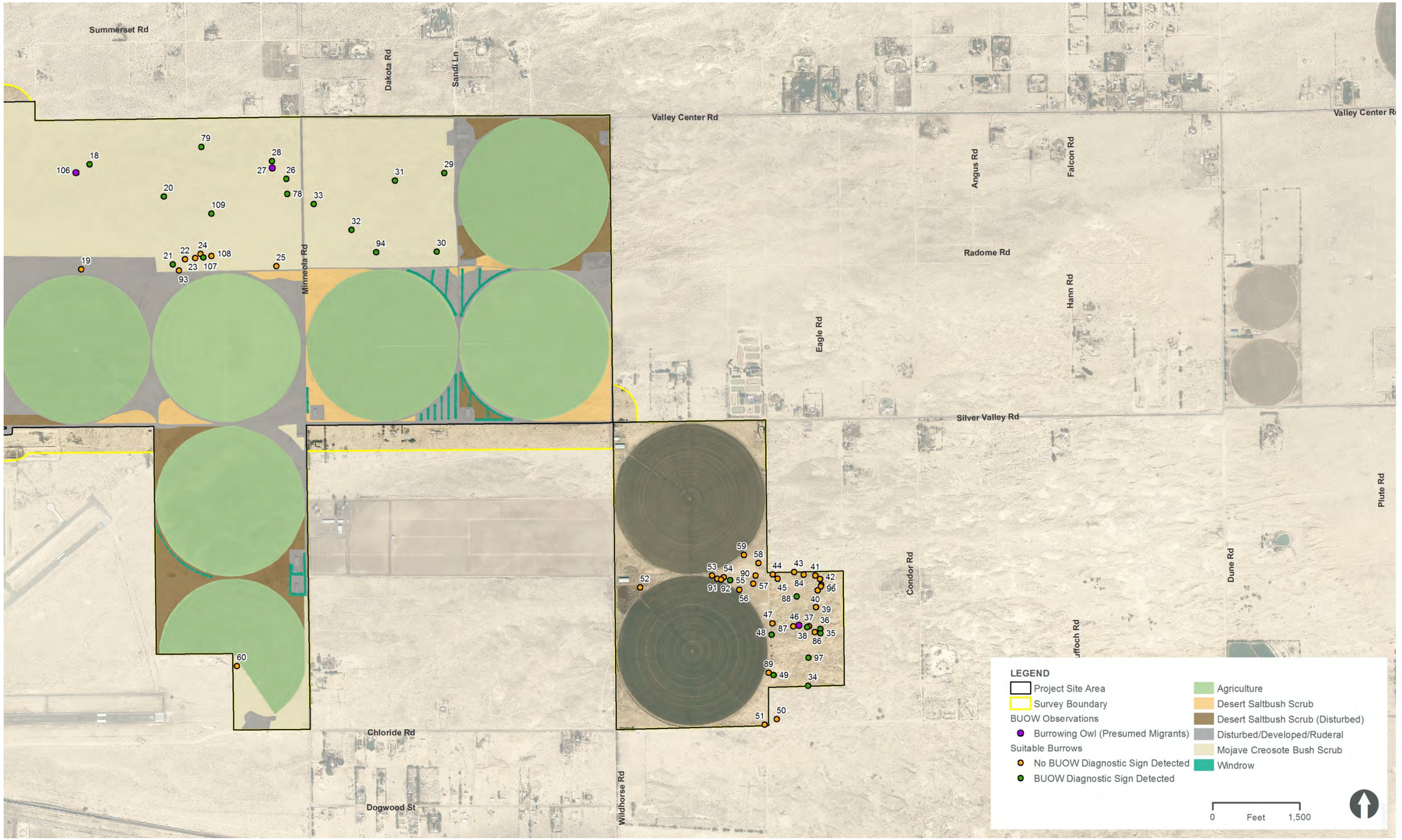


Figure 7. Burrowing Owl Burrow Location Map (Pg 1 of 2)

Figure 8. Burrowing Owl Burrow Location Map (Pg 2 of 2)



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4.3 Raptor Nesting and Site Use

4.3.1 Swainson's Hawk

Based on CNDDB records and a literature search, Swainson's hawks have been observed overwintering and migrating within and near the project area, but have not been recently recorded nesting there. The nearest recorded nest is in Apple Valley, approximately 25 miles south of the project site, and nesting was last observed there in 1932. The nearest recent nesting area is the Antelope Valley (approximately 60 miles west) (CDFW 2017a).

Four Swainson's hawks were observed on April 25th and April 26th foraging over an agricultural field that was being plowed (Figure 6). Several other raptors were observed foraging at this time (red-tailed hawk, golden eagle, and prairie falcon), likely due to an abundance of exposed prey. Swainson's hawks were not observed nesting at the site and were not observed there after April.

4.3.2 Golden Eagle

Project Site

Two golden eagles were observed foraging over the agricultural field being plowed on April 25 and April 26 (Figure 6). Two golden eagles were again observed on June 4 foraging over the same field.

CNDDB Nest Occurrence number 274

Several potential nests and large whitewash deposits were observed. At least one nest was likely an active common raven nest. None of the other nests appeared to be active. Golden eagles were not observed in the vicinity during three visits to this area.

CNDDB Nest Occurrence number 277

One potential nest and several large whitewash deposits were observed. The nest appeared to be an active common raven nest. Golden eagles were not observed in the vicinity during three visits to this area.

No golden eagle nests were documented during spring 2018 surveys of accessible transmission towers within 5 miles of the project site.

4.3.3 Other Raptor Species

The following other raptor species were observed within the project site during 2018 surveys:

- Northern harrier (*Circus cyaneus*);
- Red-tailed hawk (*Buteo jamaicensis*);
- Ferruginous hawk (*Buteo regalis*);
- American kestrel (*Falco sparverius*); and
- Prairie falcon (*Falco mexicanus*).

General areas where these species were observed are shown on Figure 6. Only one raptor species, red-tailed hawk, was observed nesting within the project site; two nests were located within the one-mile raptor survey radius and was located within the 5-mile transmission tower survey radius. Locations of red-tailed hawk nests are shown on Figure 6.

4.4 Loggerhead Shrike

Loggerhead shrikes were observed on multiple occasions during surveys. Some of the observed locations are shown on Figure 6.

4.5 Other Special Status Species

4.5.1 LeConte's Thrasher

This species was not detected within the project site during any surveys or site visits.

4.5.2 Tricolored blackbird

Tricolored blackbirds were incidentally observed during Mojave fringe-toed lizard and burrowing owls surveys in May 2018 foraging in agricultural fields near Minneola Road, south of Silver Valley Road (Figure 6). Surveyors were not able to estimate the number of tricolored blackbirds observed as they were seen and heard in flocks also consisting of Brewer's blackbirds, European starlings, and red-winged blackbirds. Birds were observed flying to and from an artificial pond with cattails located in the backyard of a residence on the east side of Minneola Road, approximately 0.2 mile north of Chloride Road (Figure 6). While surveyors did not directly observe this habitat, it is likely that tricolored blackbirds nest in this pond due to their presence in large numbers during the nesting season.

4.5.3 Desert kit fox

Canid scat was observed in creosote bush scrub and desert saltbush scrub communities throughout the project site. The majority of the burrows identified on Figure 7 are also suitable for use by kit fox. An abundance of kangaroo rat tracks were observed throughout the project site, indicating that there is ample prey to support desert kit fox in the project site.

One individual kit fox was photographed with a wildlife camera set at Burrow 32, a complex southeast of the intersection of Valley Center Road and Minneola Road on June 1 and 2, 2018 (Figure 6 and Appendix B, Photographs 7 and 8). Another individual kit fox was incidentally observed at Burrow 26, a complex southwest of the intersection of Valley Center Road and Minneola Road, during the fourth burrowing owl survey pass on June 27, 2018 (Figure 6 and Appendix B, Photograph 12). A dead desert kit fox was also incidentally observed by surveyors on the way to the project site on the shoulder of northbound Interstate 15, just past the Yermo Road overcrossing. This location is approximately 2.1 miles northwest of the project site.

4.5.4 American Badger

No American badgers were observed, however, potential burrows, scat, and claw marks were observed in creosote bush scrub habitat in the southeastern portion of the project site. A wildlife camera trap was set up at one burrow believed to have high potential for American badger, but no photographs of wildlife were obtained.

4.5.5 Townsend's Big-Eared Bat

Suitable roosting habitat for Townsend's big-eared bat was identified in abandoned buildings within the project site (Figure 5).

5 Summary of Survey Results

All special-status surveys planned for 2018 for the Daggett Solar Project Site have been completed. In summary, the following special-status species, or their sign, were observed during surveys conducted in 2018 for the Daggett Solar Project Site:

- One pair and six individual migratory or wintering burrowing owls (one survey pass remains to be completed for presence/absence breeding season surveys),
- Foraging Swainson's hawk and golden eagle,
- Loggerhead shrike that could forage and nest on-site,
- Foraging tricolored blackbirds (suitable breeding habitat occurs adjacent to the project site but not within the project site),
- Red-tailed hawk nests,
- Desert kit fox (two individuals), diagnostic sign and potential burrows throughout the site, and
- Possible American Badger diagnostic sign.

The following special-status species were not observed during surveys conducted in 2018 for the Daggett Solar Project Site:

- Mojave fringe-toed lizard
- Swainson's hawks or golden eagles nests on or within one mile of the project site,
- LeConte's thrasher,
- Desert tortoise (HDR 2018c), or
- Special-status plants (HDR 2018d).

6 References

Cablk, M. and Heaton, J. 2002. Final Report: Mojave Fringe-Toed Lizard Surveys at the Marine Corps Air Ground Combat Center, Twentynine Palms, California & Nearby Lands Administered by the Bureau of Land Management. Accessible online at: https://www.dri.edu/images/stories/divisions/dees/deesfaculty/mc-cvpub-Cablk_Heaton_Final_Report.pdf

[CDFW] California Department of Fish and Wildlife. 2012. *California Department of Fish and Game 2012 Staff Report on Burrowing Owl Mitigation*. March 7, 2012. Accessible online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843

____. 2018. CNDDB Rare Find Online Application. Accessible online at: .http://www.dfg.ca.gov/biogeodata/cnddb/ mapsanddata.asp.

Circle Mountain Biological Consultants. 2014. Biological Technical Report in Support of the City of Barstow's 2014 General Plan Master Environmental Impact Report. Prepared for the City of Barstow. June 2014.

HDR. 2018a. Administrative Draft Biological Resources Technical Report: Dagget Solar Power Facility. Prepared for Daggett Solar Power 1, LLC. June 25, 2018.

____. 2018b. Draft Jurisdictional Delineation Report: Dagget Solar Power Facility. Prepared for Daggett Solar Power 1, LLC.

____. 2018c. Administrative Draft Desert Tortoise Pre-Project Survey Report: Daggett Solar Power Facility. Prepared for Daggett Solar Power 1, LLC. June 1, 2018.

____. 2018d. Administrative Draft Special-Status Plant Species Survey Report: Daggett Solar Power Facility. Prepared for Daggett Solar Power 1, LLC. June 4, 2018.

Muhs, D. R., R. L. Reynolds, J. Been, and G. Skipp. 2003. Eolian Sand Transport Pathways in the Southwestern United States: Importance of the Colorado River and Local Sources. *Quaternary International* 104:3–18.

[USDA] United States Department of Agriculture. 1937. Soil Survey of the Barstow Area, California. USDA. Series 1933, No. 8.

USDA. 1986. Soil Survey of San Bernardino County California. Mojave River Area. USDA Soil Conservation Service.

USDA. 2017. Soil Survey Staff, Natural Resources Conservation Service. Web Soil Survey. Available online at https://websoilsurvey.sc.egov.usda.gov/. Accessed August 21, 2017.

Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updates are noted in accounts that have been added or edited since original publication.

Appendix A. Observed Botanical and Zoological Species

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Observed Botanical Species

Scientific Name	Common Name
PINOPHYTA	**GYMNOSPERMS**
Ephedraceae	**Ephedra Family**
Ephedra californica	California jointfir
MAGNOLIOPHYTA: MAGNOLIOPSIDA	**DICOT FLOWERING PLANTS**
Amaranthaceae	**Amaranth Family**
*Amaranthus albus**	Prostrate pigweed
Agavaceae	**Agave Family**
Hesperocallis undulata (remnants from 2017)	*Desert lily*
Anacardiaceae	**Sumac or Cashew Family**
Pistacia chinensis	Pistachio
Asteraceae	**Sunflower Family**
*Agoseris grandiflora**	Large flowered dandelion
Ambrosia acanthicarpa	Annual bur-sage
*Ambrosia artemisiifolia**	Common ragweed
Ambrosia dumosa	White bur-sage
Ambrosia salsola	Common burrobrush
Baileya pleniradiata	Woolly desert marigold
Chaenactis fremontii	Fremont pincushion
*Dittrichia graveolens**	Stinkwort
Encelia farinosa	Brittlebush
Ericameria cf. paniculata	Black-banded rabbitbrush
Malacothrix glabrata	Desert dandelion
Palafoxia arida var. *arida*	Spanish-needle
Rafinesquia neomexicana	Desert chicory
Stephanomeria pauciflora	Wire-lettuce
Boraginaceae	**Borage Family**
Amsinckia menziesii	Menzies' fiddleneck
Amsinckia cf. *tessellata*	Bristly fiddleneck
Cryptantha cf. *angustifolia*	Narrow-leaved cryptantha
Heliotropium curassavicum var. *oculatum*	Alkali heliotrope
Plagiobothrys sp.	Popcornflower
Tiquilia sp. (not flowering, likely *nuttallii*)	Nuttall's coldenia
Brassicaceae	**Mustard Family**
*Brassica tournefortii**	Sahara mustard
Lepidium c.f. lasiocarpum ssp. *lasiocarpum*	Shaggyfruit pepperweed
*Sisymbrium irio**	London rocket
Cactaceae	**Cactus Family**
Cylindropuntia echinocarpa	Silver cholla
Cylindropuntia ramosissima	Diamond cholla

Chenopodiaceae	**Saltbush Family**
Atriplex canescens var. *linearis*	Slenderleaf saltbush
Atriplex confertifolia	Spiny saltbush
Atriplex elegans var. fasciculata	Mecca orach
Atriplex polycarpa	Allscale saltbush
Chenopodium desiccatum	Aridland goosefoot
Grayia spinosa	Hop-sage
*Medicago sativa**	Alfalfa
*Salsola tragus**	Russian thistle
Suaeda nigra	Bush seepweed
Convolvulaceae	**Morning Glory Family**
*Convolvulus arvensis**	Field bindweed
Euphorbiaceae	**Spurge Family**
Euphorbia cf. *polycarpa*	Smallseed sandmat
Fabaceae	**Pea Family**
Prosopis sp. (not flowering, likely *glandulosa* var. *torreyana*)	Honey mesquite
Geraniaceae	**Geranium Family**
*Erodium cicutarium**	Red-stem filaree
Loasaceae	**Loasa Family**
Petalonyx thurberi ssp. *thurberi*	Thurber's sandpaper plant
Myrtaceae	**Myrtle Family**
Eucalyptus sp.*	Eucalyptus
Onagraceae	**Evening-Primrose Family**
Chylismia sp. (remnant from 2017)	Primrose
Orobanchaceae	**Broomrape Family**
Aphyllon cf. *cooperi* (dried out, ID based on range and habitat)	Burroweed strangler
Polemoniaceae	**Phlox Family**
Loeseliastrum matthewsii	Desert calico
Polygonaceae	**Buckwheat Family**
Chorizanthe sp.	Spineflower
Chorizanthe rigida	Rigid spineflower
Eriogonum gracillimum	Rose-and-white wild buckwheat
Eriogonum cf. *brachypodum*	Parry's wild buckwheat
Eriogonum cf. *maculatum*	Spotted wild buckwheat
Eriogonum fasciculatum	California buckwheat
Tamaricaceae	**Tamarisk Family**
*Tamarix aphylla**	Athel
*Tamarix ramosissima**	Saltcedar
Zygophyllaceae	**Caltrop Family**
Larrea tridentata	*Creosote bush*

MAGNOLIOPHYTA: LILIOPSIDA	**MONOCOT FLOWERING PLANTS**
Agavaceae	**Agave Family**
Hesperocallis undulata (remnant from 2017)	*Desert lily*
Poaceae	**Grass Family**
Avena sp.*	Oat
Bromus madritensis ssp. *rubens**	Red brome
*Bromus tectorum**	Cheatgrass
*Cynodon dactylon**	Bermuda grass
Hordeum murinum ssp. *leporinum**	Hare barley
*Schismus barbatus**	Common Mediterranean grass
Stipa cf. *speciosa*	Desert needlegrass

* Introduced Species

cf. indicates the plant was identified to genus, but was not identifiable to species because of the lack of necessary plant parts to key out to species (e.g., flowers or fruits). However, based on other characteristics, site location, and the habitat the plant was found in, a likely species is indicated after the cf.

sp. indicates the plant was identified to genus, but was not identifiable to species and there are at least two possibilities for the species based on site location and habitat the plant was found in.

Remnant from 2017 was indicated for plants that were dried out and were likely dead plants from the spring 2017 blooms.

Observed Zoological Species

Scientific Name	Common Name
INSECTA (HEXAPODA)	**INSECTS**
Apidae	**Carpenter, Cuckoo, Digger, Bumble, and Honey Bees**
Subfamily Apinae	**Digger, bumble, and honey bees**
Tribe Apini	**Honey bees**
Apis mellifera	Honey bee
Superfamily Vespoidea	
Mutillidae	**Velvet Ants**
Dasymutilla sackeni	White velvet ant
Pompilidae	**Spider Wasps**
Pepsis chrysothemis	Tarantula hawk
Formicidae	**Ants**
Messor sp.	Black harvester ant
Pogonomyrmex sp.	Red harvester ant
LEPIDOPTERA	***BUTTERFLIES AND MOTHS***
Pieridae	**Sulphurs and Whites**
Subfamily Coliadinae	**Sulphurs**
Colias sp.	Sulphur
Lycaenidae	**Gossamer-Wing Butterflies**
Riodinidae	**Metalmarks**
Apodemia mormo deserti	Desert metalmark
Bombyliidae	**Bee Flies**
unidentified spp.	Bee fly

REPTILIA	**REPTILES**
Eublepharidae	**Eyelid Geckos**
Coleonyx variegatus	Western banded gecko
Iguanidae	**Iguanid Lizards**
Dipsosaurus dorsalis	Desert Iguana
Crotaphytidae	**Collared and Leopard Lizards**
Gambelia wislizenii	Long-nosed leopard lizard
Callisaurus draconoides	Zebra-tailed lizard
Sceloporus uniformis	Yellow-backed spiny lizard
Sceloporus occidentalis	Western fence lizard
Uta stansburiana	Common side-blotched lizard
Phrynosoma platyrhinos	Desert horned lizard
Teiidae	**Whiptails**
Aspidoscelis tigris tigris	Great Basin whiptail
Colubridae	**Colubrid Snakes**
Coluber flagellum piceus	Red coachwhip
Viperdae	**Vipers**
Crotalus cerastes	Sidewinder

Crotalus scutulatus	Mohave rattlesnake

AVES	**BIRDS**
Accipitridae	**Kites, Hawks, and Eagles**
Buteo jamaicensis	Red-tailed hawk
Buteo swainsoni	Swainson's hawk
Aquila chrysaetos	Golden eagle
Falconidae	**Falcons**
Falco sparverius	American kestrel
Falco mexicanus	Prairie falcon
Columbidae	**Pigeons and Doves**
Zenaida macroura	Mourning dove
*Streptopelia decaocto**	Eurasian collared dove
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	Greater roadrunner
Tytonidae	**Barn Owls**
Tyto alba	Barn owl
Strigidae	**Typical Owls**
Athene cunicularia hypugaea	Burrowing owl
Asio flammeus	Short-eared owl
Caprimulgidae	**Goatsuckers**
Chordeiles acutipennis	Lesser nighthawk
Apodidae	**Swifts**
Aeronautes saxatalis	White-throated swift
Trochilidae	**Hummingbirds**
Archilochus alexandri	Black-chinned hummingbird
Calypte anna	Anna’s hummingbird
Calypte costae	Costa’s hummingbird
Tyrannidae	**Tyrant Flycatchers**
Sayornis nigricans	Black phoebe
Sayornis saya	Say’s phoebe
Tyrannus vociferans	Cassin’s kingbird
Laniidae	**Shrikes**
Lanius ludovicianus	Loggerhead shrike
Corvidae	**Crows and Ravens**
Corvus corax	Common raven
Alaudidae	**Larks**
Eremophila alpestris ammophila	Mojave horned lark
Hirundinidae	**Swallows**
Tachycineta thalassina	Violet-green swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
Petrochelidon pyrrhonota	Cliff swallow

Sylviidae	**Old World Warblers and Gnatcatchers**
Polioptila melanura	Black-tailed gnatcatcher
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern mockingbird
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling
Motacillidae	**Wagtails and Pipits**
Anthus rubescens	American pipit
Parulidae	**Wood Warblers**
Oreothlypis celata	Orange-crowned warbler
Dendroica coronata	Yellow-rumped warbler
Emberizidae	**Emberizines**
Melozone crissalis	California towhee
Spizella breweri	Brewer's sparrow
Zonotrichia leucophrys	White-crowned sparrow
Cardinalidae	**Cardinals, Grosbeaks, and Allies**
Piranga ludoviciana	Western tanager
Pheucticus melanocephalus	Black-headed grosbeak
Passerina amoena	Lazuli bunting
Icteridae	**Blackbirds, Orioles and Allies**
Agelaius phoeniceus	Red-winged blackbird
Agelaius tricolor	Tricolored blackbird
Sturnella neglecta	Western meadowlark
Euphagus cyanocephalus	Brewer's blackbird
Quiscalus mexicanus	Great-tailed grackle
Molothrus ater	Brown-headed cowbird
Icterus bullockii	Bullock's oriole
Fringillidae	**Finches**
Carpodacus mexicanus	House finch
Spinus psaltria	Lesser goldfinch
Passeridae	**Old World Sparrows**
*Passer domesticus**	House sparrow

MAMMALIA	**MAMMALS**
LAGOMORPHA	***RABBITS, HARES AND PIKA***
Leporidae	**Rabbits and Hares**
Lepus californicus deserticola	Black-tailed jackrabbit
Sylvilagus audubonii	Desert cottontail
RODENTIA	***RODENTS***
Sciuridae	**Squirrels**
Ammospermophilus leucurus	White-tailed antelope squirrel
Spermophilus beecheyi	California ground squirrel
Spermophilus tereticaudus	Round-tailed ground squirrel

Heteromyidae	**Pocket Mice and Kangaroo Rats**
Dipodomys sp.	Kangaroo rat
Muridae	**Mice, Rats and Voles**
Peromyscus sp.	Deer mouse
CARNIVORA	***CARNIVORES***
Canidae	**Foxes, Wolves and Dogs**
Canis latrans	Coyote
Vulpes macrotis	Kit fox
Mustelidae	**Weasels, Otters, and Badgers**
Taxidea taxus	American badger

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Appendix B. Site Photographs

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Photograph 1. Desert Saltbush Scrub in the eastern portion of the project site. View looking north.

Photograph 2. Desert Saltbush Scrub with fine, sandy soils/sand dunes in southeastern portion of project site. View looking southwest.

Photograph 3. Creosote Bush Scrub habitat in the eastern portion of the project site. View looking west.

Photograph 4. Agriculture (Pistachio Orchard) community shown on right side of photograph. View looking south.

Photograph 5. Disturbed Saltbush Scrub community adjacent to Agriculture near central, northern portion of site. View looking west.

Photograph 6. Agriculture near northern central portion of the project site showing inactive agricultural field.

Photograph 7. Desert kit fox captured on trail camera at burrow complex southeast of Minneola Road and Valley Center Road. Time stamp on photo is incorrect. Camera facing northeast.

Photograph 8. Desert kit fox captured on trail camera at burrow complex southeast of Minneola Road and Valley Center Road. Time stamp on photo is incorrect. Camera facing northeast.

Photograph 9. Coachwhip observed in Creosote Bush Scrub habitat near southeast corner of Minneola Road and Valley Center Road.

Photograph 10. Zebra-tailed lizard, location not noted. This species was detected throughout native habitat portions of the project site.

Photograph 11. Desert iguana, location not noted. This species was observed throughout native habitat within project site.

Photograph 12. Desert kit fox observed at Burrow 26 on June 27, 2018. Photo taken through binoculars.

Appendix C. Evaluation of Lake Effect Hypothesis

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It has been hypothesized that photovoltaic (PV) solar arrays could be an attractant to birds, who might detect an array of panels as water, attempt to land there, and collide with or be trapped among panels or other infrastructure at PV solar facilities (Lovich and Enner 2011, BLM and DOE 2012, Kagan et al. 2014). The following is a summary of existing information on this potential effect.

There is limited data available to determine the rate of mortality of birds at PV solar facilities, and even less to evaluate whether birds killed at those facilities were attracted to the appearance of water there. Walston et al. (2016) reviewed information on the "lake effect hypothesis" and synthesized available information on avian monitoring and mortality at utility scale solar energy facilities in the U.S. They identified three solar-energy facilities for which there was sufficient information to calculate avian mortality. One of those facilities, the now closed California Solar One [CSO] PV facility, is adjacent to the proposed Daggett Solar Power Facility (McCrary et al. 1986). The other two facilities, also in southern California, are concentrated solar power facilities. After adjusted to account for average searcher efficiency and average carcass persistence, Walston et al. (2016) estimated that annual rates of avian mortality attributed to the solar facilities ranges substantially, from 0.5 (for CSO) to 10.24 birds/MW/year, but that total avian mortality at the sites was more consistent, and averaged 9.9 birds/MW/year. They noted that this rate of mortality, if calculated for all solar facilities in southern California, is far lower than other common causes of avian mortality. The also noted that causal factors that contribute to avian mortality at solar energy facilities, including the "lake effect", need to be better understood.

In a review of avian mortality at solar facilities in the United Kingdom, Natural England (2017) concluded that avian "collision risk is low, but not impossible" at solar facilities and that transmission lines present more of a risk to birds than solar arrays. Walston et al. (2015) summarized information on avian fatality data at utility scale solar facilities as of 2014. Total mortality at seven sites in California ranged from 14 to 376. The causes of death documented at those facilities included solar flux (only at concentrated solar power facilities), impact trauma, predation trauma, electrocution, and emaciation; the cause of death frequently could not be determined or was not reported.

The location of a solar energy facility relative to wetlands, riparian areas, migration corridors, and other avian habitat features could influence the rate of avian mortality there (Lovich and Enner 2011, Walston et al. 2016). The Daggett Solar Power Facility is within the Pacific Flyway, but is distant from major routes or stopover locations such as the Colorado River, Salton Sea, and Mono Lake. There are a number of ponds and other small open bodies of water in the Daggett/Barstow area that could attract migrating birds, but few of those are adjacent to or otherwise close to the project area. Because of the lack of large water bodies in the area, waterbirds and other migrating birds that might be attracted to water sources there likely migrate through the area at high elevations. As listed in Appendix A of this report, no waterfowl or other water birds were observed during extensive surveys conducted throughout the Daggett Solar Power Facility in the spring of 2018.

In summary, avian mortalities at solar energy facilities have been documented, and causes of death include collision with structures there. However, no study has definitively determined that birds are attracted to PV solar arrays because of the appearance of those facilities as open bodies of water. Rates of mortality measured at utility-scale solar energy facilities generally have been much lower than those attributed to other causes of mortality in the region. The Daggett Solar Power Facility would be located in a desert area distant from large open bodies of water that would attract water birds to the area, and no waterfowl or other water birds were observed there in spring 2018.

References

Bureau of Land Management and U.S. Department of Energy. 2012. Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States, DOE/EIS-0403.

Lovich, J.E., and J.R. Enner. 2011. Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States. BioScience 16:982-992.

Kagan, R.A., T.C. Viner, P.W. Trail, and E.O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: a Preliminary Analysis. U.S. Fish and Wildlife Service, National Fish and Wildlife Forensics Laboratory.

McCrary, M.D. R.L. McKernan, R.W. Schreiber, W. D. Wagner, and T.C. Sciarrotta. 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology. 57:135-141.

Natural England. 2017. Evidence Review of the Impact of Solar Farms on Birds, Bats and General Ecology. NEER012. http://publications.naturalengland.org.uk/publication/6384664523046912.

Walston, L.J., Jr., K. E. Rollins, K. E. LaGory, K. P. Smith, and S. A. Meyers. A Preliminary Assessment of Avian Mortality at Utility-Scale Solar Energy Facilities in the United States. Renewable Energy 92:405-414.

Walston, L.R., Jr., K.E. Rollins, K.P. Smith, K.E. LaGory, K. Sinclair, C. Turchi, T. Wendelin, and H. Souder. 2015. A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities. Argonne National Laboratory, Environmental Sciences Division. ANL/EVS-15/2.