

# EVALUATION OF SIX SITES AS POTENTIAL CONSERVATION LANDS

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## MARICOPA SUN SOLAR PROJECT, KERN COUNTY, CALIFORNIA

March 2014

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Quad Knopf

**EVALUATION OF SIX SITES AS POTENTIAL  
CONSERVATION LANDS  
Maricopa Sun Solar Project,  
Kern County, California**

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## EXECUTIVE SUMMARY

Maricopa Sun, LLC (Project Administrator) is proposing to develop a solar complex (Maricopa Sun Solar Complex [Project]) in southern Kern County, California. The Project currently consists of seven Solar Sites that total 3,798.3 acres. The development of those parcels will require local, regional, and state approvals. As part of that approval process, compensation for loss of sensitive habitat and special status species is required.

Affiliates of the Project Administrator own several parcels of land that contain various levels of habitat value and that can contribute to the compensatory mitigation obligation that is required for the development of the Solar Sites. These potential Conservation Sites total 1,894.4 acres and consist of study Site 1-C (656.6 acres, APNs 220-120-14 and 220-120-15), Site 3-C (80.4 acres, APN 220-110-10), Site 3-C2 (152.9 acres, APN 220-110-08), Site 9-C (180.6 acres, APNs 220-201-02 and 220-050-42), Site 10-C (176.2 acres, APN 220-201-05), and Site 17-C (647.7 acres, APN 239-150-11), all of which are located within southwestern Kern County, California. These sites, with the exception of Site 17-C, are situated approximately three miles northeast of the unincorporated community of Maricopa. Site 17-C is located approximately 6.5 miles southeast of Maricopa.

Focused biological surveys were conducted for Sites 1-C, 3-C, 3-C2, 9-C, and 10-C, and a preliminary biological survey was conducted on Site C-17 to evaluate their suitability as conservation lands, and to begin establishing area-specific baseline biological information. Focused biological surveys consisted of protocol-level blunt nosed leopard lizard surveys, San Joaquin kit fox surveys, small mammal trapping studies, vegetation surveys, raptor surveys, and wetland delineation surveys. A preliminary survey on Site 17-C focused on evaluating the site for its suitability as compensatory land, but extensive protocol surveys were not completed due to the relatively pristine condition of the Site.

The study sites are located in a region that once supported a wide variety of plants and wildlife, many of which have been listed as threatened, endangered, or otherwise of special concern due to habitat loss resulting from urban, agricultural, and oil field development. In general, these species exist primarily in scattered, isolated remnants of native habitat within the San Joaquin Valley. However, there are large expanses of native habitat to the south and west of the Project area that provide significant value to these species. This area includes a core population of the San Joaquin kit fox (*Vulpes macrotis mutica*), extensive areas inhabited by the blunt-nosed leopard lizard (*Gambelia sila*); and extensive areas inhabited by Nelson's antelope squirrel (*Ammospermophilus nelsoni*), burrowing owls (*Athene cunicularia*), and other species of concern. The Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) occurs only in scattered, isolated, and small habitat patches on the San Joaquin Valley floor. A significant east-west linkage corridor for the San Joaquin kit fox that is south of the Project area and the California Aqueduct provides an east-west linkage corridor extending around the Project area.

Sensitive biological resources are present on and in the vicinity of the study sites. Sightings, captures, or other evidence of special status species on or adjacent to the six study sites indicate that five species, which are covered in the Maricopa Sun, LLC Habitat Conservation Plan

(MSHCP) and for which compensatory habitat needs to be provided, are present on or adjacent to the proposed Solar Sites:

- San Joaquin kit fox, federally endangered and state threatened;
- Tipton kangaroo rat, federally and state endangered species;
- Nelson's antelope squirrel, state threatened;
- Western burrowing owl, state Species of Concern; and
- Blunt-nosed leopard lizard, federally endangered, state endangered, and state fully protected.

The proposed Solar Site parcels total 3,798.3 acres of repeatedly disked lands that provide dispersal habitat for the San Joaquin kit fox, and perching and limited foraging habitat for the burrowing owl. The Tipton kangaroo rat, Nelson's antelope squirrel, and blunt-nosed leopard lizard do not occur within the proposed solar development footprint. Other special status species that were noted on or adjacent to the Solar Sites include the Le Conte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), Blainville's horned lizard (*Phrynosoma blainvillii*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), American badger (*Taxidea taxus*), Tulare grasshopper mouse (*Onychomys torridus tularensis*), California horned lark (*Eremophila alpestris actia*), northern harrier (*Circus cyaneus*), and golden eagle (*Aquila chrysaetos*).

The study sites that are proposed for conservation provide habitat values for all of the Project's Covered Species, including the San Joaquin kit fox, Tipton kangaroo rat, Nelson's antelope squirrel, western burrowing owl, and blunt-nosed leopard lizard. These sites currently provide habitat that is equal in quality or higher in quality than the disked lands occurring on the proposed Solar Sites. The proposed Conservation Sites provide 1,894.4 acres of San Joaquin kit fox habitat, 85.69 acres of Tipton kangaroo rat habitat, 730.95 acres of Nelson's antelope squirrel habitat, 1,894.4 acres of western burrowing owl habitat, and 730.95 acres of blunt-nosed leopard lizard habitat. Other special-status species are also associated with these sites.

The compensatory mitigation provided by these lands exceeds the needed amount for some species, but does not meet the compensatory requirements needed for other species. The conservation of 730.95 acres of blunt-nosed leopard lizard habitat, 85.69 acres of Tipton kangaroo rat habitat, and 730.95 acres of Nelson's antelope squirrel habitat exceed that which is needed. Alternatively, the 1,894.4 acres of San Joaquin kit fox and western burrowing owl habitat that would be provided by the conservation of these sites do not meet the compensatory mitigation needs for these species, even though much of the lands proposed for mitigation exceed the quality of the habitat that would be lost to solar development. However, additional project mitigation will be provided, including establishment of managed Movement Corridors among the Solar Sites, and the permanent conservation of all Solar Site lands once the Project is decommissioned. In combination, the total conservation acreage and Movement Corridors would meet the conservation needs of the Project.

## 1.0 INTRODUCTION

### 1.1 Purpose of the Report

Maricopa Sun, LLC is proposing to develop a solar complex on seven Solar Sites totaling approximately 3,798.3 acres in southwestern Kern County, California (Figures 1 and 2). The development of those parcels will require local, regional, and state approvals. As part of that approval process, compensation for loss of habitat and special status species is needed. This report was prepared to establish baseline biological information on six potential Conservation Sites (study sites) and to evaluate their suitability for conservation purposes.

### 1.2 Project Area

The Project area is located at the southern end of San Joaquin Valley within southwestern Kern County, California, approximately three miles northeast to approximately 6.5 miles southeast of the unincorporated community of Maricopa (Figure 1). The study sites are located west of Interstate 5 (I-5), and can be accessed from South Lake Road, Cadet Road, and Copus Road, and several other unfarmed access roads (Figure 2). Six study sites totaling 1,894.4 acres were evaluated to determine their potential for contributing to the compensatory mitigation needs of the Project (Table 1).

**Table 1**  
**Maricopa Sun Solar Complex: Study Sites**

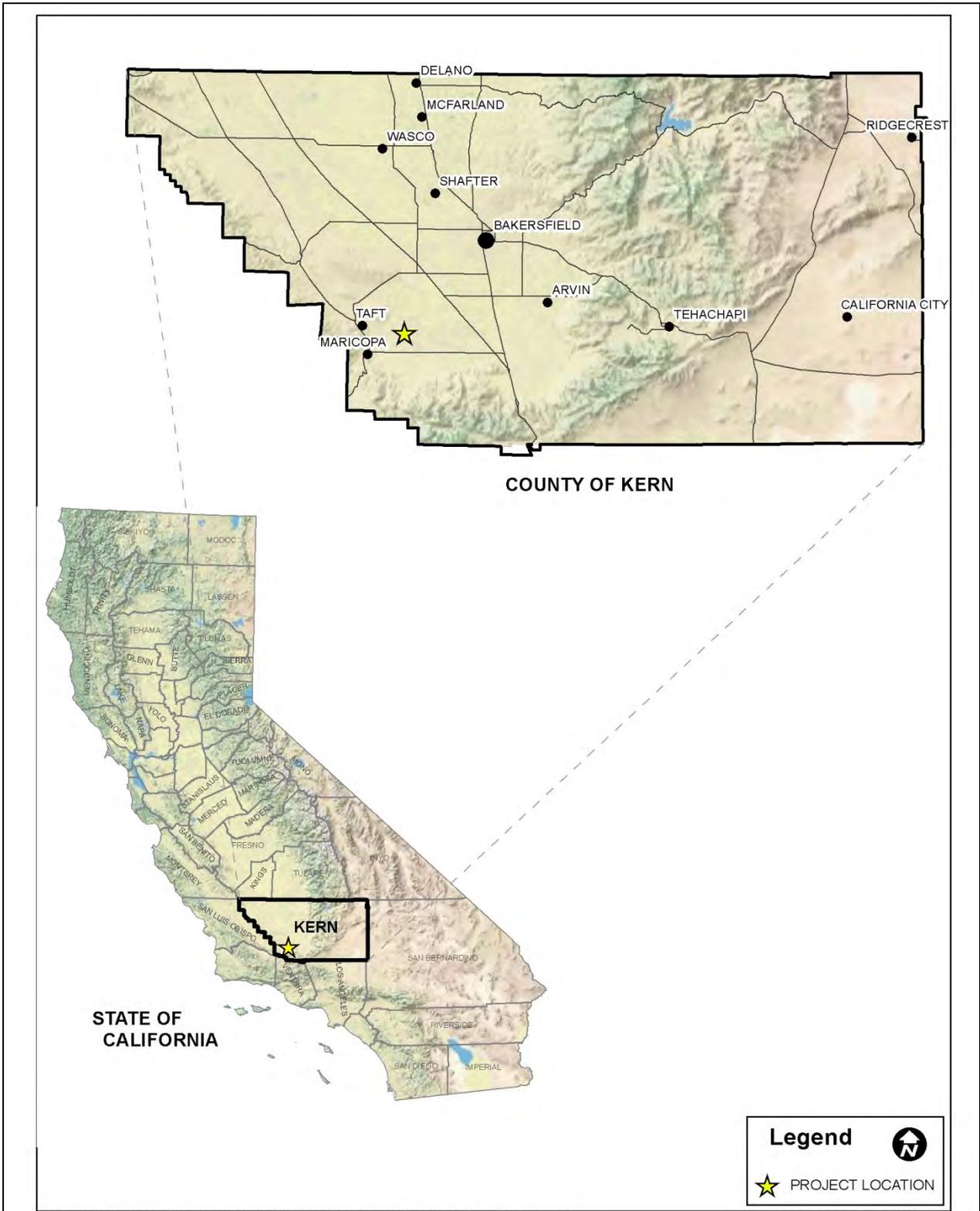
Site Numbers	APN	Township, Range, Sec.	Acreage
Site 1-C	220-120-(14-15)	T.32S., R.25E., Sec.19 <sup>1</sup>	656.6
Site 3-C	220-110-10	T.32S., R.25E.,Sec.23 <sup>1</sup>	80.4
Site 3-C2	220-110-08	T.32S., R.25E.,Sec.23 <sup>1</sup>	152.9
Site 9-C	220-201-02, 220-050-42	T.12N., R.23W., Sec.29 <sup>2</sup>	180.6
Site 10-C	220-201-05	T.12N., R.23W., Sec.33 <sup>2</sup>	176.2
Site 17-C	239-150-11	T. 11N., R.23W., Sec.13 <sup>2</sup>	647.7
<b>Total Acreage</b>			<b>1,894.4</b>

<sup>1</sup> MDBM (Mount Diablo Base and Meridian)

<sup>2</sup> SBBM (San Bernardino Base and Meridian)

## 2.0 METHODS

This chapter provides descriptions of the work that was conducted to provide baseline biological information for the study sites. The descriptions of the work performed are separated by major tasks, which either separately or together are used to evaluate the suitability of these areas for conservation purposes.

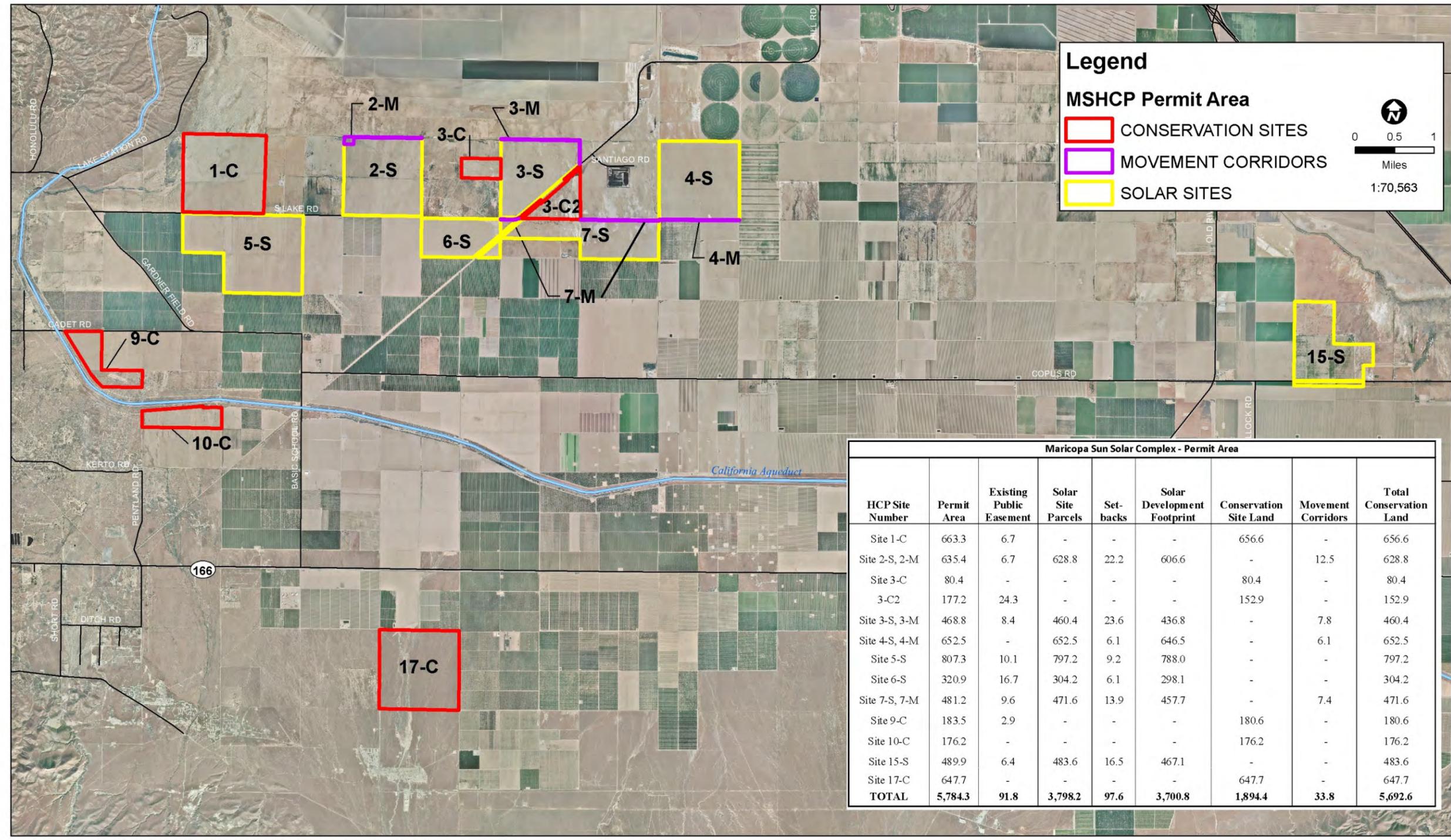


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**REGIONAL LOCATION OF MARICOPA SUN  
SOLAR COMPLEX PROJECT AREA,  
KERN COUNTY, CALIFORNIA**

**Figure  
1**



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SITE PLAN  
MARICOPA SUN SOLAR COMPLEX, KERN COUNTY, CALIFORNIA

Figure 2

## 2.1 Database and Literature Review

Queries of the California Natural Diversity Database (CNDDDB 2009, 2010, 2011), California Native Plant Society (CNPS 2009, 2010, 2011) database, and United States Fish and Wildlife Service (USFWS) Threatened and Endangered Species List (2009, 2010, 2011) were reviewed to identify reported historical occurrences of special-status plant and animal species and sensitive habitats for the following United States Geologic Survey (USGS) 7.5-Minute topographic quadrangles, which encompass the Project area and vicinity:

- Buena Vista Lake Bed;
- Ballinger Canyon;
- Conner SW;
- Eagle Rest Peak;
- East Elk Hills;
- Maricopa;
- Millux;
- Mouth of Kern;
- Pentland;
- Santiago Creek;
- Stevens;
- Taft; and
- Tupman.

The historic occurrences of special-status species located within five miles of the project area are provided on site maps to show nearby known locality records. The CNDDDB provides element-specific spatial information on individual documented occurrences of special status species and sensitive natural vegetation communities. The CNPS database provides similar information, but at a much lower spatial resolution, for additional sensitive plant species tracked by the CNPS. The USFWS query generates a list of federally-protected species known to potentially occur within individual USGS quadrangles. Wildlife species designated as “Fully Protected” by California Fish and Wildlife Code Sections 5050 (Fully Protected reptiles and amphibians), 3511 (Fully Protected birds), and 4700 (Fully Protected mammals) were also included on the target species list.

## 2.2 Focused Biological Surveys

A number of focused biological surveys for special status species were conducted, including surveys for the San Joaquin kit fox, small mammal trapping studies, protocol-level surveys for blunt-nosed leopard lizard, raptor surveys, and vegetation surveys. The focus was to determine the presence and habitat suitability of the study sites for the five species covered in the MSHCP: San Joaquin kit fox, Tipton kangaroo rat, Nelson’s antelope squirrel, western burrowing owl, and blunt-nosed leopard lizard. Information on other special status species were obtained and reported.

## 2.2.1 SAN JOAQUIN KIT FOX SURVEYS

Standardized surveys for determining San Joaquin kit fox presence were used, which consist of conducting transect surveys focusing on visual searches for dens and other sign of foxes (e.g., scat, prey remains, tracks), night spotlighting surveys, baited track station surveys, and baited camera station surveys. These focused surveys were conducted on and within the immediate vicinity of the study sites. The methods used for each survey type are described below.

### *Transect Surveys*

Quad Knopf's biologists conducted pedestrian transects to detect known, natal, and potential San Joaquin kit fox dens and other sign of kit foxes (e.g., tracks, scat, prey remains) within the study sites and vicinity (Table 2).

**Table 2**  
**San Joaquin Kit Fox Transect Survey Dates and Locations**

Study Site	Survey Dates (Month/Day/Year)	Surveyors
1-C	02/11, 02/12/2010	B. Perez, J. Firkins, T. Ped, B. Berry, and J. Thompson
3-C	02/17, 02/22, 03/03/2010	B. Perez, J. Firkins, T. Ped, B. Berry, and J. Thompson
3C-2	02/17, 02/22, 03/03/2010	B. Perez, J. Firkins, T. Ped, B. Berry, and J. Thompson
9-C	09/19, 09/20/2011	M. Pernicano, J. Firkins, L. Winfrey, R. Puryear, and M. Smith
10-C	09/22, 09/23/2011	M. Pernicano, R. Puryear, M. Smith, L. Schneider, and E. Noel
17-C	8/22/2009	C. Uptain, W. Moise

The spacing of transects was established to ensure that, as near as possible, 100 percent visual coverage of the survey areas was achieved. The walking transects were spaced from 30 to 200 feet apart depending upon conditions and visibility. The transect widths in the areas that were managed by recurring disking, which eliminated vegetation and allowed for excellent visibility, were approximately 100 to 200 feet apart. These transect widths were used on most of Site 1-C (excluding the levee area), Site 3-C, 10-C, and on the disked portions of 9-C (the northern portions). Site 3-C2, which was not disked during the time of the survey but which contained mostly vegetation of low height, was walked using transects spaced approximately 100 feet apart. The width of transects in native habitat on Site 9-C and in native habitat adjacent to Sites 9-C and 10-C varied from 30 to 50 feet apart depending on the height of vegetative cover and other visual obstructions.

All transect surveys were conducted prior to conducting spotlighting surveys and monitoring camera and track stations, as required in *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol* (USFWS 1999). A notable exception to this methodology was on Site 17-C. On that site, only four transects were walked; two along the western half of the site and two along

the eastern half of the site. These transects were walked in a north-south orientation and the distance between transects was approximately 200 feet, but the distance between the two groups of transects was approximately 0.5 miles.

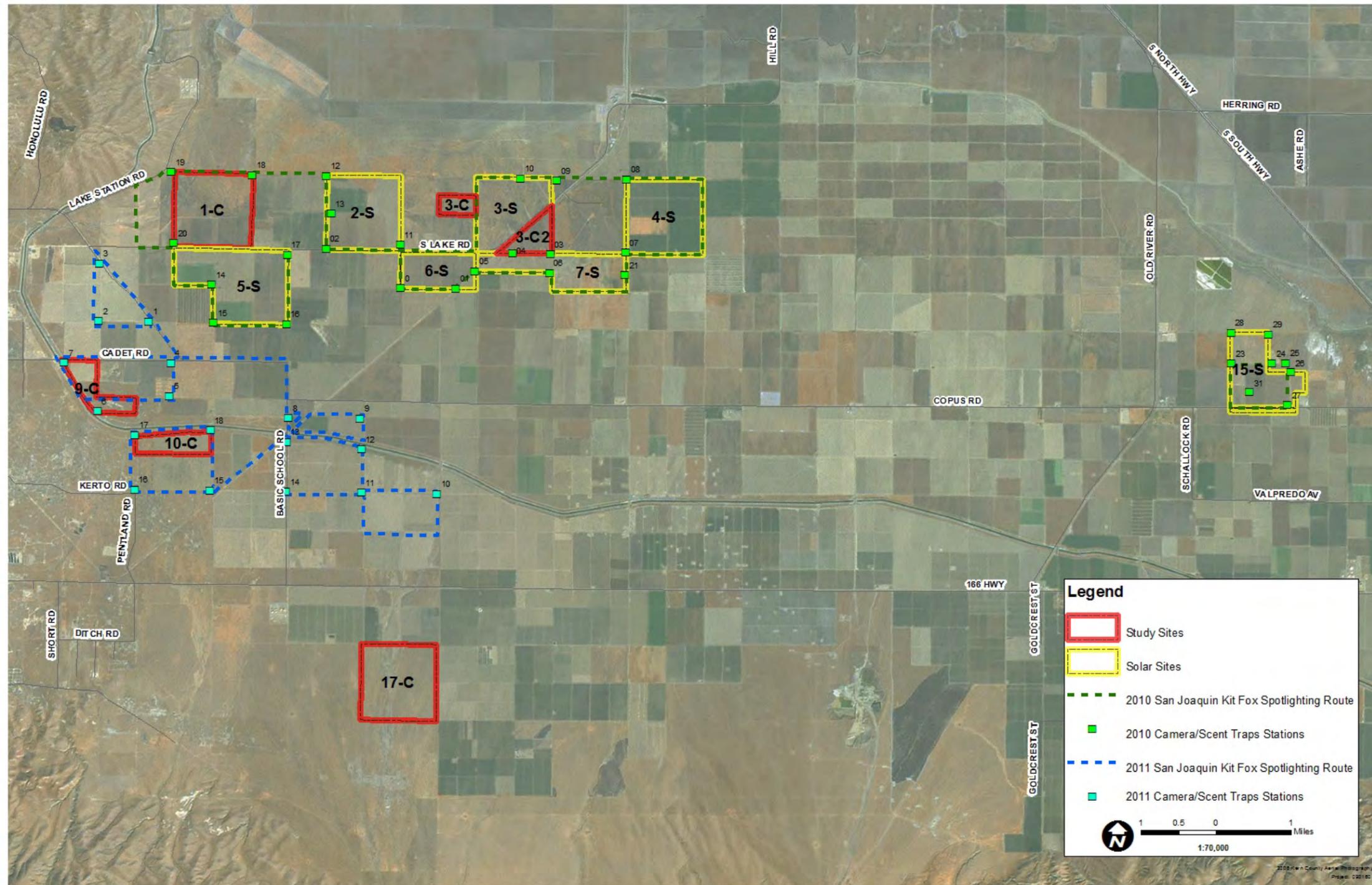
*Night Spotlighting Survey*

Quad Knopf biologists performed spotlighting surveys for San Joaquin kit fox (Table 3). Two standardized routes, using existing roads within and on the boundary of the Project area were established (Figure 3). One route, approximately 29.04 miles long, was surveyed in 2010. This route covered the project area located north of Cadet and Copus roads, and included areas near Sites 1-C, 3-C, and 3-C2 (Figure 3). A second route, approximately 23.5 miles long, was surveyed in 2011. This route covered the project area located south of Cadet and Copus roads, and included areas near Sites 9-C and 10-C (Figure 3). No spotlighting was conducted near Site 17-C.

**Table 3  
San Joaquin Kit Fox Night Spotlighting Survey Dates and Locations**

<b>Study Sites</b>	<b>Survey Dates (Month/Day/Year)</b>					<b>Surveyors</b>
1-C	03/17,	03/18,	03/22,	03/23,	03/24	J. Thompson, C. Uptain, W. Moise, B. Perez, J. Firkins, T. Ped, B. Berry, and J. Buchanan
3-C	03/17,	03/18,	03/22,	03/23,	03/24	J. Thompson, C. Uptain, W. Moise, B. Perez, J. Firkins, T. Ped, B. Berry, and J. Buchanan
3-C2	03/17,	03/18,	03/22,	03/23,	03/24	J. Thompson, C. Uptain, W. Moise, B. Perez, J. Firkins, T. Ped, B. Berry, and J. Buchanan
9-C	09/27,	09/28,	09/30,	10/03,	10/04,	M. Pernicano, R. Puryear, L. Schneider, and T. Madison
10-C	09/27,	09/28,	09/30,	10/03,	10/04,	M. Pernicano, R. Puryear, L. Schneider, and T. Madison
17-C	No surveys conducted					

The route conducted in 2010 was driven for five nights and the route conducted in 2011 was driven for six nights (at least three of which were consecutive). The spotlighting route was established in a manner that allowed for maximum coverage of the highest quality potential San Joaquin kit fox habitats within and adjacent to the study area, while also taking into account route conditions and vehicle access. The established routes were driven at speeds of no greater than 10 miles per hour. Spotlighting began 20 to 30 minutes after sunset and continued until the entire route was driven. Two biologists inspected the terrain from both sides of a vehicle using one million candlepower spotlights. All species that were observed were recorded on data sheets, along with date, start and end times, names of observers, weather conditions, and animal observations. Whenever eye shine or animal movement was detected, the vehicle was stopped and the animal identified using 7.5 x 50 and 10 x 42 binoculars. All animals observed, including potential prey and predator species, were noted on the data sheets.



LOCATIONS OF SURVEYS CONDUCTED FOR SAN JOAQUIN KIT FOX ON AND WITHIN THE VICINITY OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 3

### *Camera and Baited Track Stations*

Quad Knopf biologists conducted baited track station surveys for San Joaquin kit fox. Each station was baited in the evening and checked on the subsequent morning (Table 4). Thirty-one combination camera/track stations were established for five nights in 2009. These stations covered the project area located north of Cadet and Copus roads, which included areas near Sites 1-C, 3-C, and 3-C2 (Figure 3). Eighteen combination camera/track stations were established for six nights in 2011. These stations covered the project area located south of Cadet and Copus roads, which included areas near Sites 9-C and 10-C (Figure 3). No camera/track stations were established on Site 17-C.

**Table 4**  
**Camera and Baited Track Station Dates and Locations**

<b>Conservation Area</b>	<b>Survey Dates (Month/Day/Year)</b>	<b>Surveyors</b>
1-C	03/09, 03/10, 03/11, 03/12, 03/13/2009	J. Thompson, J. Firkins, B. Berry
3-C	03/09, 03/10, 03/11, 03/12, 03/13/2009	J. Thompson, J. Firkins
3-C2	03/09, 03/10, 03/11, 03/12, 03/13/2009	J. Thompson, J. Firkins
9-C	09/28, 09/29, 09/30, 10/4, 10/5, 10/6/2011	M. Pernicano, T. Madison, R. Puryear, L. Schneider
10-C	09/28, 09/29, 09/30, 10/4, 10/5, 10/6/2011	M. Pernicano, T. Madison, R. Puryear, L. Schneider
17-C	No surveys conducted	

Each station consisted of a one meter-diameter circle of fire clay, baited in the center with a tin of chicken-flavored cat food, and was equipped with an infrared and motion-detection sensor digital camera. Although the standard field protocol requires that five stations be installed in a diamond-five pattern within each square mile (one station in each corner and one station in the center of the site), the number and placement of stations varied from protocol; many of the sites were being actively disked at the time of the surveys, which precluded establishing track and camera stations at the centers of the sites. Furthermore, because these study sites are not being proposed for development, the placement of the stations was focused on locations along dirt roadways and along habitat corridors to best accomplish sampling of the overall Project vicinity.

Dates of operation of the cameras were simultaneous with the dates of operation of the track stations. The cameras and baited track stations were set up each afternoon and checked each following morning. All species tracks that were observed were identified to at least the ordinal level and canid tracks were identified to species where possible. The resulting data were recorded on data sheets, including date, start and end times, names of observers, weather conditions, and track observations. Camera images were downloaded and identified on a daily basis. Data recorded included date, start and end times, names of observers, weather conditions, and wildlife species captured in the photographs. In all, 263 camera station nights were compiled (5 nights each for 31 stations and 6 nights each for 18 stations) throughout the project area.

## 2.2.2 SMALL MAMMAL TRAPPING STUDIES

Small mammal trapping studies for special status small mammal species, including the Tipton kangaroo rat, giant kangaroo rat (*Dipodomys ingens*), San Joaquin pocket mouse (*Perognathus inornatus inornatus*), and Tulare grasshopper mouse (*Onychomys torridus tularensis*) were conducted within the suitable habitat present on or along adjacent lands at Sites 1-C, 3-C, 3-C2, 9-C, and 10C (Table 5, Figures 4A and 4B). No trapping was conducted on Site 17-C.

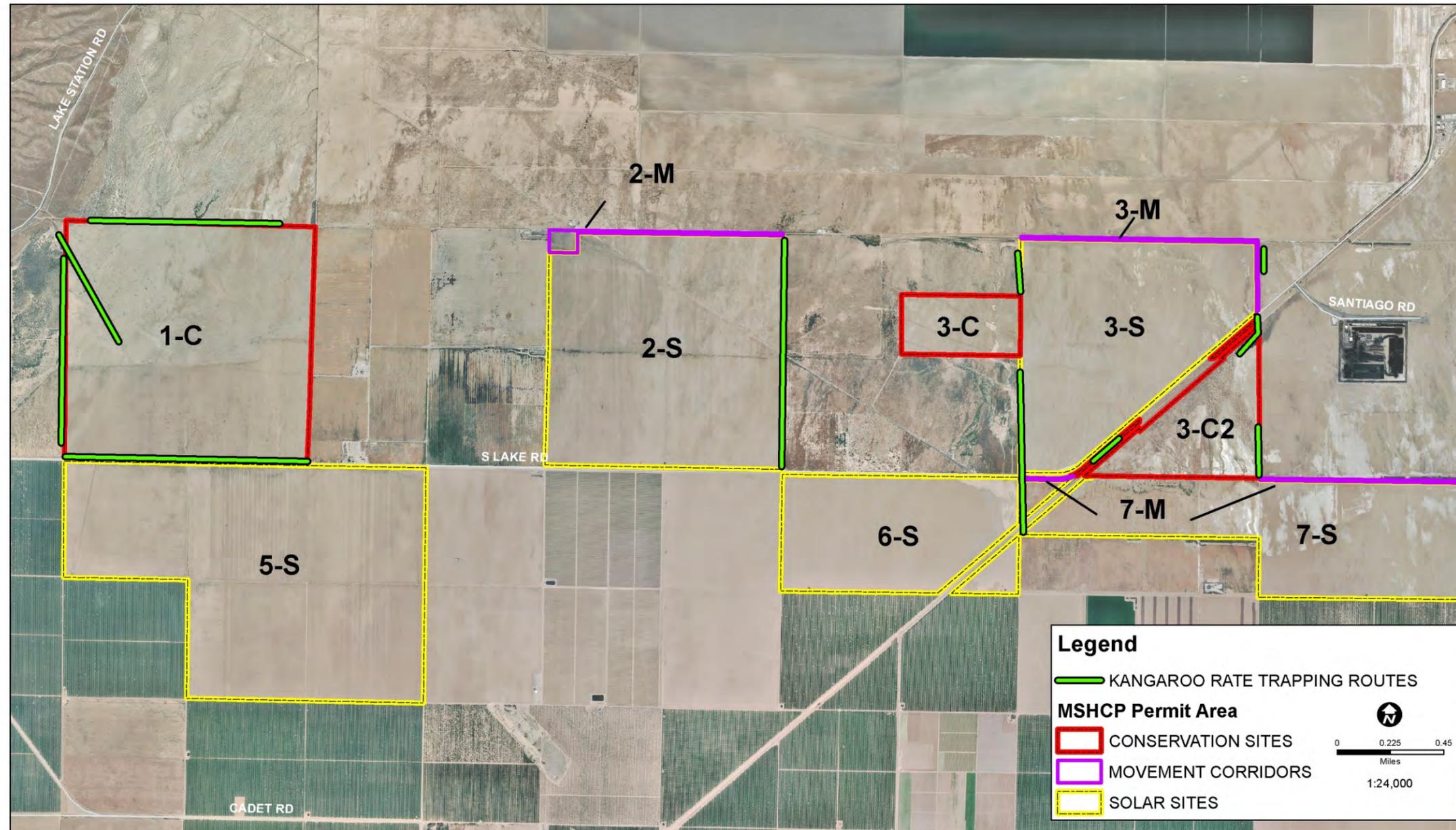
**Table 5**  
**Small Mammal Trapping Study Dates and Locations**

Conservation Sites	Survey Dates (Month/Day/Year)	Surveyors
1-C	03/08, 03/22, 03/23, 03/24, 03/25/2010	C. Uptain, W. Moise, B. Perez, and J. Firkins
3-C	03/22, 03/23, 03/24, 03/25, 03/26/2010	C. Uptain, W. Moise, B. Perez, and J. Firkins
3-C2	03/11, 03/12, 03/25/2012	W. Moise and J. Firkins
9-C	09/18/2011	C. Uptain, M. Pernicano, B. Perez, and J. Firkins
10-C	01/09, 01/10, 01/11, 01/12/ 2012	C. Uptain and M. Pernicano
17-C	No trapping surveys conducted.	

All trapping for threatened, endangered, and special status species was conducted under the authorization provided by federal recovery permit TE-119861-1 issued by the USFWS and Scientific Collecting Permit SC-2797, as amended with special provisions, issued by the California Department of Fish and Wildlife (CDFW). Trapping was conducted within each area for four consecutive nights or until the target species was captured, whichever occurred first.

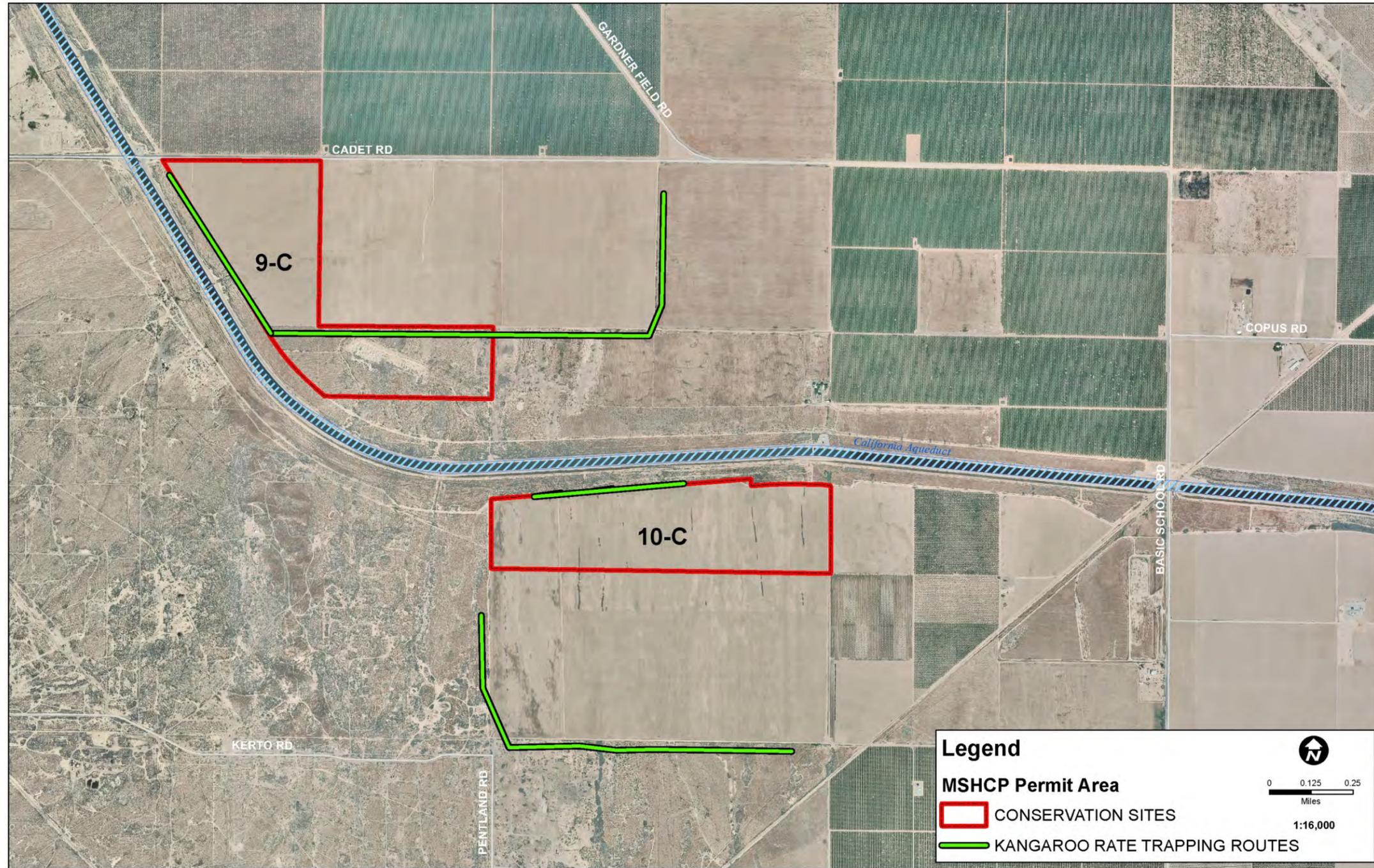
Traps were set along the levee present in the northwestern corner of Site 1-C and within non-disked habitats adjacent to the south, west, and north of this site. Traps were also set within native habitat adjacent to the north, south, and west of Site 3-C, and within Site 3-C2 and habitat adjacent to the north and south of this site. Traps were set within the 83.25-acre native habitat on Site 9-C (parcel APN220-201-02) and native habitat that occurs adjacent to the west and east of this site. Traps were also placed in native habitat located to the north, west and south of Site 10-C (Figures 4A and 4B).

Traps were spaced at approximately 30-foot intervals within each trap line and placed near active small mammal sign (i.e., burrows, dust baths, runways). Generally, trap lines consisted of 10 traps, but up to 12 or 14 traps were placed in areas that contained a relatively high amount of burrows or other small mammal sign (e.g., dust baths, runways, footprints, and tail drag marks). Each trap was flagged and numbered to assure that all traps would be relocated and checked. Standard-length (3 inch x 3.5 inch x 9 inch) or extended-length XLK (3 inch x 3.75 inch x 12 inch) Sherman™ live traps were used. All standard-length traps were modified to reduce the risk of tail injury. Each trap was baited with a mixture of rolled oats, millet, and peanut butter. A wad of paper towel was placed within traps as necessary to reduce trap-chewing behavior, which can result in injuries to mouthparts. Traps were baited and opened prior to dusk and checked once a



LOCATIONS OF SMALL MAMMAL TRAPPING LINES ON THE STUDY SITES 1-C, 3-C, AND 3-C2 OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 4A



LOCATIONS OF SMALL MAMMAL TRAPPING LINES ON THE STUDY SITES 9-C AND 10-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 4B

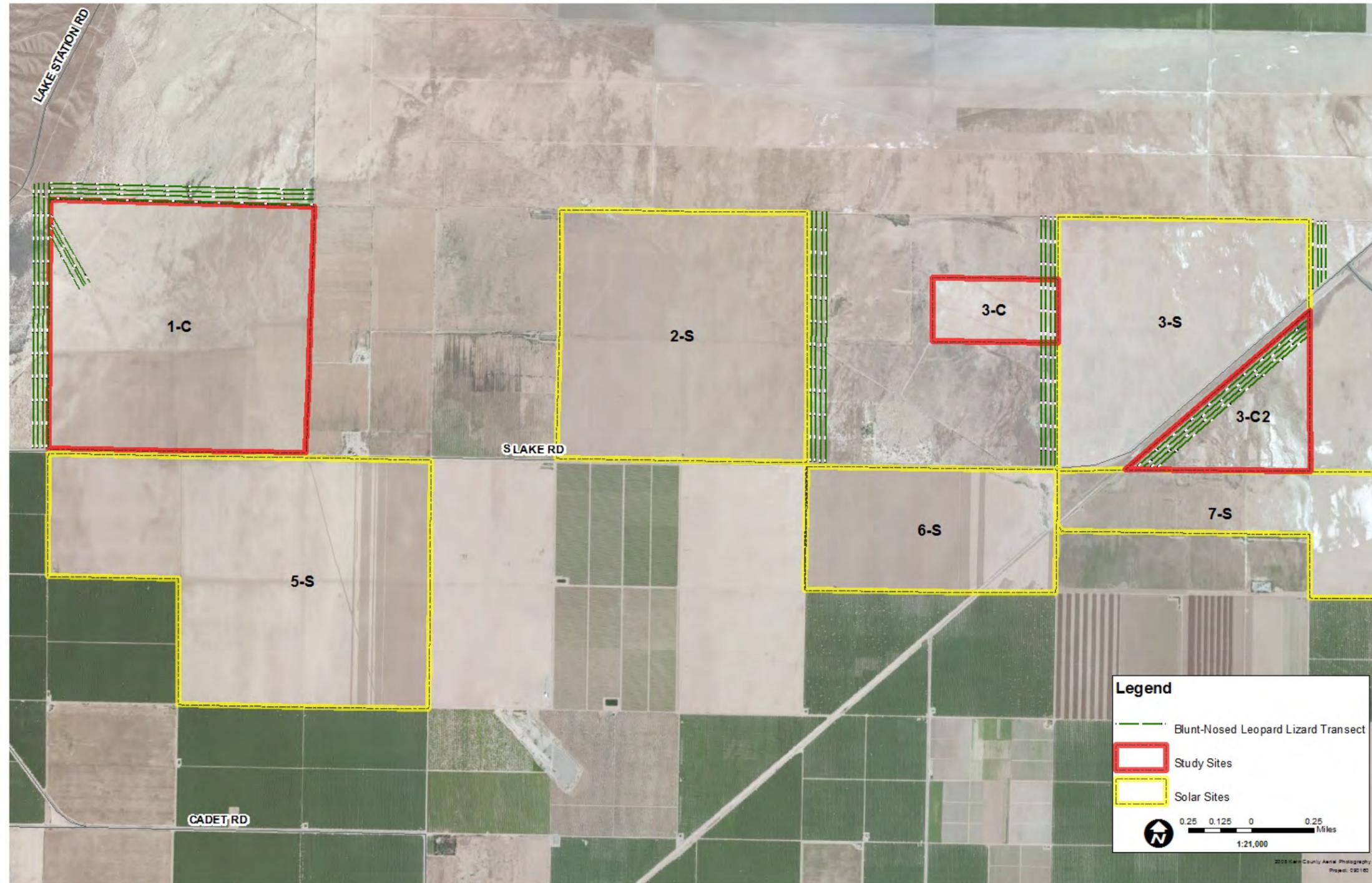
night, approximately between 2300 and 0400 hour, until all the traps were checked and closed. Checking of each trap took approximately 2 to 3.5 hours to complete. Captured animals were identified to species, weighed; and their sex, age, and reproductive condition determined before being released at the point of capture. A tuft of hair on the rear flank of each captured animal was trimmed to identify previously captured animals from newly captured animals. Data were recorded on data sheets for all protocol-level surveys, including date, time, names of observers; weather conditions with air temperature, wind, humidity, cloud cover, and moon phase information; and captured animal specifics.

### 2.2.3 BLUNT-NOSED LEOPARD LIZARD SURVEYS

Intensive surveys for blunt-nosed leopard lizard were completed throughout suitable habitat occurring along the levee running from the northwest corner to the middle of Site 1-C and within native habitats adjacent to the north and west of this site. Surveys were conducted along the east perimeter of Site 3-C and within the adjacent native habitat west of the site. Surveys were conducted along the northwest perimeter of Site 3-C2 and within the native habitat occurring within 500 feet west, south, and east of Site 9-C, including parcel APN 220-201-02. Surveys were conducted within native habitat occurring within 500 feet north and west of Site 10-C, and within native habitat occurring approximately 0.45 miles south of Site 10-C (Figures 5A and 5B). All other areas on and near the study sites were either disked on a recurring basis or are actively farmed and do not contain habitat that is suitable to support blunt-nosed leopard lizards. No focused blunt-nosed leopard lizard surveys were conducted on Site 17-C, although that site does contain habitat that could potentially support this species. The survey dates, locations, and personnel are represented in Table 6.

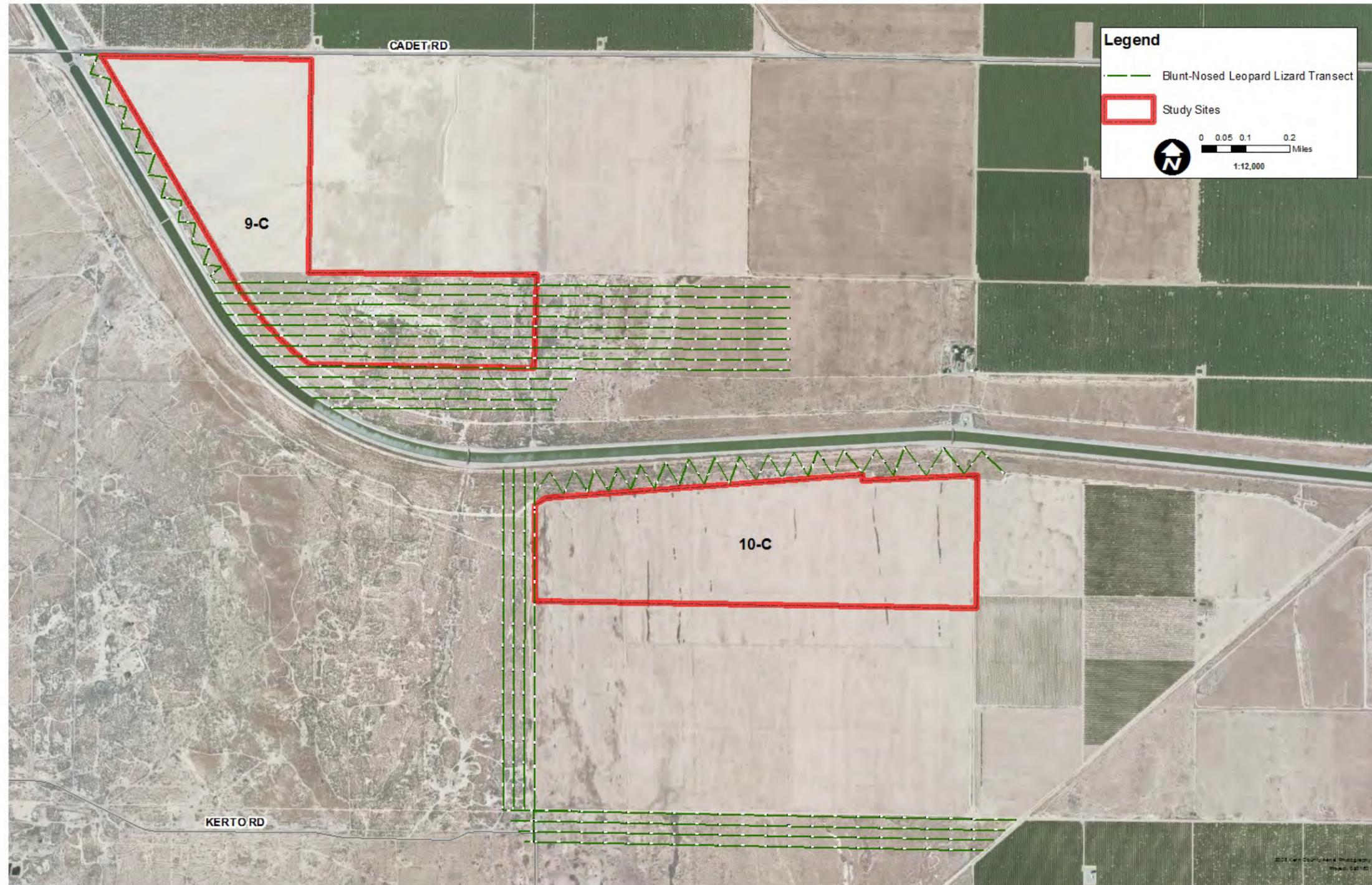
**Table 6**  
**Blunt-nosed Leopard Lizard Survey Dates and Locations**

Conservation Sites	Survey Dates (Month/Day/Year)	Surveyors
1-C	06/10, 06/12, 06/15, 06/24, 06/25, 06/30, 07/01, 07/08, 07/9, 07/13, 07/14, 08/24, 08/25, 08/26, 08/28/2009	W. Moise, B. Perez, J. Firkins, B. Jones, P. Morrison, K. Achee, V. McCauley, N. Hernandez, J. Buchanan, and T. Ped
3-C	06/ 10, 06/12, 06/15, 06/24, 06/25, 06/30, 07/01, 07/08, 07/9, 07/13, 07/14, 08/24, 08/25, 08/26, 08/28/2009	W. Moise, B. Perez, J. Firkins, B. Jones, P. Morrison, K. Achee, V. McCauley, N. Hernandez, J. Buchanan, and T. Ped
3-C2	06/25, 06/28, 06/29, 06/30, 07/01, 07/02, 07/06, 07/07, 07/08, 07/12/, 07/13, 07/14, 09/07, 09/08, 09/10, 09/14, 09/15/2010	M. Pernicano, B. Perez, G. White, and Ch. Williams
9-C	06/10, 06/13, 06/14, 06/15, 06/16, 06/28, 06/29, 06/30, 07/01, 07/11, 07/12, 07/13, 08/08, 08/09, 08/10, 08/11, 08/22/2011	M. Pernicano, A. Glass, B. Perez, G. White, J. Joyner, R. Garro, V. Prise, S. Marin, and R. Puryear
10-C	06/09, 06/10, 06/13, 06/14, 06/15, 06/16, 06/28, 06/29, 06/30, 07/01, 07/12, 07/13, 08/08, 08/09, 08/10, 08/11, 08/22/2011	M. Pernicano, A. Glass, B. Perez, G. White, J. Joyner, R. Garro, V. Prise, S. Marin, and R. Puryear
17-C	No focused surveys were conducted	



LOCATIONS OF BLUNT-NOSED LEOPARD LIZARDS SURVEYS ON THE STUDY SITES 1-C, 3-C, AND 3C-2 OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 5A



LOCATIONS OF BLUNT-NOSED LEOPARD LIZARDS SURVEYS ON THE STUDY SITES 9-C AND 10-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 5B

In general, four transects spaced approximately 125 feet apart were conducted throughout the survey areas, except for within the native habitat occurring along the California Aqueduct right-of-way west of Site 9-C, north of Site 10-C and at Site 17-C. The California Aqueduct right-of-way was surveyed by walking meandering transects throughout the habitat. Only four transects were walked on a single day on Site 17-C. The disked portions of the study sites were walked a single time because these areas are not suitable to support blunt-nosed leopard lizards. Standard methodologies as specified in *Approved Survey Methodology for the Blunt-nosed Leopard Lizard* (CDFG 2004) were followed. Surveys were conducted between early morning and 1400 hours provided that a shaded thermometer held 1 to 2 cm above the soil, in the habitat, read between 25 and 35° C (77 to 95° F), cloud cover was less than 90 percent, and sustained wind speed was below 10 mph. Surveys were conducted a total of seventeen times within each area surveyed (except on Site 17-C, and on the disked portions of Sites 1-C, 3-C, 9-C, and 10-C); twelve times during the adult survey periods (April 15 to July 15) and five times during the hatchling period (August 1 to September 15). Data were recorded on data sheets that included the date, names of observers, weather conditions, air and soil temperature, wind speed, all lizard species encountered, and signs or direct observations of other wildlife species.

#### 2.2.4 RAPTOR SURVEYS

Raptor nest surveys, consisting of identifying any stands of trees and manmade structures (such as transmission towers) that would provide suitable nesting habitat for raptors, and recording any raptors or potential raptor nests, were conducted for all study sites with the exception of Site 17-C.

Quad Knopf biologist, Tim Madison, conducted a windshield survey for raptor nests on January 18, 2012, for Site 9-C and 10-C, and was joined by Quad Knopf biologist, Jeff Firkins on February 10 and February 14, 2012 for windshield surveys on Sites 1-C, 3-C, and 3-C2. The established route used for San Joaquin kit fox spotlighting surveys was used while conducting the raptor surveys; however, the route was modified as needed to ensure that 100 percent coverage of all areas within 0.5 miles of the study sites was inspected.

The proposed study sites and all areas within 0.5 mile of them were surveyed. All potential nest locations were inspected with binoculars or a spotting scope to ensure accurate nest identification. Any confirmed raptor or potential raptor nest, and all observed raptors were recorded.

#### 2.2.5 VEGETATION SURVEYS

Information on vegetation, sensitive vegetation communities, special status plant species, and a plant species inventory of the study sites and surrounding habitat was collected.

Focused vegetation surveys, consisting of meandering pedestrian transects, were conducted on each study site to determine the presence of sensitive natural communities. Quad Knopf biologists, Curtis Uptain and Woody Moise, conducted surveys on June 9-11, 2009, within Sites 1-C, 3-C, and 3-C2. Quad Knopf biologists, Martina Pernicano and Tim Madison, conducted surveys on November 29 and 30, 2011, within Sites 9-C and 10-C and adjacent habitat as

needed, and Curtis Uptain and Woody Moise conducted a survey on August 28, 2009 within Site 17-C. Plant species inventories were collected during the site visits.

Additional information on plant species occurring within Sites 1-C, 3-C, 3-C2, 9-C, and 10-C was collected by Quad Knopf biologists during other focused biological surveys. Plants were identified using *The Jepson Manual: Higher Plants of California* (Hickman 1993), *A Key to Vascular Plant Species of Kern County California* (Moe 1967), and *Weeds of California and Other Western States* (DiTomaso et al. 2007). Vegetation types were classified following Holland (1986).

### 2.3 Wetland Delineation Survey

Prior to conducting field investigations, a review of the National Wetlands Inventory (USFWS NWI 2012) was completed to assess whether wetlands had been previously documented on or adjacent to survey areas. The NWI, which is operated by the USFWS, is a collection of wetland and riparian maps that depict graphic representations of the type, size, and location of wetland, deepwater, and riparian habitats in the United States. The NWI maps were prepared through the analysis of high altitude imagery, collateral data sources, and field work. However, given that only 1 percent of the NWI, on average, is updated each year, its interpretation should be accompanied by site-specific surveys. In addition to the NWI, USGS 7.5-minute topographic quadrangles were referenced to evaluate the potential occurrence of blue-line drainages within the project area.

Quad Knopf biologists, Curtis Uptain, Woody Moise, Andy Glass, and Tim Madison, conducted wetland field investigations to locate and delineate all potential wetlands and waters of the U.S. on and adjacent to the study sites (Table 7). The survey encompassed Sites 1-C, 3-C2, 9-C, and 10-C, including areas within 100 feet of their perimeters. Site 3-C and 17-C were not surveyed to this level of effort; however, on the basis of previous observations, it was apparent that Site 3-C is disked and lacked any presence of wetlands indicators. The delineation was completed in accordance with the methods presented in the *1987 Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the most recent version of the *Arid West Supplement* (Wetlands Regulatory Assistance Program 2008).

**Table 7**  
**Wetland Delineation Dates and Locations**

Study Site	Survey Dates (Month/Day/Year)	Surveyors
1-C	10/27/2009	C. Uptain and W. Moise
3-C	No wetland delineation conducted	
3-C2	10/28, 11/18/2009	C. Uptain and W. Moise
9-C	01/10, 01/11/2012	A. Glass, T. Madison
10-C	01/10, 01/11/2012	A. Glass, T. Madison
17-C	No wetland delineation conducted	

The field surveys of Sites 1-C and 3-C2 were conducted using pedestrian transects spaced 100 feet apart or less to ensure 100 percent coverage of the study sites. Given their smaller size, Sites 9-C and 10-C were surveyed with 100 percent coverage by primarily focusing on the perimeters of the study sites and their adjoining habitats.

Existing conditions were evaluated and documented, the historic locations of on-site wetlands identified from the NWI and USGS maps were visited to determine existing conditions, and wetland boundaries and boundaries of Ordinary High Water for those features that may be under the jurisdictional authority of the United States Army Corps of Engineers (ACOE) and the Environmental Protection Agency (EPA) were delineated (except on disked Sites 3-C and 17-C). Sample points were established and the presence or absence of hydrological indicators was noted, soils were characterized, and vegetation was analyzed following the *Corps of Engineers Wetland Delineation Manual* (USACE 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008).

All water features that were encountered on and adjacent to the study sites during the surveys were mapped and evaluated. A Trimble GeoXH Global Positioning System (GPS) unit with Wide Area Augmentation System (WAAS) and real-time sub-meter accuracy was used to map the boundary of each feature. The widths and depths of linear features were subsequently measured. Each feature was evaluated at representative sample locations for the presence of hydrology, hydric soils, and hydrophytic vegetation using standard procedures. Hydrologic indicators, including the presence of standing water, fresh alluvial deposits, root zone oxidation, drainage patterns, and other diagnostic characteristics, were documented. Soil samples were excavated and soils were inspected to characterize soil profiles and soil/water conditions at each data plot, and to compare site observations with soil conditions described in the *Web Soil Survey* (USDA 2009). Soil horizonation, texture, moisture content, depth to saturation, and/or standing water were noted for each soil pit. The presence or absence of particulate organic matter, organic matter staining, redoximorphic features, and gleying were noted. Soil colors were determined (*sensu* GretagMacbeth 2000). The percent cover of observed plant species was visually estimated and recorded. Dominant plant species were identified in accordance with the USACE 50/20 Rule. Plant identification was determined using the *Jepson Manual of Higher Plants* (Hickman 1993). The wetland indicator status of plant species was determined using the *National List of Plant Species that Occur in Wetlands: Northwest (Region 8)* (Reed 1988). The hydrological, soil, and vegetative data recorded at the sample points were transcribed onto standard ACOE Wetland Determination Data Forms. The results of the wetland delineations conducted on sites 1-C, 3-C, and 3-C2 (as well as sites 2-S, 3-S, 4-S, 5-S, 6-S, 7-S and 15-S) have been verified by the ACOE.

### 3.0 RESULTS

This section identifies the regional biological setting, general site conditions, and site-specific biological conditions. The findings of all focused biological surveys, including San Joaquin kit fox surveys, small mammal surveys, protocol-level surveys for blunt-nosed leopard lizard, raptor surveys, vegetation surveys, and wetland delineation survey are presented in this section. These findings are used to support the evaluations of potential sensitive species occurrences and the determinations of suitability of the study sites as conservation lands.

### 3.1 Regional Settings

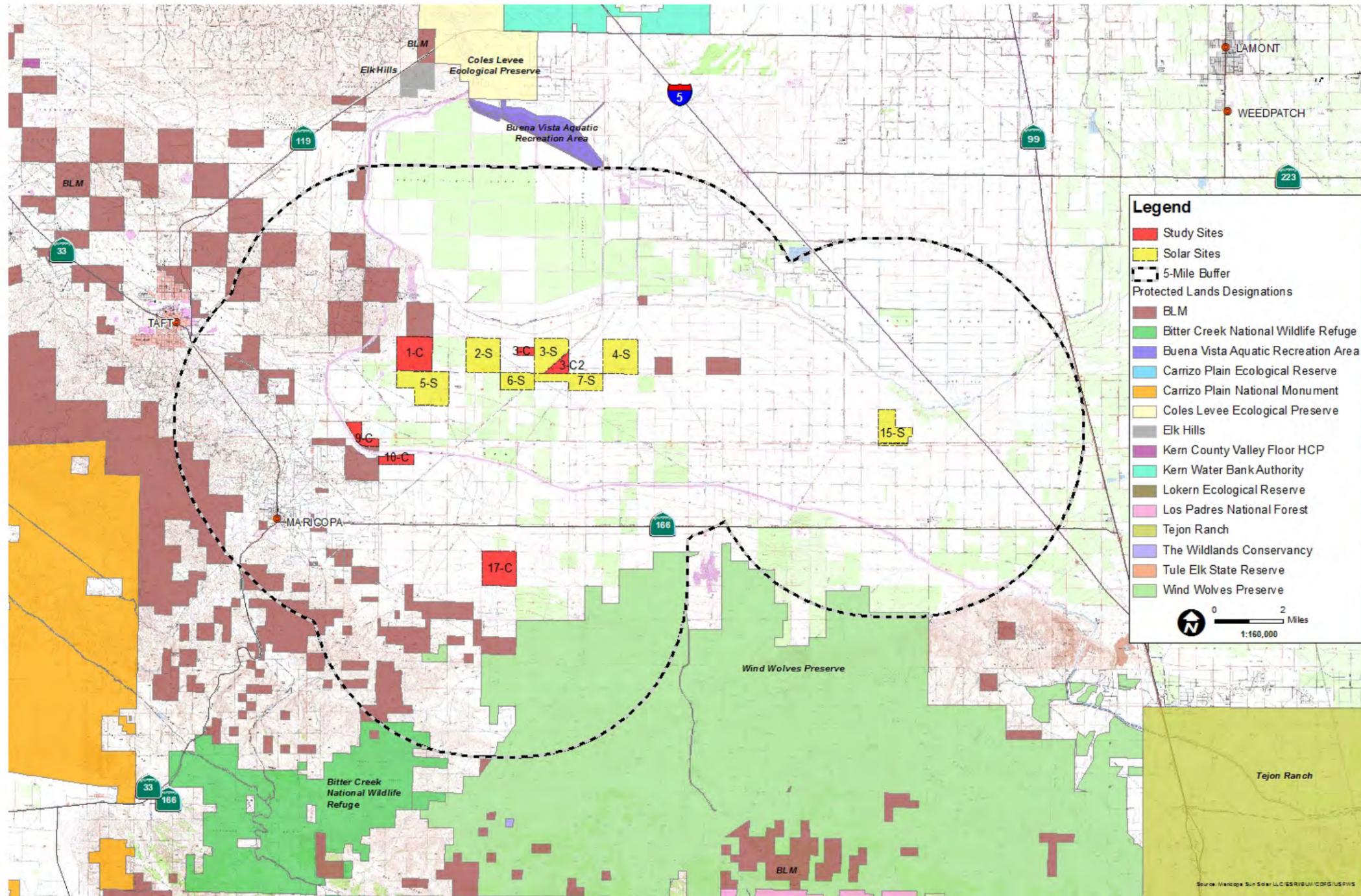
Regional biological settings of the Project represented in this section consist of information on land use, climate, hydrological conditions, and historical occurrence of special status species known from the region.

#### 3.1.1 LAND USE

Historically, the vicinity of the study sites was vegetated with San Joaquin Saltbush (*Atriplex joaquiniana*) (Kuchler 1977), although Tule Marsh (*Schoenoplectus acutus*) likely occurred along the margins of Buena Vista Lake, which is located to the north, and within the overall landscape in scattered semi-permanent and permanent wet areas. It is likely that Valley Sink Scrub habitat occurred in the lower lying areas and was interspersed with Saltbush Scrub and Tule Marsh. The native vegetation associations remaining in the Project vicinity are comprised of a mosaic of Saltbush Scrub, including valley saltbush (*Atriplex polycarpa*) and spinescale saltbush (*Atriplex spinifera*), annual Non-native Grassland, and Valley Sink Scrub, which is dominated by seepweed (*Sueada moquinnii*) and/or iodine bush (*Allenrolfea occidentalis*). Stands of tamarisk (*Tamarix pentandra*) are evident in some surrounding lands, especially along canal embankments and in pond basins. Remnants of Tule Marsh occur in Buena Vista Lake, and in scattered pond basins and other artificial ponds.

Much of the native habitat in the project region has been converted to agricultural production, oil field development, urban development, and associated infrastructure (e.g., highways, water conveyance facilities, transmission lines), but remnant stands of native habitat exist at scattered localities. Some of these native lands have subsurface oil reserves, and oil extraction activities have caused varying levels of disturbance. Most of the existing areas that still contain native habitats have been disturbed at one time or another by dry-land farming, extensive sheep and/or cattle grazing, oil extraction activities, or other activities. Many of these parcels are owned and managed by the Bureau of Land Management (BLM). There is extensive public and protected land to the south and west of the Project, but land to the north and east is mostly privately owned and not protected. Several Ecological Preserves/Reserves and other protected lands are located in the region (Figure 6). Some of these include:

- The Lokern and Elk Hills Ecological Reserves, which are administered by the CDFW;
- The Tule Elk State Natural Reserve located near Tupman, which is administered by the California Department of Parks and Recreation;
- The Buena Vista Aquatic Recreation Area, which is administered by the County of Kern;
- The Wind Wolves Preserve, which is administered by The Wildlands Conservancy;
- The Bitter Creek National Wildlife refuge, which is administered by the USFWS; and



LOCATIONS OF PROTECTED PUBLIC LANDS  
IN THE VICINITY OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure  
6

- The Carrizo Plains National Monument and the Carrizo Plains Ecological Reserve, which are administered by the Department of the Interior (DOI) and CDFW.

Study sites 1-C, 3-C, the most northern portion of Site 9-C (APN 220-050-42), and Site 10-C are zoned for agricultural uses. These areas are currently under Williamson Act contracts and are periodically disked for weed control. The 2.44-acre levee in the northwest corner of Site 1-C is excluded from disking because of its steep topography. That levee is vegetated with saltbush scrub. Site 3-C2 has been disked in the past and furrows are evident, but the site is in the process of becoming vegetated. The most southern portion of Site 9-C (APN 220-201-02) has not been disked and is vegetated with saltbush scrub and quailbush. There is some interior disturbance on this site caused by the installation of a pipeline and heavy equipment use. Site 17-C has not been disked and is vegetated with saltbush scrub and alkali goldenbush (*Isocoma acedenia*).

Adequate water for financially viable farm production is not available on the Project site, and there are no irrigation systems present, aside from a few scattered wells and farm ponds on some of the parcels.

### 3.1.2 CLIMATE

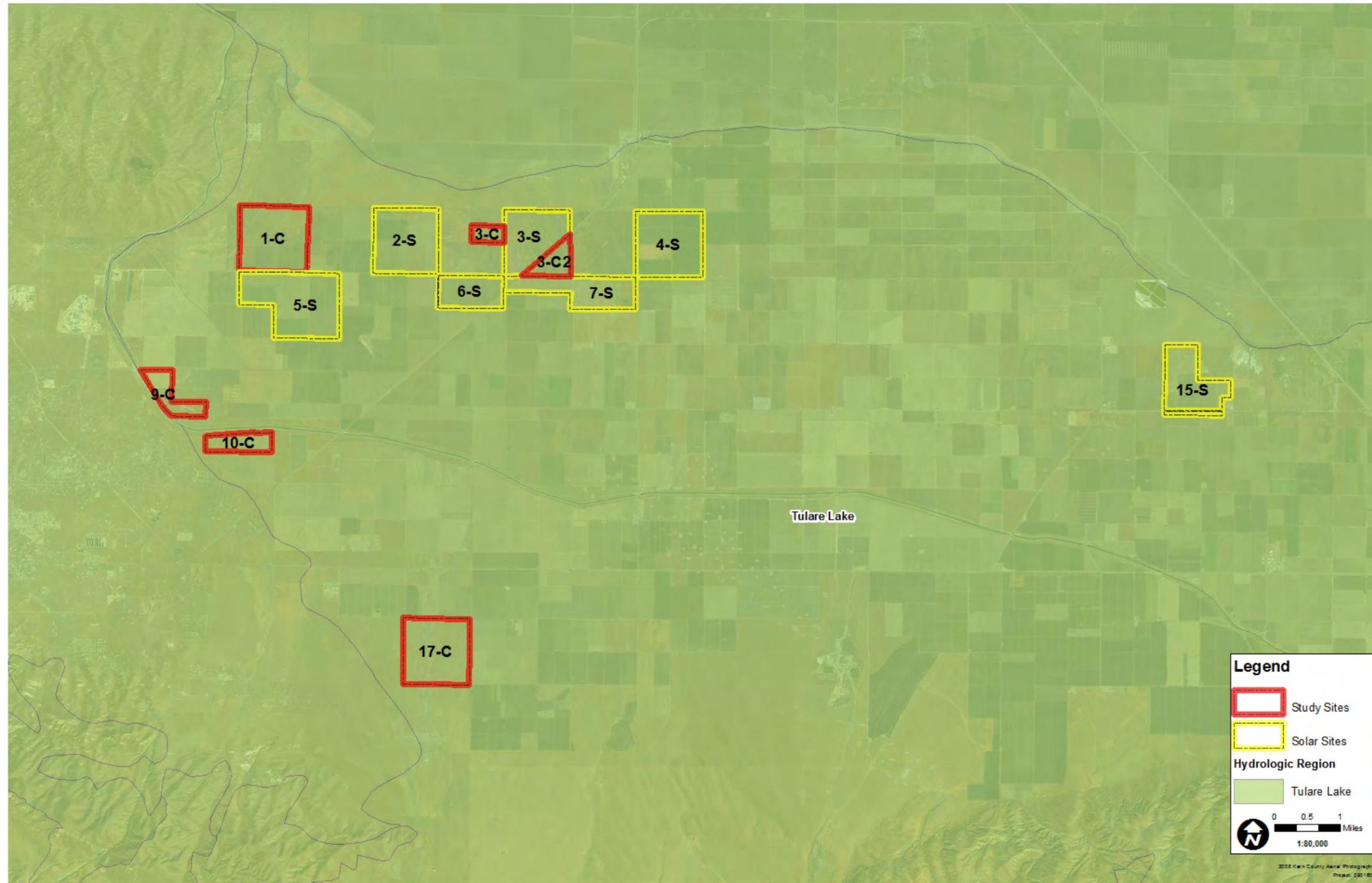
The project area has a moderate climate with generally mild temperatures throughout the year. It is hot and dry in the summer and cold and moist in the winter. The average temperature in the winter is 48.5 degrees Fahrenheit (F) and the average daily minimum winter temperature is 38.3 degrees. Winter rains are interspersed with spells of cloudy, foggy, or sunny weather. The average summer temperature is 80.7 degrees and the average daily maximum summer temperature is 94.8 degrees. The annual average precipitation is 6.32 inches, with all of the precipitation falling as rain. In the summer, the sun shines 93 percent of the time and 73 percent of the time in the winter. The prevailing wind is from the west-northwest. Average wind speed is highest in April and May, at 7.7 miles per hour. Snowfall has not been recorded at Maricopa and measurable snow is a rare occurrence in Bakersfield (United States Department of Agriculture 2009). The growing season is over 350 days per year. Table 8 provides the monthly maximum, minimum and mean temperature and precipitation recorded for the Maricopa area.

**Table 8**  
**Monthly Maximum, Minimum, and Mean Temperature and Precipitation**  
**(Maricopa climate station: <http://www.idcide.com/weather/ca/taft.htm>)**

<b>Month</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>
<b>Max °F</b>	56.9	63.8	68.6	75.9	83.9	92.2	96.9	95.8	90.0	80.5	66.1	57.2	77.3
<b>Min °F</b>	38.6	42.9	45.7	49.4	56.6	63.9	69.8	68.7	64.7	56.6	45.3	38.0	53.4
<b>Mean °F</b>	47.8	53.4	57.2	62.7	70.3	78.1	83.4	82.3	77.4	68.6	55.7	47.6	65.4
<b>Inches of precipitation</b>	1.16	1.13	1.40	0.51	0.21	0.04	0.00	0.07	0.26	0.20	0.63	0.71	6.32

### 3.1.3 HYDROLOGY

The Project is located within a semi-arid region, which relies on rainfall, groundwater, and the Kern River for its water supply. Most rainfall occurs in the winter and spring, as is typical for



HYDROLOGY REGIONS FOR THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 7

areas with this climate. The project area is in the Tulare Lake hydrologic region (Figure 7). Significant rivers within this region include Kings, Kaweah, Tule, and Kern Rivers. These rivers have their origins on the western slope of the Sierra Nevada, draining into the San Joaquin Valley floor. This basin is hydrologically closed, having no outlet to the Pacific Ocean. The Tulare Lake hydrological region includes the Kaweah River hydrologic unit and the South Valley Floor hydrological unit. The project area is located in the South Valley Floor unit (Figure 8). There are seven hydrological areas within the Tulare Lake hydrologic region. All study sites are located within Arvin-Wheeler Ridge area (Figure 9).

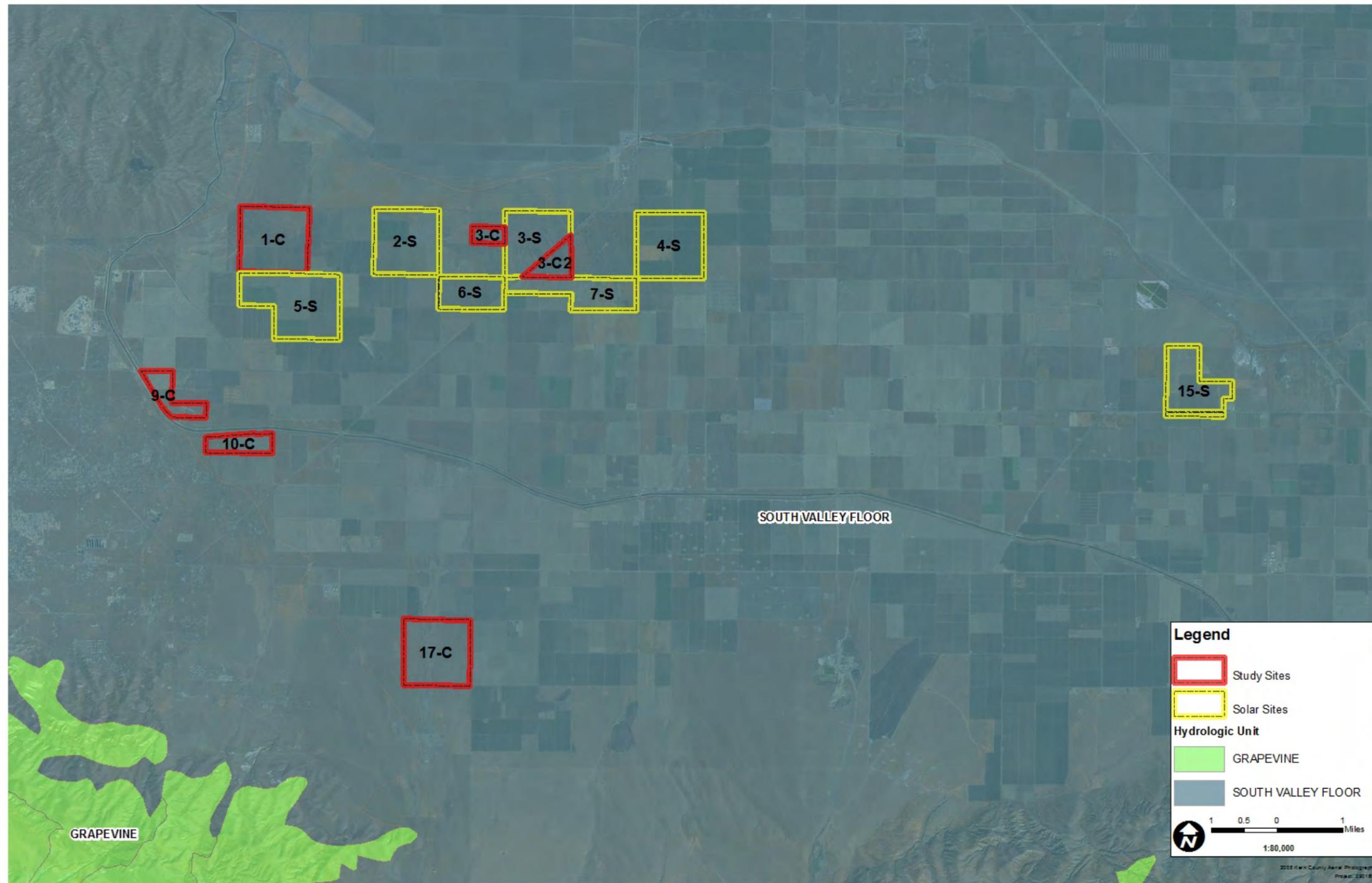
The only significant water course in the immediate area of the Project is the Kern River. The Kern River begins on the western slope of Mount Whitney in the southern Sierra Nevada range and flows in a southwest direction. Several minor streams flow into the Kern River, which exists as a contained basin except during high runoff years. The Kern River is fully diverted and its waters fully used (Kern County Planning and Community Development 2010); however, during very wet years, the Kern River reaches the flood channel located on the west of the valley floor and carries water into the Buena Vista Lake Basin, which is subject to flooding and ponding (United States Department of Agriculture, 2009). Kern River flows have been regulated since the completion of Isabella Dam in 1953 (Kern County Planning and Community Development Department, 2010).

Other sources of water in the Buena Vista Lake Basin include intermittent streams from the south, such as Bitter Creek, Santiago Creek, Los Lobos Creek, the San Emigdio Creek complex, Pleito and Pleitito Creeks, the Salt Creek complex, and Tecuya Creek, which drain the San Emigdio Mountains portion of the Transverse Ranges. These waters are largely dispersed before reaching the historic Buena Vista Lake Bed. The drainage ways are dry much of the year, but carry extremely heavy flows during thunderstorms and spring runoff (United States Department of Agriculture, 2009). Most of these drainages have been disked and planted to orchards and other crops within the immediate vicinity of the Project, and as such, their waters have been diverted and mostly eliminated from historic channels.

Portions of the project area are currently mapped by the Federal Emergency Management Agency (FEMA) as Flood Zone A, and are therefore designated as within the 100-year flood zone (Figure 10). All of Sites 3-C, 3-C2, and 17-C occur within a 100-year Flood Zone (Figure 10). A portion of Sites 1-C and 9-C occur within a 100-year Flood Zone (Figure 10). Site 10-C does not occur within a 100-year Flood Zone (see Figure 10). Based on flood maps, flooding is likely related to heavy rain fall in the Transverse Range, which flows down the alluvial slopes via streams to the south.

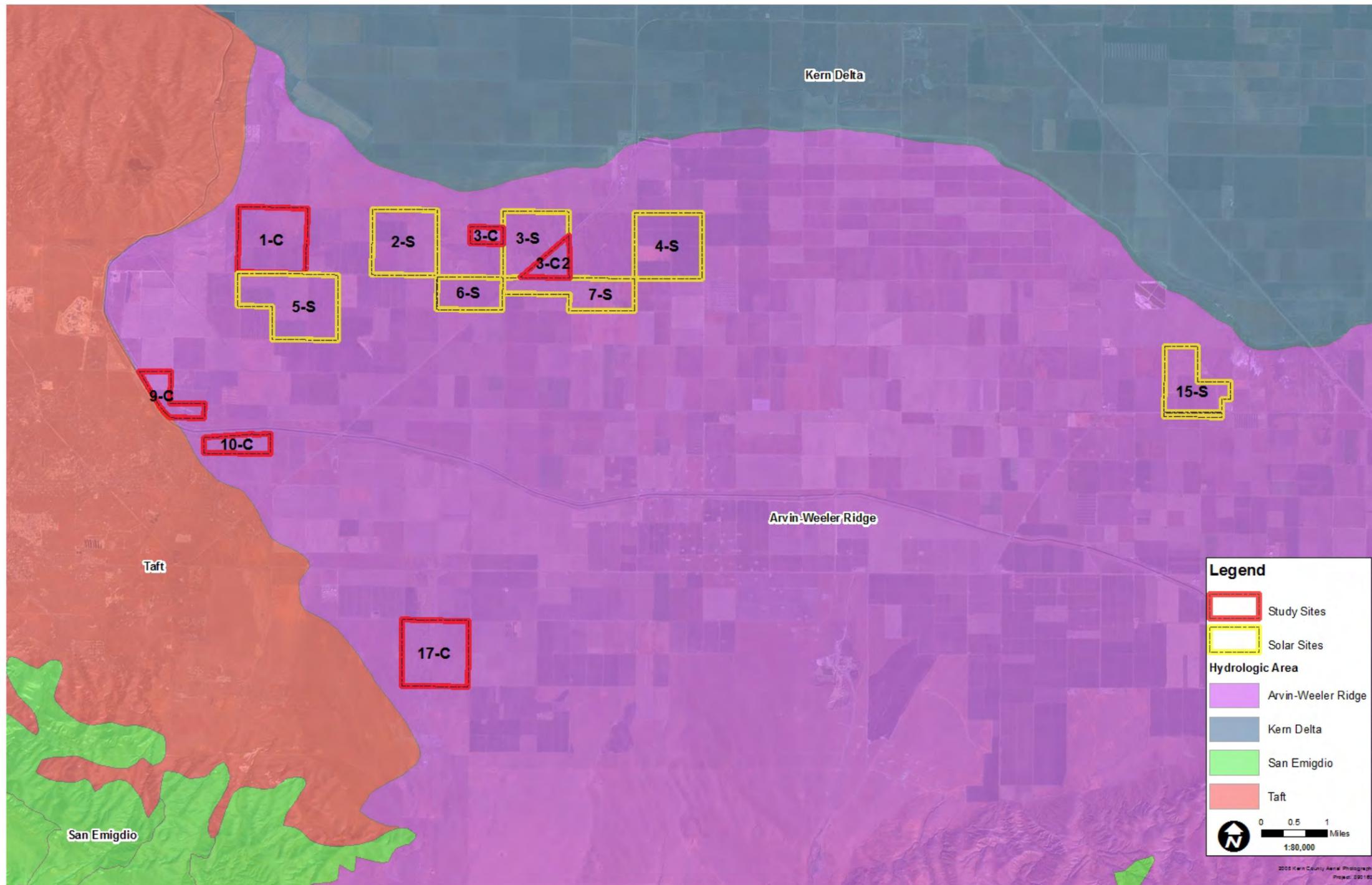
#### 3.1.4 SPECIAL STATUS SPECIES KNOWN FROM THE REGION

Based upon the database search and literature investigations, 5 sensitive natural communities, 10 species of special status plants, and 38 species of special status animals are known within the Project region (Tables 9 and 10). There are historical records of three sensitive habitat communities, 18 special status plant species, and 33 special status wildlife species occurring within 5 miles of the Project (Figures 11A, 11B, 11C, and 11D). CNDDDB records of San Joaquin kit fox, burrowing owl, Tipton kangaroo rat, Nelson's antelope squirrel, and blunt-nosed leopard lizard occur on and adjacent to the study sites (Table 11). The detailed information is provided below:



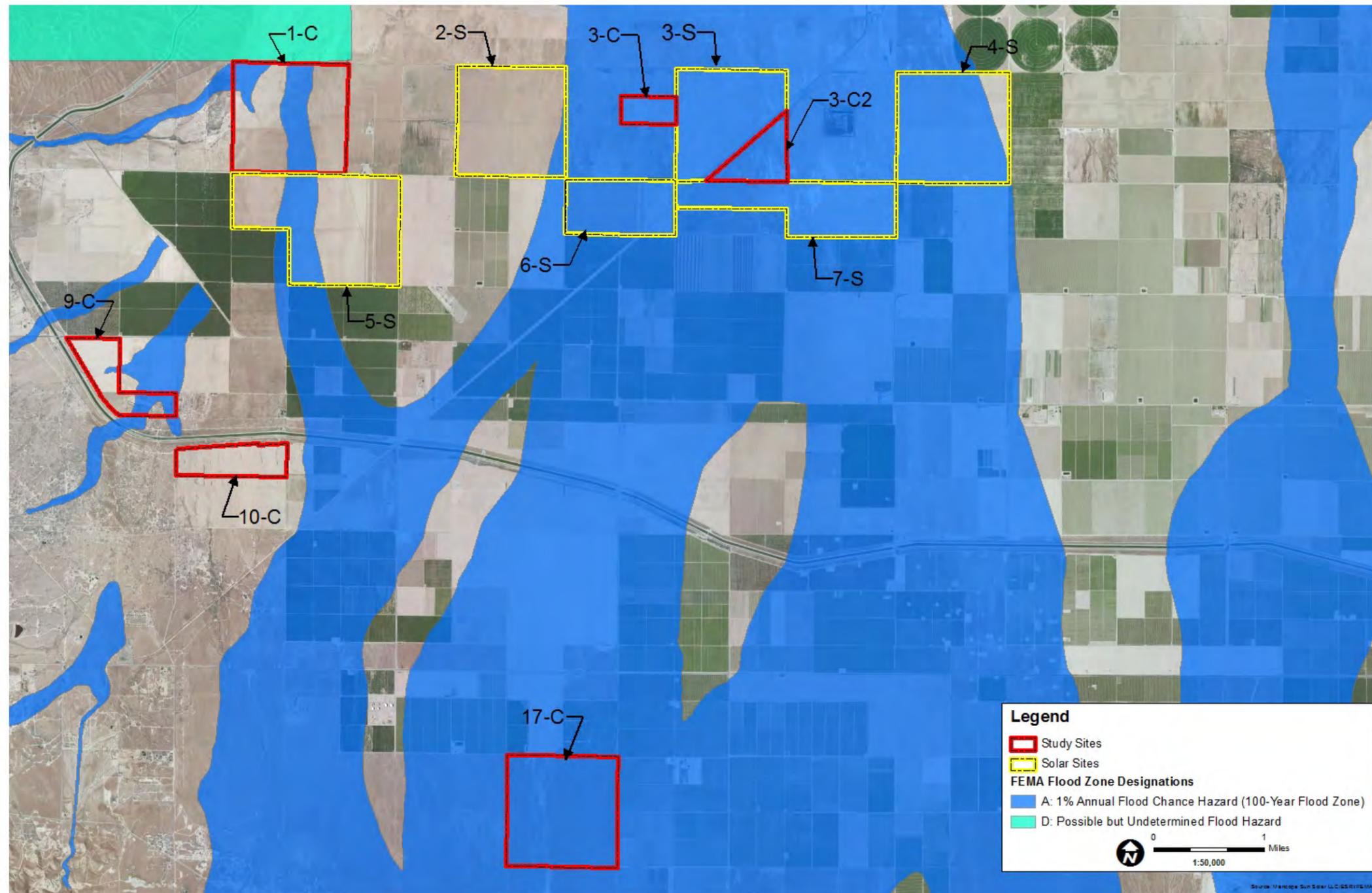
HYDROLOGY UNITS FOR THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 8



HYDROLOGY AREAS FOR THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 9



MAP OF THE 100-YEAR FLOODPLAIN ON AND WITHIN THE VICINITY OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 10

**Table 9**  
**Sensitive Vegetation Communities and Special Status Plant Species**  
**Occurring in the Region of the Maricopa Sun Solar Complex Project**  
 (Source: CNDDDB 2010, CNPS 2010, USFWS 2009, and CDFG 2009)

Scientific Name	Common Name	Status
<b>Sensitive vegetative communities</b>		
Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	Protected under CEQA
Great Valley Mesquite Scrub	Great Valley Mesquite Scrub	Protected under CEQA
Valley Sacaton Grassland	Valley Sacaton Grassland	Protected under CEQA
Valley Saltbush Scrub	Valley Saltbush Scrub	Protected under CEQA
Valley Sink Scrub	Valley Sink Scrub	Protected under CEQA
<b>Plants</b>		
<i>Allium howellii</i> var. <i>clokeyi</i>	Mt. Pinos onion	1B.3
<i>Astragalus hornii</i> var. <i>hornii</i>	Horn's milk-vetch	1B.1
<i>Atriplex cordulata</i>	Heartscale	1B.2
<i>Atriplex tularensis</i>	Bakersfield smallscale	CE, 1B.1
<i>Atriplex vallicola</i>	Lost Hills crownscale	1B.2
California ( <i>Erodium</i> ) <i>macrophyllum</i>	round-leaved filaree	1B.1
<i>Caulanthus californicus</i> ( <i>Stanfordia californica</i> )	California jewel-flower	FE, CE, 1B.1
<i>Caulanthus coulteri</i> var. <i>lemmonii</i>	Lemmon's jewel-flower	1B.2
<i>Cirsium crassicaule</i>	slough thistle	1B.1
<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	Hispid bird's beak	1B.1
<i>Delphinium recurvatum</i>	recurved larkspur	1B.2
<i>Eremalche kernensis</i>	Kern mallow	FE, 1B.1
<i>Eriastrum hooveri</i>	Hoover's eriastrum	4.2
<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i>	Tejon poppy	1B.1
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	1B.1
<i>Layia hetereotricha</i>	Pale-yellow layia	1B.1
<i>Layia leucopappa</i>	Comanche Point layia	1B.1
<i>Monardella linooides</i> ssp. <i>oblonga</i>	tehachapi monardella	1B.3
<i>Monolopia congdonii</i>	San Joaquin woollythreads	FE, 1B.2
<i>Stylocline citroleum</i>	oil neststraw	1B.1

**Status Definitions**

FE Federally Endangered

CE California Endangered

1B.1 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Endangered in California

1B.2 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Endangered in California.

1B.3 California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Not Very Endangered in California

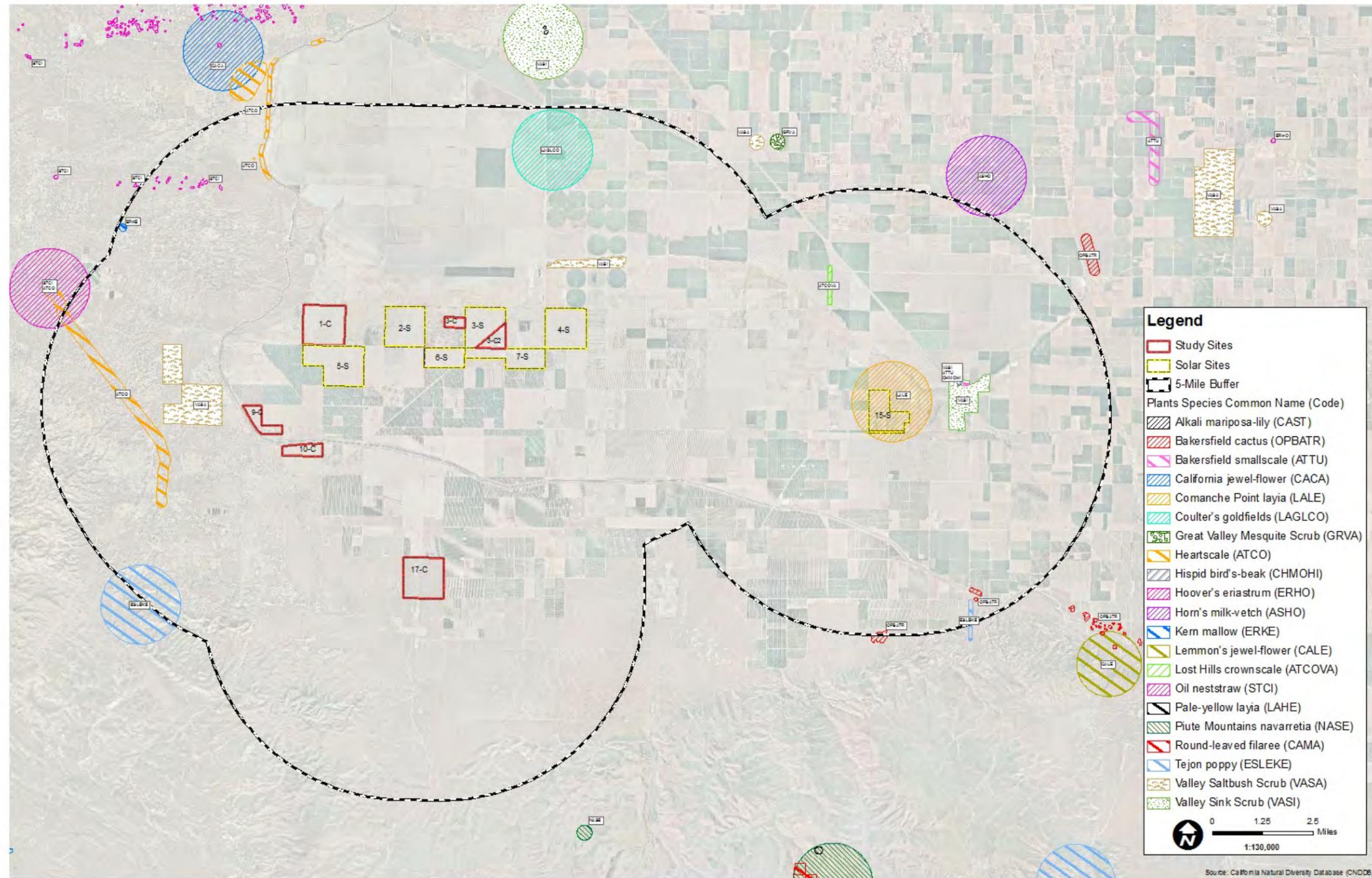
4.2. Plants of limited distribution - Watch list; Fairly endangered in California (20-80% occurrences threatened)

**Table 10**  
**Special Status Wildlife Species**  
**Occurring in the Region of the Maricopa Sun Solar Complex Project**  
 (Source: CNDDDB 2010, CNPS 2010, USFWS 2009, and CDFG 2009)

Scientific Name	Common Name	Status
<b>Invertebrates</b>		
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	FT
<i>Euproserpinus euterpe</i>	Kern primrose sphinx moth	FT
<b>Fishes</b>		
<i>Hypomesus transpacificus</i>	Delta smelt	FT, CT
<b>Amphibians</b>		
<i>Rana aurora draytonii</i>	California red-legged frog	FT
<i>Spea hammondi</i>	western spadefoot	CSSC
<b>Reptiles</b>		
<i>Actinemys marmorata pallida</i>	western pond turtle	CSSC
<i>Anniella pulchra pulchra</i>	silvery legless lizard	CSSC
<i>Gambelia sila</i>	blunt-nosed leopard lizard	CE, FE, FP
<i>Masticophis flagellum ruddocki</i>	San Joaquin whipsnake	CSSC
<i>Phrynosoma blainvillii</i>	Blainville's horned lizard	CSSC
<i>Thamnophis gigas</i>	giant garter snake	FT, CT
<b>Birds</b>		
<i>Agelaius tricolor</i>	tricolored blackbird	CSSC
<i>Athene cunicularia</i>	burrowing owl	CSSC, MBTA
<i>Buteo swainsoni</i>	Swainson's hawk	CSSC
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	FT
<i>Charadrius montanus</i>	mountain plover	CSSC
<i>Circus cyaneus</i>	Northern harrier	CSSC
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	CE
<i>Dendrocygna bicolor</i>	fulvous whistling-duck	CSSC
<i>Elanus leucurus</i>	white-tailed kite	FP
<i>Eremophila alpestris actia</i>	California horned lark	CDFW: WL
<i>Falco mexicanus</i>	prairie falcon	CDFW: WL
<i>Gymnogyps californianus</i>	California condor	FE, CE
<i>Lanius ludovicianus</i>	Loggerhead shrike	CDFW: WL
<i>Plegadis chihi</i>	white-faced ibis	CDFW: WL
<i>Toxostoma lecontei</i>	Le Conte's thrasher	CSSC
<i>Xanthocephalus xanthocephalus</i>	yellow-headed blackbird	CSSC
<b>Mammals</b>		
<i>Ammospermophilus nelsoni</i>	Nelson's antelope squirrel	CT
<i>Dipodomys ingens</i>	giant kangaroo rat	FE, CE
<i>Dipodomys nitratooides brevinasus</i>	short-nosed kangaroo rat	CSSC
<i>Dipodomys nitratooides nitratooides</i>	Tipton kangaroo rat	FE, CE
<i>Eumops perotis californicus</i>	western mastiff bat	CSSC
<i>Onychomys torridus tularensis</i>	Tulare grasshopper mouse	CSSC
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	CSSC, BLMS
<i>Sorex ornatus relictus</i>	Buena Vista Lake shrew	FE, CSSC
<i>Taxidea taxus</i>	American badger	CSSC
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	FE, CT

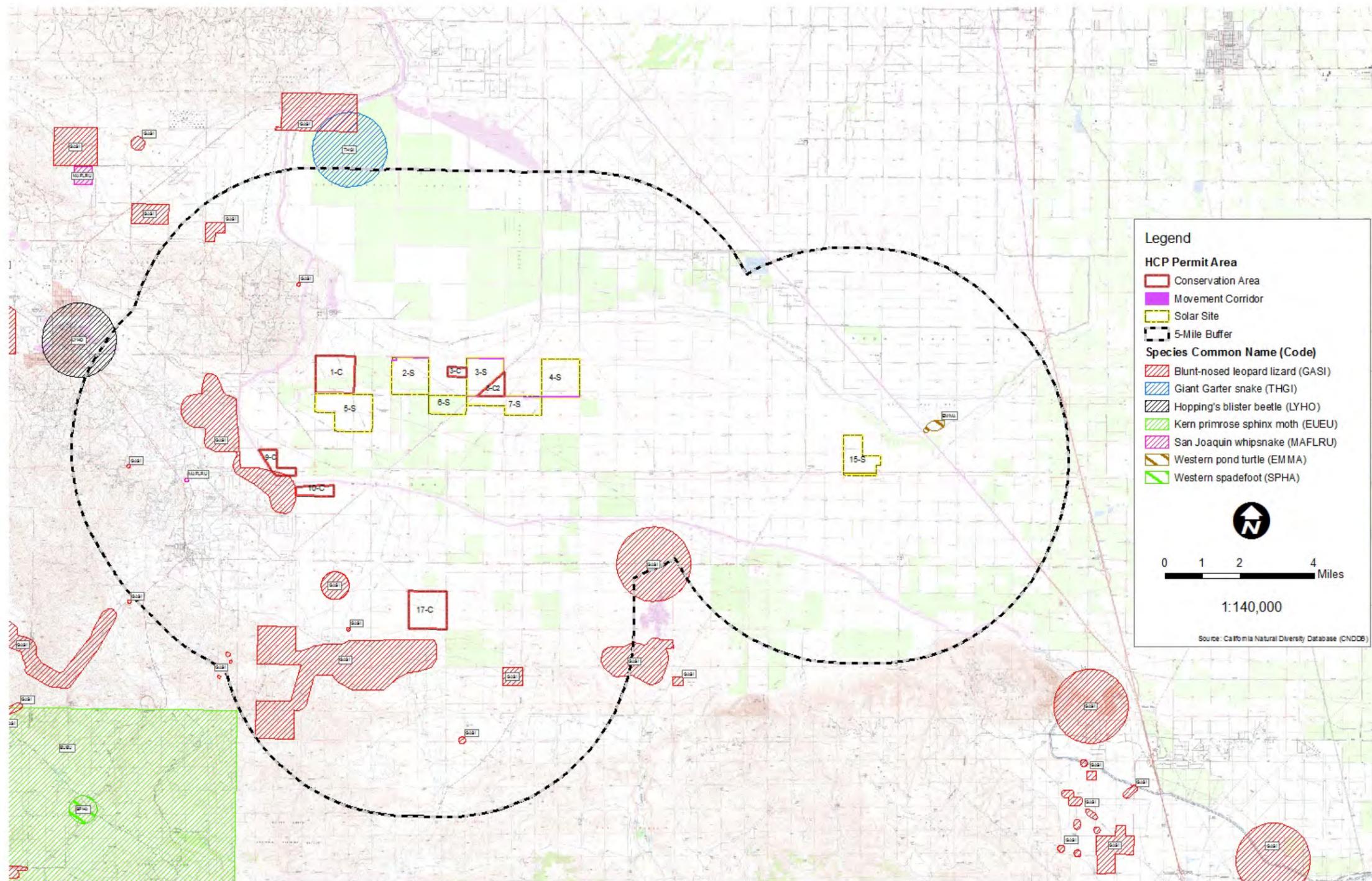
**Status Definitions**

FT	Federally Threatened	FP	California Fully Protected
FE	Federally Endangered	BLMS	Bureau of Land Management Sensitive
CT	California Threatened	CDFW: WL	California Department of Fish and Game Watch List
CE	California Endangered	MBTA	Migratory Bird Treaty Act
CSSC	California Species of Special Concern		



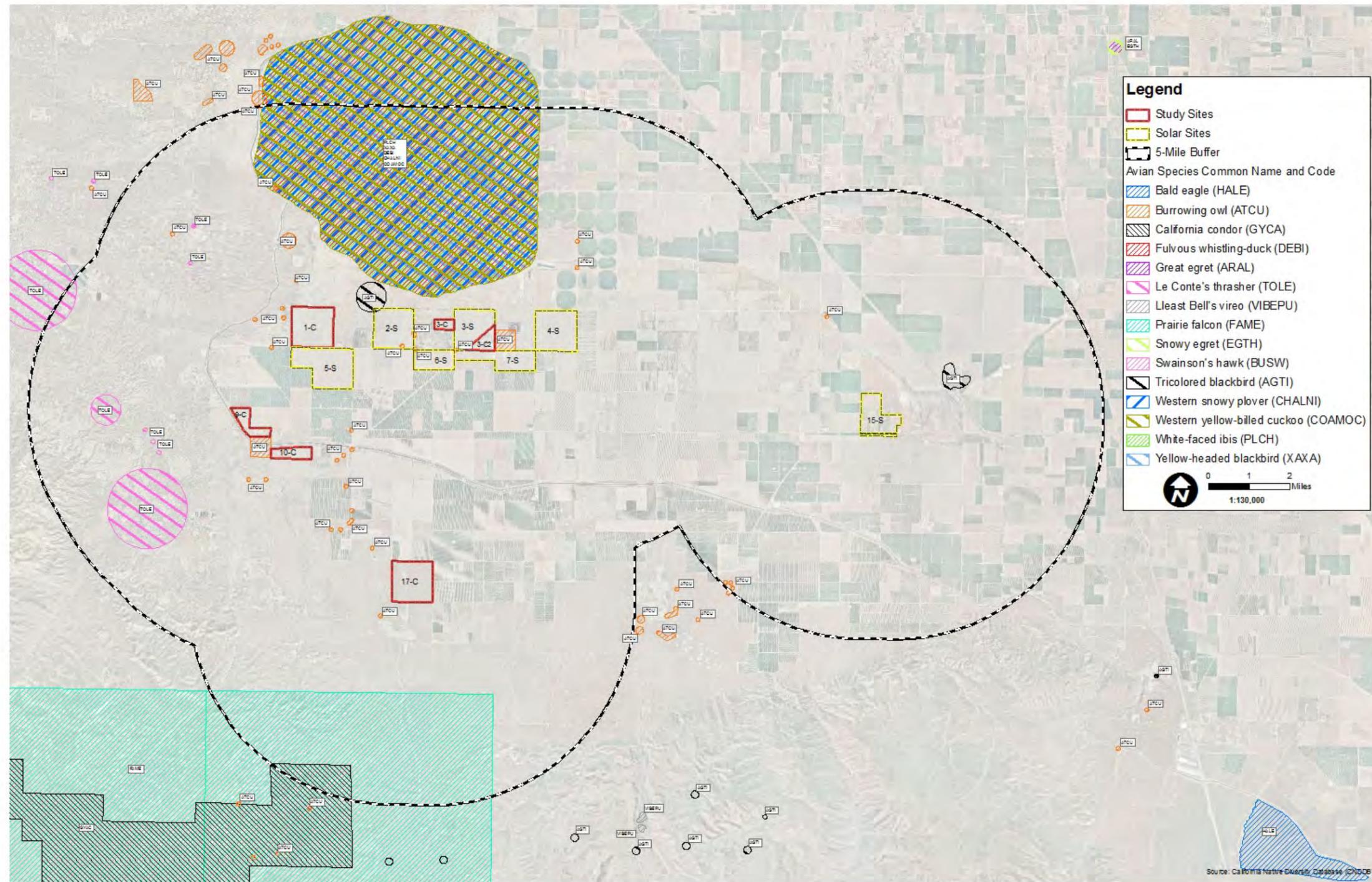
KNOWN LOCATIONS OF SENSITIVE HABITAT COMMUNITIES AND SPECIAL STATUS PLANT SPECIES WITHIN FIVE MILES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 11A



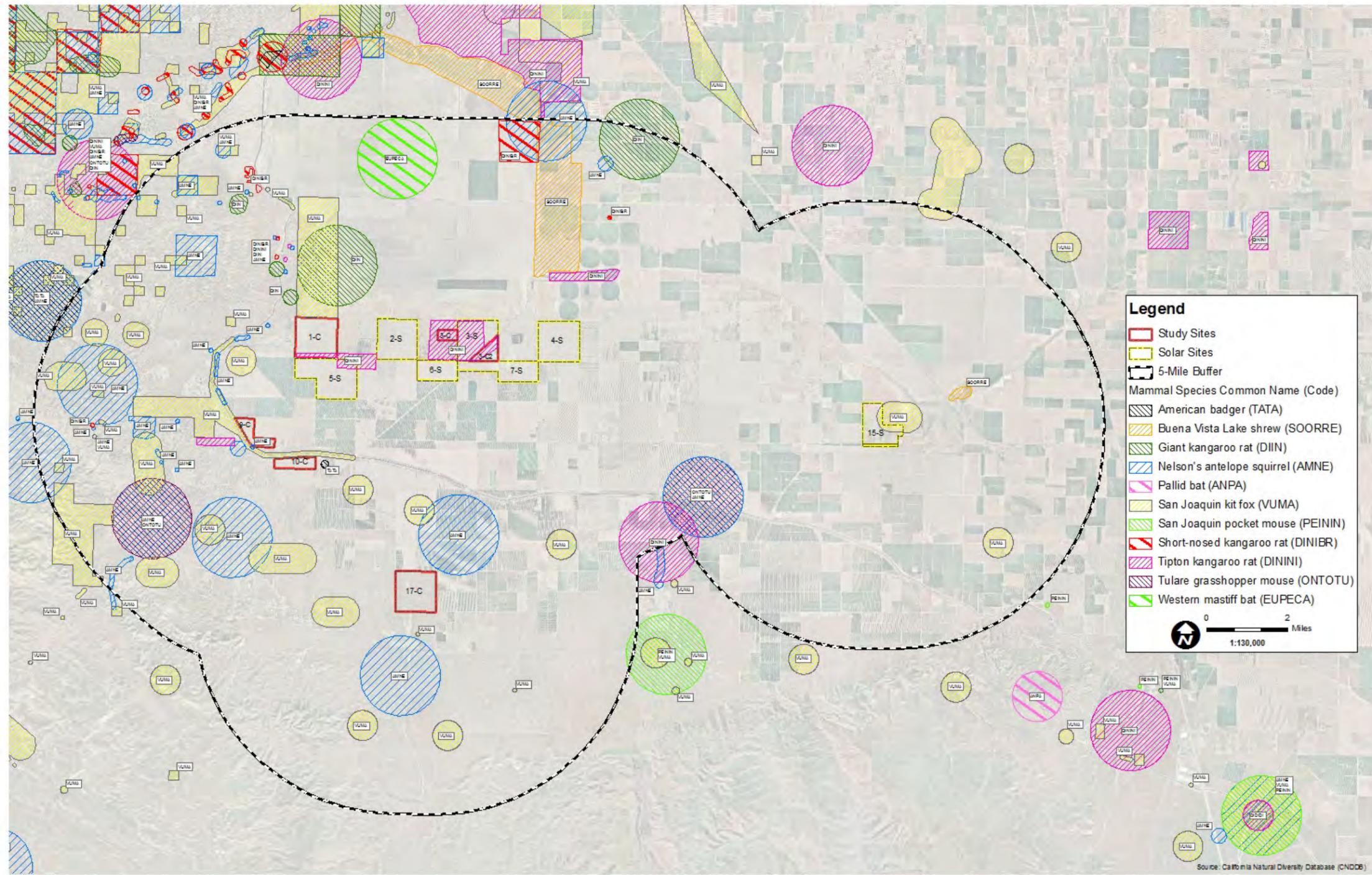
KNOWN LOCATIONS OF SPECIAL STATUS REPTILE, AMPHIBIAN, AND INVERTEBRATES SPECIES WITHIN FIVE MILES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 11B



KNOWN LOCATIONS OF SPECIAL STATUS AVIAN SPECIES WITHIN FIVE MILES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 11C



KNOWN LOCATIONS OF SPECIAL STATUS MAMMALIAN SPECIES WITHIN FIVE MILES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 11D

**Table 11**  
**Historic Occurrences of Covered Species on the Study Sites and on Adjacent Lands**  
**within the Maricopa Sun Solar Complex Project Area**  
 (Source: CNDDDB 2010, 2011, 2013)

<b>Study Site</b>	<b>1-C</b>	<b>3-C</b>	<b>3-C2</b>	<b>9-C</b>	<b>10-C</b>	<b>17-C</b>
<b>Historic Occurrence of Covered Species on Study Sites</b>						
San Joaquin kit fox				X		
Tipton kangaroo rat	X	X	X			
Nelson's antelope squirrel				X		
Blunt-nosed leopard lizard				X		
Burrowing owl			X		X	
<b>Historic Occurrence of Covered Species on Adjacent Land</b>						
San Joaquin kit fox	X			X	X	X
Tipton kangaroo rat	X	X	X	X	X	
Nelson's antelope squirrel	X			X	X	X
Blunt-nosed leopard lizard	X			X	X	X
Burrowing owl	X	X	X	X	X	X

X Documented historic occurrence

- Sightings of San Joaquin kit fox were recorded on May 1987 immediately north of Site 1-C, and on August 24, 1998 in the western portion of Site 9-C (APN 220-050-42, APN 220-201-02) and adjacent to the north side of Site 10-C (Figure 11D). Multiple historical records of San Joaquin kit fox from 1975 through 1991 are present to the south and west of Site 17-C, with the closest record located approximately 0.5 miles to the south of this Site (Figure 11D).

## 3.2 General Site Conditions

Study site 17-C is composed of a mosaic of saltbush scrub and alkali goldenbush, the southern 83.25 acres of Site 9-C supports saltbush scrub habitat, and Site 3-C2 is primarily composed of disturbed annual grassland that is recovering from past disking. The levee in the northwest corner of Site 1-C is vegetated with saltbush scrub and Mojave seepweed. All other study sites are routinely disked and do not support vegetation, except for weedy and invasive species that colonize between periods of disking. Specific conditions present on each site are described below.

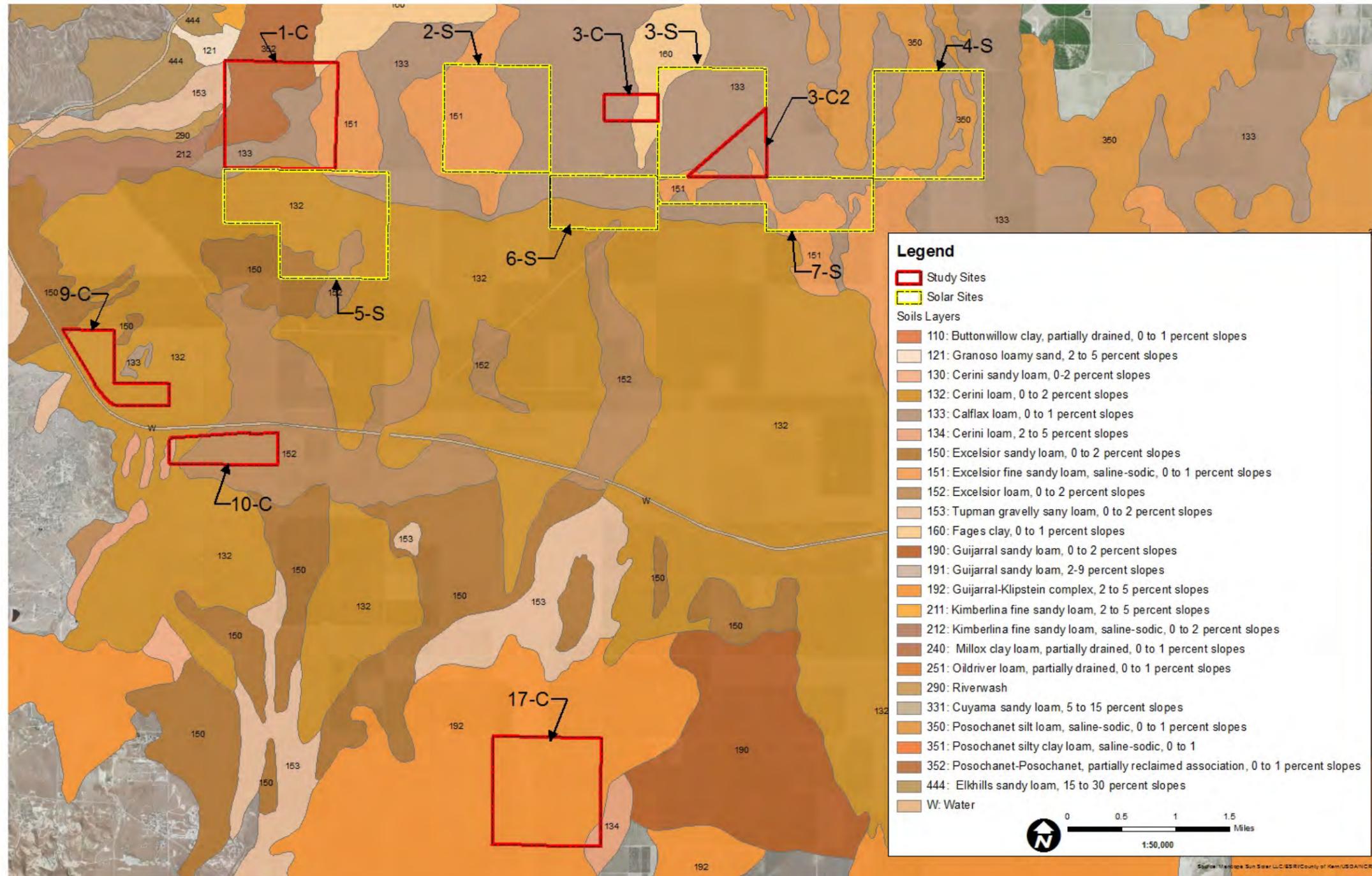
### 3.2.1 SITE 1-C

Site 1-C is composed of two parcels, APN 220-120-14 and APN 220-120-15, totaling 656.6 acres (Figure 2). It is located in Township 32S, Range 25E, Section 19. Elevation of the study site ranges from approximately 320 feet AMSL in the northeast corner to approximately 380 feet AMSL in the southwest corner. The entirety of this site has been disked on a recurring basis and the topography of the site is mainly flat, except for the tops and sides of a levee located in the northwest corner of the property and the canal that runs along the northern site boundary.

The site is barren, except for some sparse occurrences of weedy plant species that persist after disking. Species observed on the site include fiddleneck (*Amsinckia menziesii*), orchard bindweed (*Convolvulus arvensis*), Bermuda grass (*Cynodon dactylon*), London rocket (*Sisymbrium irio*), tamarisk and quailbush (*Atriplex lentiformis*). There are scattered Valley Saltbush Scrub and Mojave seepweed occurring along the levee in the northwest corner of the site and within basins associated with the levee. The levee and associated vegetated areas total 2.44 acres.

The surrounding lands adjacent to the north and west of the site contain native Valley Sink Scrub and Valley Saltbush Scrub habitat, which are known to support sensitive species. The other surrounding land use includes alfalfa (*Medicago sativa*) production to the east, orchards to the southwest and disked fields to the south and southeast of the site.

According to the USDA soil survey for Kern County, Site 1-C consists of six soil types; Cerini loam (0 to 2 percent), Calflax loam (0-1 percent slopes), Excelsior fine sandy loam, saline-sodic (0-1 percent slopes), Tupman gravelly sandy loam (0-2 percent slopes), Fages clay (0-1 percent slopes), and Posochanet-Posochanet (partially reclaimed association, 0-1 percent slopes) (Figure 12). Calflax loam and Posochanet-Posochanet are primary soil types present within the site.



SOIL TYPES PRESENT ON AND WITHIN THE VICINITY OF STUDY SITES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 12

Excelsior fine sandy loam occurs along the east perimeter, a small area of Fages clay occurs in the northeast corner, Tupman gravely sandy loam occurs along the west perimeter, and a small amount of Cerini loam occurs in the south (Figure 12).

The northeast corner and central portion of Site 1-C are within a 100-year flood zone (Figure 10). The NWI shows several Freshwater Shrub Wetlands described as Palustrine Scrub-Shrub Temporarily Flooded (PSSA) features occurring along a levee in the northwest corner of this site (USFWS 2012) (Figure 13). The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand (ppt). Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1) are less than 20 acres; 2) do not have an active wave-formed or bedrock shoreline feature; 3) have at low water a depth less than 6.6 feet in the deepest part of the basin; and 4) have a salinity due to ocean-derived salts of less than 0.5 ppt. The scrub-shrub class includes areas dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions. Surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface for most of the growing season. Plants that grow both in uplands and wetlands may be characteristic of this water regime (Cowardin et al. 1979). The 7.5 minute USGS topographic quadrangle depicts two blue-line drainages, one located in the northwest corner and the other traversing through the center of the site in the east-west direction (Figure 14).

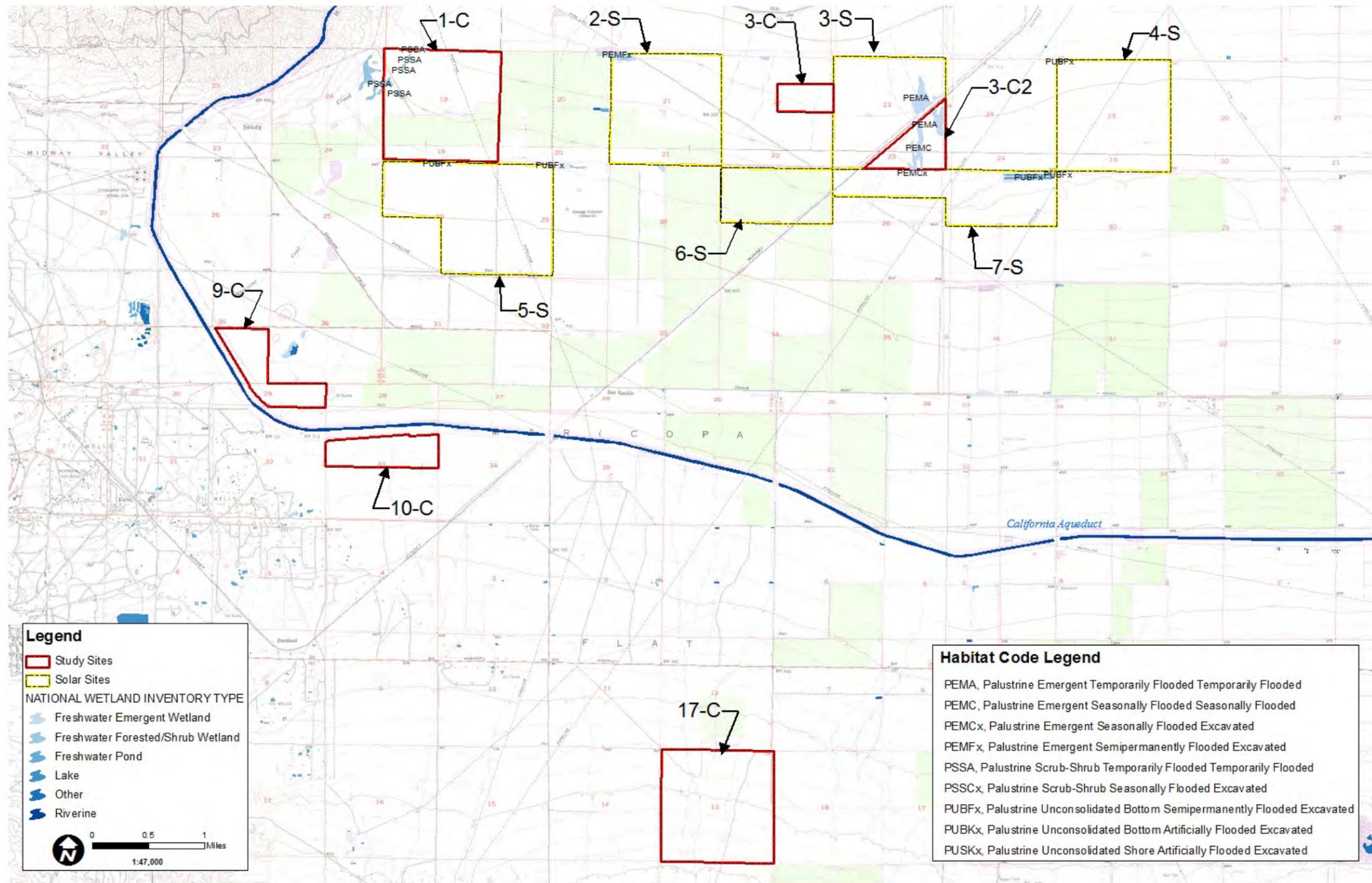
### 3.2.2 SITE 3-C

Site 3-C is composed of a single parcel, APN 220-110-10, totaling 80.4 acres (Figure 2). The area is located in Township 32S, Range 25E, Section 23. Elevation of the study site ranges from approximately 315 feet AMSL in the north to approximately 325 feet AMSL in the south. The entirety of this site has been disked on a recurring basis and the topography of the site is mainly flat; however, some low relief occurs because the site has not been laser-leveled. The site is sparsely vegetated with weedy plant species, including Mojave seepweed.

The surrounding lands adjacent to the north, south, and west of Site 3-C contain native Valley Sink Scrub and Valley Saltbush Scrub habitat. A disked field is located to the east of this area. This field has been disked on a recurring basis and is nearly devoid of vegetation.

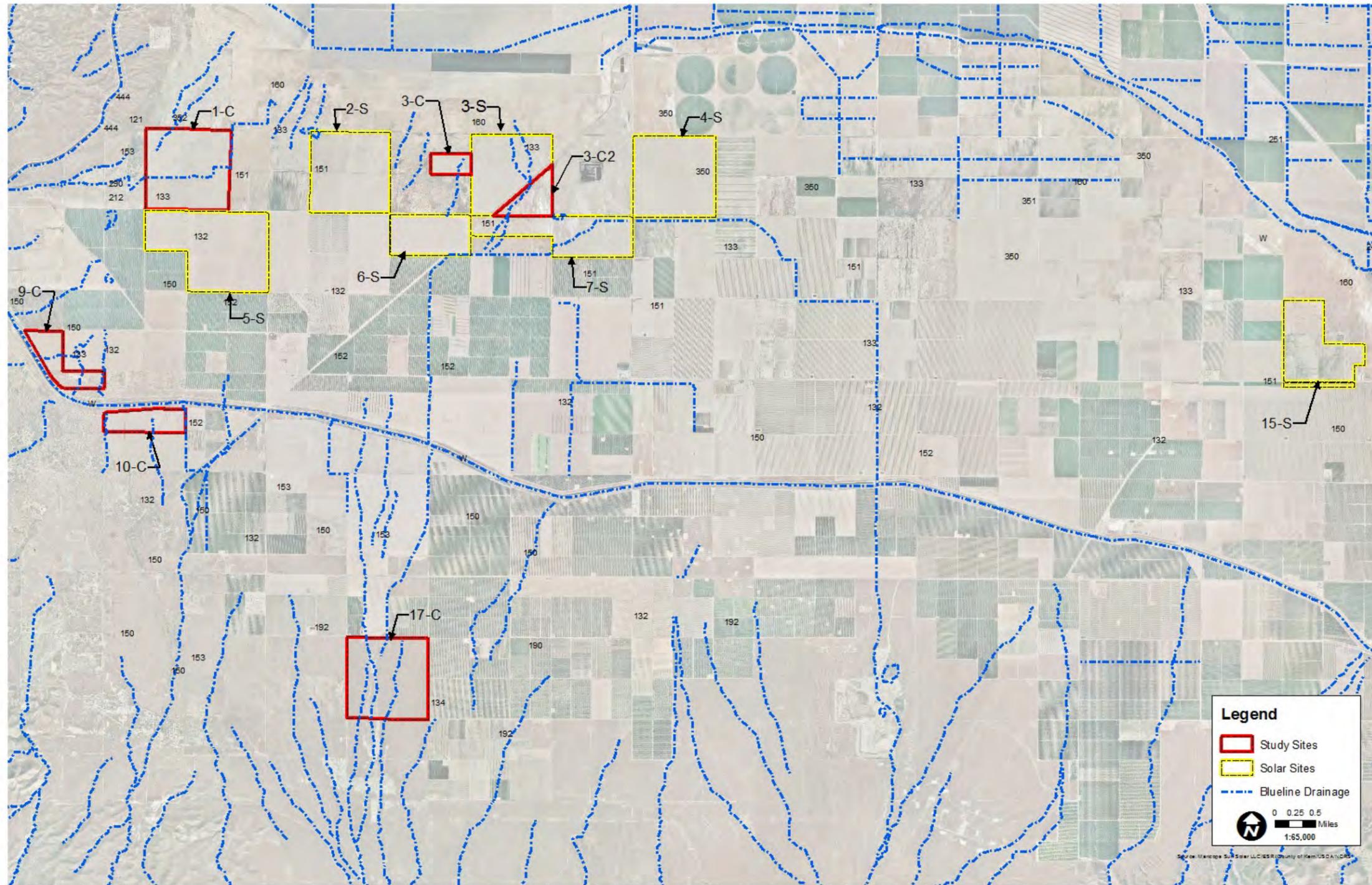
According to the USDA soil survey for Kern County, Site 3-C consists of two primary soil types: Calflax loam (0-1 percent slopes) in the west part, and Fages clay (0-1 percent slopes) in the east part (Figure 12).

The entire site occurs within a 100-year flood zone (Figure 10). No previously identified wetland habitat occurs on or within 100 feet of Site 3-C (USFWS 2012) (Figure 13). The 7.5 minute USGS topographic quadrangle depicts one blue-line drainage as traversing the eastern portion of this site (Figure 14).



KNOWN WETLANDS ON AND WITHIN THE VICINITY OF STUDY SITES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 13



USGS 7.5-MINUTE QUADRANGLES ENCOMPASSING THE STUDY SITES OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 14

### 3.2.3 SITE 3-C2

Site 3-C2 is composed of a single parcel, APN 220-110-08, totaling 152.9 acres (Figure 2). The area is located in Township 32S, Range 25E, and Section 23. Elevation of the study site ranges from approximately 320 feet AMSL throughout. The topography of the site is mainly flat with the exception of some topographic relief along the levee of an historic railroad right-of-way that is located along the northwest perimeter, and along a canal that runs along the east side of the site. The entirety of this site is fallow land sparsely vegetated with weedy annual plant species, including London rocket, five-hook bassia (*Bassia hyssopifolia*), black mustard (*Brassica nigra*), seepweed, Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* sp.), salt grass (*Distichlis spicata*), tamarisk, quailbush, annual weedy chenopods (primarily *Chenopodium album*) and annual sunflower (*Helianthus annuus*). The vegetation along the canal consists of relatively dense quailbush and scattered tamarisk. Annual weedy chenopods and *Helianthus* are also present within and along the canal. The railroad right-of way is dominated by quailbush and *Helianthus*.

The adjacent land consists of a disked field adjacent to the southern border. A fallow field that is dominated by five-hook bassia, with a small patch of Valley Sink Scrub that is highly degraded through repetitive disking is present to the east of the site. Native habitat with an expanse of chenopod scrub habitat is present to the north, and a disked field that is separated from the site by South Lake Road is present to the west.

According to the USDA soil survey for Kern County, Site 3-C2 contains two soil types; Calflax loam (0-1 percent slopes) and Excelsior fine sandy loam, saline-sodic (0-1 percent slopes) (Figure 12). Calflax loam is the primary soil type, overlapping almost the entire site. Small areas of Excelsior fine sandy loam are reported to be in the southwest and southeast corners of the site (Figure 12).

The entire site is within a 100-year flood zone (Figure 10). The NWI shows Freshwater Emergent Wetlands described as Palustrine Emergent Temporarily Flooded (PEMA) and Palustrine Emergent Seasonally Flooded (PEMC) features occurring in a north-south orientation throughout the site (USFWS 2012) (Figure 13).

No evidence of PEMC features or PEMA features was observed on this site. This finding was verified in the field by the ACOE. Similarly, although the 7.5 minute USGS topographic quadrangle depicts one blue-line drainage as traversing along the northwest boundary of this site (Figure 14), no evidence of such a feature was observed. Past disking of the site may have eliminated these features if they were present.

### 3.2.4 SITE 9-C

Site 9-C is composed of two parcels, APN 220-201-02 and APN 220-050-42, totaling 180.6 acres (Figure 2). It is located in Township 12N, Range 23W, and Section 29. Elevation of the study site averages approximately 490 feet AMSL. The northernmost portion of 9-C (APN 220-050-42) has been disked on a biannual basis and is mostly flat. Some low relief is present because this site has not been laser-leveled. The southernmost portion of Site 9-C (APN 220-

201-02, which is 83.25 acres) has natural topography, except for a 10.46-acre area near the center, which shows signs of disturbance consisting of mounds of dirt and other disturbances.

The northernmost portion of Site 9-C is nearly devoid of vegetation due to the recurring disking, but it is very sparsely vegetated with Russian thistles. The southernmost portion of Site 9-C is vegetated with chenopod scrub habitat containing Valley Saltbush Scrub, a sensitive vegetative community that is dominated by Valley Saltbush Scrub with sparse ground cover of fiddleneck, Mediterranean grass, London rocket, prickly lettuce (*Lactuca serriola*), red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), and filaree (*Erodium* sp.).

The land to the west and south of Site 9-C includes the California Aqueduct right-of-way, which is a known corridor for a variety of special status wildlife species. These areas and other contiguous habitat areas are vegetated with native chenopod scrub habitat composed of valley saltbush shrubs with a ground cover of Coulter's conyza (*Conyza coulteri*), goldenbush (*Isocoma acediana*), Kellogg's tarweed (*Hemizonia kelloggii*), telegraph weed (*Heterotheca grandiflora*), yellow start-thistle (*Centaurea solstitialis*), fiddleneck, London rocket, red brome, ripgut brome, soft brome (*Bromus hordeaceus*), Mediterranean grass, and filaree. The land east of parcel APN 200-201-02 consists of non-native grassland habitat dominated by prickly lettuce, Jimson weed (*Datura stramonium*), a few scattered chenopod shrubs, and sparse grass cover exhibiting signs of previous sheep grazing (i.e., sheep pellets, tracks, and a sheep carcass). A disked field is located immediately north of this parcel. Cadet Road, which is to the north of Site 9-C, separates this area from almond orchards.

According to the USDA soil survey for Kern County, Site 9-C consists of two different soil types: Cerini loam (0 to 2 percent slopes) and Excelsior loam (0 to 2 percent slopes) (Figure 12). The primary soil type is Cerini loam, which overlaps the entire site except for the northwest corner, where a small area of Excelsior sandy loam is reported (Figure 12).

Parts of the southern 83.25 acres of Site 9-C are within a 100-year Flood Zone A, which is located in the middle and eastern portions of this area (Figure 10). The NWI shows no wetland features within this area (USGS 2012) (Figure 13). The 7.5 minute USGS topographic quadrangle depicts three blue-line drainages traversing the central portion (Figure 14). Our field observations support the lack of wetland features and revealed that, due to repeat disking, no evidence remains of the blue-line drainages.

### 3.2.5 SITE 10-C

Site 10-C is composed of one parcel, APN 220-201-05, totaling 176.2 acres. It is located in Township 11N, Range 23W, and Section 13 (Figure 2). Elevation of the study site ranges from approximately 500 feet AMSL along the California Aqueduct to approximately 530 feet AMSL in the south. Site 10-C is repeatedly disked for weed control and the topography is mainly flat. Some minor relief remains, because the site has not been laser-leveled.

The entirety of this site is nearly devoid of vegetation except for a few patches of Russian thistle and five-hook bassia. Irrigation standpipes and pumps on this site indicate past agricultural use.

The habitat immediately adjacent to the south side of this site is a disked field. The habitat adjacent to the west of this area is vegetated with Valley Saltbush, which is dominated with valley saltbush and quailbush shrubs. Other species found in this area include tamarisk, tree tobacco (*Nicotiana glauca*), annual sunflower, London rocket, annual bursage (*Ambrosia acanthicarpa*), five-hook bassia, yellow start-thistle, Russian thistle, fiddleneck, peppergrass (*Lepidium* sp.), dove weed (*Eromocarpus setigerus*), white horehound (*Marrubium vulgare*), filaree, red brome, soft brome, and other non-native grasses. The habitat to the north along the California Aqueduct right-of-way is vegetated with chenopod scrub containing allscale saltbush, quailbush, tamarisk, goldenbush, Coulter's conyza, yellow start-thistle, fiddleneck, dove weed, soft brome, and other unidentified grasses. The California Aqueduct right-of-way is a known corridor for a variety of special status wildlife species. Along the east side of the site is a disked field.

According to the USDA soil survey for Kern County, Site 10-C consists of three different soil types: Cerini loam (0 to 2 percent slopes), Cerini loam (2-5 percent slopes), and Excelsior loam (0-2 percent slopes) (Figure 12). Excelsior loam is the primarily soil type, but there is an area of Cerini loam (0 to 2 percent slopes) and a small area of Cerini loam (2 to 5 percent slopes) along the western perimeter of this site (Figure 12).

Site 10-C is not within a 100-year flood zone (Figure 10). The NWI shows no wetland features on or near this study site (USGS 2012) (Figure 13). Two isolated blue-line drainages are shown on the 7.5-minute USGS topographical quadrangle traversing the central and western portions of the site, in a north-south orientation (Figure 14). Our field observations do not support the latter finding, but evidence of the blue-lines may have been obliterated by disking.

### 3.2.6 SITE 17-C

The Site 17-C is composed of one parcel, APN 239-150-11, totaling 647.7 acres. It is located in Township 11N, Range 23W, and Section 13 (Figure 2). Elevation of the study site ranges from approximately 750 feet AMSL in the north to approximately 890 feet AMSL in the southwest corner. Site 17-C has natural topography and has never been actively farmed or tilled.

Vegetation on the site is a Chenopod Scrub Non-native grassland mosaic, although Chenopod Scrub dominates. Valley saltbush is the dominant shrub, but alkali goldenbush (*Isocoma acradenia*) is also relatively common in some areas, especially on the eastern half of the site. Other shrub species that are present include cheesebush (*Hymenoclea salsola*) and loco weed (*Astragalus setigerus*). The shrub understory and patches of Non-native Grasslands that are present on the site are dominated by redstem stork's bill (*erodium cicutarium*), cryptantha (*cryptantha* sp.), peppergrass (*Lepidium nitidum*), and brome grasses (*Bromus madritensis rubens* and *Bromus diandrus*). Other annual species that are common include tarweed (*Hemizonia pallida*), dove weed, and small fescue (*Vulpia microstachys*).

The surrounding land use is citrus orchards to the north and east, and grazing lands to the west and south. There is oilfield activity to the south of the site.

According to the USDA soil survey for Kern County, Site 17-C consists of two different soil types: Cerini loam (2-5 percent slopes) and Gujarral-Klipstein complex (2 -5 percent slopes) (Figure 12). The Gujarral-Klipstein complex overlaps the entire site, except the southeast corner, where a small amount of Cerini loam is present (Figure 12). Scattered patches of gravel, rock, and boulders are present on the ground surface.

The entire site is located within a 100-year flood zone (Figure 10). The NWI shows no wetland features on or near this site (USGS 2012) (Figure 13). The 7.5-minute USGS topographical quadrangle depicts three primary blue-line drainages and one secondary blue-line drainage bisecting this area from south to north (Figure 14). On the basis of our field observations, there are two primary washes within the drainage complex. These washes are sometimes as wide as 15 feet and as deep as 10 feet. Within these washes is evidence of severe gully erosion and past flash flooding.

### 3.3 *Site-specific Biological Conditions*

This section provides information on site-specific biological conditions, including occurrences of sensitive vegetation communities and special status plant and wildlife species on and in the vicinity of the sites. This information is used to provide a justification for the suitability and acceptance of the proposed study sites as compensatory mitigation lands. The summary of findings is represented at the end of this section (Tables 12 and 13).

#### 3.3.1 SITE 1-C

##### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

The site is barren, except for some sparse occurrences of weedy plant species that persist after disking. Species observed on the site include fiddleneck (*Amsinckia menziesii*), orchard bindweed (*Convolvulus arvensis*), Bermuda grass (*Cynodon dactylon*), London rocket (*Sisymbrium irio*), tamarisk and quailbush (*Atriplex lentiformis*). There are scattered Valley Saltbush Scrubs and Mojave seepweed occurring along the levee in the northwest corner of the site and within basins associated with the levee. The levee and associated vegetated areas total 2.44 acres (Table 12).

Valley saltbush shrubs and Mojave seepweed shrubs are components of the sensitive vegetative communities Valley Saltbush Scrub habitat and Valley Sink Scrub habitat; however, they do not comprise a functional, recognized sensitive vegetative community because of their limited distribution on the site. Substantial habitat that is similar in function and form is present west and north of the site, so the limited on-site habitat is nearly contiguous with a much broader landscape of similar vegetation. No special status plant species were observed. The CNDDDB records identified no special status plant species or sensitive habitat communities on Site 1-C, but it is likely that the area was once vegetated with Valley Saltbush scrub, which was presumably eliminated during the past disking.

The only special status wildlife species present on the site is Tipton kangaroo rat, which is present along the levee in the northwest corner of this site (Figure 15). Although the historic

records show the Tipton kangaroo rat occurring within the southern portion of the site (Figure 11D), there was no evidence (e.g., burrows, dust baths, scat) that this species currently exists there. Although there are no other CNDDDB records shown for Site 1-C, and no San Joaquin kit fox, Nelson's antelope squirrel, blunt-nosed leopard lizard or western burrowing owl were observed on the site, these species are present to the north and west of the site. They could potentially occur along the levee in the northwest corner of the site, within a remnant of suitable habitat that remains there.

It is anticipated that other special status wildlife species, including San Joaquin pocket mouse (*Perognathus inornatus inornatus*) and Tulare grasshopper mouse (*Onychomys torridus tularensis*) could occur within the remnant habitat that is present along the levee in the northwest corner of the site, but none were recorded during field surveys performed for the Project. San Joaquin kit fox and American badger (*Taxidea taxus*) may occasionally make forays onto and across the site. Similarly, other special status species, including western mastiff bat (*Eumops perotis californicus*) and white-tailed kite (*Elanus leucurus*) may occasionally overfly the site.

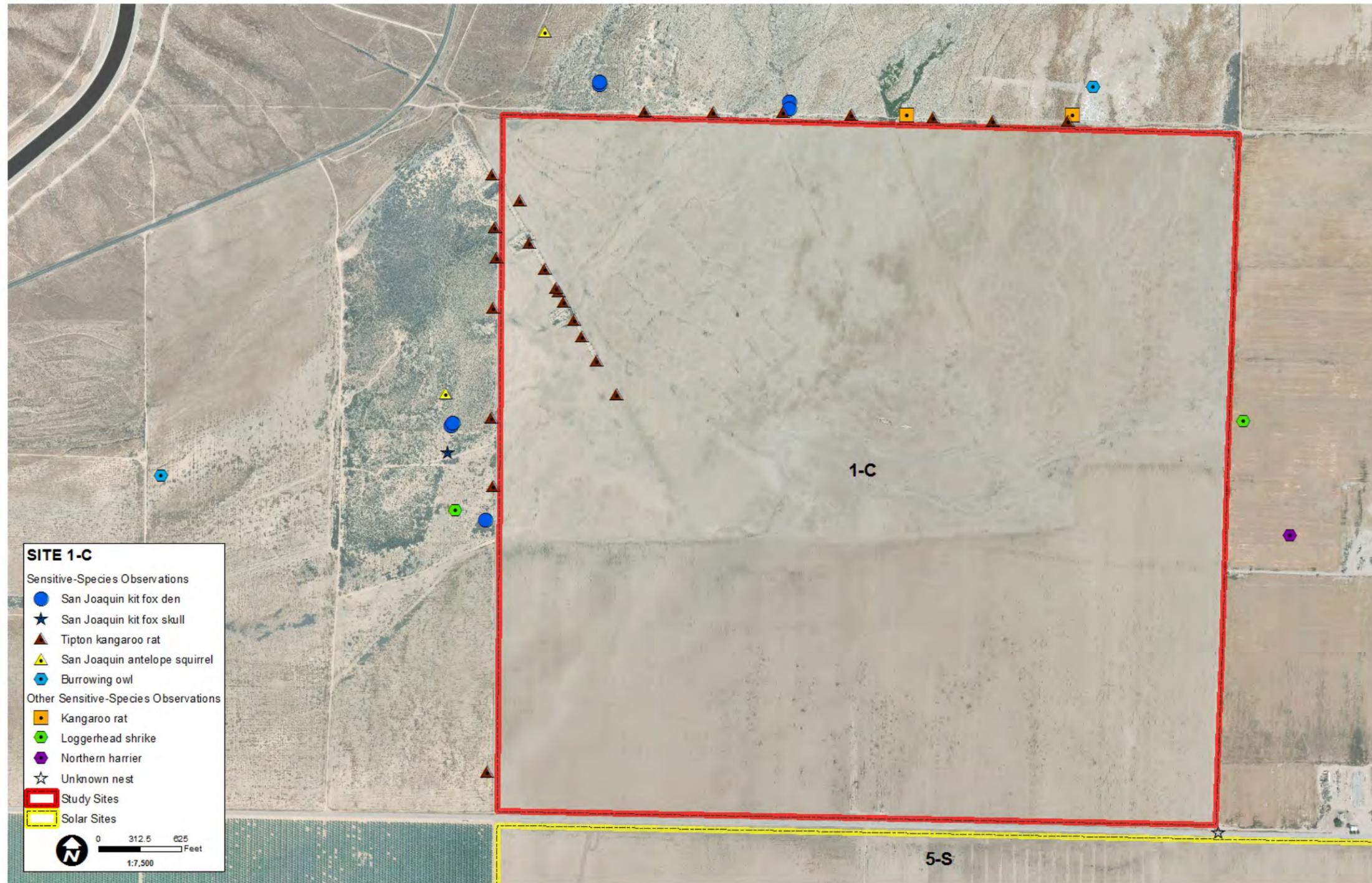
#### *On-site Occurrence of Other Important Biological Resources*

The NWI shows Freshwater Shrub Wetlands described PSSA features, occurring along a levee in the northwest corner of the site (USFWS 2012) (Figure 13). Although there are basins located in this area, there was no standing water at the time of the site survey, and the area does not qualify as a wetland because it lacks hydric soils and distinctive wetland vegetation. The repeated disking has nearly eliminated all surface evidence of the blue-line drainages shown on the USGS 7.5-minute topographical quadrangle in the northwest corner of the site and traversing the center of the site (Figure 14). Barely visible remnants of these historical drainages were observed on the site. The ACOE has assumed jurisdiction of these areas based upon an upstream determination of jurisdiction for another project.

#### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

Two sensitive vegetative communities, Valley Sink Scrub and Valley Saltbush Scrub, are present on the land adjacent to the north and west of Site 1-C (Table 13). Special status plant species that might occur in this area include: heartscale (*Atriplex cordulata*), Lost Hills crownscale (*Atriplex vallicola*), recurved larkspur (*Delphinium recurvatum*), Kern mallow (*Eremalche kernensis*), Hoover's eriastrum (*Eriastrum hooveri*), Tejon poppy (*Eschscholzia lemmonii* ssp.), San Joaquin woollythreads (*Monolopia congdonii*), and oil neststraw (*Stylocline citroleum*). Historical records do not report the presence of sensitive vegetative communities or special status plant species in these areas.

San Joaquin kit fox were not observed during the night spotlighting or camera and bait track station surveys conducted on and in the vicinity of the site. However, a San Joaquin kit fox skull was found in the native Valley Sink Scrub and Valley Saltbush Scrub habitat immediately to the west, and several kit fox dens were identified in the native habitat located immediately west and



SPECIAL STATUS SPECIES SIGHTINGS ON AND WITHIN THE VICINITY OF STUDY SITE 1-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 15

north of this site (Figure 15). A CNDDDB historic record indicates San Joaquin kit fox occurred immediately north of Site 1-C (Figure 11D). San Joaquin kit foxes likely occur in these native habitats and would occasionally traverse the site. The cessation of disking would likely increase the utilization of this site by the San Joaquin kit fox.

Tipton kangaroo rats were captured, and Nelson's antelope squirrels and burrowing owls observed in the native habitat adjacent to the north and west of Site 1-C (Figure 15). Historic records report these species on the adjacent land. A record of Tipton kangaroo rat is located adjacent immediately east of Site 1-C (Figure 11D), record of western burrowing owl is located on the adjacent land approximately 0.15 mile to the west (Figure 11C), and record of Nelson's antelope squirrel is located on the adjacent land, approximately 0.6 miles to the west (Figure 11D).

No blunt-nosed leopard lizards were observed during the field surveys; however, suitable habitat that could support this species is present on the adjacent land to the north and west of Site 1-C. An historic record of blunt-nosed leopard lizard is located approximately 1.8 miles north of Site 1-C (Figure 11B).

Sightings of other special status species in the vicinity of this site consist of northern harrier and loggerhead shrike, which were observed on the adjacent land to the west and east of Site 1-C (Figure 15). Other special status species that might also occur on the adjacent lands include American badger, San Joaquin pocket mouse, Tulare grasshopper mouse, and Le Conte's thrasher (*Toxostoma lecontei*). Other special status species, including western mastiff bat and white-tailed kite, may occasionally overfly the area.

### 3.3.2 SITE 3-C

#### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

The entirety of this site has been disked on a recurring basis and is nearly devoid of vegetation. There were no sensitive vegetation communities or special status plant species observed. The CNDDDB records identified no special status plant species or sensitive habitat communities occurring on Site 3-C (Table 12).

No special status wildlife species were observed on Site 3-C (Figure 16). One CNDDDB record reports the historical occurrence of Tipton kangaroo rat throughout the site (Figure 11D). However, the Tipton kangaroo rats are no longer present on this study site, presumably because of the recurring disking.

#### *On-site Occurrence of Other Important Biological Resources*

The NWI shows no previously identified wetlands occurring on or adjacent to Site 3-C (USFWS NWI 2012) (Figure 13). The repeated disking has eliminated all surface evidence of the blue-line drainage shown on the USGS 7.5-minute topographical quadrangle traversing the eastern portion of this area (Figure 14), and no remnants of this historical drainage were observed during field surveys. No other wetlands were observed on this site during field surveys.

### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

The surrounding lands adjacent to the north, south, and west of Site 3-C contain native Valley Sink Scrub and Valley Saltbush Scrub habitat (Table 13). Special status plant species that might occur in this area include heartscale, Lost Hills crowscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woollythreads, and oil neststraw. The CNDDDB records identified no special status plant species or sensitive habitat communities occurring on the land adjacent to Site 3-C.

San Joaquin kit foxes or their diagnostic sign were not observed during the night spotlighting, or camera and bait track station surveys; however, there is a potential that kit foxes might occasionally be present because there is a suitable habitat present on adjacent land to support this species. The closest CNDDDB record of San Joaquin kit fox occurrence is located approximately 2.5 miles to the northwest (Figure 11D).

Tipton kangaroo rats were captured, and blunt-nosed leopard lizards and western burrowing owl were observed in the native habitat adjacent to the north, west, and south of Site 3-C (Figure 16). An historic record of Tipton kangaroo rat overlaps the adjacent habitat to the north, west and south of Site 3-C (Figure 11D). Historic records of western burrowing owl are located approximately 0.45 miles to the southwest and to the south of the site (Figure 11C). No CNDDDB records report Nelson's antelope squirrel or blunt-nosed leopard lizard on or in the vicinity.

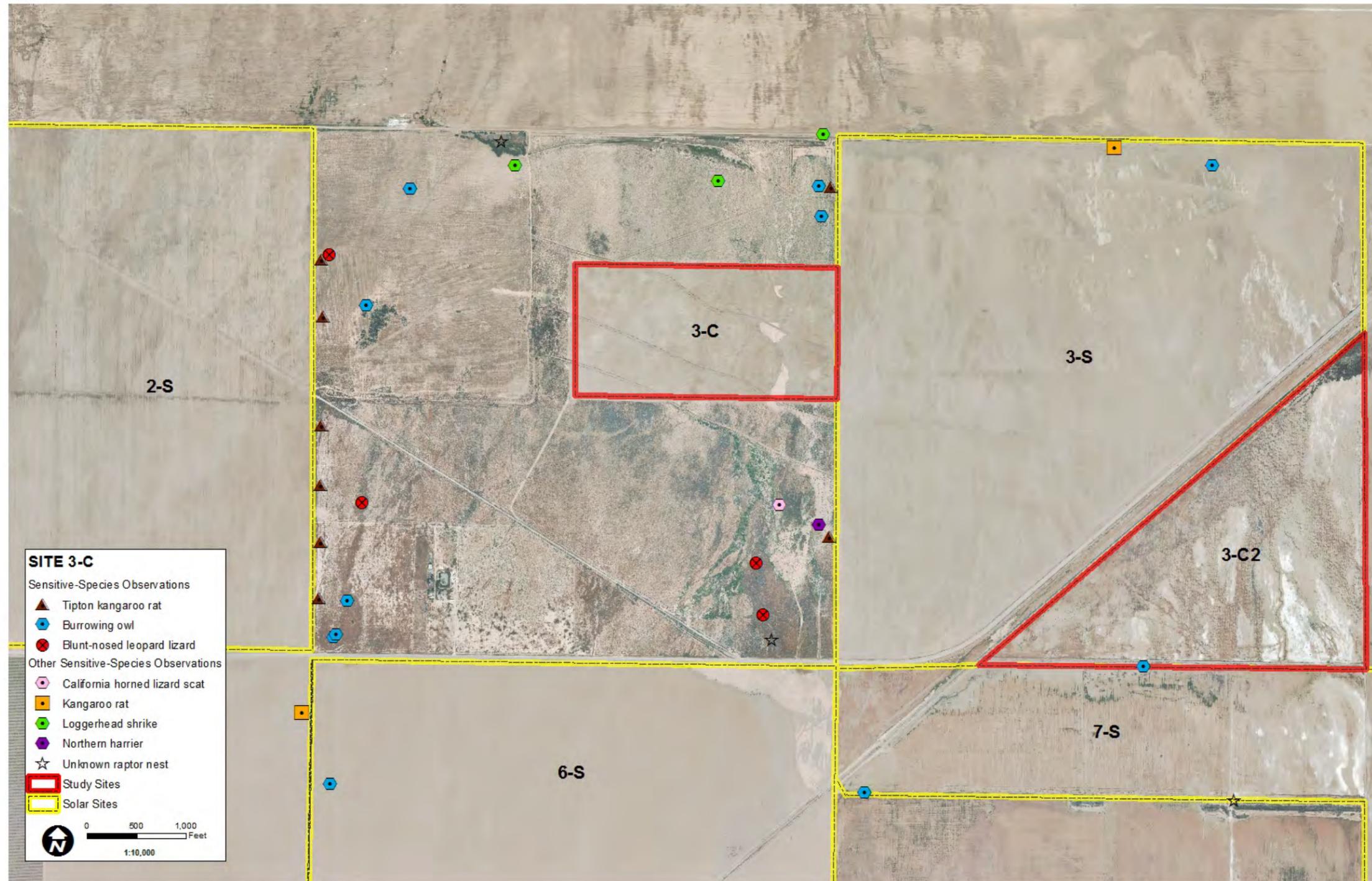
Sightings of other special status species consist of loggerhead shrike and northern harrier, which were observed in the adjacent native habitat (Figure 16). Blainville's horned lizard scat was observed on adjacent land (Figure 16). Other special status species that might also occur in the adjacent lands include American badger, San Joaquin pocket mouse, Tulare grasshopper mouse, and Le Conte's thrasher. Other special status species, including western mastiff bat and white-tailed kite, may occasionally overfly the area.

### **3.3.3 SITE 3-C2**

#### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

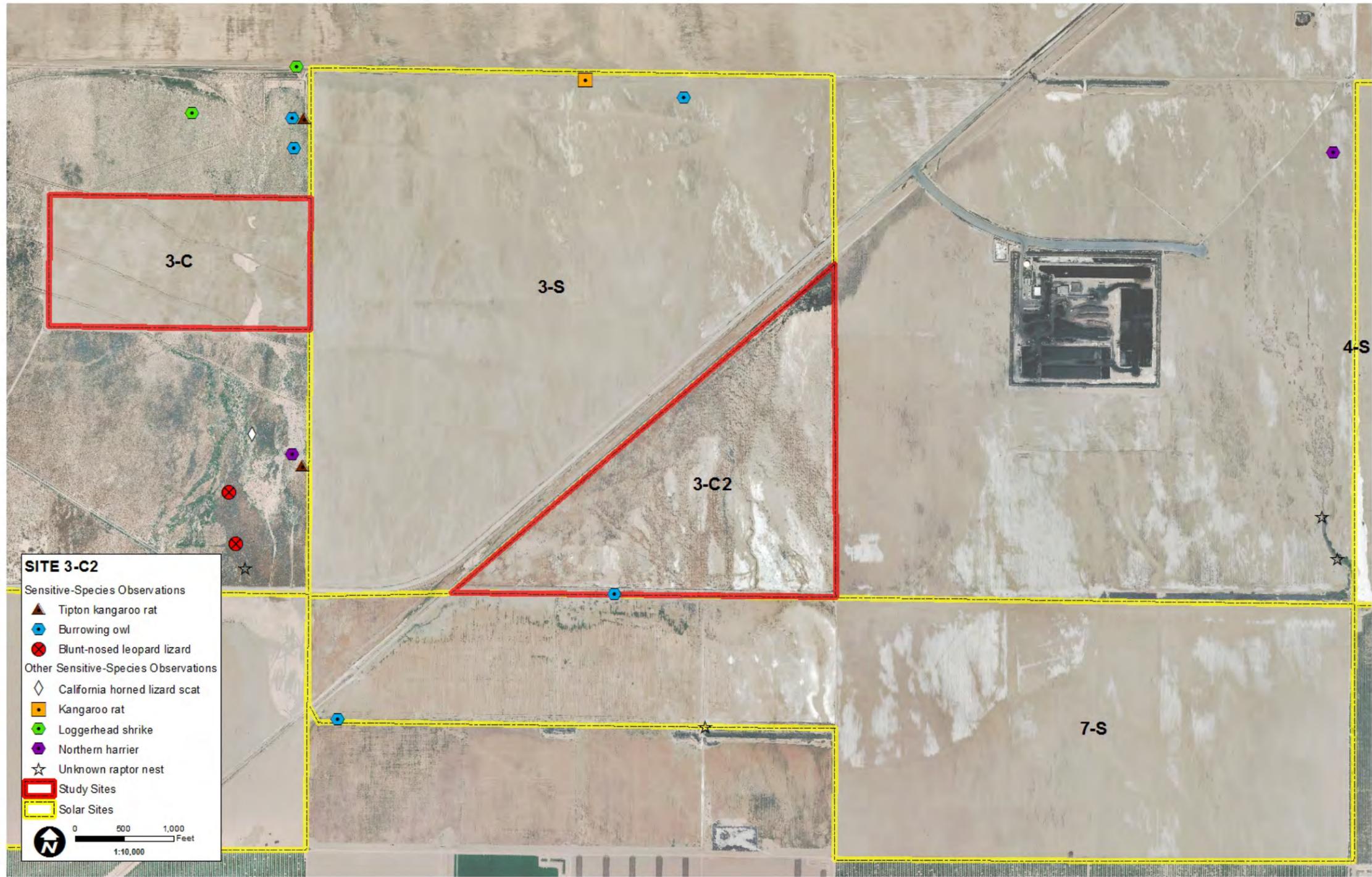
Site 3-C2 consists of fallow land that is recovering from past disking activities. The CNDDDB records identified no special status plant species or sensitive habitat communities on Site 3-C2 (Table 12).

One sighting of a burrowing owl was recorded from this site, but no other special status species were observed (Figure 17). According to historic CNDDDB records, western burrowing owl occurs along the eastern boundary and to the east of this site (Figure 11C). Currently, that habitat is comprised primarily of very large and dense five-hook bassia, and this area is thought to be generally unsuitable for western burrowing owl.



SPECIAL STATUS SPECIES SIGHTINGS ON AND WITHIN THE VICINITY  
OF STUDY SITE 3-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure  
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SPECIAL STATUS SPECIES SIGHTINGS ON AND WITHIN THE VICINITY  
OF STUDY SITE 3-C2 OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure  
17

There is an historic record of Tipton kangaroo rat occurrence located in the northwest half of the site (see Figure 11D). No Tipton kangaroo rats were captured during the small mammal trapping study for the Project, although kangaroo rat burrows were present along the historic railroad berm located along South Lake Road. No kit foxes or their sign were observed during the species surveys for the Project, and no historical records report San Joaquin kit fox in the vicinity. No Nelson's antelope squirrels or blunt-nosed leopard lizard were observed during the surveys for the Project, and no CNDDDB records report these species on or in the vicinity of this site. Although there is no evidence to support a determination of presence, the Tipton kangaroo rat, San Joaquin Kit fox, and blunt-nosed leopard lizard could occupy or become established within Site 3-C2.

#### *On-site Occurrence of Other Important Biological Resources*

The NWI shows Freshwater Emergent Wetlands described as PEMA and PEMC features present in a north-south orientation through the eastern half of this site (USFWS NWI 2012) (Figure 13). No hydrophilic vegetation was observed during the field survey for the Project. Hydric soils were not present. Widespread tamarisk is present, but the plants are widely scattered and low in stature, likely due to repeated past disturbance by disking. The repeated disking has eliminated any surface evidence of the blue-line drainage shown on the USGS 7.5-minute topographical quadrangle along the northwest boundary of this site (Figure 14). No other wetlands were found on this site during field surveys.

#### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

A small patch of Valley Sink Scrub, which is highly degraded through repetitive disking, is present on land adjacent to the east, and chenopod scrub habitat consisting of Valley Saltbush Scrub is present on land adjacent to the northeast (Table 13). No special status plant species were observed. No CNDDDB historical records report special status plant species or sensitive habitat communities on land adjacent to Site 3-C2. The potential exists that special status plant species, including heartscale, Lost Hills crownscale, recurved larkspur, Kern mallow, Hoover's eriastrum, Tejon poppy, San Joaquin woolly threads, and oil neststraw may be present in adjacent native habitat that is present to the north of this area.

### 3.3.4 SITE 9-C

#### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

The northern portion of this site (APN 220-050-42) is a disked field that does not contain any special status plant species or sensitive natural communities (Table 12). It is a barren field but for an occasional Russian thistle and five-hook bassia plant. The southernmost 83.25-acre portion of the site (APN 200-201-02) contains Valley Saltbush Scrub, a sensitive vegetative community. This portion of the site is dominated and thickly covered by valley saltbush and provides suitable habitat for special status wildlife species. Special status plant species that could potentially occur within this area include heartscale, Lost hills crownscale, Bakersfield smallscale (*Atriplex tularensis*), alkali mariposa lily (*Calochortus striatus*), recurved larkspur, kern mallow, Tejon poppy, hoovers eriastrum, Comanche Point layia (*Layia leucopappa*), and San Joaquin woolly threads. None of these were observed during the field surveys for the Project; however, the

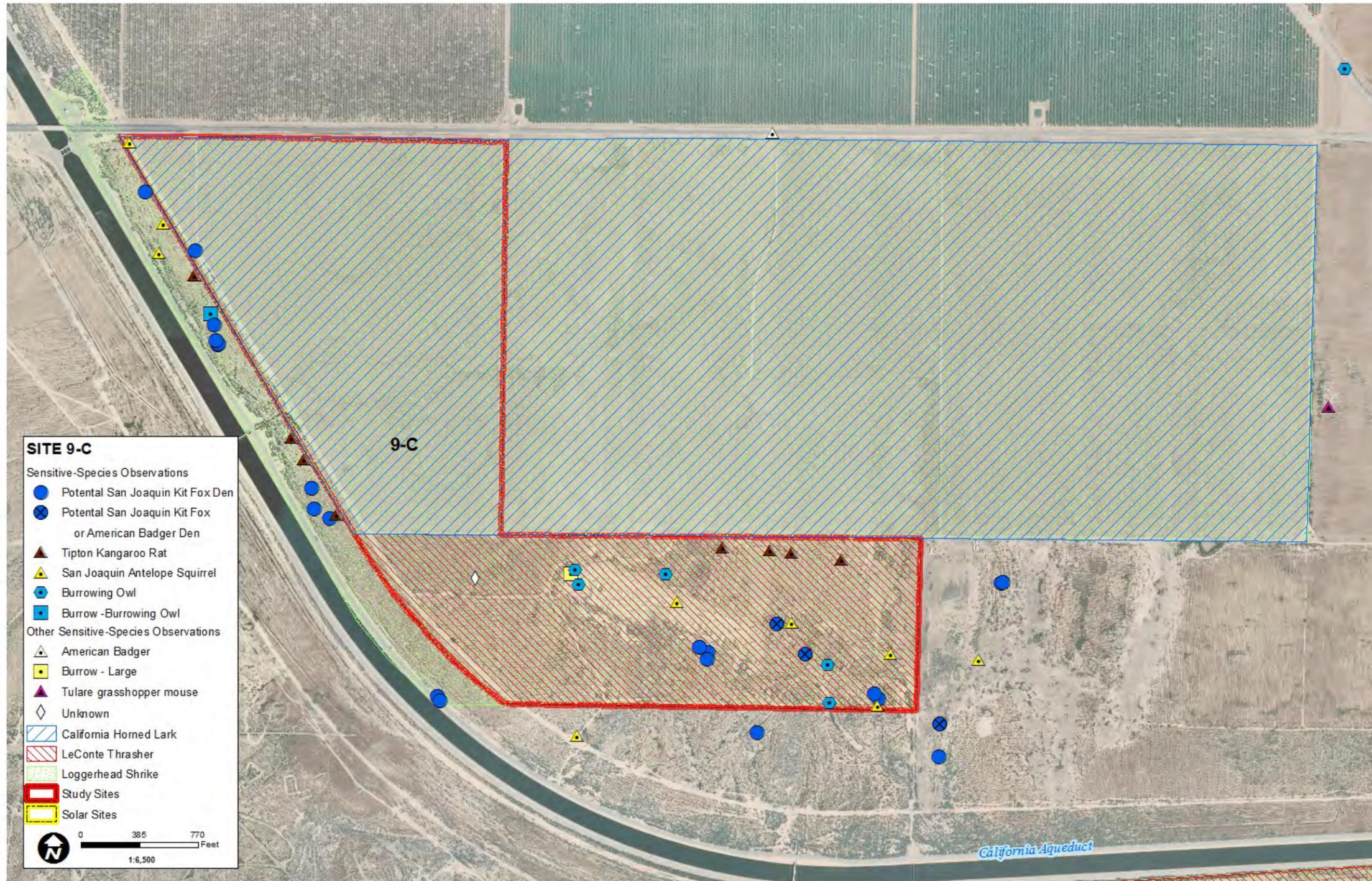
surveys were not conducted during a period when these plants would be identifiable. No CNDDDB historical records report special status plant species or sensitive habitat communities on this site.

The Tipton kangaroo rat, Nelson's antelope squirrel, and western burrowing owl were identified within native habitat on Site 9-C (Figure 18). Extensive small mammal burrows with kangaroo rat sign (tracks, scat, tail drags) were observed in the native habitat present within the 83.25-acre portion of Site 9-C, and small mammal trapping effort confirmed its presence (Figure 18). No CNDDDB historical records report Tipton kangaroo rat on the site. The closest record of the Tipton kangaroo rat is for a location approximately 0.3 miles to the west, on the west side of the California Aqueduct right-of-way (Figure 11D). Nelson's antelope squirrels were observed within the native habitat of this site (Figure 18). CNDDDB historic records report Nelson's antelope squirrel on the southwest corner of this site (Figure 11D). Five western burrowing owls were observed within the native habitat of Site 9-C (Figure 18). No CNDDDB historical records report western burrowing owl within Site 9-C; however, a record of burrowing owl is shown along and south of the site's southern boundary (Figure 11C).

No kit foxes were observed during the kit fox survey; however, several dens of the size and configuration that would qualify as potential kit fox dens were observed. No diagnostic sign of this species was observed on the site. The dens were observed in the native habitat within Site 9-C (Figure 18), but no such dens occur on the disked portions of the site. Tracks of a carnivore were observed within the disked portion of Site 9-C. On the basis of the size and pattern of the tracks, they could have been San Joaquin kit fox; however, the presence of kit foxes was not confirmed during the spotlighting and camera/track station surveys. An historical CSDDDB record of the San Joaquin kit fox overlaps a small part of the western portion of Site 9-C and the area to the west (Figure 11D).

No blunt-nosed leopard lizards were observed during the focused biological surveys for the Project, although a CNDDDB historic record reports this species in the southwest corner of this site (Figure 11B). Suitable habitat to support the San Joaquin kit fox and blunt-nosed leopard lizard exists within the native habitat of Site 9-C, and it is likely that these species occur, though none were observed.

Sightings of other special status species consist of Le Conte's thrasher, loggerhead shrike, and California horned lark (Figure 18). It is possible that Tulare grasshopper mouse, San Joaquin pocket mouse, Blainville's horned lizard, and San Joaquin whipsnake occur within the native shrubland habitat, but none of these species were identified during the focused biological surveys. Several dens of the size and configuration that would qualify as American badger dens were observed, but no diagnostic sign of this species was sighted (Figure 18). Other special status species (e.g., tricolored blackbird, golden eagle, Swainson's hawk, mountain plover, northern harrier, white-tailed kite, prairie falcon, and western mastiff bat) may occasionally overfly the site.



SPECIAL STATUS SPECIES SIGHTINGS ON AND WITHIN THE VICINITY  
OF STUDY SITE 9-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure  
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### *On-site Occurrence of Other Important Biological Resources*

No previously identified wetlands are reported on Site 9-C (USFWS NWI 2012) (Figure 13), and no potential waters of the U.S were identified on this site or within 100 feet of its perimeter during the wetland delineation that was conducted. No features that would be under the jurisdiction of the CDFW or the RWQCB were identified. Although the southern portion of this site does support some native habitat, all of the remainder of the area is disked land surrounded by agricultural land uses. The repeated diskings has eliminated all surface evidence of the three blue-line drainages shown on the USGS 7.5-minute topographical quadrangle as traversing the central portion of the site. No remnants of the historical drainages were identified. The nearest water feature to Site 9-C is the California Aqueduct, which is located approximately 280 feet west of the site and curves around to the south of it. A large culvert that channels stormwater runoff from the south across the aqueduct to the north and onto Site 9-C is located approximately 890 feet south of the site. Although the culvert is substantial in size and apparently capable of supporting large flows, the lack of hydrologic indicators suggest that such flows enter the site infrequently.

### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

One sensitive vegetative community, Valley Saltbush Scrub, is present on the land adjacent to the west and south of Site 9-C (Table 13). No special status plant species were observed within this area. No CNDDDB historical records report special status plant species or sensitive habitat communities on Site 9-C. Special status plant species that could potentially be present within this area include heartscale, Lost hills crowscale, Bakersfield smallscale, alkali mariposa lily, recurved larkspur, kern mallow, Tejon poppy, hoovers eriastrum, Comanche Point layia, and San Joaquin woolly threads.

Extensive small mammal burrows with kangaroo rat sign (tracks, scat, tail drags) were scattered throughout the habitat adjacent to the west of Site 9-C. Trapping studies indicate the Tipton kangaroo rat is present in these areas (Figure 18). Nelson's antelope squirrels were found in the native habitat adjacent to the west, south, and east of Site 9-C (Figure 18). No San Joaquin kit foxes were observed during the kit fox survey for the Project; however, several dens of the size and configuration that would qualify as potential kit fox dens were observed. The dens were in the native habitat adjacent to the west, south, and east of Site 9-C (Figure 18). No diagnostic sign of this species was observed. Active burrowing owl burrows were observed in the native habitat adjacent to the west, one of which was occupied by a burrowing owl (Figure 18). No blunt-nosed leopard lizards were observed, but the potential exists for them to be present, because a suitable habitat is present on the land adjacent to the west and south of Site 9-C, and there are extensive historical records of blunt-nosed leopard lizard occurrence in this area.

Sightings of other special status species consist of the Loggerhead shrike which was present in the adjacent native habitat, west of the site; California horned lark, which was observed in disked habitat east of Site 9-C; and Tulare grasshopper mouse, which was captured approximately 0.5 miles east of Site 9-C (Figure 18). A deceased American badger was found north of Site 9-C along the Cadet Road (Figure 18). It is possible that Blainville's horned lizard and San Joaquin whipsnake occur within the native shrubland habitat, but none were observed during the focused biological surveys for the Project. Other special status species (e.g., tricolored blackbird, golden eagle, Swainson's hawk, mountain plover, northern harrier, white-tailed kite, prairie falcon, and western mastiff bat) may occasionally overfly the site.

### 3.3.5 SITE 10-C

#### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

Site 10-C is completely disked and does not contain any sensitive vegetation communities or special status plant species. The CNDDDB records identified no special status plant species or sensitive habitat communities on the site (Table 12).

Site 10-C has no suitable habitat that would support the Tipton kangaroo rat, Nelson's antelope squirrel, blunt-nosed leopard lizard, or western burrowing owl, and none of these species were observed. The San Joaquin kit fox may occasionally visit the site, but no dens of this species were observed on the site. An historic CNDDDB record reports blunt-nosed leopard lizard immediately west of Site 10-C (Figure 11B), and a record reports burrowing owl at the western boundary of this site (Figure 11C). An historic CNDDDB record reports San Joaquin kit fox along the northern portion of Site 10-C (Figure 11D), along the California Aqueduct. The closest CNDDDB records report the closest Nelson's antelope squirrel approximately 0.6 miles northwest of the site, and the closest Tipton kangaroo rat approximately 1 mile northwest of the site (Figure 11D).

The only special status wildlife species observed on the site was California horned lark (Figure 19). It is reasonable to conclude that most special status species are absent because of the recurring disking.

#### *On-site Occurrence of Other Important Biological Resources*

No previously identified wetlands are reported on Site 10-C (USFWS NWI 2012) (Figure 13). Two isolated blue-line drainages are shown on the USGS 7.5-minute topographical quadrangle as traversing the central and western portions of the site, in a north-south orientation (Figure 14); however, any surface sign of these drainages would likely have been removed by recurring disking of the site. No wetlands or potential waters of the U.S. were identified on Site 10-C or within 100 feet of its perimeter.

#### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

A sensitive vegetative community, Valley Saltbush Scrub, which is composed of *A. polycarpa* shrubs, is present on land adjacent to the west and approximately 0.45 miles to the south of the site (Table 13). No special status plant species were observed on the adjacent land. No CNDDDB historical records report special status plant species or sensitive habitat communities on Site 10-C. Special status plant species that could potentially be present on this site include heartscale, Lost hills crowscale, Bakersfield smallscale, alkali mariposa lily, recurved larkspur, kern mallow, Tejon poppy, Hoover's eriastrum, Comanche Point layia, and San Joaquin woolly threads.

The Tipton kangaroo rat, Nelson's antelope squirrel, and western burrowing owl were identified within the native habitat adjacent to the north and west sides of Site 10-C (Figure 19). Although it is generally recognized that the Tipton kangaroo rat is absent south or west of the California Aqueduct, this area represents an exception. Within this area near the aqueduct, the Tipton kangaroo rat and the short-nosed kangaroo rat intergrade, and the animals occurring within this small region exhibit characteristics of both subspecies. The CNDDDB, along with many species

experts, consider these animals to be the Tipton kangaroo rat and worthy of protected status under state and federal law. Extensive small mammal burrows with kangaroo rat sign (tracks, scat, tail drags) were scattered throughout the native habitat adjacent to the south and west of Site 10-C, and animals identified as Tipton kangaroo rats were captured within the Valley Saltbush Scrub habitat approximately 550 feet southwest of the site (Figure 19).

Nelson's antelope squirrels were observed along the southern and western boundaries, and within the native habitat located approximately 0.45 miles south of Site 10-C (Figure 19).

Western burrowing owl was observed perched on a fence post located along the northern perimeter of the site (see Figure 19); however, no burrowing owl burrows were found. Active burrowing owl burrows and burrowing owls were observed approximately 0.45 miles south of this site, within the native Chenopod scrub habitat (Figure 19).

San Joaquin kit foxes were not detected during the spotlighting and camera/track station surveys. Several dens of the size and configuration that would qualify as potential kit fox were observed on lands adjacent to the site, but diagnostic sign of this species was not present. The dens were in the native habitat located to the west and north of this site, and in the native habitat located approximately 0.45 miles to the south (Figure 19). San Joaquin kit fox may den and be present within the native habitat on adjacent lands.

No blunt-nosed leopard lizards were observed during the focused biological surveys for the Project, but it is possible that this species may occur within the adjacent native shrubland habitat.

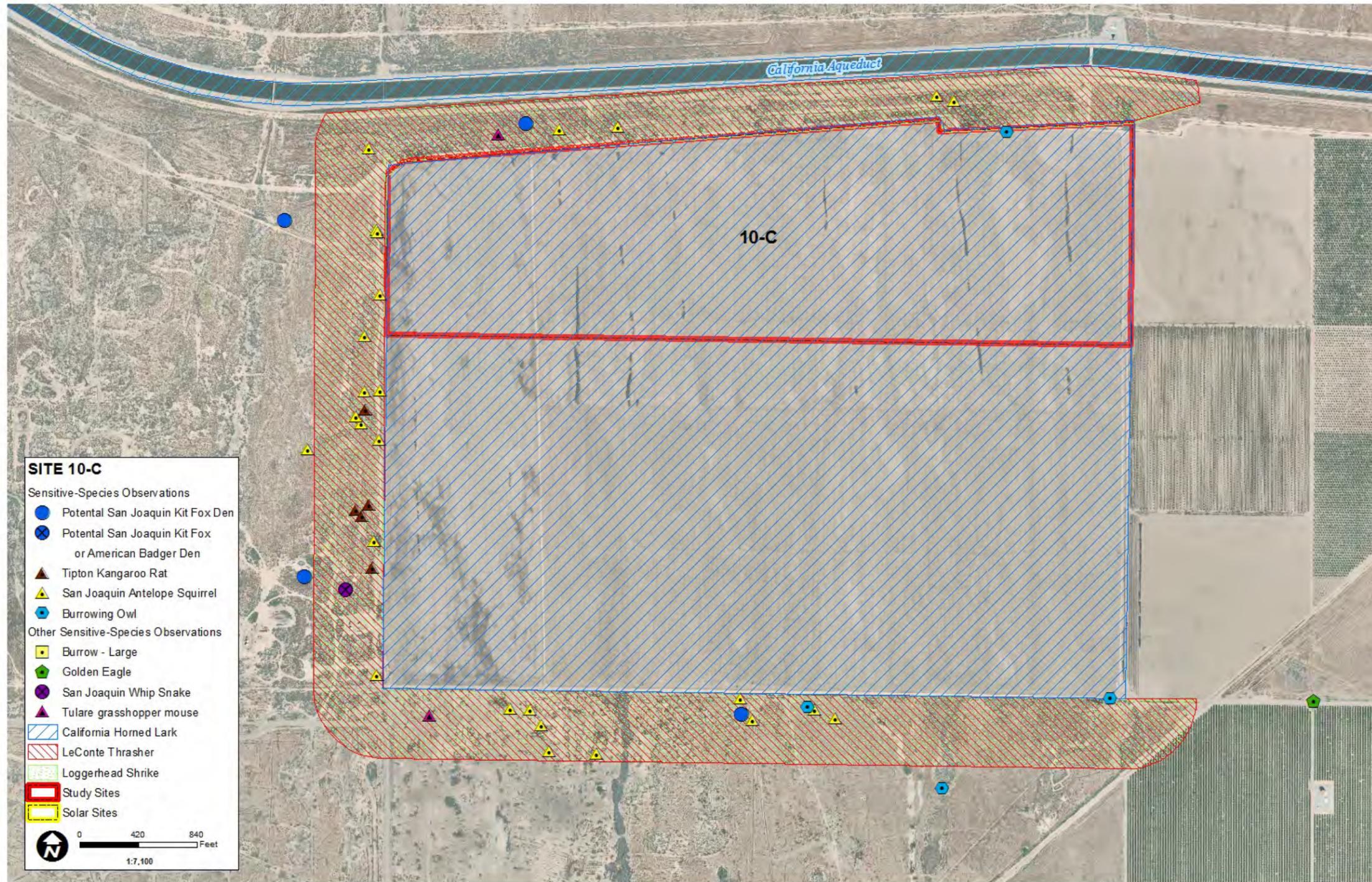
Sightings of other special status wildlife species consist of Tulare grasshopper mice, which were captured in the native habitat adjacent to the north and approximately 0.45 miles south of Site 10-C; San Joaquin whipsnake, which was observed in the native habitat to the southwest of the site; and golden eagle, which was observed to the southeast along the citrus orchard (Figure 19). The sightings of other special status species throughout the native habitat on the adjacent land consisted of loggerhead shrike and Le Conte's thrasher (Figure 19).

### 3.3.6 SITE 17-C

#### *On-site Presence of Sensitive Vegetation Communities and Special Status Species*

Site 17-C is in a relatively natural state, and has never been actively farmed or tilled. Valley Saltbush Scrub, a sensitive habitat community, is present over a large portion of the site (Table 12). One special status plant species, vinegar weed (*Trichostoma ovatum*), which is a California Native Plant Society list 1B plant, was observed on this site. Other species special status plant species that could potentially be present include heartscale, Bakersfield smallscale, recurved larkspur, Tejon poppy, Hoover's eriastrum, and San Joaquin woolly threads. The CNDDDB does not identify any records of special status plant species or sensitive habitat communities for this site.

Site 17-C has suitable habitat that would support San Joaquin kit fox, Nelson's antelope squirrel, blunt-nosed leopard lizard, and western burrowing owl, but none of these species were observed during the surveys for the Project. CNDDDB records report no historic occurrence of these species on the site; however, these species are located in the vicinity (Figures 11B, 11C, and 11D). The



SPECIAL STATUS SPECIES SIGHTINGS ON AND WITHIN THE VICINITY OF STUDY SITE 10-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT, KERN COUNTY, CALIFORNIA

Figure 19

southwestern corner of this site is within the area designated as a “core” area for the San Joaquin kit fox by the most recent USFWS five-year status report. Multiple CNDDDB historical records report San Joaquin kit fox to the south and west of this site, with the closest record located approximately 0.5 miles to the south of it (Figure 11D). Suitable habitat that would support San Joaquin kit foxes exists within this site and kit foxes are likely to be present. Additionally, Site 17-C provides a useful corridor for the east-west movements of kit fox.

Two CNDDDB historical records report Nelson’s antelope squirrel; one is for a location 375 feet northeast and the other is for a location 0.6 miles south of this site (Figure 11D). Suitable habitat for this species exists on the site and it is likely that they are present.

Multiple CNDDDB historical records report blunt-nosed leopard lizard to the south and west of this site, with the closest record located 0.3 miles to the south (Figure 11B). The potential exists that blunt-nosed leopard lizard might be present on this site.

CNDDDB historical records report western burrowing owl north and west of this site, but the closest record occurs approximately 0.4 miles to the southwest (Figure 11C). Although no burrowing owls or burrowing owl burrows were observed during the field survey for the Project, this area occurs within the species range, and burrowing owls could be present. Site 17-C is located outside of the known range of the Tipton kangaroo rat. The closest historical record is located approximately 4.5 miles to the northwest of this area (Figure 11D).

The only special status wildlife species observed on Site 17-C was the loggerhead shrike. Burrows of the kangaroo rat, presumably Heermann’s kangaroo rat (*Dipodomys heermanni*), were found throughout this area. It is anticipated that Tulare grasshopper mouse and San Joaquin pocket mouse may be present, since suitable habitat capable of supporting these species is present.

#### *On-site Occurrence of Other Important Biological Resources*

No previously identified wetlands are reported on Site 17-C (USFWS NWI 2012) (Figure 13). Four blue-line drainages are shown on the USGS 7.5-minute topographical quadrangle (Figure 14). Two primary washes are within the drainage complex. These washes are sometimes as wide as 15 feet and as deep as 10 feet. Within these washes, there is evidence of severe gully erosion and past flash flooding. No wetland delineation survey was conducted.

#### *Presence of Sensitive Vegetation Communities and Special Status Species on Adjacent Land*

No CNDDDB historical records report special status plant species or sensitive habitat communities on lands adjacent to this site (Table 13). Surveys on adjacent areas were not conducted.

San Joaquin kit foxes currently occupy habitat to the west of the area, and to the south of the site is the Windwolves Preserve (Figure 6). CNDDDB historic records report western burrowing owl, Nelson’s antelope squirrel, and blunt-nosed leopard lizards in the vicinity of the site (Figures 11B, 11C, and 11D), and there is suitable habitat to support these species adjacent to the south and west of the site.

**Table 12**  
**Occurrence of Sensitive Habitat Communities, Covered Species, and Other Sensitive Species**  
**on Study Sites within the Maricopa Sun Solar Complex Project**

<b>Study Site</b>	<b>1-C</b>	<b>3-C</b>	<b>3-C2</b>	<b>9-C</b>	<b>10-C</b>	<b>17-C</b>
<b>Sensitive Habitat Communities on Study Sites</b>						
Valley Saltbush Scrub	X			X*		X
Valley Sink Scrub						
<b>Covered Species Present on Study Sites</b>						
San Joaquin kit fox				S*		X**
Tipton kangaroo rat	X			X*		
Nelson's antelope squirrel				X*		
Blunt-nosed leopard lizard						
Burrowing owl				X*		
<b>Historic Occurrence of Covered Species on Study Sites</b>						
San Joaquin kit fox				X		
Tipton kangaroo rat	X	X	X			
Nelson's antelope squirrel				X		
Blunt-nosed leopard lizard				X		
Burrowing owl			X		X	
<b>Occurrence of Other Sensitive Species on Study Sites</b>						
American badger				S**		
Tulare grasshopper mouse						
California coast horned lizard						
San Joaquin whipsnake						
Northern harrier						
Golden eagle						
Le Conte's thrasher				X*		
Loggerhead shrike				X		
California horned lark				X	X	
X species present	* species present only within the native habitat					
S species sign	** Assumed to be present based upon habitat and nearby records.					

**Table 13**  
**Occurrence of Sensitive Habitat Communities, Covered Species, and Other Sensitive Species**  
**on Land Adjacent to Study Sites within the Maricopa Sun Solar Complex Project**

<b>Study Site</b>	<b>1-C</b>	<b>3-C</b>	<b>3-C2</b>	<b>9-C</b>	<b>10-C</b>	<b>17-C</b>
<b>Sensitive Habitat Communities on Adjacent Land</b>						
Valley Saltbush Scrub	X	X	X	X	X	
Valley Sink Scrub	X	X	X			
<b>Covered Species Present on Adjacent Land</b>						
San Joaquin kit fox	S			S	S	X**
Tipton kangaroo rat	X	X		X	X	
Nelson's antelope squirrel	X			X	X	X**
Blunt-nosed leopard lizard		X				X**
Burrowing owl	X	X	X	S	X	X**
<b>Historic Occurrence of Covered Species on Adjacent Land</b>						
San Joaquin kit fox	X	X		X	X	X
Tipton kangaroo rat	X	X	X	X	X	
Nelson's antelope squirrel	X			X	X	X
Blunt-nosed leopard lizard	X			X	X	X
Burrowing owl burrow	X	X	X	X	X	X
<b>Other Sensitive Species Present on Adjacent Land</b>						
American badger				X		X**
Tulare grasshopper mouse				X	X	X**
California coast horned lizard		S				
San Joaquin whipsnake					X	
Northern harrier	X	X	X			
Golden eagle					X	
Le Conte's thrasher					X	
Loggerhead shrike	X	X		X	X	
California horned lark				X		
X	species present					
S	species sign					

\*\* Presence assumed based upon historic records and presence of suitable habitat.

## 4.0 DISCUSSION

This section discusses the suitability of the proposed study sites as conservation lands for the Covered Species that are addressed in the Maricopa Sun Solar Complex Habitat Conservation Plan. The Covered Species are those that the USFWS or CDFW currently list or may list during the permit period, and which may be subject to “take” as defined by the FESA (Table 14).

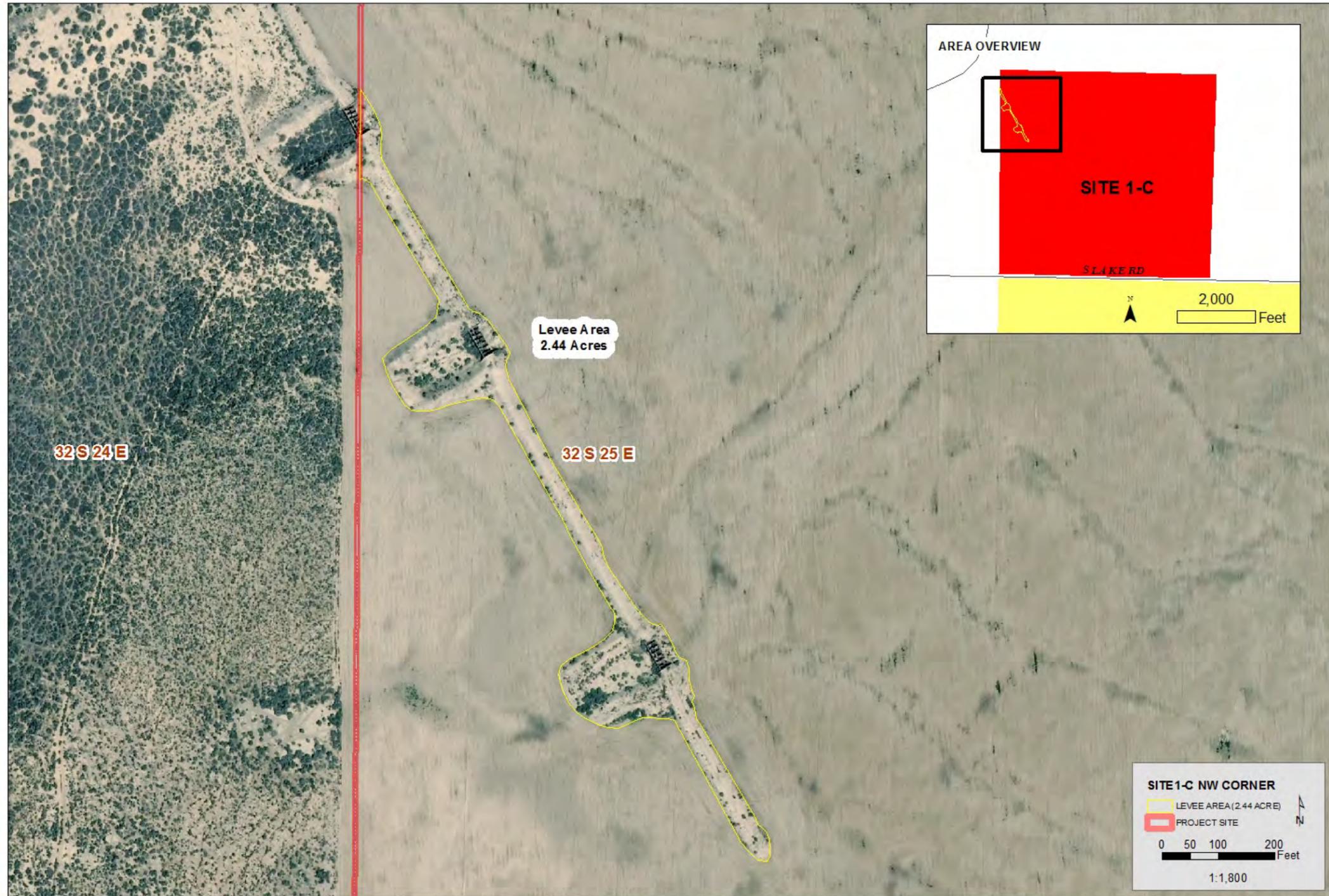
**Table 14**  
**Species Covered by the Maricopa Sun HCP and ITP**

Common Name	Scientific Name	Federal Status	State Status	Other <sup>1</sup>
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	-
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	FE	SE	-
Nelson’s antelope squirrel	<i>Ammospermophilus nelsoni</i>	-	ST	-
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE	SE, FP	-
Burrowing owl	<i>Athene cunicularia</i>	-	CSC	MBTA

### 4.1 Site 1-C

Site 1-C would provide compensatory mitigation for the San Joaquin kit fox, Tipton kangaroo rat, and western burrowing owl (Table 15).

- **San Joaquin kit fox:** Site 1-C provides 656.6 acres of potential compensatory mitigation for San Joaquin kit foxes. Although this site was not identified to be used by kit foxes as breeding or foraging habitat, it is of the same general quality as the proposed Solar Sites (being disked on a recurring basis), and it is potentially useful as dispersal habitat. Potential kit fox dens were located along the western and northern boundaries of Site 1-C, and a kit fox skull was found along the western boundary (Figure 15). CNDDDB records show that San Joaquin kit foxes occupied the area adjacent to the north of this site (Figure 11D). This species likely uses Site 1-C for movement and foraging, although foraging was not documented and foraging opportunities are limited. With site management actions and site enhancements, Site 1-C will likely provide conservation benefits to San Joaquin kit foxes.
- **Tipton kangaroo rats:** Site 1-C provides 2.44 acres of currently occupied Tipton kangaroo rat habitat. This acreage would provide compensatory mitigation for Tipton kangaroo rats. Tipton kangaroo rats are known to occur within the native habitat along the levee located in the northwest corner of the site (Figure 20). CNDDDB records show that the southernmost portion of this site was once occupied by the Tipton kangaroo rat (Figure 11D), but they are no longer present there. With implementation of site management actions and site enhancements, Site 1-C will likely provide additional conservation benefits for the Tipton kangaroo rat.



LOCATION AND SIZE OF LEVEE ON STUDY SITE 1-C OF THE MARICOPA SUN SOLAR COMPLEX PROJECT,  
KERN COUNTY, CALIFORNIA

Figure  
20

- **Western burrowing owl:** Site 1-C provides 656.6 acres of compensatory mitigation for western burrowing owls that is equal in quality to the lands proposed for solar development. Although, this species was not identified on Site 1-C, burrowing owls were observed on other lands with disked habitat (e.g. Solar Site 3-S; Figure 17) providing evidence that disked lands are used by burrowing owls, at least for perching and a limited degree of foraging. Sightings of burrowing owls were recorded in the native habitat adjacent to the west and north of the site, indicating that they are present in the area and could increase their use of the site once disking is halted. CNDDDB records report burrowing owls on the adjacent land, approximately 0.15 mile to the west of Site 1-C (Figure 11C). Habitat enhancements on the site are expected to increase habitat values for western burrowing owls, and the numbers of western burrowing owls and their utilization of Site 1-C will likely increase.
- **Nelson’s antelope squirrel:** Site 1-C does not provide compensatory mitigation for this species. Although there is suitable habitat along the levee in the northwest corner, no Nelson’s antelope squirrels were observed at this location. Nelson’s antelope squirrels were observed near this site, and it is likely that cessation of disking and implementation of enhancements and management of this site will provide habitat for this species in the future.
- **Blunt-nosed leopard lizard:** Site 1-C does not provide compensatory mitigation for this species. Although there is a suitable habitat along the levee in the northwest, no blunt-nosed leopard lizards were identified. With the cessation of disking and implementation of enhancements and management, this site will likely provide habitat for this species in the future.

## 4.2 Site 3-C

Site 3-C provides compensatory mitigation for San Joaquin kit fox and western burrowing owl (Table 15).

- **San Joaquin kit fox:** Site 3-C provides 80.4 acres of compensatory mitigation for San Joaquin kit foxes. Although this site was not identified to be used by kit foxes as breeding or foraging habitat, it is of the same quality as the proposed Solar Sites and is considered suitable as dispersal habitat. Implementation of management actions and enhancements on the site will increase habitat values for kit foxes over time, and kit fox use of this site will likely increase.
- **Western burrowing owl:** Site 3-C provides 80.4 acres of compensatory mitigation for western burrowing owls. Although, this species was not identified on Site 3-C, burrowing owls were observed to the east within the disked portion of Solar Site 3-S (Figure 17) and in the native habitat located north, west, and southwest of the site. CNDDDB records show burrowing owls located approximately 0.45 miles to the southwest and south of the study site (Figure 11C). Habitat enhancements on this site will increase habitat values for western burrowing owl, and the numbers of burrowing owls and their use of this site will likely increase.

- **Tipton kangaroo rat:** Site 3-C does not provide compensatory mitigation for this species, because the Tipton kangaroo rat does not occur on this site, nor does the site have suitable habitat for it. However, the Tipton kangaroo rat does occur nearby, and it is likely that the cessation of disking, and implementation of enhancements and management of this site will provide habitat for this species in the future.
- **Nelson’s antelope squirrel:** Site 3-C does not provide compensatory mitigation for this species, because the Nelson’s antelope squirrel does not occur on this site, nor does this site have suitable habitat for it. However, it is likely that the cessation of disking, and implementation of enhancements and management of this site would provide habitat for this species in the future.
- **Blunt-nosed leopard lizard:** Site 3-C does not provide compensatory mitigation for this species, because the blunt-nosed leopard lizard does not occur on this site, nor does this site have suitable habitat for it. However, the blunt-nosed leopard lizard is known to occur nearby, and it is likely that the cessation of disking, and implementation of enhancements and management of this site will provide habitat for this species in the future.

### 4.3 Site 3-C2

Site 3-C2 will provide compensatory mitigation for San Joaquin kit fox and western burrowing owl (Table 15).

- **San Joaquin kit fox:** Site 3-C2 provides 152.9 acres of compensatory mitigation for San Joaquin kit foxes. Although this site was not identified to be used by kit foxes as breeding or foraging habitat, it is of the same quality as the proposed Solar Sites and is considered suitable as dispersal habitat. Potential denning habitat is present, and kit foxes will likely use Site 3-C2 for movement and foraging, although foraging was not documented. The implementation of management actions and enhancements on the site will increase habitat values for kit foxes over time, and the use of this site by kit foxes will likely increase.
- **Western burrowing owl:** Site 3-C2 provides 152.9 acres of compensatory mitigation for western burrowing owls. The burrowing owl was observed on the site, and to the north of the site within the disked portion of Solar Site 3-S. Burrowing owl were also present in the habitat adjacent to the south of Site 3-C2 (Figure 17). CNDDDB records confirm historical occurrence of western burrowing owl along the eastern boundary and to the east of this site (Figure 11C). Habitat enhancements on this site will increase habitat values for western burrowing owl, and the numbers of burrowing owls and their use of this site will likely increase.
- **Tipton kangaroo rat:** Site 3-C2 does not provide compensatory mitigation for this species. Suitable habitat is present along the levee located along the northwestern boundary, but presence of Tipton kangaroo rats was not confirmed during the small mammal trapping studies. CNDDDB records report Tipton kangaroo rats in this area. Habitat enhancements on this site will increase habitat values for the Tipton kangaroo rat and the potential exist that the species will use this site in the future.

- **Nelson's antelope squirrel:** Site 3-C2 does not provide compensatory mitigation for this species, because the Nelson's antelope squirrel does not occur on this site, and the habitat present is marginal for this species. Habitat enhancements on this site may increase habitat values for the Nelson's antelope squirrel, and the potential exists that the species will use this site in the future.
- **Blunt-nosed leopard lizard:** Site 3-C2 does not provide compensatory mitigation for this species, because the blunt-nosed leopard lizard does not occur on this site. However, the blunt-nosed leopard lizard is known to occur nearby, and the implementation of enhancements and management of this site may increase habitat values for this species in the future.

#### 4.4 Site 9-C

Site 9-C will provide compensatory mitigation for San Joaquin kit fox, Tipton kangaroo rat, Nelson's antelope squirrel, blunt-nosed leopard lizard, and western burrowing owl (Table 15).

- **San Joaquin kit fox:** Site 9-C provides 180.6 acres of compensatory mitigation for San Joaquin kit fox. Although this site was not identified to be used by kit foxes as breeding or foraging habitat, most of it is of the same quality as the proposed Solar Sites and is considered suitable as dispersal habitat. Potential denning habitat is present within the 83.25 acres of native habitat that is present in the southern portion of Site 9-C, and within the habitat adjacent to the west and south. Potential kit fox dens were observed within these areas, and tracks of a carnivore were observed within the disked portion of Site 9-C. On the basis of the size and pattern, the tracks could be San Joaquin kit fox. Site 9-C borders native habitat that occurs along the right-of-way of the California Aqueduct, which provides a viable movement corridor for a wide variety of special status species, including kit foxes. The implementation of management actions and enhancements on the site will increase habitat values for kit foxes over time, and kit fox use of this site will likely increase.
- **Tipton Kangaroo rat:** Site 9-C provides 83.25 acres of compensatory mitigation for Tipton kangaroo rat. Tipton kangaroo rats are known to be present with the native habitat of Site 9-C and in the native habitat adjacent to the west. Although the disked portion of Site 9-C does not currently provide suitable habitat for this species, habitat enhancements on this area will increase habitat values for the Tipton kangaroo rat, increasing the potential for the species to use this area in the future.
- **Nelson's antelope squirrel:** Site 9-C provides 83.25 acres of compensatory mitigation for Nelson's antelope squirrel. Nelson's antelope squirrels are known to be present within the native habitat of Site 9-C, and in the habitat adjacent to the west, south, and east. Although the disked portion of Site 9-C does not currently provide suitable habitat for this species, management and habitat enhancements on this area will increase habitat values for the Nelson's antelope squirrel, increasing the potential for the species to use this area in the future.

- **Western burrowing owl:** Site 9-C provides 180.6 acres of compensatory mitigation for western burrowing owls. Western burrowing owls are known to be present within the 83.25 acres of native habitat of Site 9-C. Western burrowing owls were not identified within the disked portion of Site 9-C, but they were observed on other lands containing disked habitat (e.g., Solar Site 3-S; Figure 17), providing evidence that disked lands are used to some extent by burrowing owls. Therefore, the disked area of Site 9-C provides an additional 103.75 acres of compensatory mitigation that is of equal quality to that habitat occurring on the Solar Sites. The disked portion of Site 9-C is surrounded on two sides by native habitat where Western burrowing owls are known to be present. Burrowing owls will likely increase their use of the disked portion of Site 9-C following management actions and habitat enhancements.
- **Blunt-nosed leopard lizard:** Site 9-C provides 83.25 acres of compensatory mitigation for blunt-nosed leopard lizards. Suitable habitat is present within the native habitat on the southern portion of this site. Extensive historical records report blunt-nosed leopard lizard contiguous with and on the southwest corner of this site (Figure 11B). On the basis of these reports, it is reasonable to assume that blunt-nosed leopard lizard is present on the site, although none were observed during the site surveys. Following habitat enhancements and management, the disked portions of this site may provide additional habitat for this species in the future.

#### 4.5 Site 10-C

Site 10-C provides compensatory mitigation for San Joaquin kit fox and western burrowing owl (Table 15).

- **San Joaquin kit fox:** Site 10-C provides 176.2 acres of compensatory mitigation for San Joaquin kit fox. Although the San Joaquin kit fox was not identified as using Site 10-C as breeding or foraging habitat during the field surveys for the Project, it is of the same quality as the proposed Solar Sites and is considered suitable as dispersal habitat. Potential denning habitat is present within the native habitat adjacent to the north and west, and within the native habitat located approximately 0.45 miles to the south. Potential kit fox dens were observed within these locations. Site 10-C borders native habitat along the right-of-way of the California Aqueduct, which provides a viable movement corridor for a wide variety of special status species, including kit foxes. The implementation of management actions and enhancements on the site will increase habitat values for kit foxes over time, and the use of this site by kit foxes will likely increase.
- **Western burrowing owl:** Site 10-C provides 176.2 acres of compensatory mitigation for western burrowing owls. Western burrowing owls were not identified within this site, but they were observed on other lands with disked habitat (e.g., Solar Site 3-S; Figure 17), providing evidence that disked lands are used to some extent by burrowing owls. Therefore, this site provides compensatory mitigation that is of equal quality to the habitat on the Solar Sites. Burrowing owls were observed in the native habitat north and south of the site, and a CNDDDB historic record reports western burrowing owl west of, and in the western portion of Site 10-C (Figure 11C). The implementation of management actions and enhancements on

the site will increase habitat values for the western burrowing owl over time and the use of this site by the burrowing owl will likely increase.

- **Tipton kangaroo rat:** Site 10-C does not provide compensatory mitigation for the Tipton kangaroo rat, because there is no suitable habitat on the site that would support this species. This species is not present nearby. However, implementation of management actions and enhancements on Site 10-C may result in the Tipton kangaroo rat becoming established on the site in the future.
- **Nelson’s antelope squirrel:** Site 10-C does not provide compensatory mitigation for Nelson’s antelope squirrel, because there is no suitable habitat on the site that would support this species. The Nelson’s antelope squirrel is not present nearby. However, implementation of management actions and enhancements on the site may result in this species becoming established on the site in the future.
- **Blunt-nosed leopard lizard:** Site 10-C does not provide compensatory mitigation for blunt-nosed leopard lizard, because there is no suitable habitat on the site that would support this species. This species does occur nearby. However, implementation of management actions and enhancements on the site may result in the blunt-nosed leopard lizard becoming established on the site in the future.

#### 4.6 Site 17-C

Site 17-C provides compensatory mitigation for the San Joaquin kit fox, western burrowing owl, Nelson’s antelope squirrel, and blunt-nosed leopard lizard (Table 15).

- **San Joaquin kit fox:** Site 17-C provides 647.7 acres of compensatory mitigation for San Joaquin kit fox. Although the San Joaquin kit fox was not identified as using Site 17-C, suitable habitat is present that would support the San Joaquin kit fox. Historic records report the species nearby, a portion of Site 17-C is “core” habitat area, and a designated linkage corridor is located south of the site. The San Joaquin kit fox is likely to be present on this site and the site provides a higher value for the San Joaquin kit fox than the dispersal habitat on the proposed Solar Sites. Habitat management on this site may, over time, increase habitat values for San Joaquin kit fox.
- **Western burrowing owl:** Site 17-C provides 647.7 acres of compensatory mitigation for western burrowing owls. Although the western burrowing owl was not identified on the site during preliminary surveys, suitable foraging and breeding habitat is present that would support this species, and burrowing owls are likely to be present. CNDDDB records report western burrowing owl north and west of this site, but the closest record is approximately 0.4 miles southwest of the site (Figure 11C). Habitat management on this site may, over time, increase habitat values for western burrowing owls.
- **Nelson’s antelope squirrel:** Site 17-C provides 647.7 acres of compensatory mitigation for the Nelson’s antelope squirrel. Although the Nelson’s antelope squirrel was not identified on the site, suitable habitat is present that would support this species, and the Nelson’s antelope

squirrel is likely to be present. Two CNDDDB historical records report Nelson’s antelope squirrel: one is 375 feet northeast and the other is 0.6 miles south of the site (Figure 11D). Habitat management on this site may, over time, increase habitat values for this species.

- **Blunt-nosed leopard lizard:** Site 17-C provides 647.7 acres of compensatory mitigation for the blunt-nosed leopard lizard. The blunt-nosed leopard lizard was not identified on the site, however, habitat suitable to support this species is present and the site has not undergone disturbances that would have eliminated the leopard lizard; records report this species nearby, and the site is surrounded on two sides by habitat that is suitable to support this species. It is reasonable to conclude that the blunt-nosed leopard lizard is likely to occur on this site. Multiple historical records report blunt-nosed leopard lizard to the south and west, with the closest record located 0.3 miles to the south (see Figure 11B). Habitat management through grazing on this site will maintain habitat values for this species.
- **Tipton kangaroo rat:** Site 17-C does not provide compensatory mitigation for Tipton kangaroo rat. This site is outside of the species range and has no value for this species.

**Table 15**  
**Summary of Compensatory Mitigation Acreages for Covered Species on Study Sites,**  
**Maricopa Sun Solar Complex Project**

Study Site	1-C	3-C	3-C2	9-C	10-C	17-C	Total
<b>Compensatory Mitigation (acres)</b>							
San Joaquin kit fox	656.6	80.4	152.9	180.6	176.2	647.7	<b>1,894.4</b>
Tipton kangaroo rat	2.44	0	0	83.25	0	0	<b>85.69</b>
Nelson’s antelope squirrel	0	0	0	83.25	0	647.7	<b>730.95</b>
Blunt-nosed leopard lizard	0	0	0	83.25	0	647.7	<b>730.95</b>
Western burrowing owl	656.6	80.4	152.9	180.6	176.2	647.7	<b>1,894.4</b>

## 5.0 CONCLUSION

The proposed conservation sites provide conservation benefits for all of the Maricopa Sun Solar Project’s Covered Species; i.e., the San Joaquin kit fox, Tipton kangaroo rat, Nelson’s antelope squirrel, blunt-nosed leopard lizard, and western burrowing owl. These sites currently provide habitat that is equal or higher in quality than the habitat on the proposed Solar Sites. These sites provide 1,894.4 acres of San Joaquin kit fox habitat, 85.69 acres of Tipton kangaroo rat habitat, 730.95 acres of Nelson’s antelope squirrel habitat, 730.95 acres of blunt-nosed leopard lizard habitat, and 1,894.4 acres of western burrowing owl habitat.

The compensatory mitigation acreage provided by these lands exceeds the acreage needed for some species, but does not meet the compensatory requirements for other species. The solar projects will not be built on lands that are occupied by the blunt-nosed leopard lizard, Nelson’s

antelope squirrel, or Tipton kangaroo rat; therefore, no compensatory mitigation lands are needed for these species.

The conservation of 730.95 acres of blunt-nosed leopard lizard habitat, 85.69 acres of Tipton kangaroo rat habitat, and 730.95 acres of Nelson's antelope squirrel habitat exceeds the acreage needed. The 1,894.4 acres of San Joaquin kit fox and western burrowing owl habitat that would be provided by the conservation of these sites do not meet the compensatory mitigation needs for these species, even though much of the lands proposed for mitigation exceed the quality of the habitat that would be lost to solar development. However, additional project mitigation will be provided, including establishment of managed movement corridors among the Solar Sites, and permanent conservation of all Solar Site lands once the solar project is decommissioned. In combination, these would meet the conservation needs of the project.

Many of the proposed conservation sites are currently disked. The cessation of disking, habitat enhancements, and active management of these sites are likely to improve the habitat value of these sites over time, leading to increased conservation benefits. Although the actual benefits that might be realized are untested and unknown, the potential exists for these sites to be of greater conservation value than is currently available.

A long-term monitoring program is an integral component of the Maricopa Sun Solar Project. The monitoring program will drive the implementation of management actions through an adaptive management evaluation process, and provide continuing information on the recovery of these conservation lands and the value of the lands in providing habitat for the Covered Species. This continuous monitoring will provide assurances that the conservation objectives and goals will be met throughout the life of the Project.

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