APPENDIX D

Biological Resources Report

Prepared by

Live Oak Associates

October 2017

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

WESTLANDS SOLAR PARK MASTER PLAN AND WSP GEN-TIE CORRIDORS PLAN BIOLOGICAL ASSESSMENT KINGS COUNTY, CALIFORNIA

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EXECUTIVE SUMMARY

Live Oak Associates, Inc., conducted an investigation of the biological resources of the Westlands Solar Park (WSP) Master Plan area ("Plan Area") in Kings County, and the associated Gen-Tie Corridors extending into Fresno County, California, and evaluated likely impacts to such resources resulting from development of large scale photo-voltaic solar energy projects. The following report is a programmatic-level analysis of impacts to these resources from future projects potentially constructed. The 21,000-acre Plan Area is located in western Kings County approximately two miles north of Kettleman City and eight miles southwest of the City of Lemoore. In 2010, 2011, 2012, 2013, 2014, and 2015, Live Oak Associates (LOA) conducted multiple spring and summer surveys over the Plan Area for biotic habitats, the plants and animals occurring in those habitats, and significant habitat values that may be protected by state and federal law. The Gen-Tie Corridors consist of two transmission corridors connecting the WSP Plan Area to the Gates Substation approximately 11.5 miles west.

The Plan Area and Gen-Tie Corridors consist of agricultural lands within a region dominated by similar agricultural lands. Habitats/land uses identified within the Plan Area included cultivated fields, fallowed and pastured fields, canals/aquatic, and off-site tailwater pond. The WSP Plan Area and Gen-Tie Corridors do not provide suitable habitat for locally occurring special-status plant or animal species except for burrowing owls and foraging habitat for Swainson's hawks. However, a number of special status animal species may occur onsite. Suitable habitat was found for sixteen special status animal species that potentially occur as regular foragers or residents of the area. These include the western pond turtle, San Joaquin whipsnake, western snowy plover, Swainson's hawk, northern harrier, white-tailed kite, mountain plover, white-faced ibis, burrowing owl, loggerhead shrike, tricolored blackbird, Townsend's big-eared bat, pallid bat, California mastiff bat, San Joaquin kit fox, and American badger. Additional impacts to Swainson's hawks will be mitigated through avoidance of active nests found during required preconstruction surveys; and if active nests are found onsite or on adjacent lands, additional mitigation for loss of habitat may be required. Similar avoidance and preconstruction surveys will reduce impacts to burrowing owls, raptors, loggerhead shrike, and other nesting birds protected by the federal Migratory Bird Treaty Act. While there are no reported sightings of San Joaquin kit fox within or near the Plan Area (although there are some reported sightings along the California Aqueduct from the early 1980s), and no evidence of kit fox was found during LOA's field surveys, impacts to kit fox are potentially significant. Prior to the construction of each solar development within WSP, preconstruction surveys will be conducted. If kit fox are found, additional surveys and compensation strategy will be designed and implemented. All WSP solar projects will adhere to the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance*. Preconstruction surveys and avoidance measures will reduce impacts to American badgers from direct construction related mortality to a less-than-significant level. Impacts to wildlife movements and movement corridors will be minimized through the planned retention of canals as well as the construction of wildlife-friendly fencing. Waters of the U.S. are likely absent from the Plan Area and Gen-Tie Corridors. However, in the absence of a U.S. Army Corps of Engineers determination of the status of onsite waters, actual impacts to Potential Waters of Waters the U.S. are unknown at this time.

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 PROJECT DESCRIPTION 1
1.2 REPORT OBJECTIVES 2
1.3 STUDY METHODOLOGY 5

2 EXISTING CONDITIONS 7
2.1 REGIONAL SETTING 7
2.2 PROJECT SITE 8
2.3 BIOTIC HABITATS/LAND USES 10
2.3.1 Fallow/Pasture/Barren/Shrubland 13
2.3.2 Irrigated Fields 14
2.3.3 Orchard/Vineyard 16
2.3.4 Tailwater Pond 16
2.3.5 Canal/Aquatic 18
2.3.6 Developed 20
2.4 WILDLIFE MOVEMENT CORRIDORS 20
2.5 SPECIAL STATUS PLANTS AND ANIMALS 21
2.6 ENDANGERED, THREATENED, OR SPECIAL STATUS ANIMAL SPECIES MERITING FURTHER DISCUSSION 35
2.6.1 Western Pond Turtle (Actinemys marmorata). 35
2.6.2 Blunt-Nosed Leopard Lizard (Gambelia silus). 35
2.6.3 Giant Garter Snake (Thamnophis gigas). 36
2.6.4 Swainson's Hawk (Buteo swainsoni). 38
2.6.5 Burrowing Owl (Athene cunicularia). 41
2.6.6 San Joaquin Kit Fox (Vulpes macrotus mutica). 43
2.7 JURISDICTIONAL WATERS 45

3 IMPACTS AND MITIGATIONS 47
3.1 SIGNIFICANCE CRITERIA 47
3.2 RELEVANT GOALS, POLICIES, AND LAWS 48
3.2.1 Threatened and Endangered Species 48
3.2.2 Migratory Birds 49
3.2.3 Birds of Prey 49
3.2.4 Wetlands and Other Jurisdictional Waters 49
3.2.5 Local Policies or Habitat Conservation Plans 52
3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION 52
3.3.1 Loss of Habitat for Special Status Plants 53
3.3.2 Loss of Habitat for Special Status Animals 53
3.3.3 Disturbance to Active Raptor and Migratory Bird Nests 55
3.3.4 Impacts to San Joaquin Kit Fox 56
3.3.5 Impacts to American Badgers 58
3.3.6 Impacts to Nesting Swainson's Hawks 60
3.3.7 Impacts to Burrowing Owls 63
3.3.8 Impacts to Wildlife Movement Corridors 68

3.3.9 Disturbance to Native Wildlife Nursery Sites 69
3.3.10 Disturbance to Waters of the United States and Riparian Habitats..... 69
3.3.11 Local Policies or Habitat Conservation Plans..... 70

4 CUMULATIVE IMPACT ANALYSIS FOR POTENTIAL IMPACTS TO SWAINSON'S HAWK FORAGING HABITAT 72

5 LITERATURE CITED..... 82

APPENDIX A: VASCULAR PLANTS OF THE WSP PLAN AREA..... 85

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE WSP PLAN AREA 87

APPENDIX C: SELECTED PHOTOS OF WSP PLAN AREA..... 93

1 INTRODUCTION

Live Oak Associates, Inc. (LOA) has prepared the following report. This report describes the biotic resources of the proposed 21,000-acre Westlands Solar Park (WSP) Master Plan area ("Plan Area"), and the associated Gen-Tie Corridors extending into Fresno County, and evaluates likely impacts to such resources from potential conversion of the WSP Plan Area from agricultural lands to a solar generation facilities. The WSP Plan Area is located in western Kings County approximately two miles north of Kettleman City and eight miles southwest of the City of Lemoore (Figure 1). The Plan Area and Gen-Tie Corridors are located within the Huron, Kettleman City, Stratford, and Westhaven U.S. Geological Survey (USGS) 7.5 minute quadrangles (Figure 2).

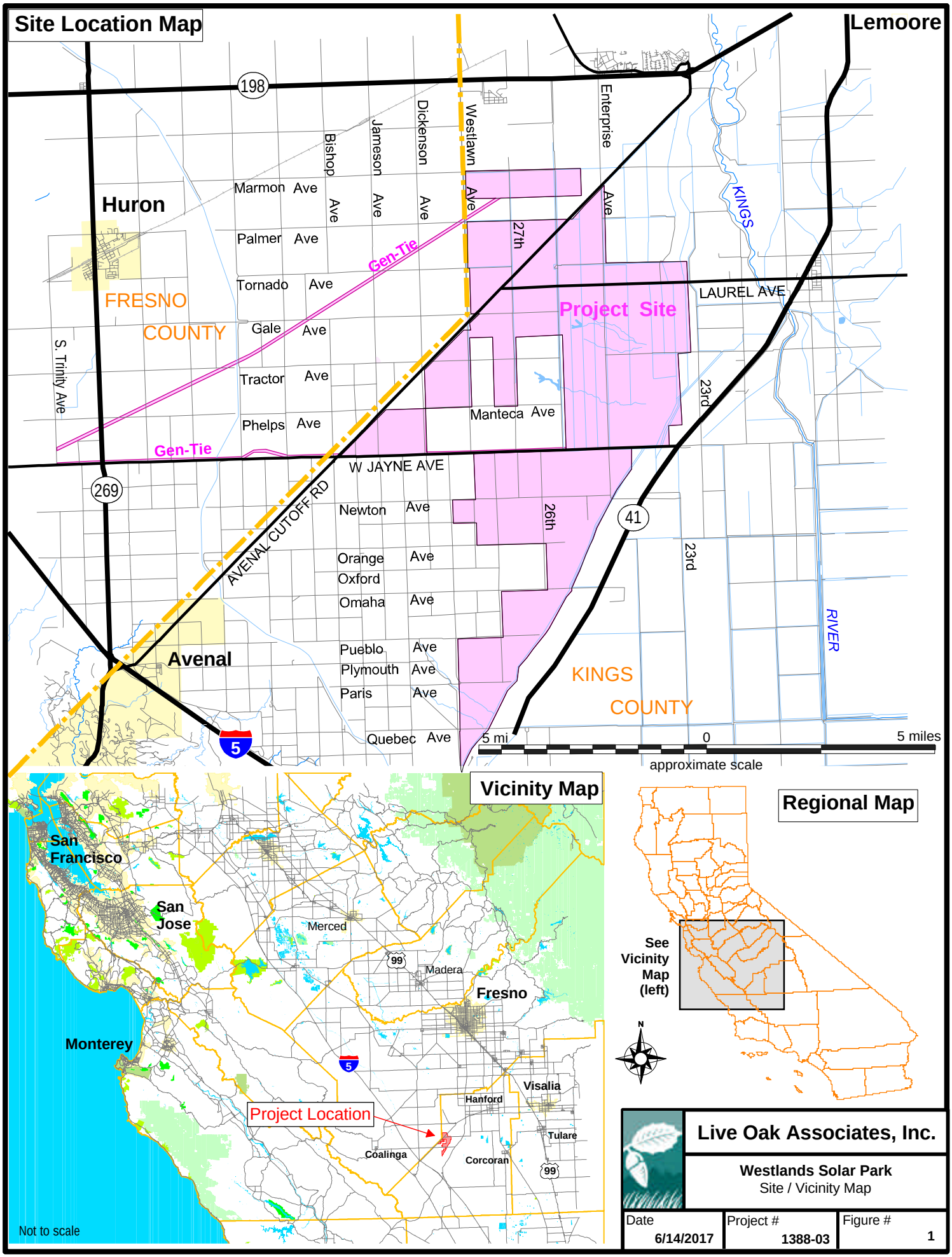
1.1 PROJECT DESCRIPTION

The Westlands Solar Park encompasses an area of approximately 21,000 acres in western Kings County where the project proponent plans to develop large-scale solar photovoltaic (PV) generating projects. These projects will consist of photo-voltaic arrays which will generate electric power for the State grid. This report is intended to provide an assessment of biological resources within the Plan Area and a program-level assessment of likely impacts from development of the entire 21,000 acres, in compliance with the requirements of the California Environmental Quality Act (CEQA).

Two gen-ties lines are proposed for the WSP: the WSP-North Gen-Tie and the WSP-South Gen-Tie. The WSP-North Gen-Tie corridor extends from the northwestern portion of WSP across agricultural fields to the Gates Substation and the WSP-South Gen-Tie corridor extends from the middle of the WSP plan area near 25th Avenue to the Gates Substation along the northern side of Jayne Avenue/Nevada Avenue. The total length of the Gen-Tie Corridors is approximately 23 miles. The gen-tie corridors have a planned width of up to 350 feet. The transmission towers are planned to consist of tubular steel monopoles placed at intervals of approximately ¼ mile. Poles/towers for these gen-tie lines are flexible in their placement, and will be placed appropriately to avoid any special areas such as potential wetlands.

1.2 REPORT OBJECTIVES

The development of land can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA), and/or covered by policies and ordinances of Kings County. This report addresses issues related to: 1) sensitive biotic resources occurring within the Plan Area and Gen-Tie Corridors; 2) the federal, state, and local laws regulating such resources, and 3) mitigation measures which may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies. Since the proposed project has been defined at a general level to date, this report is intended to provide a program-level environmental assessment of onsite biological conditions and probable impacts, and is subject to further refinement once individual solar projects under the WSP Master Plan and the gen-tie lines are sufficiently defined to allow a project-specific impact analysis, in compliance with the



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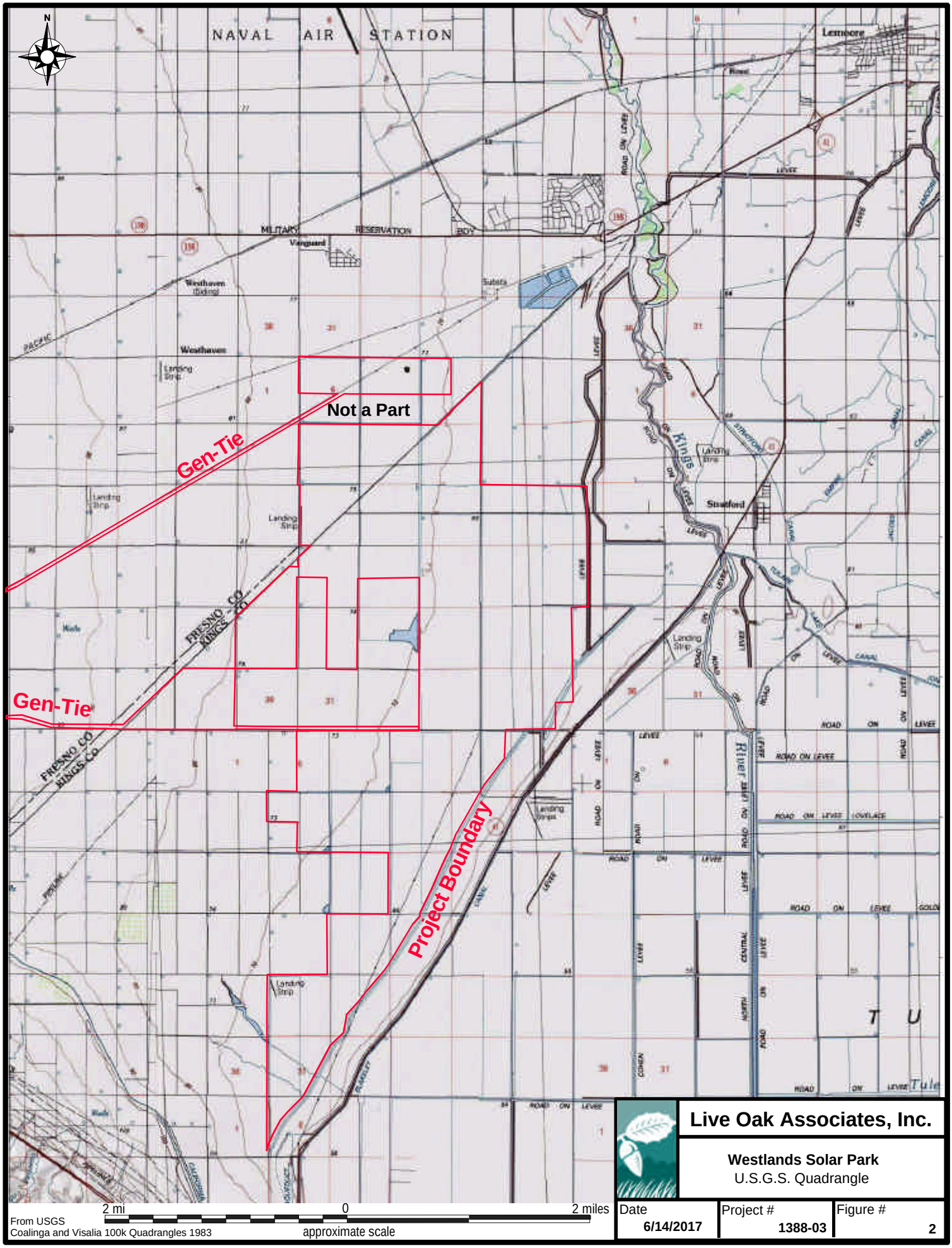
Westlands Solar Park
Site / Vicinity Map

Date	Project #	Figure #
6/14/2017	1388-03	1



From USGS
Coalinga and Visalia 100k Quadrangles 1983

Live Oak Associates, Inc.

Westlands Solar Park
U.S.G.S. Quadrangle

Date	Project #	Figure #
6/14/2017	1388-03	2

requirements of the California Environmental Quality Act (CEQA). As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources, based on a review of the literature, a search of species databases, and field surveys conducted by LOA over the entire WSP Plan Area and Gen-Tie Corridors;
- In addition to species observed to be present within the Plan Area, make reasonable inferences about the other biological resources that could occur onsite based on habitat suitability and the proximity of the Plan Area and Gen-Tie Corridors to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to development of solar projects within the WSP Plan Area and Gen-Tie Corridors;
- Identify and discuss project impacts to biological resources likely to occur within the Plan Area and Gen-Tie Corridors within the context of CEQA or any state or federal laws; and
- Identify avoidance and mitigation measures that would reduce impacts to a less-than-significant impact (as identified by CEQA) and are generally consistent with recommendations of the resource agencies for affected biological resources.

1.3 STUDY METHODOLOGY

The analysis of impacts, as discussed in Section 3.0 of this report, is based on the known and potential biotic resources of the Plan Area and Gen-Tie Corridors discussed in Section 2.0. Sources of information used in the preparation of this analysis included: (1) the *California Natural Diversity Data Base* (CDFW 2010 and 2011), (2) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2010 and 2011), and (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region. A number of reconnaissance-level field surveys of the Plan Area were conducted from 2010 through 2015, as follows: 2010 - January 11, 12; May 12; and June 21, by LOA ecologists Jeff Gurule and Geoff Cline; 2011 - March 21; April 5 by LOA ecologists Katrina Krakow and Nathan Hale, April 12 and 13 by Ms. Krakow, April 19 and 20 by Ms. Krakow and LOA field ecologist Robert Shields, and May 3, and 17; June

7 and 21 by Ms. Krakow; 2012 – April 7 by LOA ecologists Ms. Krakow and Rebekah Jensen, May 3 by Ms. Krakow, May 4 by Ms. Krakow and Mr. Cline, May 23 by Ms. Krakow, and May 24 and 25 by Ms. Krakow and Mr. Cline; 2013 – May 13 by Ms. Krakow; 2014 – May 2 and 22 by Ms. Krakow an LOA ecologist Waring Laurendine; 2015 – April 15 by Ms. Krakow and Mr. Hale. Field surveys for the Gen-Tie Corridors were performed on May 4, 2017. These surveys consisted primarily of driving the perimeter of the fields and along onsite canals at which time the principal land uses of the site were identified and the constituent plants and animals of each were noted. If a particular area or resource of interest or importance was discovered the surveyors exited the vehicle to investigate conditions on foot.

Detailed surveys for sensitive biological resources were not conducted during the multiple site surveys of the Plan Area except the Swainson's hawk nest survey (April 27 and May 3 and 4, 2012) which included the Plan Area and a 10-mile buffer of the Plan Area. The level of effort undertaken during LOA's field surveys during other site surveys was sufficient to locate and establish the general extent of wetland and special-status species habitat that might be present, but was not sufficient to establish precise wetland boundaries or the extent of actual use of onsite habitats by special status species that are present. Field surveys conducted for this study were sufficient to assess the significance of potential biological impacts associated with the solar development of the 21,000-acre WSP Plan Area and Gen-Tie Corridors, and to assess the need for more detailed studies that could be warranted if sensitive biotic resources were identified in this program-level survey. Delineating all wetlands that may be present, conducting focused surveys for sensitive plant and wildlife species, or mapping the extent of any special-status species habitat present may be warranted prior to the development of individual solar projects and gen-tie lines within the WSP Plan Area and Gen-Tie Corridors. The need for any such subsequent surveys or delineations is identified in this report where appropriate.

2 EXISTING CONDITIONS

2.1 REGIONAL SETTING

Like most of California, the Central San Joaquin Valley (and the WSP Master Plan and Gen-Tie Corridors area) experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely rise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the Plan Area is about 10 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The Kings County area of the Central San Joaquin Valley receives water from the Kings River, which is located approximately one mile east of the north end of the Plan Area. The Kings River historically drained into the Tulare Lake Basin which contained the vast Tulare Lake, which encompassed a large area of Kings County and at times extend to the eastern edge of the WSP plan area. The Kings River and Tulare Lake contained large areas of riparian, wetland, and aquatic ecosystems that supported large populations of diverse native plants and animals. Under present conditions, the Kings River supports only a fraction of the riparian habitat it once supported and the aquatic habitat has been greatly degraded from agricultural runoff and irregular flows. In essence the river currently provides water to a series of distributary channels supplying water to farmland in the region. Tulare Lake has long been drained and converted to farmland and urban uses.

Native upland biotic habitats of the Central San Joaquin Valley once consisted of grassland and shrubland, nearly all of which have been converted to farmland or urban use within the last 50 years or more. Native plant and animal species once abundant in the valley have become locally extirpated or have experienced large reductions in their populations. The native habitat that remains in the region is particularly valuable to native wildlife species including special status species that still persist in the region.

The lands surrounding the WSP Plan Area and Gen-Tie Corridors consist of agricultural land. The nearest natural habitats are the Kettleman Hills approximately two miles to the south and the Kings River drainage approximately one mile to the east at the north end of the Plan Area.

2.2 PROJECT SITE

The approximately 21,000-acre WSP Plan Area includes agricultural lands, artificial waterways, and local access roads. The Plan Area is generally bounded by Avenal Cutoff Road, the Fresno County Line, and Kent Avenue and to the northwest, Highway 41 to the east, and 28th Avenue to the southwest. Avenal Cutoff Road runs diagonally through the northwest portion of the site. Topographically, the site is relatively level, ranging in elevation from approximately 210 feet (64 m) National Geodetic Vertical Datum (NGVD) along the Westlands Main Canal near the southeastern Plan Area boundary to approximately 285 feet (87 m) NGVD along the western edge of the Plan Area at Avenal Cutoff Road (Figure 2).

The South and North Gen-Tie Corridors traverse similar agricultural lands in Fresno County en route to the Gates Substation located approximately 6 to 10 miles west of the Kings County line, respectively. The ground elevations of the Gen-Tie Corridors rise gradually to the west, reaching elevations of approximately 400 feet NGVD at the Gates Substation.

Eleven soil mapping units from nine soil series were identified within the Plan Area. The Gen-Tie Corridors pass through five of these mapping units – Lethent clay loam, Excelsior sandy loam, Westhaven loam and Westhaven clay loam, and Calflax clay loam (Table 1). The soil series are slightly to moderately alkaline, and eight of the soil units are considered hydric (Houser clay, Lethent clay loam, Panoche clay loam, Pitco clay, Tulare variant clay, Twisselman silty clay, Westcamp loam, Westhaven clay loam). Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part; under sufficiently wet conditions, they support the growth and regeneration of hydrophytic vegetation. The soils within the Plan Area and Gen-Tie Corridors have been cultivated for decades and land preparation practices such as grading, deep ripping, and/or discing have almost certainly disrupted the native soil characteristics such that storm water readily infiltrates the soils of and surrounding the Plan Area. Therefore, any ponding that may have once occurred on hydric soils

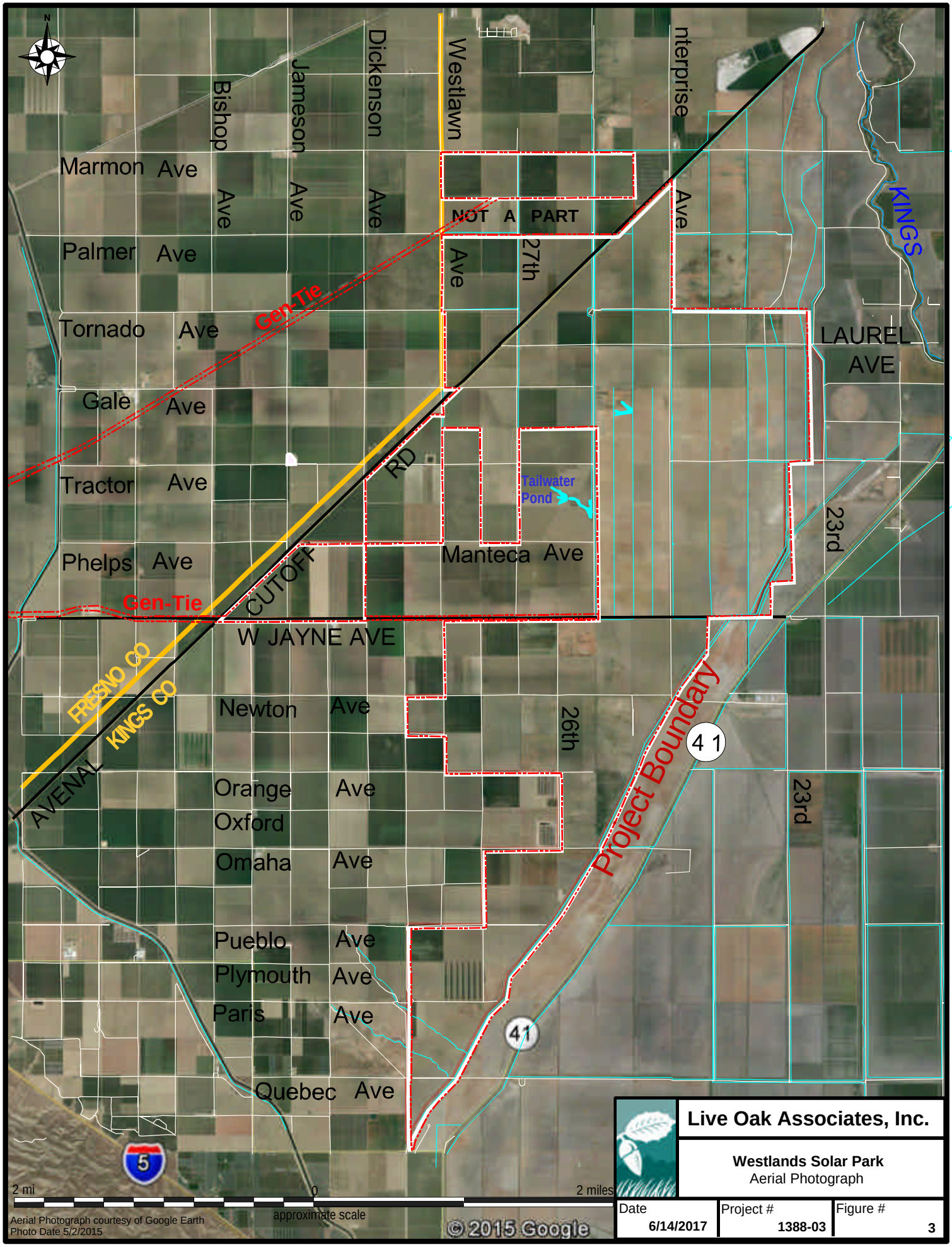
within the Plan Area would no longer occur, resulting in the absence of vernal pool habitat. Furthermore, any rare, threatened, or endangered plant species once potentially associated with native soil characteristics of the Plan Area and Gen-Tie Corridors would be absent due to extensive soil disturbance.

TABLE 1. SOILS OF THE PLAN AREA (FROM NRCS 2006, 2009).

Soil Series/Soil	Map Unit Symbol	Parent Material	Drainage Class	Hydric?
Calflax Series Calflax clay loam, saline-sodic, 0-2% slopes	480fw	Alluvium derived from calcareous sedimentary rock	Moderately well drained	No
Houser Series Houser clay, partially drained	126	Alluvium derived from igneous and sedimentary rock	Somewhat poorly drained	Yes
Lethent Series Lethent clay loam, 0-1% slopes	139	Alluvium derived from sedimentary rock	Moderately well drained	Yes
Panoche Series Panoche loam, 0-2% slopes Panoche clay loam, saline-alkali, 0-1% slopes	150 151	Alluvium derived from sedimentary rock	Well drained	No Yes
Pitco Series Pitco clay, partially drained, 0-1% slopes	153	Alluvium derived from igneous and sedimentary rock	Somewhat poorly drained	Yes
Tulare Series Tulare variant clay, partially drained, 0-1% slopes	164	Alluvium derived from igneous and sedimentary rock	Poorly drained	Yes
Twisselman Series Twisselman silty clay, saline-alkali, 0-1% slopes	166	Alluvium derived from sedimentary rock	Well drained	Yes
Westcamp Series Westcamp loam, partially drained, 0-2% slopes	175	Alluvium derived from igneous and sedimentary rock	Somewhat poorly drained	Yes
Westhaven Series Westhaven loam, 0-2% slopes Westhaven clay loam, saline-alkali, 0-2% slopes	176 178	Alluvium derived from igneous and sedimentary rock	Moderately well drained	No Yes

2.3 BIOTIC HABITATS/LAND USES

Five biotic habitats and one land use were observed on and adjacent to the Plan Area and Gen-Tie Corridors during the biological field surveys conducted from 2010 through 2017. These are described below and include: fallow/pasture/barren/shrubland, irrigated fields, orchard/vineyard, tailwater pond, and canal/aquatic as well as developed land use (Figures 3 and 4). The biotic habitats of the Plan Area and Gen-Tie Corridors, while providing habitat for a number of native wildlife species, are regularly disturbed or manipulated as a result of



Live Oak Associates, Inc.

Westlands Solar Park
Aerial Photograph

Date	Project #	Figure #
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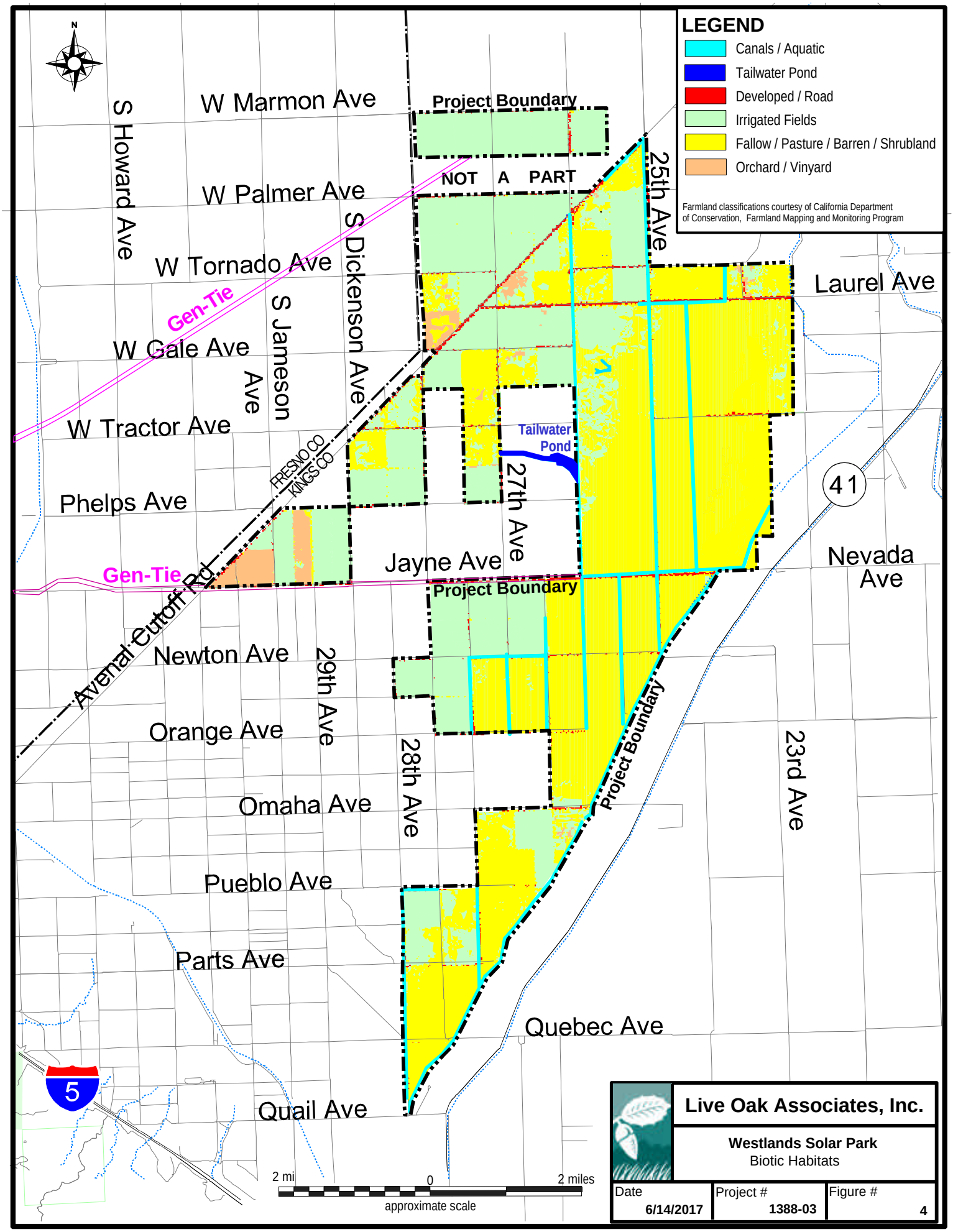

LEGEND
Canals / Aquatic
Tailwater Pond
Developed / Road
Irrigated Fields
Fallow / Pasture / Barren / Shrubland
Orchard / Vinyard
Farmland classifications courtesy of California Department of Conservation, Farmland Mapping and Monitoring Program
N
Project Boundary
NOT A PART
Project Boundary
Project Boundary
Tailwater Pond
Gen-Tie
Gen-Tie
W Marmon Ave
W Palmer Ave
W Tornado Ave
W Gale Ave
W Tractor Ave
Phelps Ave
Jayne Ave
Newton Ave
Orange Ave
Omaha Ave
Pueblo Ave
Parts Ave
Quail Ave
Quebec Ave
Laurel Ave
Nevada Ave
S Howard Ave
S Jameson Ave
S Dickenson Ave
25th Ave
27th Ave
29th Ave
28th Ave
23rd Ave
Avenal Cutoff Rd
FRESNO CO
KINGS CO
41
5
2 mi
0
2 miles
approximate scale
Live Oak Associates, Inc.
Westlands Solar Park
Biotic Habitats
Date 6/14/2017
Project # 1388-03
Figure # 4

standard farming practices. A list of the vascular plant species observed within the Plan Area and Gen-Tie Corridors, and the terrestrial vertebrates using, or potentially using, the Plan Area and Gen-Tie Corridors are provided in Appendices A and B, respectively. Photos of the Plan Area and Gen-Tie Corridors are presented in Appendix C.

2.3.1 Fallow/Pasture/Barren/Shrubland

The vast majority of the Plan Area consists of fallow fields/pasture/barren/shrubland areas (see Figure 3), while the Gen-Tie Corridors contain relatively little of this habitat. Based on inspection of historical aerial photos, much of this area appears to have been fallowed for up to five years or more. Fallowed fields showed no sign of irrigation and were dominated by non-native grasses and forbs adapted to withstand the long hot dry season. Vegetation in these areas varied from low-growing to taller more dense herbaceous cover depending on the field. Pasture areas have livestock or dung present within a permanently fenced area. However, LOA biologists also observed some fallow fields temporarily fenced and grazed by sheep during the 2010-2015 field visits. At the time of the annual spring field surveys, pastured areas supported small numbers of grazing livestock. Barren areas also exist within the eastern portion of the site. Vegetation height and density is likely dependent upon soil characteristics and yearly rainfall. Grass and forb species common to this habitat/land use include fiddleneck, wild oat, soft chess brome (*Bromus hordeaceaus*), red brome (*Bromus madritensis* ssp. *rubens*), horseweed (*Conyza canadensis*), and prickly wild lettuce among others. Very little native vegetation such as Alkali mallow (*Malvella leprosa*) was observed in this habitat.

Wildlife species expected to occur in this habitat would be somewhat similar to those species occurring in the cultivated fields, described below. However, because this habitat is not regularly cultivated, an herbaceous groundcover has developed that provides forage and cover for regional and transient wildlife. Therefore, the fallow fields and pastures would support somewhat larger populations and a greater diversity of wildlife species than the cultivated fields.

The fallow fields/ pasture/barren/shrubland would support much of the same amphibian and reptile species as the irrigated fields; but at a greater density and with the possible addition of species

such as western whiptails (*Cnemidophorus tigris*), coachwhips (*Masticophus flagellum*), and glossy snakes (*Arizona elegans*).

Birds observed foraging in the fallow fields/pasture/barren/shrubland during the surveys included the killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), western kingbird (*Tyrannus verticalis*), loggerhead shrike (*Lanius ludovicianus*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), horned lark (*Eremophilia alpestris*), northern mockingbird (*Mimus polyglottos*), American pipit, savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), red-winged blackbird, western meadowlark. Raptors observed over fallow field/pasture include the red-tailed hawk and northern harrier. Other raptors that may forage on or over this habitat within Plan Area include the white-tailed kite, American kestrel, and various owl species such as the barn owl (*Tyto alba*) or western burrowing owl.

A number of mammal species may also occur within the fallow fields/pasture/barren/shrubland of the Plan Area. Small mammals such as deer mice (*Peromyscus maniculatus*), California voles (*Microtus californicus*), house mice (*Mus musculus*), California ground squirrels (*Otospermophilus beecheyi*), and Botta's pocket gophers (*Thomomys bottae*) would occur in fluctuating numbers depending on the season and available cover. Other small mammals likely to occur from time to time within these fields include black-tailed hares (*Lepus californicus*) and desert cottontail rabbits (Sy*lvilagus audubonii*). Various species of bat may also forage over the agricultural fields of the Plan Area for flying insects. Random walks into portions of the fallow fields revealed a low density of small mammal burrows, and walks into the idle cropland revealed a low to moderate density of burrows.

2.3.2 Irrigated Fields

After the fallow field/ pasture/barren/shrubland, the next most extensive habitat/land use of the Plan Area is irrigated fields. Within the Gen-Tie Corridors, irrigated fields comprise the predominant habitat/land use. These fields are disturbed by agricultural practices on a regular basis. During the field surveys that occurred during the early portion of the year (2010-2015), much of the fields were disced and barren of vegetation in preparation of the spring planting

season. Crops identified during site surveys in 2010-2015 include wheat, garbanzo beans, tomatoes, onion, and alfalfa. Bare fields and other unidentified crops were also present. The sparse vegetation that was observed in the disced fields consisted primarily of non-native grasses and forbs such as fiddleneck (*Amsinckia* sp.), wild oat (*Avena* sp.), field mustard (*Brassica rapa*), Shepherd's purse (*Capsella bursa-pastoris*), jimsonweed (*Datura stramonium*), seaside heliotrope (*Heliotropium curassavicum*), prickly lettuce (*Lactuca serriola*), common mallow (*Malva neglecta*), Russian thistle (*Salsola tragus*), and escaped wheat (*Triticum* sp.), which are adapted to regular disturbance. Several lone willow trees (*Salix* sp.) were sparsely scattered throughout the margins of the cultivated fields. Vegetation in this community is highly managed, with cultivation, monocrop plantings, and weed abatement efforts defining the broad annual cycle. As a result, these fields provide only marginal habitat for most native wildlife. Nonetheless, some native wildlife species may use these fields, as described in more detail below.

Cultivated fields within the Plan Area and Gen-Tie Corridors provide limited habitat for amphibians and reptiles. Amphibian species, such as Pacific chorus frogs (*Pseudacris regilla*) and western toads (*Bufo boreas*) may use the adjacent irrigation canals for breeding and may also disperse through the cultivated fields during the winter and spring, but these fields provide marginal habitat value for these species at best. Reptile species that may forage in this habitat include the side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis melanoleucus*), and common kingsnake (*Lampropeltis getulus*).

These fields provide foraging habitat for a number of avian species. Species observed in and around cultivated fields of the Plan Area and Gen-Tie Corridors include the mourning dove (*Zenaida macroura*), western kingbird (*Tyrannus verticalis*), loggerhead shrike (*Lanius ludovicianus*), Common raven (*Corvus corax*), American pipit (*Anthus rubescens*), horned lark (*Eremophila alpestris*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), and brown-headed cowbird (*Molothrus ater*). Raptors observed foraging over cultivated fields include the northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*).

Other common resident species likely to forage in the agricultural fields of the Plan Area and Gen-Tie Corridors include the European starling (*Sturnus vulgaris*). Winter migrants common to the

area include white-crowned sparrows (*Zonotrichia leucorphrys*), and savannah sparrows (*Passerella sandwichensis*).

Mammal species utilizing the cultivated fields would be essentially the same as those likely to occur in the fallow fields/pasture/barren/shrubland.

The presence of birds and small mammals is likely to attract foraging raptors, such as red-tailed hawks, white-tailed kites (*Elanus leucurus*), and various owls such as the burrowing owl (*Athene cunicularia*). Mammalian predators occurring within the Plan Area and Gen-Tie Corridors would most likely be limited to raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), coyotes (*Canis latrans*) and red foxes (*Vulpes vulpes*), as these species are tolerant of human disturbance.

2.3.3 Orchard/Vineyard

This habitat occurs within the Plan Area and Gen-Tie Corridors and includes fruit, nut, and other tree crop orchards such as almonds, pistachios, and walnuts, as well as grapes. Animal species using expected to sparsely use these habitats include species in the adjacent habitats.

2.3.4 Tailwater Pond

One off-site pond was observed in the vicinity of the Plan Area near the center of the Plan Area (Figure 3). While this pond is not located within the Plan Area, its proximity to the Plan Area warranted detailed consideration of its habitat characteristics and value. This pond was approximately 2,160 feet long and 490 feet wide, and reportedly serves as a tailwater pond for storage of irrigation return flows from nearby fields. LOA's site surveys from 2010-2015 confirm the pond to be ephemeral in nature, as it was completely dry with deep crevices in the bottom during some site surveys and was inundated during others over the past six years. Inflow pumps and piping suggest that this managed pond is filled using a pump and/or from direct rainfall and the water is then used for adjacent agricultural fields when needed. The lack of vegetation in the center of the dry pond in 2010 suggests that it recently was filled with water and in most years the pond would provide relatively good aquatic habitat. Aside from trees along the levees, the pond area was sparsely vegetated during the March 2011 surveys with vegetation increasing significantly by late April. These observations were consistent through the following four years of surveys. The tailwater pond was observed to be fringed with hydrophytic vegetation including tall

flatsedge (*Cyperus eragrostis*), seaside heliotrope, alkali mallow (*Malvella leprosa*), Harding grass (*Phalaris aquatica*), knotweed (*Polygonum* sp.), willow leaved dock (*Rumex salicifolius*), Goodding's willow (*Salix gooddingii*), athel tamarisk (*Tamarix aphylla*), and common cattail (*Typha latifolia*). Other vegetation observed in this habitat includes common nightshade (*Solanum americanum*), common cudweed (*Gnaphalium luteo-album*), saltbush (*Atriplex* sp.), common sunflower (*Helianthus annuus*), cheeseweed (*Malva parviflora*), and summer mustard (*Hirschfeldia incana*).

The aquatic habitat and riparian vegetation associated with the tailwater pond are expected to support some amphibian species and numerous avian species. Species observed within or in the vicinity of the pond during the field surveys included: a desiccated bullfrog (*Rana catesbeiana*); further evidence of normally perennial waters), a great horned owl (*Bubo virginianus*), a nesting pair of barn owls, peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), and Swainson's hawk. Various wading birds such as the American avocet (*Recurvirostra americana*), long-billed dowitcher (*Limnodromus scolopaceus*), great egrets (*Casmerodius alba*), great blue herons (*Ardea herodias*), and a small rookery of black-crowned night herons (*Nycticorax nycticorax*), as well as mallards (*Anas platyrhynchos*) were observed using this habitat.

During the 2010 field surveys, Swainson's hawks were observed flying overhead. During the 2011 field surveys, a pair of Swainson's hawks was observed flying over the tailwater pond, and a pair of red-tailed hawks (*Buteo jamaicensis*) was also observed over the pond. The trees surrounding the pond supported two nesting great horned owls (*Bubo virginianus*), one nest with one owlet and the other nest with two owlets. During the 2012-2014 field surveys, Swainson's hawks were observed flying over the pond area, and red-tailed hawks and great-horned owls were also observed at the pond. During the April 15, 2015 field survey, LOA ecologists observed two Swainson's hawks land in a tree at the tailwater pond although no evidence of nesting was observed.

Other birds observed in the immediate area of the pond include the mallard (*Anas platyrhynchos*), snowy egret (*Egretta thula*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferous*), black-necked stilt (*Himantopus mexicanus*), American avocet (*Recurvirostra Americana*), spotted sandpiper (*Actitis macularius*), greater yellowlegs (*Tringa melanoleuca*), whimbrel (*Numenius*

phaeopus), least sandpiper (*Calidris minutilla*), mourning dove (*Zenaida macroura*), western kingbird (*Tyrannus verticalis*), loggerhead shrike (*Lanius ludovicianus*), Common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), northern rough-winged swallow (*Stelgidopteryx serripennis*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), both individuals and nestlings of Brewer's blackbird (*Euphagus cyanocephalus*), and brown-headed cowbird (*Molothrus ater*).

The riparian trees and shrubs associated with the pond provide considerable habitat for a diversity of avian species. The taller shrubs and trees provide roosting and nesting habitat for various resident species such as the yellow-billed magpie (*Pica nuttallii*), common raven, and red-tailed hawk. This vegetation provides cover for many migrant species moving north from Mexico and Central America during the spring or moving south from the Pacific Northwest and Canada during the fall. The more densely vegetated areas may be used as nesting habitat by spring migrants such as house wrens (*Troglodytes aedon*) and Bullock's orioles (*Icterus bullockii*).

Breeding California toads (*Bufo boreas*), breeding American bullfrogs (*Rana catesbeiana*), and gopher snakes (*Pituophis catenifer*) were observed near the pond. Mammal species associated with the tailwater pond would be limited to those species found in the surrounding cultivated fields such as the various small mammals observed on the dikes around the pond, including desert cottontail (*Sylvilagus audubonii*), California ground squirrel burrows, mice, including one dead in a plant, presumably a loggerhead shrike cash, and one being eaten by a gopher snake, as well as a dead shrew. A coyote skull (*Canis latrans*), raccoon prints (*Procyon lotor*), one domestic horse (*Equus caballus*) with rider, and domestic sheep (*Ovis aries*) were also observed near the pond. Various bat species would find ample foraging habitat along the edges and over the pond.

2.3.5 Canal/Aquatic

For the purposes of this discussion, "canal/aquatic" refers to relatively permanent earthen-banked irrigation water conveyance structures and drainage ditches within the Plan Area, most of which contained water during the multi-year field surveys and/or supported wetland vegetation. Earthen ditches which may be created and/or removed from one season or crop season to the next, or which

rarely contain water are not considered to be aquatic habitat, but are considered part of the cultivated and fallow field habitats described above.

A number of irrigation canals and agricultural drainage ditches occur within the Plan Area, all of which have earthen beds and banks (Figure 4). The largest canal runs along the south side of Laurel Avenue and connects to secondary and tertiary canals in the eastern half of the Plan Area. The eastern part of the Plan Area, along with the off-site tailwater pond, supported the greatest biodiversity of any areas on the Plan Area. Vegetation occurred in some of the canals; however, signs of vegetation removal within some canals were observed, providing evidence of regular management of the canals to maintain and maximize flows. Wetland and upland native and non-native plant species such as common sunflower, Russian thistle, prickly lettuce, salt grass (*Distichlis spicata*), Mexican sprangeltop (*Leptochloa uninervia*), cocklebur (*Xanthium strumarium*), and alkali heath (*Frankenia salina*), to name a few, were all regularly observed in the dry canals. Canals that were inundated during surveys supported some emergent vegetation such as narrow-leaf cattail.

The canals within the Plan Area provide habitat for several amphibian and reptile species. Amphibian species observed in the canals during the survey included the Pacific chorus frog, breeding California toad, and breeding bullfrog. The presence of amphibians would attract predators such as the common garter snake (*Thamnophis sirtalis*). Gopher snakes (*Pituophis catenifer*) were observed on the roads (dikes) next to canals. An unidentified turtle was observed in a canal near the eastern boundary of the Plan Area.

Several bird species are likely to forage over the canals for invertebrate prey; avian species observed in this habitat include the mallard, pied-billed grebe (*Podilymbus podiceps*), great blue heron (with two juveniles in 2011), great egret, snowy egret (*Egretta thula*), green heron (*Butorides virescens*), black-crowned night heron, northern harrier, red-shouldered hawk (*Buteo lineatus*), common moorhen (*Gallinula chloropus*), American coot (*Fulica americana*), killdeer, black-necked stilt, greater yellowlegs, least sandpiper (*Calidris minutilla*), long-billed dowitcher, herring gull (*Larus argentatus*), mourning dove, black phoebe (*Sayornis nigricans*) Say's phoebe (*Sayornis saya*), western kingbird, loggerhead shrike, American crow, northern rough-winged swallow, cliff swallow (observed nesting in concrete culverts), European starling, American pipit,

yellow-rumped warbler (*Dendroica coronata*), lark sparrow, savanna sparrow, song sparrow, white-crowned sparrow, Brewer's blackbird, and house sparrow were observed in this habitat. Several common ravens' nests were observed throughout the Plan Area, mostly in power poles/towers, often along the edges of the canals. California ground squirrels and western burrowing owls were observed along the sides of dry and/or inundated canals. A few coyote dens were observed along dry canals.

The canals provide habitat for aquatic species as well. Mosquito fish (*Gambusia affinis*), carp (*Cyprinus carpio*), and an unknown species of crayfish were observed in the canals. Various species of catfish are known to inhabit perennial canal habitats as well.

There are few irrigation canals or agricultural drainage ditches in the Gen-Tie Corridors area, although both gen-tie corridors pass over the San Luis Canal/California Aqueduct to the west of the Plan Area. The agricultural canals and ditches in the corridors area are periodically maintained and do not support native vegetation associated with wetlands or riparian habitats. There are also several tailwater ponds or irrigation regulating ponds in the vicinity, but these were all created as part of agricultural infrastructure and do not include wetland or riparian habitat.

2.3.6 Developed

Developed areas within a near the Plan Area and Gen-Tie Corridors are limited to public and private roads consisting of both paved and dirt roads. The margins of these roads support weedy plant species.

2.4 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are areas where regional wildlife populations regularly and predictably move during dispersal or migration. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. In the San Joaquin Valley, which lacks many of the more pronounced topographic features found in the surrounding foothills, wildlife will often move across ill-defined undeveloped habitat patches, or regional movement is facilitated along existing linear features such as ditches, canals, farm roads,

and creeks. In areas of intense farming, these existing linear features tend to be used disproportionately for movement when compared to the adjacent, intensely farmed lands. While actively farmed fields are not barriers in themselves, they are used less often than the linear features that cut through them.

The intense farming throughout the San Joaquin Valley over the last century has long altered the more traditional regional movement patterns of wildlife. While regionally-occurring wildlife do in fact move across the broad range of the Valley, they do so less effectively than they once did, relying more extensively on various linear features such as canals, ditches and creeks. Regionally, the nearest areas believed to provide for regional wildlife movement include areas in the surrounding Sierra and inner coast range foothills that have not been substantially altered.

The WSP Plan Area and Gen-Tie Corridors consist mainly of agricultural fields or fallowed pasture fields with minor areas of ruderal/developed and canal habitat. A number of medium to large canals are located within the Plan Area, which in agricultural areas of the San Joaquin Valley can function as movement corridors for the regular home range or dispersal movements of native wildlife, including special status species. The San Luis Canal/California Aqueduct also likely functions as a movement corridor for local wildlife. The vast area comprising the Plan Area (approximately 33 sq. mi.) likely has value for the regional movements of some wildlife species, when placed in a regional context. However, it is noted that the USFWS' *Recovery Plan for Upland Species of the San Joaquin Valley* (Recovery Plan) does not show movement corridors within or near the WSP Plan Area or the Gen-Tie Corridors. The Recovery Plan shows the foothills to the west as a north-south movement corridor (USFWS 1998). The nearest significant riparian corridor that likely facilitates regional movement of wildlife is the Kings River to the northeast of the Plan Area. This riparian area is located just over 1.3 miles to the east of the Plan Area at its nearest point.

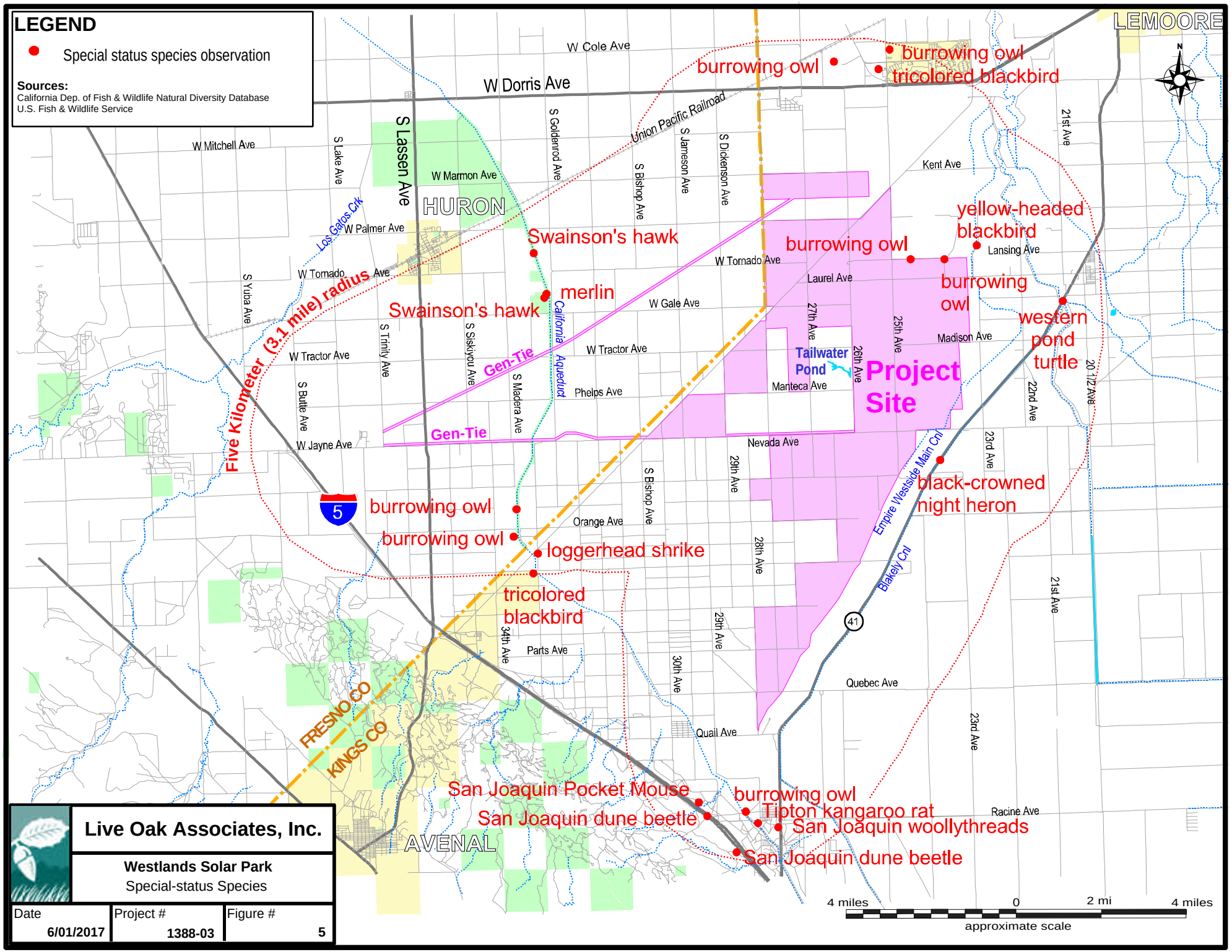
2.5 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to

agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2010). Collectively, these plants and animals are referred to as "special status species."

A number of special status plants and animals occur in the vicinity of the WSP Plan Area (Figures 5 and 6). These species, and their potential to occur in the Plan Area, are listed in Table 2 in the following pages. Sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *California Natural Diversity Data Base* (CDFW 2016), *Endangered and Threatened Wildlife and Plants* (USFWS 2016), *Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants* (CDFW 2016), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016). This information was used to evaluate the potential for special status plant and animal species to occur within the Plan Area and the Gen-Tie Corridors. It is important to note that the California Natural Diversity Data Base (CNDDB) is a volunteer database.

A search of published accounts for all of the relevant special status plant and animal species was conducted for the Westhaven and Kettleman City USGS 7.5-minute quadrangle within which the majority of the Plan Area is located, and for the 10 surrounding quadrangles (Calfax, Vanguard, Lemoore, Huron, Stratford, La Cima, and Stratford SE, Kettleman Plain, Los Viejos, and Dudley Ridge) using the California Natural Diversity Data Base Rarefind 2010.


LEGEND
Special status species observation
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
LEMOORE
HURON
AVENAL
W Cole Ave
W Dorris Ave
W Mitchell Ave
W Marmon Ave
W Palmer Ave
W Tornado Ave
W Gale Ave
W Tractor Ave
W Jayne Ave
Phelps Ave
Orange Ave
Parts Ave
Quail Ave
Nevada Ave
Manteca Ave
Madison Ave
Laurel Ave
Lansing Ave
Kent Ave
Quebec Ave
Racine Ave
S Lassen Ave
S Lake Ave
S Yuba Ave
S Butte Ave
S Trinity Ave
S Siskiyou Ave
S Madera Ave
S Goldenrod Ave
S Bishop Ave
S Jameson Ave
S Dickenson Ave
Union Pacific Railroad
Los Gatos Crk
California Aqueduct
Empire Westside Main Cnl
Blakely Cnl
21st Ave
20 1/2 Ave
22nd Ave
23rd Ave
25th Ave
26th Ave
27th Ave
28th Ave
29th Ave
30th Ave
34th Ave
Five Kilometer (3.1 mile) radius
Gen-Tie
Gen-Tie
Project Site
Tailwater Pond
FRESNO CO
KINGS CO
5
41
burrowing owl
burrowing owl
tricolored blackbird
Swainson's hawk
merlin
Swainson's hawk
burrowing owl
yellow-headed blackbird
burrowing owl
western pond turtle
burrowing owl
black-crowned night heron
burrowing owl
loggerhead shrike
tricolored blackbird
San Joaquin Pocket Mouse
San Joaquin dune beetle
burrowing owl
Tipton kangaroo rat
San Joaquin woollythreads
San Joaquin dune beetle
4 miles
0
2 mi
4 miles
approximate scale
Live Oak Associates, Inc.
Westlands Solar Park
Special-status Species
Date
6/01/2017
Project #
1388-03
Figure #
5

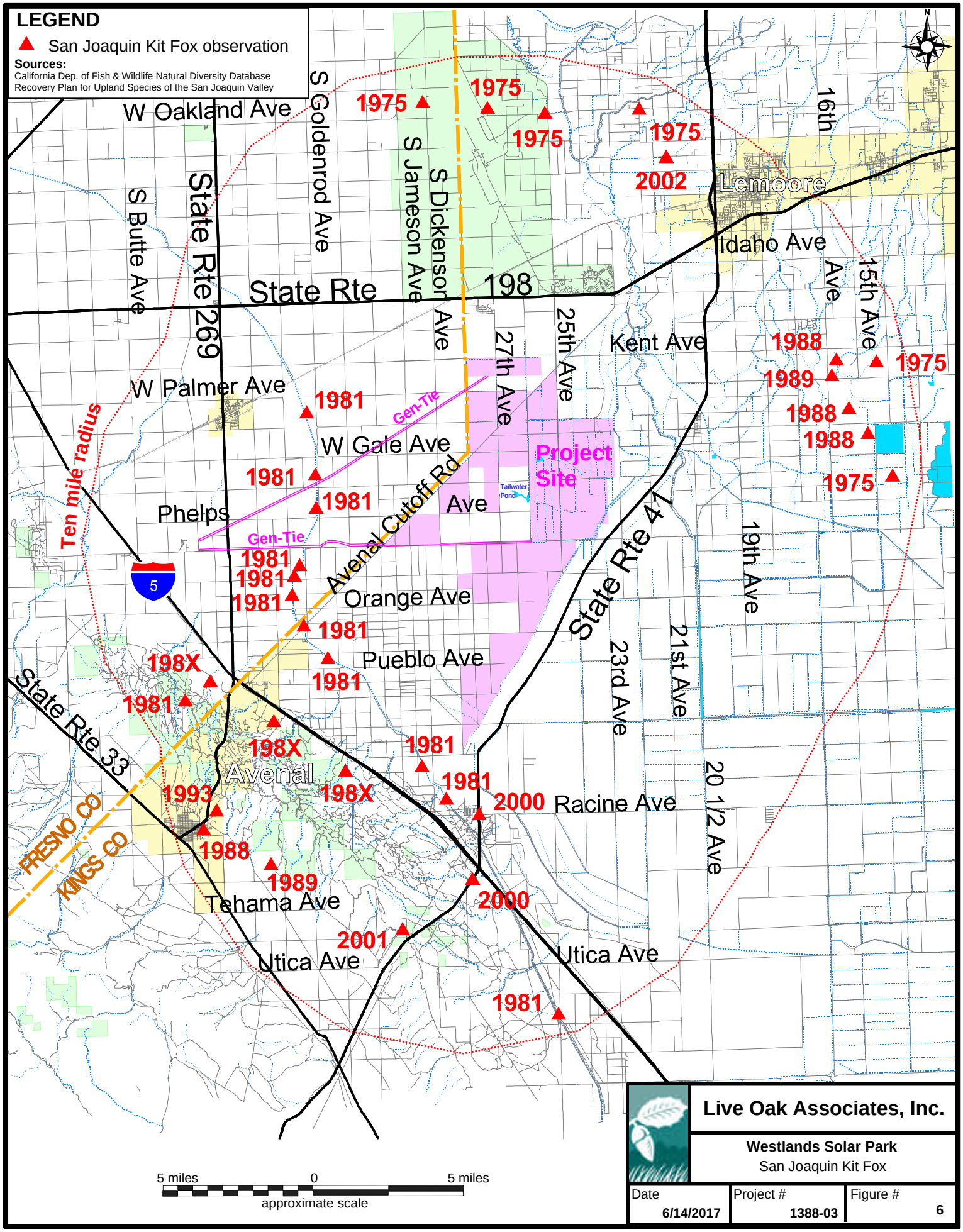

LEGEND
San Joaquin Kit Fox observation
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
Recovery Plan for Upland Species of the San Joaquin Valley
W Oakland Ave
S Goldenrod Ave
S Jameson Ave
S Dickenson Ave
S Butte Ave
State Rte 269
State Rte 198
16th Ave
Lemoore
Idaho Ave
15th Ave
25th Ave
27th Ave
Kent Ave
W Palmer Ave
W Gale Ave
Gen-Tie
Project Site
Tailwater Pond
Ten mile radius
Phelps
Avenal Cutoff Rd
Ave
State Rte 41
19th Ave
23rd Ave
21st Ave
20 1/2 Ave
Orange Ave
Pueblo Ave
State Rte 33
Avenal
Racine Ave
Tehama Ave
Utica Ave
FRESNO CO
KINGS CO
1975
1975
1975
2002
1988
1989
1975
1988
1988
1975
1981
1981
1981
1981
1981
1981
1981
198X
1981
198X
1981
198X
1981
1981
2000
1993
1988
1989
2000
2001
1981
5 miles
0
5 miles
approximate scale
Live Oak Associates, Inc.
Westlands Solar Park
San Joaquin Kit Fox
Date
6/14/2017
Project #
1388-03
Figure #
6

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

PLANTS (adapted from CDFW 2016 and CNPS 2016)
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Plan Area
California jewel-flower *(Caulanthus californicus)*	FE, CE, CNPS 1B	Chenopod scrub, pinyon and juniper woodland, and sandy valley and foothill grassland at elevations between 70 and 1000 meters. Blooms February-May.	**Absent.** Suitable habitat for this species is absent from the Plan Area. Any suitable habitat that may have once been present has been highly modified for human use.
San Joaquin woolly threads *(Monolopia congdonii)*	FT, CNPS 1B	Chenopod scrub and valley and foothill grassland at elevations between 60 and 800 meters. Blooms February-May.	**Absent.** Suitable habitat for this species is absent from the Plan Area. Any suitable habitat that may have once been present has been highly modified for human use.

Other Species under the CNPS

Species	Status	Habitat	*Occurrence in the Plan Area
Round leaved filaree *(California macrophylla)*	CNPS 1B	Grasslands and foothills at elevations between 200 and 2,000 feet. Blooms March-May.	**Absent.** Suitable habitat for this species is absent from the Plan Area. Any suitable habitat that may have once been present has been highly modified for human use.
Lemmon's jewel-flower (*Caulanthus lemmonii*)	CNPS 1B	Habitat: Occurs in pinion and juniper woodland and valley and foothill grasslands. Elevation: 80-1220 meters. Blooms: March-May.	**Absent.** Suitable habitat for this species is absent from the project site. Furthermore, this species is not known to occur within the interior of the San Joaquin Valley. The nearest documented occurrence is approximately 9.25 miles southwest of the project site, from a 1962 occurrence centered in the City of Avenal (CDFW 2017).
Recurved larkspur (*Delphinium recurvatum*)	CNPS 1B	Habitat: Occurs in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Elevation: 3-750 meters. Blooms: March-June.	**Unlikely.** Suitable habitat for this species is absent from the project site. The nearest documented occurrence is approximately 12 miles northwest of the project site in undisturbed foothill grassland (CDFW 2017). Past farming activities in fallow fields of the site that currently support non-native grassland habitat would have eliminated any recurved larkspur that may have occurred there. Furthermore, many miles of cultivated agricultural fields lie between these fallow fields and all distant documented occurrences of this species or any suitable habitat, making colonization of this species onto onsite fallow fields highly unlikely.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

PLANTS (adapted from CDFW 2016 and CNPS 2016)
Other Species under the CNPS

Species	Status	Habitat	*Occurrence in the Plan Area
Kern Mallow (*Eremalche parryi ssp. kernensis*)	CNPS 1B	Habitat: Occurs on dry, open sandy to clay soils, often at the edge of balds in chenopod scrub, pinion and juniper woodland, and valley and foothill grassland habitats. Elevation: 70-1290 meters. Blooms: January-May	**Unlikely.** Suitable habitat for this species is absent from the project site. Furthermore, the project site is just outside the northern edge of this species documented distribution. The nearest documented occurrence is approximately 7.5 miles southwest of the project site, from a 1973 occurrence in foothill grassland northeast of the City of Avenal (CDFW 2017). Past farming activities in fallow fields of the site that currently support non-native grassland habitat would have eliminated any Kern mallow that may have occurred there. Furthermore, many miles of cultivated agricultural fields lie between these fallow fields and all distant documented occurrences of this species or any suitable habitat, making colonization of this species onto onsite fallow fields highly unlikely.

ANIMALS (adapted from CDFW 2016 and USFWS 2016)
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Plan Area
Vernal pool fairy shrimp *(Branchinecta lynchi)*	FT	Occurs in vernal pools of California.	**Absent.** Suitable habitat in the form of vernal pools is absent from the Plan Area.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus)*	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra Foothills.	**Absent.** Suitable habitat in the form of elderberry shrubs is absent from the Plan Area.
California tiger salamander *(Ambystoma californiense)*	FT, CT	Breeds in vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent.** No historic or current records of this species are known within the region. Intensively cultivated lands provide unsuitable habitat for this species. The nearest recorded observation is more than 22 miles to the northeast of the Plan Area (CNDDB 2016).

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS – cont'd.
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Plan Area
Giant garter snake *(Thamnophis gigas)*	FT, CT	Habitat requirements consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.	**Unlikely.** Marginal breeding and overwintering habitat is available along major irrigation canals along the eastern edge of the Plan Area. However, the nearest recorded observation is more than 13 miles to the north and is a historic record from a published account in 1941 (CNDDB 2016). See expanded discussion following this table.
Blunt-nosed leopard lizard *(Gambelia silus)*	FE, CE, CP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley from Merced south to Kern County.	**Unlikely.** Habitats required by this species have been highly disturbed or eliminated as a result of agricultural activities. The nearest recorded observation is more than 8 miles to the southwest (CNDDB 2016).

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS – cont'd.
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Plan Area
Swainson's hawk *(Buteo swainsoni)*	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Present.** Foraging habitat is available throughout the project area in both fallow and agricultural fields. Breeding habitat is present in riparian trees along the off-site tailwater pond. A pair of Swainson's hawks was observed flying over the tailwater pond in 2010-2014 and a pair was observed landing in a tree at the tailwater pond during 2015 surveys. LOA's 2012 nest survey observed four active SWHA nests off-site. One of the four nests was incidentally observed during the 2017 nesting season and was found to be active. All four nests were re-visited after the 2017 nesting season; and was revisited during the September assessment; the nest known to be active in 2017 was found to be fully intact. The second nest appeared to be partially broken down and whether or not nesting occurred this year is inconclusive. The third nest was on top of a mistletoe clump in a cottonwood tree along Los Gatos Creek, and may have supported nesting during the 2017 season; 2017 nesting however could not be positively confirmed. The forth nest in a clump of tamarisk on the west side of Los Gatos Creek was absent. Whether or not an alternative nest site was active in 2017 in this area of the river is not known. In addition, Estep (2017) surveyed most of the project site and observed several nests along the Kings River northeast of the site.
California least tern (*Sterna antillarum browni*)	FE, CE, CP	Occurs in coastal central to southern California April to November. Found in and near coastal habitat including coasts, beaches, bays, estuaries, lagoons, lakes, and rivers. When found inland, they are near large bodies of water.	**Unlikely.** California least terns are most prevalent on the coast of central to southern California for breeding. Although records exist of them occurring inland, they are observed near large bodies of water. As the Study Area does not support large bodies of water, the California least tern would be unlikely to occur within the Study Area, although, they may fly over the Study Area from time to time during migration.
Western yellow-billed cuck (*Coccyzus americanus occidentalis*)	FC, CE	Breed in large blocks of riparian habitats, particularly cottonwoods and willows.	**Absent.** Dense riparian habitat required by this species is absent from the Plan Area.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS – cont'd.
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Plan Area
Western snowy plover *(Charadrius alexandrines nivosus)*	FT, CSC	Uses human-made agricultural wastewater ponds and reservoir margins. Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, and riverine sand bars.	**Possible.** Breeding and foraging habitat is available along agricultural canals and nearby ponds, including the tailwater pond adjacent to the Plan Area. The nearest recorded observation is approximately 3 miles to the east of the Plan Area (CNDDB 2016).
Nelson's antelope squirrel *(Ammospermophilus nelsoni)*	CT	Frequents open shrublands and annual grassland habitats.	**Absent.** Habitats required by this species are absent from the Plan Area and surrounding agricultural lands due to intensive agricultural use.
Giant kangaroo rat *(Dipodomys ingens)*	FE, CE	Inhabits grasslands on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent**. Habitats required by this species are absent from the Plan Area and surrounding agricultural lands due to intensive agricultural use.
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)	FE, CE	Inhabits arid land with grassland or salt scrub on level or near-level terrain on the San Joaquin Valley floor with alluvial fan and floodplain soils.	**Absent.** The habitat of the Study Area has been disturbed for agricultural use for many years, therefore, Tipton's kangaroo rat would not be expected to recolonize the Study Area. The nearest recorded observation of the TKR is from 1951 and is approximately 2.5 miles south of the Study Area south of Kettleman City near the California Aqueduct (CNDDB 2017).
Fresno kangaroo rat *(Dipodomys nitratoides exilis)*	FE, CE	Inhabits grassland on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent.** Habitats required by this species are absent from the Plan Area and surrounding agricultural lands due to intensive agricultural use.
San Joaquin kit fox *(Vulpes macrotis mutica)*	FE, CT	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (4 to 10 inches in diameter) ground squirrel burrows as denning habitat.	**Unlikely.** Burrows observed within the Plan Area during the multi-year field surveys were of suitable size for the kit fox. However, nearly all these burrows were within the vicinity of California ground squirrels or actively used by ground squirrels. An extensive burrow survey was not conducted. The Plan Area has been highly modified for agricultural use and, as a result, provides only marginal foraging and breeding habitat for the kit fox. Fallow land provides more suitable foraging habitat than agricultural fields. There are no documented sightings of this species within the Plan Area, but there have been numerous documented sightings within a ten mile radius of the Plan Area (see Figure 5), between 1971 and 2002 (CNDDB 2016). Therefore, kit foxes are unlikely to breed within the Plan Area, but may occasionally forage within the Plan Area, and may use the Plan Area for dispersal movements.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS (adapted from CDFW 2016 and USFWS 2016)
State Species of Special Concern

Western spadefoot *(Scaphiopus hammondii)*	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Unlikely.** Vernal pools required for breeding are absent from the Plan Area. Terrestrial habitat required for aestivation is absent from cultivated fields and marginally available in fallow fields.
Western pond turtle *(Actinemys marmorata)*	CSC	Intermittent and permanent waterways including streams, marshes, rivers, ponds and lakes.	**Possible.** Habitat for this species is available in and along the larger agricultural canals. An unidentified turtle was observed in such a canal during the 2010 field survey of the Plan Area. The nearest documented occurrence is less than 2 miles to the east of the Plan Area (CNDDB 2016).
Silvery legless lizard *(Anniella pulchra pulchra)*	CSC	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	**Unlikely.** Habitat for this species is not available.
Coast horned lizard *(Phrynosoma blainvillii)*	CSC	Grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs.	**Unlikely.** Habitats required by this species are absent because they have been heavily modified for human use. The nearest documented observation of this species is more than 27 miles to the northwest of the Plan Area (CNDDB 2016).
San Joaquin whipsnake *(Masticophis flagellum ruddocki)*	CSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	**Possible.** Some habitat for this species occurs in fallowed lands along the eastern portion of the Plan Area. The nearest documented occurrence of this species is more than 3 miles south of the Plan Area.
American white pelican (nesting) *(Pelecanus erythrorhynchos)*	CSC	Nests on islands in large lakes or on ephemeral islands in shallower wetlands.	**Unlikely.** Nesting habitat is absent from this Plan Area. This species was observed flying over the Plan Area, however, the species is unlikely to stop and nest within the Plan Area.
White-faced ibis *(Plegadis chihi)*	CSC	Salt and freshwater marsh as well as grain and alfalfa fields.	**Possible.** Marginal foraging habitat required for this species is present in the form of alfalfa, grain, and fallow fields within the Plan Area. Breeding habitat is absent. In 2010, a dead white-faced ibis was observed on a road shoulder by LOA biologists Jeff Gurule and Geoff Cline 5.5 miles east of the Plan Area.
Northern harrier *(Circus cyaneus)*	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Present.** Harriers were observed foraging over agricultural fields within the Plan Area in both 2010 and 2011.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS – cont'd.
State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Plan Area
White-tailed kite *(Elanus leucurus)*	CP	Open grasslands and agricultural areas throughout central California.	**Possible.** Suitable breeding and foraging habitat occurs for this species within the Plan Area.
Mountain plover *(Charadrius montanus)*	CSC	Forages in short grasslands and freshly plowed fields of the Central Valley.	**Possible.** The Plan Area provides suitable winter foraging habitat for this species.
Burrowing owl *(Athene cunicularia)*	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Present.** Multiple burrowing owls were observed within the Plan Area along dry agricultural canals and dry banks of larger wet canals. Nesting habitat in the form of ground squirrel burrows exist onsite and were in use by owls during the multi-year surveys.
Black swift *(Cypseloides niger)*	CSC	Migrants found in many habitats of state; in Sierra nests are often associated with waterfalls.	**Absent.** The Plan Area does not provide suitable breeding or foraging habitat for this species.
Vaux's swift *(Chaetura vauxi)*	CSC	Migrants move through the foothills of the western Sierra in spring and late summer. Some individuals breed in the region.	**Absent.** The Plan Area does not provide suitable breeding or foraging habitat for this species.
Loggerhead shrike *(Lanius ludovicianus)*	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	**Present.** This species was observed throughout the project area in agricultural fields and canals and fallow/pasture fields in both 2010 and 2011.
Tricolored blackbird *(Agelaius tricolor)*	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Possible.** Suitable foraging habitat occurs onsite for this species. Marginal breeding habitat occurs at the tailwater pond and large canals. The nearest recorded observation is more than 5 miles to the west of the Plan Area (CNDDB 2016).

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE WSP AND GEN-TIE CORRIDORS VICINITY

ANIMALS – cont'd.
State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Plan Area
Tulare grasshopper mouse *(Onychomys torridus)*	CSC	Arid shrubland communities in hot, arid grassland and scrub desert associations. These include blue oak woodlands at 450 m (1476 feet); upper Sonoran subshrub scrub community; alkali sink and mesquite associations on the valley floor; and grasslands associations on the sloping margins of the San Joaquin Valley and Carrizo Plain region.	**Absent.** Suitable shrubland habitat is not present within the Plan Area.
Townsend's Big-eared bat *(Corynorhinus townsendii)*	CSC	Primarily a cave-dwelling bat that may also roost in buildings. Occurs in a variety of habitats.	**Possible.** Suitable foraging habitat for this species is present within the Plan Area, roosting habitat is absent.
Pallid bat *(Antrozous pallidus)*	CSC	Roosts in rocky outcrops, cliffs, and crevices with access to open habitats for foraging. May also roost in caves, mines, hollow trees and buildings.	**Possible.** Suitable roosting and foraging habitat for this species is present within the Plan Area.
California mastiff bat *(Eumops perotis ssp.* californicus)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, trees and tunnels.	**Possible.** Suitable roosting and foraging habitat for this species is present within the Plan Area. The nearest recorded observation is less than 8 miles to the west of the Plan Area (CNDDB 2016).
American badger *(Taxidea taxus)*	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Possible.** No burrows of the size and shape suitable for this species were observed within the Plan Area. However, an exhaustive search was not conducted. It is possible this species may establish burrows within the Plan Area in fallow/pasture fields with sparse to moderately dense vegetation within the Plan Area. The nearest documented observation is 6 miles to the west of the Plan Area (CNDDB 2016).
Ringtail *(Bassariscus astutus)*	CP	Riparian and heavily wooded habitats near water.	**Unlikely.** Marginal habitat for this species is present in the riparian area around the off-site tailwater pond.

**Explanation of Occurrence Designations and Status Codes*
Present: Species observed within the Plan Area at time of field surveys or during recent past.
Likely: Species not observed within the Plan Area, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed within the Plan Area, but it could occur there from time to time.

Unlikely: Species not observed within the Plan Area, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed within the Plan Area, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered
FT	Federally Threatened
FPE	Federally Endangered (Proposed)
FC	Federal Candidate

CE	California Endangered
CT	California Threatened
CR	California Rare
CP	California Fully Protected
CSC	California Species of Special Concern

CNPS	California Native Plant Society Listing
1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list

2.6 ENDANGERED, THREATENED, OR SPECIAL STATUS ANIMAL SPECIES MERITING FURTHER DISCUSSION

2.6.1 Western Pond Turtle (*Actinemys marmorata*).

Federal Listing Status: None; State Listing Status: Species of Special Concern.

Life history and ecology. The western pond turtle is the only native freshwater turtle in California and normally associates with permanent or nearly permanent aquatic habitats, including streams, lakes, and ponds. Historically, this species occurred in Pacific Coast drainages from Washington to Mexico. This species occurs in aquatic habitats with 1) basking sites such as rocks and logs, 2) dense stands of submergent or emergent vegetation, 3) abundant aquatic invertebrate resources, 4) suitable nearby nesting sites, and 5) the lack of native and exotic predators (Bury 1972; Jennings and Hayes 1994). This species can move along streams up to 3.1 miles (5 kilometers) in a short period of time, and they can tolerate at least 7 days without water (Jennings and Hayes 1994).

Potential to occur within the Plan Area and Gen-Tie Corridors. One unidentified turtle was observed during LOA's field survey on the eastern edge of the Plan Area in a large canal adjacent to Laurel Avenue. A previous sighting of a western pond turtle occurred just to the east of this location at the junction of Highway 41 and the Kings River in 1996 (CNDDB 2010). Therefore, there is a potential that the western pond turtle may occur in portions of the Plan Area and Gen-Tie Corridors containing perennial or near perennial waters.

2.6.2 Blunt-Nosed Leopard Lizard (*Gambelia silus*).

Federal Listing Status: Endangered; State Listing Status: Endangered; California Protected.

In addition to being state and federally-endangered, the blunt-nosed leopard lizard (BNLL) is one of fewer than forty species that has a "fully protected" status through provisions of the California State Fish & Game Code. The CDFW cannot issue a "take" permit for fully protected species, and projects with fully protected species are required to completely avoid direct "take" of the species. In this instance, "take" refers to direct harm, injury, or killing of an individual, not to habitat modifications.

Life history and ecology. The blunt-nosed leopard lizard is a large, long-lived lizard whose short, blunt snout and pale crossbars on its back and tail give it its common name. It inhabits sparsely

vegetated plains, alkali flats, low foothills, grasslands, canyon floors, large river washes, and arroyos. These opportunistic foragers feed primarily on insects—particularly grasshoppers, crickets and moths—other lizards, and occasionally plant material (CDFW 2004).

The species was originally found throughout the San Joaquin Valley and adjacent foothills, from San Joaquin County southward and into eastern San Luis Obispo County. Its distribution has been reduced by conversion of habitat to cropland. The blunt-nosed leopard lizard now occurs in scattered locations in the valley and in the eastern portions of the Coast Ranges, including the Antelope and Carrizo Plains and Cuyama Valley.

Potential to occur within the Plan Area and Gen-Tie Corridors. The BNLL is known to occur west of Interstate 5, several miles from the southern end of the Plan Area and Gen-Tie Corridors. A few sightings of this species have been documented in the Kettleman Hills, just west of Kettleman City, the nearest being made in 1994 more than eight miles southwest of the Plan Area and Gen-Tie Corridors. Given the decades of ground disturbance the Plan Area and Gen-Tie Corridors have experienced from agricultural use the Plan Area provides no habitat in cultivated fields and extremely marginal habitat in fallowed areas of the Plan Area. Therefore, it would be extremely unlikely that BNLL would occur within the Plan Area or the Gen-Tie Corridors.

2.6.3 Giant Garter Snake (*Thamnophis gigas*).

Federal Listing Status: Threatened; State Listing Status: Threatened.

By the time it was listed as federally threatened on October 20, 1993, the giant garter snake population had suffered severe declines as a result of habitat loss due to urbanization and agricultural activities. A draft recovery plan was submitted for the giant garter snake in 1999, but a final recovery plan has not been adopted to date.

Life history and ecology. The giant garter snake is one of the largest garter snakes, reaching a total length of at least 63 inches. Females typically weigh 1 to 1.5 pounds and tend to be slightly longer and proportionately heavier than males. Dorsal background coloration varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light colored lateral stripes. Background coloration and prominence of a black checkered pattern and the three light stripes are geographically and individually variable. The ventral surface (the snake's

underside) is cream to olive or brown and sometimes infused with orange, especially in northern populations. Giant garter snakes feed primarily on small fishes, tadpoles, and frogs (USFWS 2007).

The giant garter snake inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period. Giant garter snakes typically select burrows with sunny exposure along south- and west-facing slopes. Their breeding season extends through March and April, and females give birth to live young from late July through early September. Brood size is variable, ranging from 10 to 46 young, who immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Sexual maturity averages three years for males and five years for females (USFWS 2007).

Although giant garter snakes generally remain in close proximity to aquatic and wetland habitats, they have been observed foraging or dispersing through upland habitats up to 800 feet from marshes and pools. The giant garter snake is generally inactive during the winter and seeks cover in rodent burrows that may be as much as 800 feet from marshes and ponds.

Potential to occur within the Plan Area and Gen-Tie Corridors. As has been previously noted, the Plan Area and Gen-Tie Corridors have been highly disturbed by agricultural activities. While some of the larger irrigation canals provide potentially suitable habitat for this species, all the nearest known populations of giant garter snakes are associated with the San Joaquin River drainage in areas near Mendota approximately 40 miles northwest of the Plan Area. The nearest documented occurrence is more than 13 miles to the north in the Kings River drainage and is an historic record from a published account in 1941 (CNDDB 2010). Therefore, based on the highly disturbed nature of the Plan Area and the Gen-Tie Corridors and the lack of recent documentation of this species in the immediate region, the giant garter snake is unlikely to occur within the Plan Area or the Gen-Tie Corridors.

2.6.4 Swainson's Hawk (*Buteo swainsoni*).

Federal Listing Status: None; State Listing Status: Threatened.

The Swainson's hawk is designated as a California Threatened species. The loss of agricultural lands (i.e., foraging habitat) to urban development and additional threats such as riverbank protection projects have contributed to its decline.

Life history and ecology. Swainson's hawks are large, broad-winged, broad-tailed hawks. Male and female Swainson's hawks have similar body types, with a length generally between 17 and 22 inches and a wingspan between 47 and 57 inches. They weigh up to 2.5 pounds.

Swainson's hawks migrate to Mexico or Argentina for the non-nesting season and return to nesting habitat (such as the Central Valley of California in March or April, with a high degree of mate and territorial fidelity. Their nests, measuring three to four feet in diameter, can take up to two weeks to complete. The nest is likely to be a stick nest constructed in a tree. In the Central Valley, Swainson's hawks typically nest in large trees in or peripherally to riparian systems adjacent to suitable foraging habitats. The female will lay and incubate two to four eggs for approximately 28 to 35 days. The male helps with incubation when the female leaves the nest to feed. The young hatch sometime between March and July and do not leave the nest until some 4 to 6 weeks later. Other suitable nest sites include lone trees, groves of trees such as oaks, other trees in agricultural fields, and mature roadside trees. Swainson's hawks forage in large, open fields with abundant prey, including grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands.

As Swainson's hawks arrive to their nesting territories to begin their nesting season in March or April, many other raptors already have active nests in place. Therefore, for Swainson's hawks nesting in the Central Valley, limiting factors include adequate nest sites and good forage abundance. This means that there must be enough nest trees in the area for the late-arriving Swainson's hawk to restore or build a new nest in an adequate nest tree and have suitable foraging habitat within a 10-mile radius of that nest tree.

Potential to occur within the Plan Area and Gen-Tie Corridors. Swainson's hawks are known to forage in areas surrounding the entire Plan Area and Gen-Tie Corridors. The trees surrounding the

off-site tailwater pond adjacent to the Plan Area as well as other groupings of trees and trees along the nearby Kings River, provide suitable nesting and perching habitat, and the fallow and agricultural lands within the Plan Area provide suitable foraging habitat.

On June 21, 2010 LOA biologists Jeff Gurule and Geoff Cline observed a pair of Swainson's hawks soaring above and around the tailwater pond. The two hawks vocalized an alarm call when first encountered flying low over the pond and then soared high into the air. The hawks were encountered again within 30 minutes flying low over the off-site tailwater pond. Although approximately 30 minutes was spent in a thorough search for a nest, no Swainson's hawk nest was observed in the trees associated with the tailwater pond. An active barn owl nest was found however. Although the behavior of the Swainson's hawks observed indicated the possibility that a nest may occur in the trees associated with the tailwater pond.

In 2011, surveys for Swainson's hawks were made on March 21 and April 5 by LOA ecologists Katrina Krakow and Nathan Hale, April 12 and 13 by Katrina Krakow, April 19 and 20 by Katrina Krakow and biologist Robert Shields, and May 3, and 17 by Katrina Krakow. The majority of surveys focused on the tailwater pond area where the majority of the onsite trees within Phase I exist. Shorter surveys were made near the King's River along Jackson Road where Swainson's hawks have been observed in previous years. A pair of Swainson's hawks was observed off of Jackson Road near the Kings River on 21 March, and 5, 12, and 13 April 2011. Only one individual was observed at a time (both individuals were observed separately) starting on April 19th, which may indicate the beginning of nesting, although no nest was located. On 3 May 2011, a Swainson's hawk was observed over the housing of the Lemoore Air Base along Highway 198. A pair of Swainson's hawks were observed over the tailwater pond beginning on 19 April 2011 by LOA ecologist Katrina Krakow and biologist Robert Shields, and only one individual was observed at a time (both individuals were observed separately) starting on 3 May by LOA ecologist Katrina Krakow, which may indicate the beginning of nesting for this pair. These individuals were observed interacting with a pair of red-tailed hawks, by 3 May, the red-tailed hawks were also observed only singularly near the pond. Two great horned owl nests were observed in trees along the south side of the pond, on 19 April, one owlet was observed in one nest and two owlets were observed in the other nest. Presently, Swainson's hawks do not appear to be

nesting within the Westlands Solar Park plan area or the Gen-Tie Corridors. However, as at least two pair of Swainson's hawks were observed either over or in the vicinity of the Plan Area, both observed pairs of this species most likely forages onsite.

Further multi-year surveys of the tailwater pond area were conducted by LOA biologists during subsequent breeding seasons 2012-2015. Although Swainson's hawks were reliably observed flying over the tailwater pond in each of these years, these surveys likewise failed to detect the presence of a Swainson's hawk nest within the trees at the tailwater pond. The April 15, 2015 survey was the only survey that LOA biologists observed Swainson's hawks land in a tree at the tailwater pond. All other observations were of Swainson's hawks flying overhead.

In the spring of 2012, LOA conducted a Swainson's hawk nest survey of the Plan Area as well as accessible lands within a buffer of 10 miles from the Plan Area. These surveys took place on April 27 by Ms. Krakow and Ms. Jensen; May 3 by Ms. Krakow; and May 4 by Ms. Krakow and Mr. Cline. Accessible lands within the 10-mile radius were surveyed completely except for those lands previously surveyed by ESTEP Ecological Consulting (2011 and 2012). Four active Swainson's nests were observed, all occurring off-site (Figure 7). Active nests were revisited on May 24 by Ms. Krakow and Mr. Cline. Two nests were located to the northwest of the site in trees bordering a drainage (Los Gatos Creek) located northwest of the Town of Huron, one nest was located to the southeast of the site just east of Kettleman City in a stand of eucalyptus trees, and one nest was located in a cottonwood tree located south of the southern limit of the WSP Plan Area just off-site on the eastern side of the canal adjacent to the site near Quail Avenue. During the 2013-2015 spring surveys, this nest was observed to be in active use by a pair of breeding Swainson's hawks. This pair likely uses the WSP Plan Area for foraging. As shown in Figure 7, there are no known Swainson's hawk nests within or in the immediate vicinity of the gen-tie corridors.

Therefore, Swainson's hawks are present within the Plan Area and Gen-Tie Corridors vicinity and likely forage onsite throughout the months of March through September, and may possibly nest in off-site trees at the tailwater pond and just outside the southern limit of the Plan Area in some years. Section 4 includes a cumulative impact analysis for potential impacts to Swainson's hawk foraging habitat.

Estimates of an annual nesting population for the Study Area were based on 2017 nesting surveys conducted by Estep for within 10 miles of the Mustang 2 project site which included the majority of the Study Area and supplemented active nests identified by LOA in 2012, the last year full nesting surveys were conducted in the "gap" (i.e., areas within the Study Area not surveyed by in 2017 by Estep) area (Estep 2017). While it is not possible to rely on Estep's detection of active nests from his 2017 surveys for the entire Study Area, LOA ecologist Katrina Krakow, in an attempt to confirm the validity of the 2012 survey results for the small area not covered by Estep's 2017 surveys, visited the location of the four active 2012 Swainson's hawk nests within the "gap" area September 2017 to evaluate their likely relevance for inclusion as "active nests" for the 2017 analysis. One of the four nests from 2012 was observed incidentally by Ms. Krakow during the 2017 nesting season to be active, and was revisited during the September assessment; this nest was found to be fully intact. The second nest appeared to be partially broken down and whether or not nesting occurred this year is inconclusive. The third nest was on top of a mistletoe clump in a cottonwood tree along Los Gatos Creek, and may have supported nesting during the 2017 season; 2017 nesting however could not be positively confirmed. The forth nest in a clump of tamarisk on the west side of Los Gatos Creek was absent. Whether or not an alternative nest site was active in 2017 in this area of the river is not known.

2.6.5 Burrowing Owl (*Athene cunicularia*).

Federal Listing Status: None; State Listing Status: Species of Special Concern.

The burrowing owl is designated as a California Species of Special Concern. This designation was based on the species' declining population within the state over the past 40 years. The population decline is mainly due to habitat destruction resulting from development and agricultural practices.

Life history and ecology. The burrowing owl is a small, long-legged bird that averages a height of 9.5 inches, has an average wingspan of 23 inches, and weighs an average of 5.25 ounces. Burrowing owls are unique in that they are the only owl that regularly lives and breeds in underground nests. In California, these birds typically occur in the Central and Imperial Valleys, primarily utilizing ground squirrel burrows (or the burrows of other animals, e.g., badgers, prairie dogs and kangaroo rats) found in grasslands, open shrub lands, deserts, and, to a lesser extent, grazed and agricultural lands. Burrowing owls in this region are typically found at elevations

below 250 ft. and exhibit strong site fidelity. Pairs have been known to return to the same area year after year, and some pairs are known to utilize the same burrow as the previous year. Burrowing owls are colonially nesting raptors, and colony size is indicative of habitat quality. It is not uncommon to find burrowing owls in developed and cultivated areas where California ground squirrels are active.

Burrowing owls feed on various small mammals including deer mice, voles, and rats. They also prey on various invertebrates including crickets, beetles, grasshoppers, spiders, centipedes, scorpions and crayfish. Peak hunting periods occur around dusk and dawn.

Potential to occur within the Plan Area and Gen-Tie Corridors. As noted in Table 2, burrowing owls were observed utilizing existing burrows along canals in the eastern and southern portions of the Plan Area. The Plan Area provides suitable habitat for this species in the form of California ground squirrel burrows present in fallow fields and canal banks. Field surveys did not consist of 100% coverage surveys and were conducted mainly as driving surveys on public roads, farm roads, and canal levees with short walking surveys when animals of plants of particular biological note were observed. Many of these owls were paired and presumably nesting with a minimum of 8 pair in 2011, a minimum of 12 pair in 2012, and a minimum of 8 pair in 2014 (Figure 9). Suitable nesting habitat for burrowing owls was present in the fallow fields and along the canal banks in the form of California ground squirrel burrows. As 100% coverage surveys were not conducted, the precise extent of burrowing owls within the Plan Area is unknown, however, LOA has identified approximately 59% of the Plan Area to be year-round suitable habitat (11,056 acres; which includes year-round forage and burrow habitat + year-round burrow habitat) and an additional approximately 38% to be seasonably suitable habitat (7,833 acres) (see Section 3.3.7 for details). Within the Gen-Tie Corridors vicinity, burrowing owls have been observed along and near the California Aqueduct within 3 miles of the southern Gen-Tie Corridor. Thus, suitable nesting habitat likely occurs in the vicinity of the Gen-Tie Corridors.

2.6.6 San Joaquin Kit Fox (*Vulpes macrotus mutica*).

Federal Listing Status: Endangered; State Listing Status: Threatened.

By the time the U.S. Fish and Wildlife Service listed it as an endangered species under the authority of the Federal Endangered Species Act on 11 March 1967, the San Joaquin kit fox had been extirpated from much of its historic range. In 1998, the USFWS adopted a final recovery plan for the San Joaquin kit fox. On 27 June 1971, the State of California listed the kit fox as a threatened species.

Life history and ecology. The San Joaquin kit fox, the smallest North American member of the dog family (Canidae), historically occupied the dry plains of the San Joaquin Valley, from San Joaquin County to southern Kern County (Grinnell et al. 1937). Critical habitat has yet to be established for the San Joaquin kit fox. Local surveys, research projects, and incidental sightings indicate that kit foxes currently occupy available habitat on the San Joaquin Valley floor and in the surrounding foothills.

Kit foxes prefer habitats of open or low vegetation with loose soils. In the northern portion of their range, they occupy grazed grasslands and, to a lesser extent, valley oak woodlands. In the southern and central portion of the Central Valley, kit foxes are found in valley sink scrub, valley saltbrush scrub, upper Sonoran subshrub scrub, and annual grassland (USFWS 1998). Kit foxes may also be found in grazed grasslands, urban settings, and in areas adjacent to tilled or fallow fields (USFWS 1998).

Kit fox diets vary geographically, seasonally, and annually. In the central portion of their range, which includes lands around the Plan Area, known prey includes white-footed mice, insects, California ground squirrels, black-tailed hares, San Joaquin antelope squirrels, kangaroo rats, desert cottontails, and ground-nesting birds (Archon 1992; Jensen 1972).

The kit fox requires underground dens to raise pups, regulate body temperature, and avoid predators and other adverse environmental conditions (Golightly and Ohmart 1984). In the central portion of their range, they usually occupy burrows excavated by small mammals, such as ground squirrels. Denning habitat consists of ground squirrel complexes in which some burrows have been enlarged to 4 to 6 inches in diameter for the length of a human arm (approximately 2 ft.).

Potential to occur within the Plan Area and Gen-Tie Corridors. Lands surrounding the Plan Area and the Gen-Tie Corridors consist of cultivated and fallow agricultural fields and the State Route 41 corridor as well as undeveloped rangeland further out to the south and southwest in the Kettleman Hills. The lands within Plan Area and Gen-Tie Corridors have been heavily managed for agricultural uses for decades. Agricultural lands are not generally suitable for the San Joaquin kit fox.

A few burrows were observed that were of suitable dimensions for kit fox, most of these burrows were or appeared to be occupied by California ground squirrels or burrowing owls; however, protocol-level surveys consisting of 100% visual coverage were not conducted for the Plan Area or the Gen-Tie Corridors. Having been modified for agricultural use, the Plan Area and Gen-Tie Corridors provide a limited prey base especially in the cultivated fields and, therefore, constitutes poor foraging habitats for kit fox.

Of primary interest for this assessment are kit fox records from the vicinity of the Plan Area and Gen-Tie Corridors. According to the CNDDB there have been a total of thirty-two historical sightings within ten miles of the Plan Area, none of which occurred within the Plan Area itself (Figure 6) (CDFW 2016). These sightings occurred to the east, west, south, and north of the Plan Area. Many of these sightings are largely historic sightings with 88% from 1975-1993, with the most recent record in 2002. Multiple large irrigation canals run through the Plan Area which may act as movement corridors; however, should a kit fox utilize these corridors, the fox would have to travel through miles of marginal to poor habitat before reaching the Plan Area, which itself holds little habitat value. In the vicinity of the Gen-Tie Corridors, there were 6 sightings of kit fox along the California Aqueduct in 1981. This indicates that kit fox may utilize the Aqueduct as a movement corridor.

In summary, the Plan Area and Gen-Tie Corridors offer marginal habitat primarily in fallowed fields; the surrounding lands provide similar habitat; and thirty-two historical kit fox sightings occur within ten miles of the Plan Area and Gen-Tie Corridors, but not within the Plan Area or Gen-Tie Corridors themselves. Considering the highly disturbed condition of the Plan Area and Gen-Tie Corridors, their isolation from extant kit fox populations, and their marginal to poor suitability as foraging or denning habitat, it is unlikely any kit fox have taken up residence within

the Plan Area and Gen-Tie Corridors. The Plan Area and Gen-Tie Corridors may, however, be used by occasional dispersing kit foxes. The WSP solar development will utilize wildlife friendly fencing that will allow for kit fox movement through the Plan Area. All permanent irrigation canals will be avoided by the Plan Area and are planned to continue operations as they currently do. Therefore, any kit foxes currently using the Plan Area for movement are expected to continue to use the Plan Area after buildout. The Gen-Tie Corridors vicinity similarly provide poor kit fox habitat, and the gen-tie lines would not impede movement of kit fox across and through the gen-tie corridors.

2.7 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the California Regional Water Quality Control Board (RWQCB). See Section 3.2.4 of this report for additional discussion of these agencies' roles and responsibilities. Formal wetland delineations of the Plan Area or the Gen-Tie Corridors have not been conducted, but the jurisdictional status of onsite waters has been surmised by LOA based on the aforementioned surveys and investigation of aerial photography and maps of the Plan Area and Gen-Tie Corridors.

The nearest known Water of the U.S. is the Kings River which runs to the north and east of the Plan Area, and is 1.5 miles from the nearest eastern boundary of the Plan Area. A number of irrigation canals run through the Plan Area; however, these canals do not receive water from the Kings River, which is at a lower elevation than the Plan Area. Artificial waterways such as canals are typically not claimed by the agencies unless they receive water from a Known Water of the U.S., and then return water to a Known Water of the U.S. Thus, even if the onsite canals received water from a Known Water of the U.S., the Kings River, those waters do not return to the Kings River. Therefore, it is unlikely that the onsite canals would fall under the jurisdiction of the USACE. Furthermore, the adjacent tailwater pond would also likely fall outside the jurisdiction of the USACE due to its isolation from a Known Water of the U.S. under federal law. However, only the USACE can make a jurisdictional determination of onsite waters. Furthermore, onsite waters,

while likely not regulated by the USACE may be claimed as jurisdictional by the RWQCB or CDFW under the broader definition of Waters of the State under the Porter-Cologne Water Quality Act, which encompasses any surface or groundwater within the boundaries of the state. Thus, although the canals and the off-site tailwater pond may not fall under federal jurisdiction, the RWQCB may assert jurisdiction over those portions of the canals that function as wetlands. The CDFW typically only asserts jurisdiction over ponds, lakes, and natural drainages or manmade features that replace natural drainages and, therefore, is unlikely to regulate alterations to the manmade canals mentioned above.

In the vicinity of the Gen-Tie Corridors, the nearest known Water of the U.S., besides the California Aqueduct, is Los Gatos Creek which runs to the north and west of the Gen-Tie Corridors, and is 4 miles from the Gen-Tie Corridors at its nearest approach. Since there is no hydrologic connection between the Gen-Tie Corridors and Los Gatos Creek, and the gen-tie projects will avoid the California Aqueduct, it is unlikely that any portion of the Gen-Tie Corridors would fall under the jurisdiction of the USACE.

To summarize, any alteration of the canals within the Plan Area or the Gen-Tie Corridors is unlikely to be regulated by the USACE; however, the RWQCB and CDFW may assert jurisdiction over some of these features. Jurisdiction would need to be evaluated on a case-by-case basis. It is important to note that these three agencies are the final arbiters and would need to be consulted regarding their jurisdiction over some or all of these features.

3 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

Approval of general plans, area plans, and specific projects is subject to the provisions of the California Environmental Quality Act (CEQA). The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Specific project impacts to biological resources may be considered "significant" if they would:

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

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

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

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

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory findings of significance" if the project has the potential to:

"Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory."

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the "take" of a listed species. "Take" is

defined by the state of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, as "responsible agencies" under CEQA, the CDFG and the USFWS both review CEQA documents involving projects which may have an impact on state- and/or federally-protected species in order to determine the adequacy of their treatment of protected species issues and to make project-specific recommendations for their conservation.

3.2.2 Migratory Birds

State and federal laws also protect most birds. The Federal Migratory Bird Treaty Act (16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.2.3 Birds of Prey

Birds of prey are also protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

3.2.4 Wetlands and Other Jurisdictional Waters

Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" (hereafter referred to as "jurisdictional waters") subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE). The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e., the bulleted items above).

As determined by the United States Supreme Court in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (the SWANCC decision), channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. However, the U.S Supreme Court decisions Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers (referred together as the Rapanos decision) impose a "significant nexus" test for federal jurisdiction over wetlands. In June 2007, the USACE and U.S. Environmental Protection Agency (USEPA) established guidelines for applying the significant nexus standard. This standard includes: 1) a case-by-case analysis of the flow characteristics and functions of the tributary or wetland to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters; and 2) consideration of hydrologic and ecologic factors (USEPA and USACE 2007).

The USACE regulates the filling or grading of such waters under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by “ordinary high water marks” on opposing channel banks. Wetlands are habitats with soils that are intermittently or permanently saturated, or inundated. The resulting anaerobic conditions select for plant species known as hydrophytes that show a high degree of fidelity to such soils. Wetlands are identified by the presence of hydrophytic vegetation, hydric soils (soils saturated intermittently or

permanently saturated by water), and wetland hydrology according to methodologies outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987).

All activities that involve the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE (Wetland Training Institute, Inc. 1991). Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No Section 404 permit can be issued until the California Regional Water Quality Control Board issues a Water Quality Certification (or waiver of such certification) under Section 401 of the Clean Water Act, certifying that the proposed activity will meet state water quality standards. The filling of isolated wetlands, over which the USACE has disclaimed jurisdiction under the SWANCC decision, is still regulated by the RWQCB under the Porter-Cologne Water Quality Act. Under the Porter-Cologne Act, it is unlawful to fill isolated wetlands without filing a Notice of Intent with the RWQCB. The RWQCB may impose waste discharge requirements (WDRs) if fill material is to be placed into the Waters of the State. In the wake of the SWANCC decision discussed above, the State Water Resources Control Board, in coordination with the CDFW, is currently in the process of preparing policy guidance for the definition and delineation of wetlands subject to State jurisdiction, as well as waste discharge requirements applicable to the filling of such wetlands. Based on the draft wetland protection policies, the State's definition of wetlands is expected to closely follow the federal definition of wetlands under Section 404 of the Clean Water Act, except that the State definition will apply to isolated wetlands (i.e., areas no longer under federal jurisdiction) and may apply to surface waters lacking vegetation (i.e., un-vegetated areas experiencing prolonged soil saturation and/or prolonged inundation). While the state definition of a wetland has yet to be finalized, it appears that all surface waters of the state, whether natural or man-made, vegetated or un-vegetated could be defined as a wetland subject to the jurisdiction to the state of California.

The RWQCB is also responsible for enforcing National Pollution Discharge Elimination System (NPDES) permits, including the General Construction Activity Storm Water Permit. All projects with federal funding must also comply with Executive Order 11990 (Protection of Wetlands).

The California Department of Fish and Wildlife (CDFW) has jurisdiction over the bed and bank of natural drainages according to provisions of Section 1601 and 1602 of the California Fish and

Game Code (2003). Activities that would disturb these drainages are regulated by the CDFW via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented which protect the habitat values of the drainage in question. Since there are no natural drainage channels within the WSP Plan Area or Gen-Tie Corridors, no Streambed Alteration Agreement would be required from CDFW.

3.2.5 Local Policies or Habitat Conservation Plans

- The Resource Conservation Elements of the 2035 Kings County General Plan contains a number of goals and policies on biological resources. These County policies are outlined below.

- Wetland and Riparian Areas. The County's goal is to conserve the functions and values of wetland communities and riparian areas while allowing compatible uses where appropriate.

- Fish and Wildlife Habitat. The County's goal is to protect, restore, and enhance habitats in Kings County that support fish and wildlife species so that populations are maintained at viable levels.

- Vegetation. The County's goal is to protect the valuable vegetation resources of each County.

- The Open Space and Conservation Element of the Fresno County General Plan contains a number of policies related to Natural Resources. These policies are directed specifically to the protection of special habitat areas such as wetlands and riparian areas, as well as fish and wildlife habitat.

3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION

The Westlands Solar Park is planned to include several utility-scale solar PV generating facilities. Although no site plans for individual solar PV projects within WSP have been prepared, each solar project will mainly consist of fields of solar arrays with supporting electrical equipment such as transformers, inverters, substations, power collection lines, and Operations and Maintenance facilities. It is intended that WSP solar development will avoid all irrigation canals and the off-site tailwater pond, as depicted in Figures 3 and 4. Thus, for purposes of this biological impact analysis, it is assumed that all cultivated and fallowed or pastured lands within the Plan Area will be subject to disturbance and alteration related to solar development.

The WSP gen-tie lines would consist of a series of tubular steel monopoles placed at approximately ¼ mile intervals along a total corridor length of about 23 miles. The area subject to disturbance at each tower site would be about one acre, and the area subject to permanent displacement at each transmission tower would be approximately 700 square feet. (The total combined area of permanent displacement along both gen-tie corridors would be less than 2 acres.) The monopoles are planned to be placed within or alongside existing agricultural fields, and the planning and design of the gen-tie lines would allow sufficient flexibility to adjust tower locations in order avoid impacts to wetlands, riparian zones, and other sensitive habitats.

Potentially significant project impacts to biological resources and mitigations are discussed below.

3.3.1 Loss of Habitat for Special Status Plants

Potential Impacts. Three special-status vascular plant species are known to occur in the vicinity of the Plan Area, California jewel-flower (*Caulanthus californicus*), San Joaquin woolly threads (*Monolopia congdonii*), and round leaved filaree (*California macrophylla*) (see Table 2). Due to the many decades of agricultural disturbance of the Plan Area and the Gen-Tie Corridors, habitat for these three plant species is absent from the area. Therefore, the planned WSP solar development and associated gen-tie lines would not affect regional populations of these species and potential impacts would be less-than-significant.

Mitigation. Mitigation measures are not warranted.

3.3.2 Loss of Habitat for Special Status Animals

Potential Impacts. Of the 33 special-status animal species potentially occurring in the region, eighteen species would be absent or unlikely to occur within the Plan Area or the Gen-Tie Corridors due to unsuitable habitat conditions. These include the vernal pool fairy shrimp, valley elderberry longhorn beetle, California tiger salamander, western spadefoot, silvery legless lizard, coast horned lizard, blunt-nosed leopard lizard, giant garter snake, American white pelican (nesting), black swift, Vaux's swift, western yellow-billed cuckoo, Nelson's antelope squirrel, giant kangaroo rat, Fresno kangaroo rat, Tulare grasshopper mouse, San Joaquin kit fox, and ringtail. Development of individual WSP solar projects and gen-tie lines would have no effect on loss of habitat for these species because there is little or no likelihood that they are present.

Two species that may regularly or occasionally utilize the Plan Area and Gen-Tie Corridors vicinity for foraging other than the Swainson's hawk, discussed above in Section 2.6.4, include the mountain plover and white-faced ibis. The WSP Plan Area or Gen-Tie Corridors do not provide regionally important foraging habitat for these species. Migrant species such as the mountain plover pass through or over many types of habitats en route to breeding or wintering habitat. White-faced ibis may possibly forage in agricultural fields of the Plan Area and Gen-Tie Corridors vicinity from time to time, this species would still have abundant foraging habitat in the region after full buildout of the Westlands Solar Park and the gen-tie lines. Considerable habitat suitable for migratory movements and winter foraging would continue to be available for these species on other lands within the region following WSP solar development and construction of the associated gen-tie lines. Therefore, the WSP solar projects and the gen-tie lines would result in a less-than-significant impact on these species.

An additional 13 special-status animal species from Table 2 potentially may occur frequently as regular foragers and may be resident to the area. These include the western pond turtle, San Joaquin whipsnake, western snowy plover, Swainson's hawk, northern harrier, white-tailed kite, burrowing owl, loggerhead shrike, tricolored blackbird, Townsend's big-eared bat, pallid bat, California mastiff bat, and American badger. Given the very large area of the Plan Area (approximately 33 sq. mi.), the WSP solar development would result in a substantial reduction of foraging, denning, and/or roosting habitat available regionally, depending on the species. However, the WSP solar development would not affect existing canals, which would continue to be operated and managed as they are under current conditions. The gen-tie towers would also avoid any canals and other aquatic features. Thus the foraging, nesting, denning, breeding, and roosting habitat for resident special-status species (as well as other native wildlife) provided by these canals would be maintained. However, impacts to several of the special-status species utilizing the Plan Area would be potentially significant. These species include Swainson's hawk, burrowing owl, American badger, and nesting raptors and migratory birds noted above. With respect to the Gen-Tie Corridors, the burrowing owl, other raptors and migratory birds would be potentially subject to impacts if gen-tie construction occurred in the vicinity of existing nests.

Mitigation. For species that are subject to potentially significant impacts due to WSP solar development gen-tie construction, mitigation measures are identified below for each as follows: raptors and migratory birds (Mitigation 3.3.3); American badger (Mitigation 3.3.5); Swainson's hawk (Mitigation 3.3.6) and; burrowing owl (Mitigation 3.3.7).

3.3.3 Disturbance to Active Raptor and Migratory Bird Nests

Potential Impacts. In addition to the Swainson's hawk and burrowing owl (discussed below in Sections 3.3.6, 3.3.7, and 4), several other raptor species such as the northern harrier, prairie falcon, peregrine falcon, and red-tailed hawk were observed foraging over the Plan Area and Gen-Tie Corridors, and barn owls, great horned owls, and red-tailed hawks were observed nesting at the off-site tailwater pond during the multi-year surveys from 2010-2017. Additionally, the Plan Area provides nesting habitat for a number of migratory bird species. Nearly all native bird species are protected by the federal Migratory Bird Treaty Act. The trees surrounding the off-site tailwater pond as well as large trees in existing orchards within and adjacent to the Plan Area and Gen-Tie Corridors provide potential nesting habitat for these species. Emergent vegetation and barren ground also provide nesting habitat for some bird species. Although the WSP solar and gen-tie projects will avoid the habitats most suitable for nesting raptors and other birds, some areas of the Plan Area and Gen-Tie Corridors such as orchards provide suitable nesting habitat and fallow fields and other undisturbed areas provide suitable nesting habitat for several ground-nesting birds. If birds were to nest in these areas in the future prior to construction, such project-related activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of raptors or result in mortality of individual birds constitute a violation of state and federal laws (see Section 3.2.2 and 3.2.3) and would be considered a significant impact under CEQA.

Mitigation. In order to minimize construction disturbance to active raptor and other bird nests, the following measure(s) as necessary prior to the construction of each WSP solar development project and gen-tie project:

***Mitigation 3.3.3a* (*Pre-construction surveys*).** If tree removal, site preparation, grading, or construction is planned to occur within the breeding period (i.e., between February 1 and August

31), a qualified biologist will conduct pre-construction surveys for active nests of migratory birds within 14 days of the onset of these activities. If construction activity is planned to commence outside the breeding period, no pre-construction surveys are required for nesting birds and raptors.

***Mitigation 3.3.3b* (*Establish Buffers*).** Should any active nests be discovered in or near proposed construction zones, the biologist will consult with the California Department of Fish and Wildlife to identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

***Mitigation 3.3.3c* (*Tailgate Training*).** All construction and operations workers on each solar project site shall be trained by a qualified biologist. The tailgate training shall include a description of the Migratory Bird Treaty Act, instructions on what to do if an active nest is located, and the importance of capping pipes and pipe-like structures standing upright in order to avoid birds falling into the pipes and getting stuck.

Implementation of the above measures would ensure that WSP solar development and gen-tie construction would have no impact on nesting raptors and migratory birds and that all construction activity would be in compliance with state and federal laws protecting nesting birds.

3.3.4 Impacts to San Joaquin Kit Fox

Potential Impacts. Over 90 percent of the Plan Area and the Gen-Tie Corridors consist of agricultural habitat. Of primary interest for this assessment are kit fox records from the area. According to the CNDDB there have been a total of thirty-two historical sightings within ten miles of the Plan Area, none of which occurred within the Plan Area itself (Figure 6) (CDFW 2016). These sightings occurred to the east, west, south, and north of the Plan Area. Many of these sightings are largely historic sightings with 88% from 1975-1993, with the most recent record in 2002. Multiple large irrigation canals run through the Plan Area which may act as movement corridors; however, should a kit fox utilize these corridors, the fox would have to travel through miles of marginal to poor habitat before reaching the Plan Area, which itself holds little habitat value. Although a few burrows were observed during the 2010-2015 surveys that were of suitable dimensions for kit fox, most of these burrows were or appeared to be occupied by California

ground squirrels or burrowing owls. As discussed in Section 2.6.6, a majority of the Plan Area provides poor habitat and fallow fields and canals offer marginal habitat for this species.

In the vicinity of the Gen-Tie Corridors, there were 6 sightings of kit fox along the California Aqueduct in 1981. This indicates that kit fox may utilize the Aqueduct as a movement corridor.

While it is unlikely kit fox have or would take up residence within the WSP Plan Area or the Gen-Tie Corridors under current site conditions, kit foxes from populations reported from the surrounding areas may pass through and possibly forage within the area from time to time during regular dispersal movements. To be prudent, the following measures shall be implemented:

Mitigation. The following measures shall be implemented in conjunction with WSP solar development and Gen-Tie line construction.

Mitigation Measure 3.3.4a (Pre-construction surveys). Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the San Joaquin kit fox. These surveys shall be conducted in accordance with the USFWS Standard Recommendations. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on the solar project and gen-tie sites and evaluate their use by kit foxes. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action.

Mitigation Measure 3.3.4b (Avoidance). Should kit fox be found to be using a project site during preconstruction surveys, the project shall avoid the habitat occupied by kit fox and the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be notified.

Mitigation Measure 3.3.4c (Tailgate Training). All workers on the solar and gen-tie projects shall attend a tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if a San Joaquin kit fox is observed on a project site.

Mitigation Measure 3.3.4d (Minimization of Potential Disturbance to Kit Fox). Whether or not kit foxes are found to be present, all permanent and temporary construction activities and other types of project-related activities shall be carried out in a manner that minimizes potential disturbance to kit foxes. Minimization measures include, but are not limited to: restriction of project-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.

***Mitigation Measure 3.3.4e (Mortality Reporting)*.** The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be notified in writing within three working days in case of the accidental death or injury to a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Implementation of these measures would reduce impacts to the San Joaquin kit fox to a less-than-significant level and would minimize the risk that construction activities during the development of WSP solar and gen-tie projects would result in mortality to individual kit foxes. Should kit fox be found within an individual solar or gen-tie project site, the applicant may wish to contact the USFWS for implementation of a Safe Harbor Agreement. If allowed, this agreement will allow the applicant "assurances that additional land use restrictions as a result of their voluntary conservation actions would not be imposed by the USFWS" (USFWS, 1998).

3.3.5 Impacts to American Badgers

Potential Impacts. Given the observations of American badgers, a California Species of Special Concern, on nearby lands with similar habitats to those of the WSP Plan Area and the Gen-Tie Corridors, the potential exists that the American badger may reside within the Plan Area or Gen-Tie Corridors vicinity. No badgers or badger burrows were observed within the WSP Plan Area during any of the multi-year site surveys. However, the surveys were conducted primarily through driving field edges with limited foot coverage of the Plan Area and during the day when badgers are not typically active above ground. Potential badger habitat was found on the Plan Area in the

form of fallow fields. Conditions in or Gen-Tie Corridors are similar those of the Plan Area. Therefore, WSP solar development and gen-tie construction could result in loss of foraging, breeding and denning habitat, and may result in harm or injury to individuals of this species. The potential for badgers to suffer mortality during project construction would constitute a significant adverse impact to American badgers.

Mitigations. Implementation of the following measures prior to the construction of each WSP solar and gen-tie project will reduce impacts to American badgers from direct mortality to a less-than-significant level.

Mitigation Measure 3.3.5a (Pre-construction Surveys). During the course of the preconstruction surveys for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of each individual solar project. If badgers are found to be absent, a report shall be written to the applicant so stating and no other mitigations for the protection of badgers shall be warranted.

Mitigation Measure 3.3.5b (Avoidance and Monitoring). If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once the biologist has determined that badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple burrows in a breeding burrow complex, a biological monitor shall be present onsite during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor will be required onsite until it is determined that young are of an independent age and construction activities would not harm individual badgers.

Mitigation Measure 3.3.5c (Tailgate Training). All workers on the solar and gen-tie projects shall attend a tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if an American badger is observed on a solar project site.

Implementation of the above measures would reduce potential impacts to the American badger to a less-than-significant level.

3.3.6 Impacts to Nesting Swainson's Hawks

Potential Impacts. Swainson's hawks are known to nest within a half-mile of the Plan Area and Gen-Tie Corridors. Swainson's hawks were observed over the off-site tailwater pond during the LOA field surveys in 2010-2014 and were observed landing in a tree at the pond in 2015 (see Section 2.6.4). Few willows occur singly at various areas across the Plan Area, but these trees provide unlikely nesting habitat for Swainson's hawks. Larger trees associated with agricultural and residential structures occur on lands adjacent to the Plan Area and the Gen-Tie Corridors. The most likely habitat for nesting Swainson's hawks occurs in large Gooding's willows in riparian habitat around the off-site tailwater pond and the cottonwood tree just east of the southern end of the Plan Area, which has supported an active Swainson's hawk nest for several years. Project-related activities occurring near these areas (Figure 8), could result in the abandonment of active Swainson's hawk nests or direct mortality to these birds should they be nesting in onsite or adjacent trees. Construction activities that adversely affect their nesting success or result in mortality of individual birds constitute a violation of state and federal laws (see Section 3.2.2 and 3.2.3) and would be considered a significant impact under CEQA.

Additionally, four active Swainson's hawk nests were observed within 10 miles of the Plan Area during the 2012 Swainson's hawk nest survey (Figure 7). During the scheduled 12-year development period, WSP solar projects could result in the loss of Swainson's hawk foraging habitat.

As discussed in Section 4 below, LOA biologists conducted a detailed analysis of foraging habitat within a 10-mile radius of the Plan Area and concluded that the abundant habitat that would remain after development of the WSP, and all other cumulative projects within this 10-mile radius, would be more than sufficient to support all of the known Swainson's hawk nests within this radius, with surplus capacity to support additional nesting pairs. Estimates of an annual nesting population for the Study Area were based on 2017 nesting surveys conducted by Estep (2017) and active nests identified by LOA in 2012, the last year full nesting surveys were conducted in the

"gap" (See Sections 2.6.4 and 4 for more detail). In an attempt to confirm the validity of the 2012 survey results for the small area not covered by Estep's 2017 surveys, visited the location of the four active 2012 Swainson's hawk nests within the "gap" area September 2017 to evaluate their likely relevance for inclusion as "active nests" for the 2017 analysis. One of the four nests from 2012 was observed as active in 2017, one may have been intact and supported nesting, one was partially broken down, and one was missing. It was concluded that the WSP solar development and gen-tie line construction would not significantly impact Swainson's hawk foraging habitat.

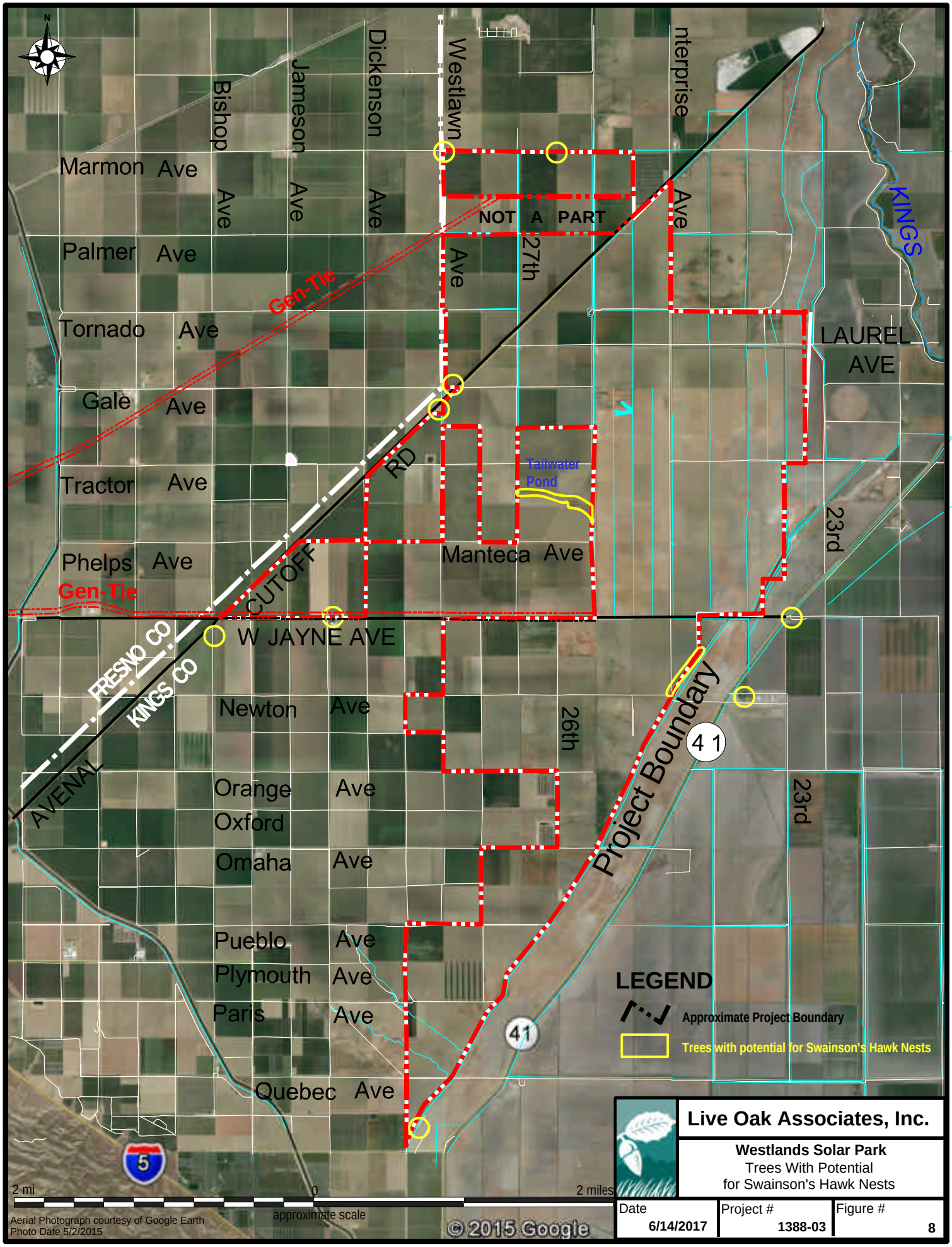
Implementation of the following mitigations will reduce impacts to nesting Swainson's hawks to a less-than-significant level.

Mitigation. Prior to the construction of each future WSP solar project and gen-tie project the following measures will be implemented.

Mitigation 3.3.6a (Pre-construction Surveys). During the nesting season prior to the construction of any WSP solar project or gen-tie project within a half-mile of a potential nest tree (Figure 8), preconstruction surveys will be conducted on the project site and adjacent lands to identify any nesting pairs of Swainson's hawks. These surveys will conform to the guidelines of CDFW as presented in *RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY,* Swainson's Hawk Technical Advisory Committee, May 31, 2000. This preconstruction survey is not necessary for individual solar projects that are further than a half-mile from a potential nest tree (Figure 8).

Mitigation 3.3.6b (Establish Buffers). Should any active nests be discovered in or near proposed construction zones, the qualified biologist will establish a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

Mitigation Measure 3.3.6c (Tailgate Training). All workers on the solar projects shall attend a tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if a Swainson's hawk is observed on a solar project site.



Live Oak Associates, Inc.

Westlands Solar Park
Trees With Potential
for Swainson's Hawk Nests

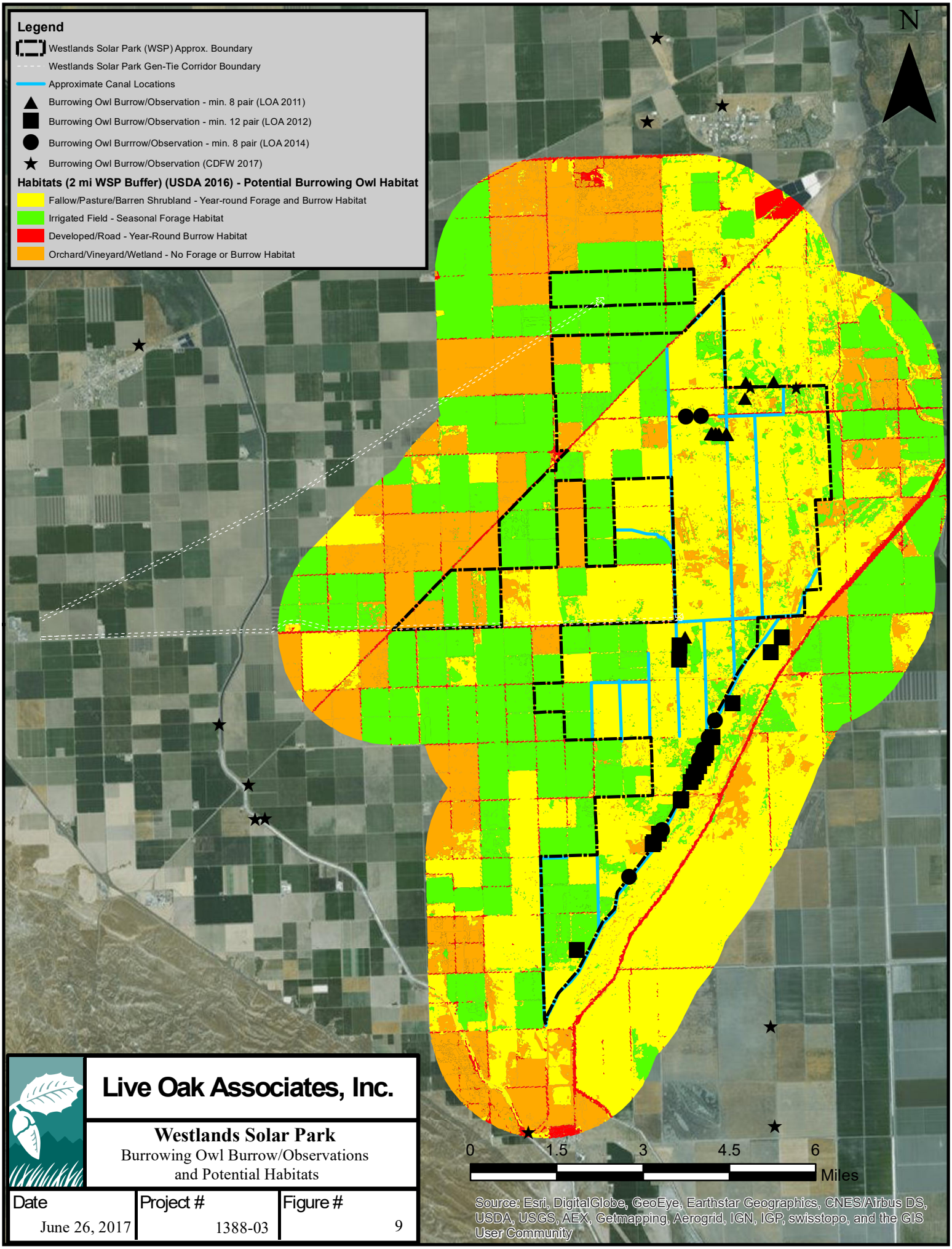
Date	Project #	Figure #
6/14/2017	1388-03	8

Implementation of these measures would reduce impacts to Swainson's hawks to a less-than-significant level.

3.3.7 Impacts to Burrowing Owls

Potential Impacts. A number of burrowing owls were observed occupying existing burrows within the WSP Plan Area during the field surveys conducted in 2010-2015. These field surveys did not consist of 100% coverage surveys and were conducted mainly as driving surveys on public roads, farm roads, and canal levees with short walking surveys when animals of plants of particular biological note were observed. Many of these owls were paired and presumably nesting with a minimum of 8 pair in 2011, a minimum of 12 pair in 2012, and a minimum of 8 pair in 2014 (Figure 9). To date, no surveys were completed specifically for burrowing owls in 2016 or 2017. Suitable nesting habitat for burrowing owls was present in the fallow fields and along the canal banks in the form of California ground squirrel burrows. As 100% coverage surveys were not conducted, the precise extent of burrowing owls within the Plan Area is unknown. LOA used the most recently available cropland data (USDA 2016) to prepare a map of potentially suitable habitat for burrowing owls within the Plan Area (Figure 9). Crops were categorized into four categories for their suitability to support burrowing owl burrows and foraging habitat by using the cropland data (USDA 2016; Figure 9):

1) *Fallow/Pasture/Barren/Shrubland - Year-Round Forage and Burrow Habitat.* Potentially suitable crop/habitat types to support burrowing owl forage and burrow habitat year-round as identified in the cropland data include barren, fallow/idle cropland, grass/pasture, and shrubland.
2) *Irrigated Field - Seasonal Forage Habitat.* Potentially suitable crop/habitat types to support burrowing owl seasonal forage habitat include alfalfa, asparagus, barley, cantaloupes, carrots, corn, cotton, double crop barley/sorghum, double crop oats/corn, double drop winter wheat/corn, and double crop winter wheat/sorghum, dry beans, durum wheat, garlic, herbs, lettuce, oats, onions, other hay/non-alfalfa, peas, safflower, sorghum, tomatoes, triticale, and winter wheat.
3) *Developed/Road - Year-Round Burrow Habitat.* As this category within the WSP Plan area is limited to roadways, this category also provides year-round burrow habitat, as burrowing



Live Oak Associates, Inc.

Westlands Solar Park
Burrowing Owl Burrow/Observations and Potential Habitats

Date	Project #	Figure #
June 26, 2017	1388-03	9

owls are known to use roadsides for burrow habitat; these habitat types include developed/high intensity, developed/low intensity, developed/medium intensity, developed/open space, and open water.

4) *Orchard/Vineyard/Wetland - No Forage or Burrow Habitat*. This category includes almonds, apricots, grapes, open water, oranges, pistachios, pomegranates, and walnuts.

For the WSP Plan Area, LOA identified 11,056 acres (53.33% of site) of habitat suitable for burrowing owls year-round (which includes year-round forage and burrow habitat + year-round burrow habitat, see Table 5 below), 7,833 acres (37. 79% of site) suitable seasonally, and 1,841 acres (8.88% of site) of unsuitable habitat (Table 5; Figure 9).

TABLE 5. LAND COVER TYPE ACREAGE AND PERCENT TOTAL OF WSP PLAN AREA AND A 2-MILE BUFFER (USDA 2016).

Habitat Type	Value as BUOW Habitat	WSP Plan Area Acres (Percent of Total)	WSP Plan Area and a 2-mile Buffer Acres (Percent of Total)
Fallow/Pasture/Barren/Shrubland	Year-round forage and burrow habitat	10,622 (51.24%)	32,413 (40.26%)
Irrigated Field	Seasonal forage habitat	7,833 (37.79%)	28,090 (34.89%)
Developed/Road	Year-round burrow habitat	434 (2.09%)	3,012 (3.74%)
Orchard/Vineyard/Wetland	No forage or burrow habitat	1,841 (8.88%)	17,000 (21.11%)
Total		20,729 (100%)*	80,514 (100%)

*Total acreage differs slightly from assessor parcel total of 20,938 acres.

The development of WSP solar projects could result in the loss of foraging and breeding habitat for burrowing owls. Known locations of burrowing owl burrows along canals will be avoided, as the project will not be impacting the canals, and the canals will continue to be managed as they are currently managed, which will also benefit other species using the canal system to move through the Plan Area. The majority of burrowing owls observed were along the eastern edge of the Plan Area. Adequate suitable foraging habitat exists to the east of the Plan Area to support these owls. For any burrowing owls occurring within the Plan Area but outside the canal systems, both breeding and foraging habitat could be lost; this would constitute a significant impact to burrowing owl foraging and breeding habitat.

The Gen-Tie lines would result in very little loss of foraging habitat and likely no loss of breeding habitat for burrowing owls, although gen-tie construction could result in disturbance to any nesting burrowing owls in the vicinity.

Ground disturbance from project construction may also result in the mortality of burrowing owls, as they are known to retreat into their burrows ahead of approaching grading activity. These small raptors are protected under the federal Migratory Bird Treaty Act and the California Fish and Game Code. Mortality of individual birds would be a violation of state and federal law. The mortality of individual burrowing owls and the loss of a large area of known breeding and foraging habitat would constitute a significant environmental impact.

Mitigation. Prior to the construction of WSP solar projects and gen-tie projects, the following measures shall be implemented which will reduce impacts to the burrowing owl to a less-than-significant level:

Mitigation Measure 3.3.7a (pre-construction surveys). Pre-construction surveys shall be conducted for burrowing owls by a qualified biologist no more than 14 days in advance of the on-set of ground-disturbing activity at each solar development site. These surveys shall be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) or the most recent CDFW guidelines. The surveys shall cover all areas of suitable burrowing owl habitat within each individual solar development site.

Mitigation Measure 3.3.7b (Avoidance of active nests during breeding season). If pre-construction surveys are undertaken during the breeding season (February through August) and active nest burrows are located within or near construction zones, a construction-free buffer of 250 feet shall be established around all active owl nests. The buffer areas shall be enclosed with temporary fencing, and construction equipment and workers shall not be allowed to enter the enclosed setback areas. Buffers shall remain in place for the duration of the breeding season. After the breeding season (i.e., once all young have left the nest), passive relocation of any remaining owls may take place, but only under the conditions described below.

Mitigation Measure 3.3.7c (Avoidance of occupied burrows during non-breeding season, and passive relocation of resident owls). During the non-breeding season (September through January), any burrows occupied by resident owls in areas planned for development shall be protected by a construction-free buffer with a radius of 250 feet around each active burrow. Passive relocation of resident owls is not recommended by CDFW where it can be avoided. If passive relocation is not avoidable, resident owls may be passively relocated according to a relocation plan prepared by a qualified biologist.

Mitigation Measure 3.3.7d (Tailgate Training). All workers on the solar projects shall attend a tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if a burrowing owl is observed on a project site.

Mitigation Measure 3.3.7e (Mitigation for Loss of Breeding and/or Foraging Habitat). If it is determined that burrowing owl nest(s) are located on or near a project site, the biologist shall coordinate with the project applicant to determine whether these nests are to be unavoidably relocated. If so, measure #1 below (off-site conservation easement) would apply. If the onsite or nearby nests are to remain in place, the biologist shall determine whether sufficient foraging habitat is available on adjacent or nearby lands, and if so, no further mitigation is required. (Approximately 200 acres of year-round foraging habitat within about 2 miles of the burrowing owl burrow is required to support a burrowing owl pair.) If it is determined that there is insufficient nearby foraging habitat, the biologist shall determine the amount of off-site foraging habitat that is required to sustain the burrowing owl nest. In this case, the potential impact to foraging habitat shall be either avoided through implementation of measure #2 below (onsite buffer zone), or compensated through implementation of measure #1 (conservation easement) or measure #3 (long-term agreement on adjacent lands) below:

1). Establishment of a conservation easement with a 1:1 ratio for foraging/breeding habitat preservation. These easements would include habitats determined to be suitable for foraging and/or breeding year-round and seasonal use.

2) Establishment of permanent buffer zones of adequate size around current burrowing owl locations. These buffer zones would require adequate management for the life of the project and buffer zones to ensure the buffer area remains suitable for burrowing owls. Annual monitoring of the suitability of management activities may be required by CDFW.

3) Short or long-term compensation for foraging habitat by providing farmers in adjacent lands incentives to plant particular crops known to be suitable forage habitat for burrowing owls (i.e. winter wheat, alfalfa, etc.) and to enact a farmer burrowing owl safety program where farmers are trained how to reduce burrowing owl mortalities on their lands and farm roads. A 1:1 ratio would be required to be in the program as long as the project is active.

Compliance with the above mitigation measures would reduce impacts to burrowing owls to a less-than-significant level.

3.3.8 Impacts to Wildlife Movement Corridors

Potential Impacts. As discussed in Section 2.6.6, given the large scale of the WSP Plan Area, it is likely that some species use onsite canals as movement corridors, including San Joaquin kit fox. The large area comprising the Plan Area (approximately 33 sq. mi.) likely has value for the regional movements of some wildlife species, when placed in a regional context. However, the WSP solar development would not affect existing canals, which would continue to be operated and managed by Westlands Water District as they are under current conditions. Thus it is expected that wildlife that currently uses the canals for movement will continue to use the canal system to move through the site at project build-out.

To allow for ground movement of wildlife through the Plan Area, all fencing enclosing the WSP solar facilities is planned to consist of "wildlife friendly" fencing with a continuous 5-inch separation from the top of the ground to the lowest point of the bottom of the fence along the entire fence. Such fencing will not be electrified.

In the vicinity of the Gen-Tie Corridors, the California Aqueduct is likely used as a movement corridor for local wildlife. However, given the very light footprint of the gen-tie lines, it is

unlikely that they would affect local wildlife movement along the Aqueduct or any other linear feature.

Therefore, wildlife currently using the Plan Area and Gen-Tie Corridors for movement are expected to continue to use the area after project construction is complete, as wildlife friendly fencing will be used and the canal system will be retained within the Plan Area in order to allow for wildlife movement through the Plan Area.

Impacts to movement corridors for local wildlife are less-than-significant.

Mitigations. Mitigation for impacts to wildlife movements is not warranted.

3.3.9 Disturbance to Native Wildlife Nursery Sites

Potential Impacts. The aquatic habitat associated with the irrigation canals within the WSP plan area and the off-site tailwater pond, including tree cavities in willows around the tailwater pond, could provide nursery sites for native wildlife. Since all of these features would be avoided by WSP solar development and gen-tie construction, the potential impacts to wildlife nursery sites would be less-than-significant.

Mitigation. No mitigation is warranted.

3.3.10 Disturbance to Waters of the United States and Riparian Habitats

Potential Impacts. All onsite waters, as contained in irrigation canals and ditches and small irrigation overflow basins which exist along the margins of the work areas as well as the off-site tailwater pond, appear not to meet the jurisdictional requirements of the USACE as Waters of the United States (see Section 2.7). However, only the USACE can make a jurisdictional determination of onsite waters. Therefore, in the absence of a wetland delineation verified by the USACE, the jurisdictional status of onsite waters is unconfirmed. However, these features may be subject to the jurisdiction of the State of California. WSP solar development and gen-tie construction is not planned or expected to encroach upon or physically alter the onsite canals (and associated riparian zones) that are identified in Figure 4. The projects will avoid all permanent canals. However, should construction be planned to occur in areas that would result in the

placement of fill in any canals or the off-site tailwater pond, a wetland delineation would be required to determine the extent of USACE jurisdiction over such features. If the waters to be filled are determined to be Waters of the U.S. the following permits may be required 1) a Clean Water Act permit from the USACE, 2) a Water Quality Certification from the RWQCB, and/or 3) a Lake or Stream Alteration Agreement from the CDFW. These permits are usually issued on the condition that a mitigation plan be prepared and approved by the applicable state and federal regulatory agencies noted above. Although the WSP solar project sites and gen-tie corridors are not anticipated to include wetland features, the full coverage biological field surveys and reports required in conjunction with CEQA review prior to approval of Conditional Use Permits for each WSP solar project and gen-tie project would confirm the presence or absence of potentially affected wetlands within proposed disturbance areas and identify avoidance measures, as appropriate.

Potential impacts to the irrigation canals and ditches and irrigation overflow basins within the project site will be avoided by not building arrays within them; the gen-tie tower planning and design will also have sufficient flexibility to enable placement and installation of the towers to avoid impacts to these features. Because WSP solar development and gen-tie construction is intended to avoid potential Waters of the U.S. and riparian areas, potential impacts to Waters of the U.S. and riparian habitat would constitute a less-than-significant adverse impact under CEQA.

Mitigation. Potential impacts to Waters of the U.S. and riparian habitat would be avoided; therefore, no mitigation is warranted.

3.3.11 Local Policies or Habitat Conservation Plans

Potential Impacts. The WSP solar development would be in compliance with the provisions of Kings County, and the gen-tie projects would be in compliance Fresno County General Plan polices. In particular, the avoidance of onsite canals and the adjacent tailwater pond would assure that biological resources of concern to Kings County and Fresno County would be avoided and preserved.

The USFWS has adopted the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998) which covers 34 species of plants and animals that occur in the San Joaquin

Valley. The majority of these species occur in arid grasslands and scrublands of the San Joaquin Valley and the adjacent foothills and valleys. The plan includes information on recovery criteria, habitat protection, umbrella and keystone species, monitoring and research program, adaptive management, and economic and social considerations. The only species addressed in the recovery plan that potentially occurs in the WSP and Gen-Tie Corridors vicinity is the San Joaquin kit fox, although no sightings of this species have been recorded in the immediate vicinity of the WSP Plan Area since 2002, and no sightings have been recorded in the vicinity of the Gen-Tie Corridors since 1981, as discussed above. The Recovery Plan does not identify the WSP Plan Area, the Gen-Tie Corridors, or any other lands in the vicinity as areas that should be protected as Specialty Reserve Areas, Wildlife-Compatible Farmland to be Maintained, or Areas Where Connectivity and Linkages Should be Promoted. The nearest area identified as a connectivity and linkage area is the Kettleman Hills to Anticline Ridge Movement Corridor, located west of I-5, approximately 4 miles west of the western end of the gen-tie corridors at the Gates Substation.

Neither the WSP Plan Area or Gen-Tie Corridors is covered by any existing Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP), or any other conservation plan adopted at the local, regional, state, or federal level.

Mitigation. No mitigations are warranted.

4 CUMULATIVE IMPACT ANALYSIS FOR SWAINSON'S HAWK FORAGING HABITAT

The purpose of this analysis is to evaluate whether or not the project will contribute to a cumulative loss of foraging habitat available for the regional nesting Swainson's hawk population. This analysis presumes that a significant cumulative loss of foraging habitat would compromise growth rates of the Swainson's hawk as it would reduce nutritional capacity and adversely affect annual nesting production.

This analysis completes the Cumulative Impacts Assessment for the project in support of Section 15130 of the California Environmental Quality Act (CEQA) Guidelines. These guidelines require that cumulative impacts of a project are discussed when a project's incremental effects are cumulatively considerable (15065(a)(3)). A cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts (15355). CEQA guidelines define cumulatively considerable as follows: "the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects."

In accordance with CEQA Guidelines, the following discussion of cumulative impacts reflects the standards of practicality and reasonableness, and focuses on the cumulative impact to which the identified other projects contribute to the cumulative impact. A list of past, present, and probable future projects producing related or cumulative impacts was provided by Bert Verrips and the County of Kings.

This analysis focuses on the project's possible cumulative effects on the Swainson's hawk (SWHA) (*Buteo swainsonii*), a California threatened species that relies largely on agricultural lands to meet its foraging needs. As noted in Section 2.6.4, Swainson's hawk populations in California are limited by available nest trees with suitable foraging habitat within 10 miles of the nests. Therefore, the objectives of this analysis include using available data to:

1) Identify past, current and probable future projects for cumulative impacts assessment;

2) Determine distribution and abundance of nesting Swainson's hawk in the Study Area for a given year (i.e., for the purpose of estimating annual nutritional needs for the regional nesting population);
3) Determine foraging habitat requirements in the Study Area that might affect annual Swainson's hawk production; and
4) Assess the cumulative impacts of the proposed Westlands Solar Park on the distribution and abundance of annual foraging habitat.

STUDY AREA

The Study Area, (e.g., geographic scope) for this analysis is defined by a 10-mile radius surrounding the proposed approximately 21,000-acre project footprint of the Westlands Solar Park. This radius was selected because published studies have identified this radius as the flight distance between active nests sites and suitable foraging habitats (Estep 1989, Babcock 1995). The area encompassed by the 10-mile radius is 442,802 acres (approximately 692 square miles). Note: Since the Gen-Tie Lines would occupy a negligible area of land (i.e., total land area permanently displaced by transmission monopoles would be less than 2 acres), the 10-mile radius does not extend 10 miles from the Gen-Tie Corridors, but only from the WSP plan area boundaries.

The proposed project site (i.e., WSP Plan Area) is located in the center of the Study Area approximately nine miles southwest of the City of Lemoore, CA. The entire project site consists of cultivated fields, fallow fields/pastures, agricultural roads, and irrigation canals and ditches.

With the exception of the City of Lemoore, the Naval Air Station Lemoore, and the census designated places of Lemoore Station, Stratford and the east side of Huron, the surrounding lands are similar to the Project Site with fallow/idle cropland, grass/pasture, tomatoes, and cotton dominating the landscape (USDA 2016). Avenal, Huron, Kettleman City, Lemoore, Lemoore Station, Naval Air Station Lemoore, and Stratford are located entirely within the Study Area. California state highway 41 is approximately 0.4 miles east and highway 198 is approximately 2 miles north of the site.

A few natural features are located within the Study Area. Natural Resource Conservation Service Wetlands Reserve Program land is located approximately 5 miles to the northeast of the site and the Arroyo Pasajero Westside Detention Basin is located approximately 5 miles to the west of the

site, which contain more natural habitats and may be subject to flooding. Bureau of Land Management Areas of Critical Environmental Concern are located approximately 4 miles west and southwest of the site. Portions of the North Fork, South Fork and Clarke Fork of the Kings River are present within the Study Area, most of which contain riparian habitat and more natural riverine features. Irrigation canals and ditches are also located throughout the Study Area.

RECENT AND PROPOSED PROJECTS OF THE STUDY AREA

Twenty-one other solar projects were identified within the Study Area for this cumulative impact assessment. These include the Sun City (180 acres), Sand Drag (240 acres), Avenal Park (86.29 acres), American Kings (978 acres), Sunpower Henrietta (836 acres), Kansas South (230 acres), Aurora Solar (186 acres), Kansas (200 acres), Mustang (1,422 acres), Orion (200 acres), Kent South (200 acres), Kettleman Solar (220 acres), Lemoore 14 (60.39 acres), 2275 Hattesen (15.70 acres), Java Solar (96.14 acres), Mustang 2 (2,459.15 acres), and NAS Lemoore (930 acres) projects within Kings County, and PG&E Huron (~240 acres), PG&E Gates (~70 acres), and Westlands Solar Farm (90.5 acres), SC&R (1,594 acres) projects within Fresno County. These 21 projects together encompass approximately 10,534 acres of the Study Area. With the addition of the proposed project (approximately 20,938 acres), the total area covered by the cumulative projects is approximately 31,472 acres. (Note: Westside Solar Phases 1 and 2 (187 acres) and Aquamarine Solar (1,860 acres) are included within the WSP Plan Area and therefore are not listed as separate projects above.)

METHODS

Estimates of an annual nesting population for the Study Area were based on 2017 nesting surveys conducted by Estep for within 10 miles of the Mustang 2 project site which included the majority of the Study Area and supplemented active nests identified by LOA in 2012, the last year full nesting surveys were conducted in the "gap" (i.e., areas within the Study Area not surveyed by in 2017 by Estep) area (Estep 2017).

The primary objective of this analysis was to estimate the foraging needs of 2017 Swainson's hawk population with the Study Area. While it is not possible to rely on Estep's detection of active nests from his 2017 surveys for the entire Study Area, LOA ecologist Katrina Krakow, in an

attempt to confirm the validity of the 2012 survey results for the small area not covered by Estep's 2017 surveys, visited the location of the four active 2012 Swainson's hawk nests within the "gap" area September 2017 to evaluate their likely relevance for inclusion as "active nests" for the 2017 analysis.

One of the four nests from 2012 was observed incidentally by Ms. Krakow during the 2017 nesting season to be active, and was revisited during the September assessment; this nest was found to be fully intact. The second nest appeared to be partially broken down and whether or not nesting occurred this year is inconclusive. The third nest was on top of a mistletoe clump in a cottonwood tree along Los Gatos Creek, and may have supported nesting during the 2017 season; 2017 nesting however could not be positively confirmed. The forth nest in a clump of tamarisk on the west side of Los Gatos Creek was absent. Whether or not an alternative nest site was active in 2017 in this area of the river is not known.

While it was only possible to confirm that a single nest from 2012 was active in 2017, for the purposes of this analysis, it was assumed that all four 2012 nests were active. This is a conservative approach that would more likely trigger a significant adverse cumulative impact, than assuming only one nest was active. Therefore, as noted above, this analysis relies on Estep's 2017 nest surveys for the majority of the Study Area LOA's 2012 nest surveys for the remainder.

Foraging Habitats

Land uses and habitat types were identified using the 2016 United States Department of Agriculture (USDA) National Agricultural Statistics Service Cropland Data Layer (CDL) (Han et al. 2012; Boryan et al. 2011). The CDL is a raster, geo-referenced, crop-specific land cover data layer created annually for the continental United States using moderate resolution satellite imagery and extensive agricultural ground truthing (USDA 2016). For the purposes of this study, the CDL layer was limited to the Study Area which included 66 cover types.

Foraging habitat associations were based on 6 cover type aggregates, instead of the 66 specific cover types because agricultural crop management is a dynamic process; crop types may change annually and seasonally. In order to capture long-term land use patterns specific crop types were

grouped into broad categories. These were used to characterize relative foraging habitat suitability on the landscape (Estep 2017). The six land use/cover type categories used for the Study Area include:

- Alfalfa
- Irrigated Cropland
- Orchard/Vineyard
- Developed/Open Water
- Pasture/Barren
- Natural woodlands

Foraging habitat classes were based on Biology, Movements, and Habitat Relationships of the Swainsons's Hawk in the Central Valley of California (Estep 1989) and California Partners in Flight Riparian Bird Conservation Plan: Swainson's Hawk (Buteo swainsoni) (Woodbridge 1998). Based on these documents alfalfa, irrigated cropland, and pasture/barren were determined to constitute suitable foraging habitat for the Swainson's hawk.

Data Preparation

The CDL was queried using the Study Area boundary as the defined area of interest that was imported into USDA's National Agricultural Statistics Service Cropscape – Cropland Data Layer website (https://nassgeodata.gmu.edu/CropScape/). Land use/cover types within the Study Area were then exported to excel and reclassified into the above categories, which included acreages. The Study Area includes roads and highways which are not classified habitat types in the CDL; therefore, acreages may minimally exceed the actual acreage for any given class. For the purposes of this study, this effect is considered negligible because it accounts for a very small percentage of the Study Area and does not affect habitat distribution and abundance. In addition, CDL acreage counts are not official estimates (USDA 2016).

RESULTS

Nest Proximity

A total of 32 SWHA nests were documented within the Study Area (CDFW 2017; LOA 2012; Estep 2017). Figure 10 shows the nest distribution across the Study Area. The nearest SWHA nest is approximately 120 feet east of the southern tip of the project site along the Blakeley Canal and 9 other nests are within five miles of the site. Twenty-two SWHA nests are between five and ten miles of the site.

Land Use Cover Types

There are 6 cover types in the 442,802-acre Study Area. Relative abundance for each cover type and their SWHA forage value is listed Table 3 and described below.

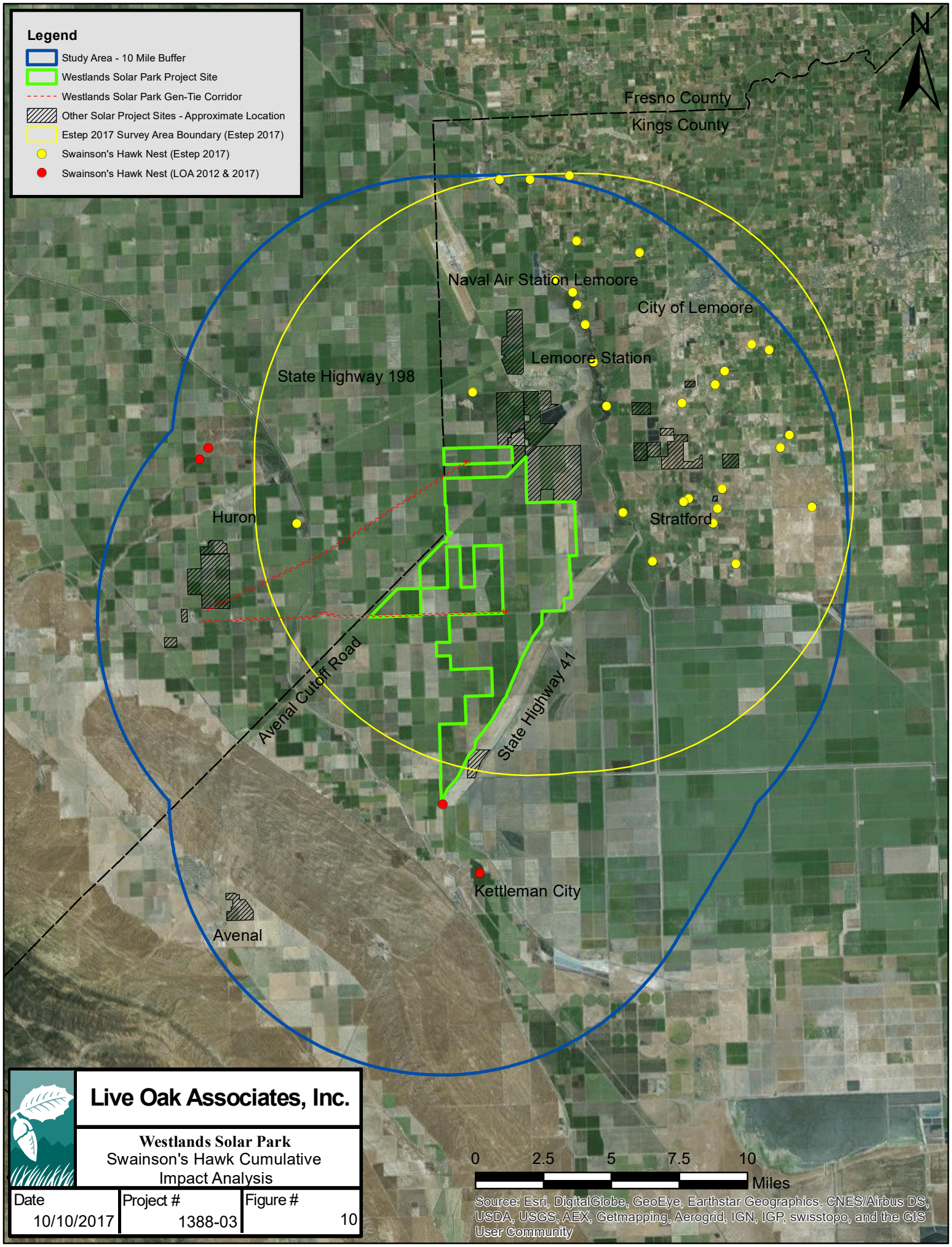
Table 3. Land Cover Type Acreage and Percent Total of Study Area (USDA 2016).

Land Cover Type	SWHA Forage Value	WSP Plan Area Acres (Percent of Total)	Study Area Acres (Percent of Total)
Alfalfa	High	105 (0.51%)	11,905 (2.69%)
Pasture/Barren	Medium-High	10,622 (51.24%)	186,240 (42.10%)
Irrigated Cropland	Medium	7,728 (37.28%)	142,159 (32.13%)
Orchard/Vineyard	Low-None	1,841 (8.88%)	72,056 (16.29%)
Developed/Open Water	None	434 (2.09%)	29,972 (6.77%)
Natural Forested	None	0	61 (0.01%)
Total		20,729 (100%)*,**	442,393 (100%)**

* Acreage differs from assessor parcel amount.
** CDL acreage counts are not official estimates.

Alfalfa. Alfalfa is considered to have the highest foraging value for SWHA (Estep 1989, 2012, 2017). This crop remains in fields for up to 5 years. Alfalfa management includes mowing and irrigation which can expose rodent prey and make prey more accessible to SWHA (Estep 2012, 2017).

Pasture/Barren. This cover type includes fallow/idle cropland, grass/pasture, barren, shrubland, and herbaceous wetlands. Other grassland surrogates such as herbs are also included in this category. Fallow/idle croplands represent the majority of this cover type. This cover type may provide medium to high forage value to SWHA depending upon prey availability.



Live Oak Associates, Inc.

Westlands Solar Park
Swainson's Hawk Cumulative Impact Analysis

Date	Project #	Figure #
10/10/2017	1388-03	10

Irrigated Cropland. This cover type includes crops such as tomatoes, cotton, safflower, and winter wheat, which represent the majority of this category. Other crops, such as asparagus, melons, carrots, and peas, are also included; however, these represent a very small percentage of the total. This cover type may provide medium foraging habitat value to SWHA (Estep 1989). Foraging value for this type may be dependent upon timing of harvest and planting.

Orchard/Vineyards. This cover includes fruit, nut, and other tree crop orchards, and grapes, and represents little to no foraging value to SWHA due to a lack of accessibility for SWHA (Woodbridge 1998). Due to the little to no foraging value, this habitat is not included as foraging habitat for this analysis.

Developed/Open Water. This cover type represents developed areas with low, moderate and high intensities such as the towns of Avenal, Huron, Kettleman City, Lemoore, Lemoore Station, Naval Air Station Lemoore, and Stratford and rural developments (e.g., cattle corrals and other infrastructure). This cover type contributes no forage value, however trees located on these properties may provide nesting habitat. Open water also represents no forage value to SWHA. A small percentage of the open water mapped in the CDL may be flooded fields, a temporary feature. Therefore, this cover type may be overrepresented; however, this effect is considered negligible in comparison to the overall Study Area.

Natural Forested. This type is represented by mixed forest and woody wetlands. These areas may provide nesting habitat for SWHA; however, they provide no forage habitat value for SWHA.

Foraging Habitat Cumulative Analysis

Estep (1989, 2012, 2017) has proposed that if a cumulative loss of agricultural foraging habitat, from the proposed project and other projects, results in a reduction of surplus habitat to less than 70% relative to pre-project conditions, then the cumulative impact is deemed significant. Surplus habitat represents the number of available foraging acres that exceed the minimum required available foraging acres to support known Swainson's hawk nesting pairs. The significance threshold is derived from reviewing habitat land cover data to estimate the existing foraging habitat baseline condition and including the existing Swainson's hawk population foraging habitat

requirements to estimate the required foraging habitat necessary to support the nesting population (Estep 1989, 2012, 2017). This methodology is used for this study.

Estep (1989) calculated that an area of 6,820 acres of foraging habitat is required for each nesting pair. The total foraging habitat acreage required for the nesting population is calculated by multiplying the number of pairs in the Study Area by 6,820 acres. Table 4 presents the Study Area analysis for foraging habitat requirements for 32 pairs located in the Study Area.

TABLE 4. CUMULATIVE IMPACT ANALYSIS FOR SWHA FORAGING HABITAT WITHIN THE STUDY AREA

Foraging Habitat	Acres	Percent
(a) Available Foraging Habitat within Study Area	340,304	-
(b) Unadjusted Foraging Habitat required to support 32 SWHA pairs	218,240	-
(c) Adjusted Foraging habitat required to support 32 SWHA pairs (adjusted for 30% range overlap)	152,768	-
(d) Surplus SWHA foraging habitat (a-c)	187,536	-
(e) Cumulative impact of project impact and 21 other solar projects (on foraging habitat) (assumes that all acreage within the cumulative projects is suitable foraging habitat).	31,472	-
(f) Remaining available foraging habitat following cumulative impacts (a-e)	308,832	90.8%
(g) Remaining available surplus SWHA foraging habitat following cumulative impacts (d-e)	156,064	83.2%

Cumulative analysis for foraging habitat shows that there is a greater amount of foraging habitat available than that required to support 32 nesting pairs. Following Estep (2012 & 2017), the total foraging habitat required was adjusted down to account for foraging habitat overlap within the Study Area. Estep (2012 & 2017) considers the availability of the surplus foraging habitat acres in addition to the required foraging habitat to be sufficient to support a growing population. If available foraging habitat required to sustain the nesting population plus at least 70% (i.e., 131,275acres) of the existing surplus habitat remains, the habitat removal resulting from the project and the other projects in the Study Area is not expected to significantly affect either the existing population or substantially affect opportunities for future population expansion. Therefore, the cumulative impacts would be considered less-than-significant.

There are currently 21 solar projects within the Study Area (including the proposed project) with a total area of approximately 31,472 acres. If it is conservatively assumed that 100-percent of the

solar projects within the Study Area represent potential foraging habitat, these projects equal approximately 9.2% of the total potential foraging habitat in the Study Area. Table 4 shows that the impact areas of the proposed project and the 21 other solar projects do not reach or go below the 70% threshold of significance (131,275 acres) as defined by Estep (2012 & 2017). The remaining available surplus habitat (156,064 acres) exceeds the 70% threshold of significance. Therefore, the cumulative impact to Swainson's hawk foraging habitat is less-than-significant.

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APPENDIX A: VASCULAR PLANTS OF THE WSP PLAN AREA

The plants species listed below were observed on the Plan Area during annual spring and summer surveys conducted by Live Oak Associates, Inc. in 2010-2015. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

AMARANTHACEAE – Pigweed Family		
Amaranthus sp.	Amaranth	-
ASTERACEAE – Sunflower Family		
Baccharis salicifolia	Mulefat	-
Conyza canadensis	Canada Horseweed	FAC
Gnaphalium luteo-album	Common cudweed	-
Helianthus annuus	Common Sunflower	FAC-
Lactuca serriola	Prickly wild lettuce	FAC
Silybum marianum	Milk Thistle	UPL
Sonchus asper	Prickly Sow-thistle	FAC
Xanthium strumarium	Cocklebur	FAC+
BORAGINACEAE – Borage Family		
Amsinckia sp.	Fiddleneck	UPL
Heliotropium curassavicum	Seaside Heliotrope	OBL
BRASSICACEAE - Mustard Family		
Brassica nigra	Black Mustard	UPL
Capsella bursa-pastoris	Shepherd's Purse	FAC-
Hirschfeldia incana	Summer Mustard	UPL
Lepidium nitidum ssp. *nitidum*	Peppergrass	UPL
Raphanus sativa	Wild Radish	UPL
Sisymbrium irio	London Rocket	UPL
CHENOPODIACEAE – Goosefoot Family		
Atriplex sp.	Saltbush	-
Chenopodium sp.	Goosefoot	-
Chenopodium album	Lamb's Quarters	FAC
Chenopodium murale	Nettle leaf goosefoot	UPL
Salsola tragus	Russian thistle	FACU
CYPERACEAE – Sedge Family		
Carex sp.	Sedge	FACW/OBL
Cyperus eragrostis	Flatsedge	FACW

EUPHORBIACEAE – Spurge Family		
Eremocarpus setigerus	Dove Weed	UPL
FABACEAE - Pea Family		
Medicago lupulina	Black Medic	FAC
FRANKENIACEAE – Frankenia Family		
Frankenia salina	Alkali heath	FACW+
GERANEACEAE - Geranium Family		
Erodium cicutarium	Filaree	UPL
MALVACEAE – Mallow Family		
Malva neglecta	Common Mallow	UPL
Malvella leprosa	Alkali mallow	FAC*
MYRTACEAE – Myrtle Family		
Eucalyptus sp.	Eucalyptus	UPL
POACEAE – Grass Family		
Avena sp.	Wild Oat	UPL
Bromus hordeaceaus	Soft Chess	FACU
Bromus madritensis ssp. *rubens*	Red Brome	UPL
Cynodon dactylon	Bermuda Grass	FAC
Distichlis spicata	Saltgrass	FACW
Hordeum murinum ssp. *leporinum*	Barnyard Barley	NI
Leptochloa uninervia	Mexican sprangeltop	FACW
Phalaris minor	Little seed canarygrass	-
Phalaris aquatica	Harding Grass	FAC+
Polypogon monspeliensis	Rabbit's Foot Grass	FACW
Triticum sp.	Cultivated Wheat	-
Vulpia myuros ssp. *hirsuta*	Rattail Fescue	FACU
POLYGONACEAE – Buckwheat Family		
Polygonum lapathifolium	Willow weed	OBL
Polygonum sp.	Knotweed	-
Rumex crispus	Curly Dock	FACW
Rumex salicifolius	Willow Leaved Dock	FACW
PORTULACACEAE - Purselane Family		
Portulaca oleracea	Purslane	FAC
SALICACEAE – Willow Family		
Salix gooddingii	Goodding's Willow	OBL
SOLANACEAE – Nightshade Family		
Datura stramonium	Jimsonweed	
Solanum americanum	Common Nightshade	FAC
TAMARICACEAE – Tamarisk Family		
Tamarix aphylla	Athel tamarisk	FACW-
Tamarix Sp.	Tamarisk	-
TYPHACEAE – Cattail Family		
Typha latifolia	Common Cattail	OBL
VISCACEAE – Mistletoe Family		
Phoradendron macrophyllum	Mistletoe	UPL

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE WSP PLAN AREA

The species listed below are those that may reasonably be expected to use the habitats of the Plan Area routinely from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed in or adjacent to the Plan Area in 2010-2015 field surveys have been noted with an asterisk.

CLASS: AMPHIBIA (Amphibians)
ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
*Western California Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and relatives)
*Pacific Chorus Frog (*Pseudacris regilla*)
FAMILY: RANIDAE (True Frogs)
*Bullfrog (*Rana catesbeiana*)

CLASS: REPTILIA (Reptiles)
ORDER: TESTUDINES (Turtles)
FAMILY: EMYDIDAE (Box and Water Turtles)
Western Pond Turtle (*Actinemys marmorata*)
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE
Western Fence Lizard (*Sceloporus occidentalis*)
Side-blotched Lizard (*Uta stansburiana*)
FAMILY: TEIIDAE (Whiptails and relatives)
Western Whiptail (*Cnemidophorus tigris*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Coachwhip (*Masticophis flagellum*)
Glossy Snake (*Arizona elegans*)
*Gopher Snake (*Pituophis melanoleucus*)
Common Kingsnake (*Lampropeltis getulus*)
Long-nosed Snake (*Rhinocheilus lecontei*)
Common Garter Snake (*Thamnophis sirtalis*)
FAMILY: VIPERIDAE (Vipers)
Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES (Birds)
ORDER: GAVIIFORMES (Loons)
FAMILY: PODICIPEDIDAE (Grebes)
*Pied-Billed Grebe (*Podilymbus podiceps*)
ORDER: PELECANIFORMES (Tropicbirds, Pelicans and Relatives)

FAMILY: PELECANIDAE (Pelicans)
*American White Pelican (*Pelecanus erythrorhynchos*)
FAMILY: PHALACROCORACIDAE (Cormorants)
*Double-Crested Cormorant (*Phalacrocorax auritus*)
ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
***Great Blue Heron (*Ardea herodias*)
*Great Egret (*Ardea alba*)
*Snowy Egret (*Egretta thula*)
*Green Heron (*Butorides virescens*)
*Black-Crowned Night Heron (*Nycticorax nycticorax*)
*Cattle Egret (*Bubulcus ibis*)
*American Bittern (*Botaurus lentiginosus*)
FAMILY: CATHARTIDAE (American Vultures)
*Turkey Vulture (*Cathartes aura*)
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)
*Northern Harrier (*Circus cyaneus*)
White-tailed kite (*Elanus leucurus*)
*Red-tailed Hawk (*Buteo jamaicensis*)
Ferruginous Hawk (*Buteo regalis*)
Sharp-Shinned Hawk (*Accipiter striatus*)
Cooper's hawk (*Accipiter cooperii*)
*Red-Shouldered Hawk (*Buteo lineatus*)
*Swainson's Hawk (*Buteo swainsoni*)
ORDER: ANSERIFORMES (Screamers, Ducks, and relatives)
FAMILY: ANTATIDAE (Swans, Geese, and Ducks)
Mallard (*Anas platyrhynchos*)
ORDER: FALCONIFORMES (Caracaras and Falcons)
FAMILY: FALCONIDAE (Caracaras and Falcons)
*American Kestrel (*Falco sparverius*)
Merlin (*Falco columbarius*)
*Peregrine Falcon (*Falco peregrinus*)
*Prairie Falcon (*Falco mexicanus*)
ORDER: GALLIFORMES (Megapodes, Curassows, Pheasants, and relatives)
FAMILY: PHASIANIDAE (Quails, Pheasants, and relatives)
Ring-necked Pheasant (*Phasianus colchicus*)
ORDER: GRUIFORMES (Cranes, Rails and Relatives)
FAMILY: RALLIDAE (Rails, Gallinules and Coots)
*Common Moorhen (*Gallinula chloropus*)
*American Coot (*Fulica americana*)
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)
FAMILY: CHARADRIIDAE (Plovers and relatives)
Western Snowy Plover (*Charadrius alexandrines nivosus*)
Mountain Plover (*Charadrius montanus*)

*****Killdeer (*Charadrius vociferus*)
FAMILY: RECURVIROSTRIDAE (Avocets and Stilts)
*Black-Necked Stilt (*Himantopus mexicanus*)
*American Avocet (*Recurvirostra americana*)

FAMILY: COLOPACIDAE (Sandpipers and Relatives)
*Greater Yellowlegs (*Tringa melanoleuca*)
*Whimbrel (*Numenius phaeopus*)
*Long-Billed Curlew (*Numenius americanus*)
*Least Sandpiper (*Calidris minutilla*)
*Long-Billed Dowitcher (*Limnodromus scolopaceus*)
FAMILY: LARIDAE (Skuas, Gulls, Terns and Skimmers)
Ring-billed Gull (*Larus delawarensis*)
California Gull (*Larus californicus*)
*Herring Gull (*Larus argentatus*)
Caspian Tern (*Sterna caspia*)
*Forster's Tern (*Sterna forsteri*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
*Rock Dove (*Columba livia*)
*Mourning Dove (*Zenaida macroura*)
*Eurasian Collared Dove (*Streptopelia decaocto*)
ORDER: STRIGIFORMES (Owls)
FAMILY: TYTONIDAE (Barn Owls)
*Common Barn Owl (*Tyto alba*)
FAMILY: STRIGIDAE (Typical Owls)
*Burrowing Owl (*Athene cunicularia*)
*Great Horned Owl (*Bubo virginianus*)
Western Screech Owl (*Otus kennicottii*)
ORDER: CAPRIMULGIFORMES (Goatsuckers and relatives)
FAMILY: CAPRIMULGIDAE (Goatsuckers)
Lesser Nighthawk (*Chordeiles acutipennis*)
FAMILY: TROCHILIDAE (Hummingbirds)
Black-chinned Hummingbird (*Archilochus alexandri*)
Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)
ORDER: CORACIIFORMES (Kingfishers and Relatives)
FAMILY: ALCEDINIDAE (Kingfishers)
*Belted Kingfisher (*Ceryle alcyon*)
ORDER: PICIFORMES (Woodpeckers and relatives)
FAMILY: PICIDAE (Woodpecker and Wrynecks)
Northern Flicker (*Colaptes chrysoides*)
Downy Woodpecker (*Picoides pubescens*)
Nuttall's Woodpecker (*Picoides nuttallii*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)

*Black Phoebe (*Sayornis nigricans*)
*Say's Phoebe (*Sayornis saya*)
*Western Kingbird (*Tyrannus verticalis*)
FAMILY: LANIIDAE (Shrikes)
*Loggerhead Shrike (*Lanius ludovicianus*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
Western Scrub Jay (*Aphelocoma coerulescens*)
Yellow-billed Magpie (*Pica nuttalli*)
*American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)
FAMILY: ALAUDIDAE (Larks)
*****Horned Lark (*Eremophila alpestris*)
FAMILY: HIRUNDINIDAE (Swallows)
*Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
*Cliff Swallow (*Hirundo pyrrhonota*)
*Barn Swallow (*Hirundo rustica*)
FAMILY: TROGLODYTIDAE (Wrens)
Marsh Wren (*Cistothorus palustris*)
FAMILY: TURDIDAE
Western Bluebird (*Sialia mexicana*)
*American Robin (*Turdus migratorius*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
*Northern Mockingbird (*Mimus polyglottos*)
FAMILY: STURNIDAE (Starlings)
*European Starling (*Sturnus vulgaris*)
FAMILY: MOTACILLIDAE (Wagtails and Pipits)
*American Pipit (*Anthus rubescens*)
FAMILY: BOMBYCILLIDAE (Waxwings)
Cedar Waxwing (*Bombycilla cedrorum*)
FAMILY: PARULIDAE (Wood Warblers and Relatives)
Orange-crowned Warbler (*Vermivora celata*)
*Yellow-rumped Warbler (*Dendroica coronata*)
FAMILY: EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and relatives)
*Savannah Sparrow (*Passerculus sandwichensis*)
*Song Sparrow (*Melospiza melodia*)
Golden-crowned Sparrow (*Zonotrichia atricapilla*)
*White-crowned Sparrow (*Zonotrichia leucophrys*)
FAMILY: CARDINALIDAE (Cardinals, Grosbeaks and Allies)
*Blue Grosbeak (*Passerina caerulea*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
*Red-winged Blackbird (*Agelaius phoeniceus*)
Tricolored Black Bird (*Agelaius tricolor*)
*Western Meadowlark (*Sturnella neglecta*)
*Yellow-Headed Blackbird (*Xanthocephalus xanthocephalus*)
*Brewer's Blackbird (*Euphagus cyanocephalus*)

*Great-Tailed Grackle (*Quiscalus mexicanus*)
*Brown-headed Cowbird (*Molothrus ater*)
FAMILY: FRINGILLIDAE (Finches)
*House Finch (*Carpodacus mexicanus*)
FAMILY: PASSERIDAE (Old World Sparrows)
House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA (Mammals)
ORDER: DIDELPHIMORPHIA (Marsupials)
FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)
ORDER: INSECTIVORA (Insectivores)
Ornate Shrew (*Sorex ornatus*)
ORDER: CHIROPTERA (Bats)
FAMILY: PHYLLOSTOMIDAE (Leaf-nosed Bats)
Southern Long-nosed Bat (*Leptonycteris curasoae*)
FAMILY: VESPERTILIONIDAE (Evening Bats)
Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Pale Big-eared Bat (*Corynorhinus townsendii pallescens*)
Townsend's Western Big-eared Bat (*Corynorhinus townsendii townsendii*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Western Red Bat (*Lasiurus borealis*)
Pallid Bat (*Antrozous pallidus*)
FAMILY: MOLOSSIDAE (Free-tailed Bat)
California Mastiff Bat (*Eumops perotis* ssp. *californicus*)
Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)
FAMILY: LEPORIDAE (Rabbits and Hares)
*Desert Cottontail (*Sylvilagus audubonii*)
Black-tailed (Hare) Jackrabbit (*Lepus californicus*)
ORDER: RODENTIA (Rodents)
FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)
*California Ground Squirrel (*Otospermophilus beecheyi*)
FAMILY: GEOMYIDAE (Pocket Gophers)
Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)
San Joaquin Pocket Mouse (*Perognathus inornatus*)
Heermann's Kangaroo Rat (*Dipodomys heermani*)
Short-Nosed Kangaroo Rat (*Dipodomys nitratoides brevinasus*)
FAMILY: MURIDAE (Old World Rats and Mice)
Western Harvest Mouse (*Reithrodontomys megalotis*)
Deer Mouse (*Peromyscus maniculatus*)
Norway Rat (*Rattus norvegicus*)

House Mouse (*Mus musculus*)
California Vole (*Microtus californicus*)
Southern Grasshopper Mouse (*Onchomys torridus ramona*)

ORDER: CARNIVORA (Carnivores)

FAMILY: CANIDAE (Foxes, Wolves, and relatives)

*****Coyote (*Canis latrans*)
Gray Fox (*Urocyon cinereoargenteus*)
San Joaquin Kit Fox (*Vulpes macrotis mutica*)

FAMILY: PROCYONIDAE (Raccoons and relatives)

*Raccoon (*Procyon lotor*)

FAMILY: MUSTELIDAE (Weasels, Badgers, and relatives)

Badger (*Taxidea taxus*)

FAMILY: MEPHITIDAE (Skunks)

Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)

Bobcat (*Lynx rufus*)
Feral Cat (*Felis domesticus*)

ORDER: ARTIODACTYLA (Even-toes Ungulates)

FAMILY: CERVIDAE (Deer, Elk, and relatives)

Black-tailed Deer (*Odocoileus hemionus columbianus*)

FAMILY: BOVIDAE (Sheep, Goats, and relatives)

*****Domestic Sheep (*Ovis aries*)

APPENDIX C: SELECTED PHOTOS OF WSP PLAN AREA

Picture # 1: Agricultural field, disced.

Picture #2: Agricultural field, disced

Picture #3: Agricultural field, cultivation of garlic.

Picture #4: Agricultural field, orchard.

Picture #5: Irrigation canal (foreground), access road and pasture field (background).

Picture #6: Fallow field.

Picture #7: Agricultural canal, sparse vegetation.

Picture #8: Agricultural canal, moderate vegetation, access road on left.

Picture #9: Off-site tailwater pond, dry with riparian fringe in background.

Picture #10: Off-site tailwater pond, fringed with riparian vegetation.

Picture #11: Burrowing owl perched next to existing burrow and adjacent agricultural canal.