

## **APPENDIX G**

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Baseline Biological Resources Inventory at the  
Mariposa Lakes Project Site

**BASELINE BIOLOGICAL RESOURCES INVENTORY AT  
THE MARIPOSA LAKES PROJECT SITE**

STATE ROUTE 4 AND MARIPOSA ROAD  
SAN JOAQUIN COUNTY, CALIFORNIA

April 4, 2005

Prepared For:

**InSite Environmental**  
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Prepared By:

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# MOORE BIOLOGICAL CONSULTANTS

April 4, 2005

Mr. Charlie Simpson  
Insite Environmental  
6653 Embarcadero Drive, Suite Q  
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Subject: BASELINE BIOLOGICAL RESOURCES INVENTORY AT THE MARIPOSA LAKES  
PROJECT SITE, SAN JOAQUIN COUNTY, CALIFORNIA

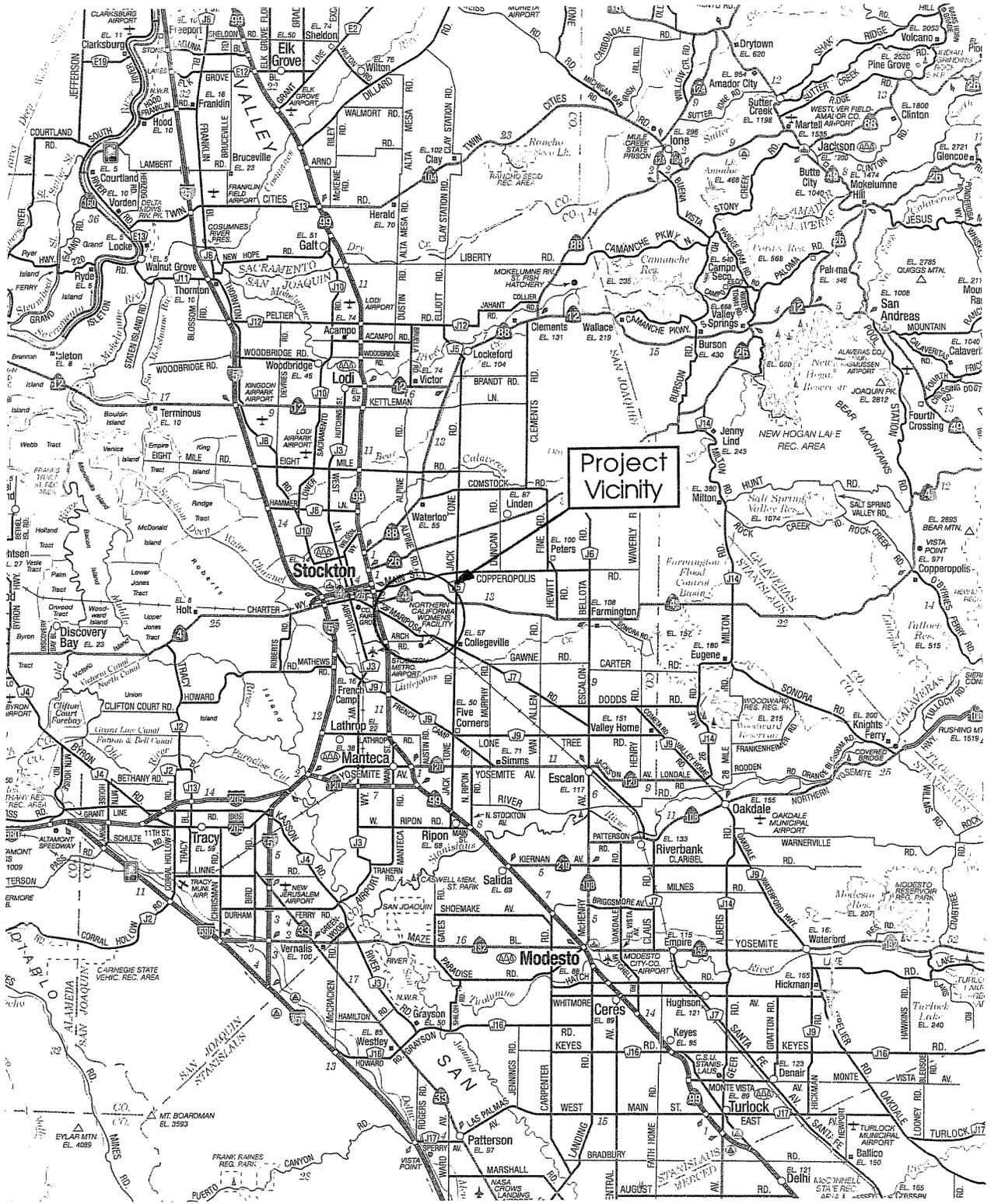
Dear Charlie:

Thank you for contracting with Moore Biological Consultants to conduct a baseline biological resources inventory of the project site (Figures 1 and 2). The focus of our work was to conduct an evaluation of wetlands and suitable habitat for or presence of sensitive species within the project site. This letter report details the methodology and results of our investigation.

## Methods

Prior to the field survey, we conducted an updated query of California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDDB, 2004). This information was used to identify wildlife and plant species that have been previously documented in the project vicinity or have the potential to occur based on suitable habitat and geographical distribution. The project site is quite large and is located in the central portion of the USGS 7.5-minute Stockton East topographic quadrangle. Therefore, the CNDDDB search area included the Stockton East, Stockton West, and Peters topographic quadrangles, which is an area of approximately 200 square miles around the site.

The field surveys were conducted on December 6, 2004 and March 25, 2005. The surveys consisted of walking and driving throughout the site making observations of current



Scale: 1 inch = 9 miles

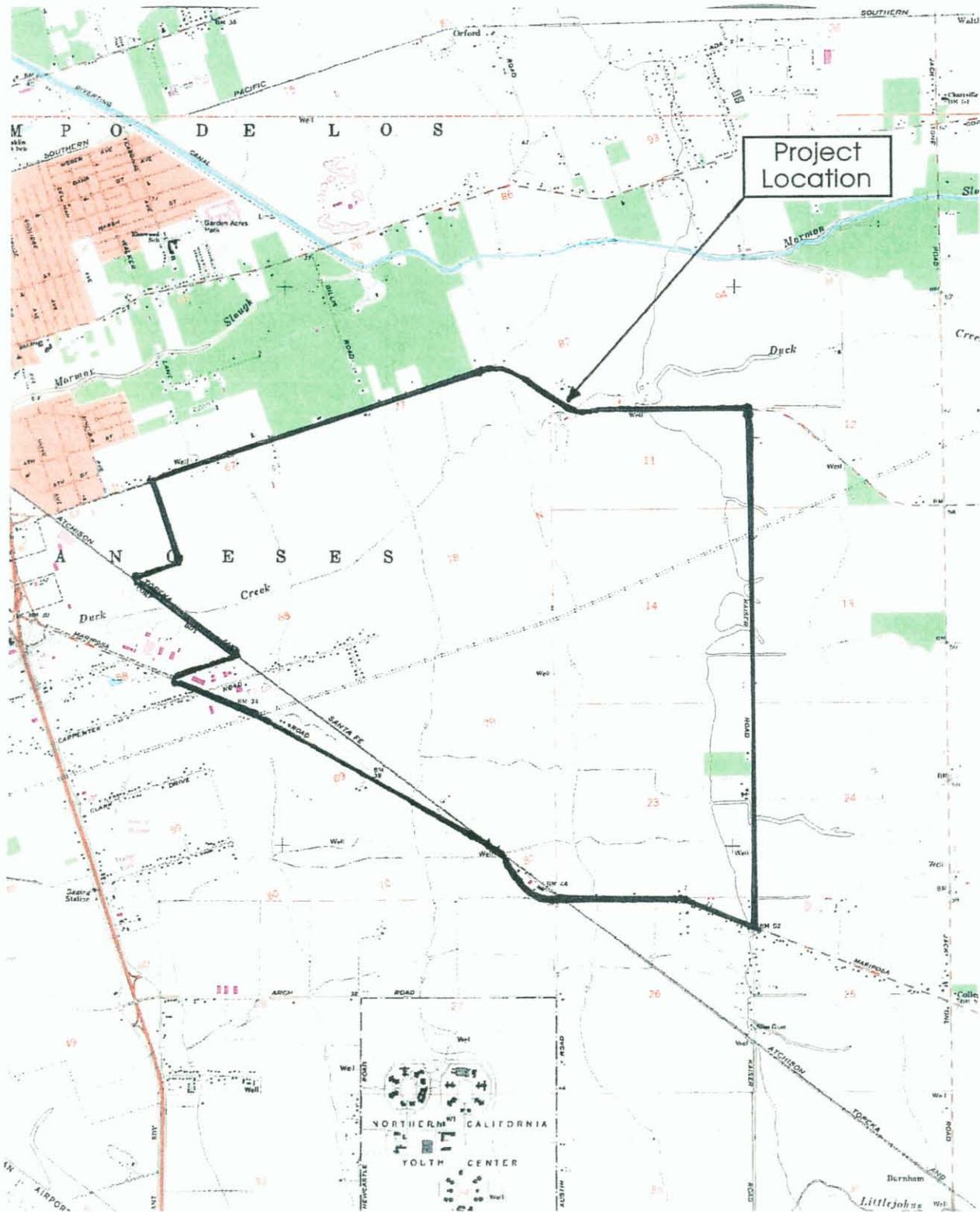
Source: Calif. State Automobile Association



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**FIGURE 1  
PROJECT VICINITY**



Scale: 1 inch = 4,000 feet

Source: USGS 7.5-minute Stockton East topographic quadrangle



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**FIGURE 2  
PROJECT LOCATION**

habitat conditions and noting surrounding land use, general habitat types, and plant and wildlife species. We conducted a search for jurisdictional Waters of the U.S. (a term that includes wetlands) as defined by the U.S. Army Corps of Engineers (ACOE, 1987), sensitive species, and suitable habitat for sensitive species (e.g., elderberry shrubs and potential nest trees for Swainson's hawk).

## Results

**GENERAL SETTING:** The project site is located southeast of the City of Stockton, California (Figures 1 and 2). The site is within portions of Sections 11, 14, 23, 26, 58, 67, 68, 69, 77, 78, 79 and 80, Township 1 North, Range 7 East of the USGS 7.5-minute Stockton East topographic quadrangle (Figure 2). The project site is approximately 3,000 acres and encompasses a multitude of land uses that include home sites, ranchettes, annual cropland fields, orchards, equipment yards, barns, livestock corrals, and large industrial yards (e.g., a cement plant, trucking yards) (Figure 3). Most of the agricultural fields have been leveled at some point in the past and elevations at the site range from 30 to 50 feet above sea level. There are also some utility lines, roads, and a railroad easement that transect or are located along the edges of the site.

Surrounding land uses in this portion of San Joaquin County are primarily agricultural, industrial, and residential. The site is bounded on the north by Farmington Road and on the east by Kaiser Road. Mariposa Road and a section of railroad tracks are located along the southern edge of the site. Agricultural fields are located to the north, south, east, and west of the site. There are also industrial facilities to the west of the site.

**VEGETATION:** Since the project site is so large and encompasses many land uses, on-site vegetation varies from season to season and from habitat type to habitat type. The majority of the project site project site consists of various annual cropland fields that were disked, in the process of being disked, in beds from last season, planted to small grains and annual crops, or left fallow. Herbaceous vegetation within the annual cropland fields, orchard floors, roads, and annual pastures consists of various native and non-native annual and perennial grass and weed species. These species include field mustard (*Brassica rapa*), Bermuda grass (*Cynodon dactylon*), ryegrass (*Lolium perenne*), morning glory (*Convolvulus arvensis*), willow weed (*Epilobium brachycarpum*)



Scale: 1 inch = 2,000+/- feet



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and foxtail barley (*Hordeum murinum*). Plant species documented in the project site are listed in Table 1.

The project site contains an assortment of native trees, ornamental trees, and orchard trees. There are several large valley oak (*Quercus lobata*) trees scattered throughout the agricultural fields and along the on-site drainages. Along some of the drainages, these oaks are mixed with other riparian species such as Fremont cottonwoods (*Populus fremontii*), California black walnut (*Juglans californica*), willows (*Salix* spp.), and Himalayan blackberry (*Rubus discolor*). Several of the oaks appear to be large enough to fall into San Joaquin County's classification of "Heritage Oaks" (i.e., trunk diameter of 32 inches or greater measured 4.5 feet above ground level).

The majority of the orchard trees within the project site consist of large English walnut (*Juglans regia*) and cherry (*Prunus* sp.) trees; there are also several volunteer orchard trees located along the roads and fence lines within the site. Ornamental trees and shrubs associated with the onsite residences include, but are not limited to eucalyptus (*Eucalyptus* sp.), pine (*Pinus* sp.), cedars (*Cedrus deodara*) and oleander (*Nerium* sp.).

Plant species within and along the agricultural ditches and channels within the site range from perennial species such as tule (*Scirpus acutus*) and cattail (*Typha* sp.) to annual species such as Mediterranean barley (*Hordeum marinum*) and annual beardgrass (*Polypogon monspeliensis*). No blue elderberry (*Sambucus mexicana*) shrubs were observed within or adjacent to the project site.

WILDLIFE: A limited number of wildlife species were observed during the recent survey. Some of the more common birds observed include red-tailed hawk (*Buteo jamaicensis*), yellow-billed magpie (*Pica nuttalli*), northern mockingbird (*Mimus polyglottos*), and Brewer's blackbird (*Euphagus cyanocephalus*). All of these are bird species commonly found in agricultural areas in the greater project vicinity (Table 2).

There are several nest trees within the project site that are suitable for nesting raptors and other protected migratory birds, including Swainson's hawk (*Buteo swainsoni*). Given the size of the site, the presence of nesting habitat (large trees), as well as the presence of foraging habitat (large open fields) within the site, it is considered likely one or more pairs of raptors, plus a variety of songbirds, nest at the site each year. There are several large stick nests trees within the project site.

TABLE 1  
PLANT SPECIES OBSERVED DURING THE 2004 - 2005 SURVEYS

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<i>Acer negundo</i>	box elder
<i>Ailanthus altissima</i>	tree-of-heaven
<i>Amaranthus albus</i>	pigweed
<i>Amsinckia intermedia</i>	fiddleneck
<i>Artemisia douglasiana</i>	mugwort
<i>Asclepias</i> sp.	milkweed
<i>Aster</i> sp.	aster
<i>Avena</i> sp.	oat
<i>Brassica nigra</i>	black mustard
<i>Brassica rapa</i>	field mustard
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus hordeaceus</i>	soft chess brome
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Centaurea solstitialis</i>	yellow star-thistle
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Conium maculatum</i>	poison hemlock
<i>Convolvulus arvensis</i>	morning glory
<i>Conyza canadensis</i>	horseweed
<i>Cynodon dactylon</i>	Bermuda grass
<i>Cyperus eragrostis</i>	umbrella sedge
<i>Dactylis glomerata</i>	orchard grass
<i>Eichhornia crassipes</i>	water hyacinth
<i>Eleocharis</i> sp.	spikerush
<i>Epilobium brachycarpum</i>	willow weed
<i>Erodium botrys</i>	filaree
<i>Eucalyptus</i> sp.	eucalyptus
<i>Ficus carica</i>	edible fig
<i>Helianthus annuus</i>	common sunflower
<i>Holocarpha virgata</i>	tarweed
<i>Hordeum marinum</i>	Mediterranean barley
<i>Hordeum murinum</i>	foxtail barley
<i>Hypochaeris glabra</i>	smooth cat's ear
<i>Hypochaeris radiata</i>	false dandelion
<i>Juglans californicus</i>	black walnut
<i>Juglans regia</i>	English walnut
<i>Juncus effusus</i>	rush

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TABLE 1

## PLANT SPECIES OBSERVED DURING THE 2004 - 2005 SURVEYS (continued)

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<i>Lactuca serriola</i>	prickly lettuce
<i>Lolium perenne</i>	perennial ryegrass
<i>Ludwigia peploides</i>	water primrose
<i>Malva neglecta</i>	common mallow
<i>Montia perfoliata</i>	miner's lettuce
<i>Morus alba</i>	mulberry
<i>Nerium</i> sp.	oleandar
<i>Olea europaea</i>	olive
<i>Paspalum dilatatum</i>	dallis grass
<i>Picris echioides</i>	bristly ox-tongue
<i>Pinus</i> sp.	pine
<i>Platanus racemosa</i>	sycamore
<i>Polygonum</i> sp.	water smartweed
<i>Populus fremontii</i>	Fremont cottonwood
<i>Prunus dulcis</i>	almond
<i>Prunus</i> spp.	plum, cherry
<i>Punica granatum</i>	pomegranite
<i>Quercus lobata</i>	valley oak
<i>Quercus wislizenii</i>	interior live oak
<i>Raphanus sativus</i>	wild radish
<i>Rosa californica</i>	California wild rose
<i>Rubus discolor</i>	Himalayan blackberry
<i>Rumex crispus</i>	curly dock
<i>Rumex pulcher</i>	fiddle dock
<i>Salix</i> spp.	willows
<i>Salsola fragus</i>	tumbleweed
<i>Silybum marianum</i>	milk thistle
<i>Sonchus asper</i>	prickly sow thistle
<i>Sonchus oleraceus</i>	sow thistle
<i>Sorghum halepense</i>	Johnson grass
<i>Trifolium hirtum</i>	rose clover
<i>Typha</i> sp.	cattail
<i>Urtica dioica</i>	stinging nettle
<i>Vicia sativa</i>	common vetch
<i>Vulpia myuros</i>	rattail fescue
<i>Xanthium strumarium</i>	cocklebur

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TABLE 2  
WILDLIFE SPECIES OBSERVED DURING THE 2004 - 2005 SURVEYS

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<b><u>Birds</u></b>	
Great blue heron	<i>Ardea herodias</i>
Great egret	<i>Casmerodius albus</i>
Mallard	<i>Anas platyrhynchos</i>
Turkey vulture	<i>Cathartes aura</i>
Black-shouldered kite	<i>Elanus caeruleus</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
American kestrel	<i>Falco sparverius</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columba livia</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Black phoebe	<i>Sayornis nigricans</i>
Western scrub jay	<i>Aphelocoma coerulescens</i>
Yellow-billed magpie	<i>Pica nuttalli</i>
American crow	<i>Corvus brachyrhynchos</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
<b><u>Mammals</u></b>	
Desert cottontail	<i>Sylvilagus audubonii</i>
California ground squirrel	<i>Spermophilus beecheyi</i>

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A limited variety of mammals common to agricultural and semi-rural areas occur in the project site. Ground squirrel (*Spermophilus beecheyi*) and desert cottontail (*Sylvilagus audubonii*) were the mammals observed in the site. Raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and opossum (*Didelphis virginiana*) are expected to occur at the site. A number of species of small rodents including mice (*Mus musculus*,

*Reithrodontomys megalotis*, and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also are likely to occur.

Based on habitat types present, a limited number of reptiles and amphibians may use habitats within the project site. The site contains suitable habitat for species such as western fence lizard (*Sceloporus occidentalis*) and bullfrog (*Rana catesbeiana*). However, no reptile or amphibians were observed during the recent surveys.

WATERS OF THE U.S. AND WETLANDS: Waters of the U.S., including wetlands, are broadly defined under 33 Code of Federal Regulations (CFR) 328 to include navigable waterways, their tributaries, and adjacent wetlands. State and federal agencies regulate these habitats and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into any waters of the U.S., including wetlands. Both CDFG and ACOE have jurisdiction over modifications to riverbanks, lakes, stream channels and other wetland features.

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Jurisdictional wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the ACOE *Wetlands Delineation Manual* (ACOE, 1987). Waters of the U.S. are drainage features or water bodies as described in 33 CFR 328.4. ACOE holds sole authority to determine the jurisdictional status of waters of the U.S., including wetlands.

Jurisdictional wetlands and Waters of the U.S. include, but are not limited to, perennial and intermittent creeks and drainages, lakes, seeps, and springs; emergent marshes; riparian wetlands; and seasonal wetlands. Wetlands and Waters of the U.S. provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Duck Creek and some other on-site tributaries, drainages, and irrigation laterals are potential waters of the U.S. under the jurisdiction of ACOE and CDFG. Duck Creek runs from east to west in the northern part of the site (see Figure 3). Duck Creek is vegetated with species such as cattail, tule and rushes (*Juncus* sp.). There are also some small willows and blackberries growing along the upper portions of the banks. Sections of Duck Creek have been realigned in the past to facilitate farming and irrigation practices.

There are two tributaries within the southern portion of the site that run east to west (see Figure 3). The northern of the two is a tributary to Duck Creek and the second is a tributary to French Camp Slough. Both of these channels have similar vegetative characteristics and appear to be somewhat dependent on irrigation tail water as a source of hydrology. Portions of these channels are lined with willows and blackberries and there is a notable stand of cottonwoods and oaks at the western end of the northern channel.

There are also quite a few well-developed irrigation canals and agricultural ditches located within the site. Some of these appear to have the potential to fall under ACOE jurisdiction due to connectivity with creeks and sloughs, while others are believed to be non-jurisdictional because they originate and terminate on site, are entirely created, and hydrologically manipulated.

The jurisdictional status of non-natural wetlands such as irrigation canals, detention basins, and drainage ditches can be especially difficult to determine and there are several of these types of features within the site. The ACOE has recently asserted jurisdiction over irrigation ditches in situations where water flows out of jurisdictional Waters of the U.S. via gravity, is conveyed in the ditches, and has an opportunity to return to jurisdictional Waters of the U.S. Created wetlands that are adjacent to or "neighboring" jurisdictional Waters of the U.S. may also be considered jurisdictional by ACOE. As ACOE holds the authority to determine jurisdiction or non-jurisdiction, a formal wetland delineation, based on current regulations of ACOE, would need to be conducted to firmly establish the extent of jurisdictional Waters of the U.S., including wetlands, on the project site.

**SENSITIVE SPECIES:** The likelihood of occurrence of listed, candidate, and other sensitive species in the project site is generally considered low. Table 3 provides a summary of the listing status and habitat requirements of sensitive species that have been documented in the project vicinity or for which there is potentially suitable habitat in the project vicinity. This table also includes an assessment of the likelihood of occurrence of each of these species at the project site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences, habitat suitability of the site, and field observations.

**SENSITIVE PLANTS:** No sensitive plants were observed during the recent surveys and the overall potential for occurrence of sensitive plants within the project site is considered

TABLE 3

## SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	CNPS List <sup>3</sup>	Habitat	Potential for Occurrence within Project Site
<b>PLANTS</b>						
Alkali milk-vetch	<i>Astragalus tener</i> <i>var. tener</i>	None	None	1B	Alkali playas and vernal pools. Blooms March - June.	Very low to none: Duck Creek and the various irrigation ditches and tributaries are extremely marginal habitat for alkali milk-vetch. The nearest occurrence of this species is approximately 4.5 miles northwest of the project site (CNDDDB, 2004).
Delta tule pea	<i>Lathyrus jepsonii</i> <i>var. jepsonii</i>	None	None	1B	Freshwater and brackish marshes, usually along the edges. Found in the San Joaquin delta region. Blooms May - September.	Very low: Delta tule pea was not observed during the recent survey. Duck Creek and the various irrigation ditches or tributaries are marginal habitat for this species. This species is typically found in the Delta. This species has been found approximately 7 miles west of the site (CNDDDB, 2004).
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	None	None	1B	Standing or slow moving freshwater ponds, marshes and ditches. Blooms May - October.	Low: Duck Creek and the various irrigation ditches or tributaries are marginal habitat for Sanford's arrowhead. However, this easily recognized species was not observed within the project site. The nearest occurrence of Sanford's arrowhead is located approximately 3 miles northwest of the site (CNDDDB, 2004).
Rose-mallow	<i>Hibiscus lasiocarpus</i>	None	None	2	Freshwater marshes and swamps. Blooms August - September.	Low to none: Duck Creek and the various irrigation ditches or tributaries are extremely marginal habitat for this species. This species is typically found in the Delta. The nearest occurrence of rose-mallow is located approximately 7 miles northwest of the site (CNDDDB, 2004).
Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	E	E	1B	Chenopod scrub, valley and foothill grassland. Blooms May - October.	Extremely low to none: the project site does not contain suitable habitat for this species. The CNDDDB (2004) contains only a historical sighting of palmate-bracted bird's-beak approximately 3 miles northwest of the site.

TABLE 3

## SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	CNPS List <sup>3</sup>	Habitat	Potential for Occurrence within Project Site
Greene's tuctoria	<i>Tuctoria greenei</i>	E	R	1B	Vernal Pools, valley and foothill grassland.	None: there are no vernal pools within the project site. The nearest occurrence of Greene's tuctoria is approximately 8 miles east of the project site (CNDDDB, 2004).
Delta button celery	<i>Eryngium racemosum</i>	None	E	1B	Riparian scrub on seasonally inundated floodplain with a clay substrate.	Very low to none: Duck Creek and the various irrigation ditches or tributaries are extremely marginal habitat for this species. Delta button celery was not observed within or near the project site. The nearest occurrence of this species is approximately 3.5 miles northeast of the project site (CNDDDB, 2004).
Recurved larkspur	<i>Delphinium recurvatum</i>	None	None	1B	Alkaline soils within valley and foothill grassland and chenopod scrub habitats.	Low to none: The project site does not contain suitable habitat for this species. The nearest recorded occurrence of Recurved larkspur within the CNDDDB (2004) is a historical siting located at the site along Mariposa Road.
Round-leaved filaree	<i>Erodium macrophyllum</i>	None	None	2	Cismontane woodland and valley and foothill grassland.	Very low to none: the project site does not contain suitable habitat for this species. The CNDDDB (2004) contains only a historical sighting of round-leaved filaree approximately 3 miles northwest of the site.
<b>WILDLIFE</b>						
Swainson's hawk	<i>Buteo swainsoni</i>	None	T	N/A	Nesting: large trees, usually within riparian corridors. Foraging: agricultural fields and annual grasslands.	High: there is suitable nesting habitat as well as foraging habitat within the site. There are several suitable nest trees within the project site and several occurrences of nesting Swainson's hawks within the project site CNDDDB (2004).
Burrowing owl	<i>Athene cunicularia</i>	None	SC	N/A	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Moderate: there are ground squirrel burrows within the project site. However, no burrowing owls or evidence of occupancy were found during the recent survey. Burrowing owls are documented in the CNDDDB (2004) approximately 0.5 miles south of the project site.

TABLE 3

## SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	CNPS List <sup>3</sup>	Habitat	Potential for Occurrence within Project Site
Tricolored blackbird	<i>Agelaius tricolor</i>	None	SC	N/A	Requires open water and protected nesting substrate, usually cattails and riparian scrub with surrounding foraging habitat.	Low: Duck Creek and the riparian scrub habitats along the tributaries are extremely marginal habitat for this species. However, tricolored blackbirds may occasionally fly over or forage in the site. This species has been documented within the search area, although the location information in the CNDDDB (2004) is suppressed.
Giant garter snake	<i>Thamnophis gigas</i>	T	T	N/A	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Very low: Duck Creek and the various irrigation ditches and tributaries are extremely marginal habitat for this species. Giant garter snakes have not been reported several decades; the nearest historical occurrence of this species is a 1976 observation from the Stockton Diverting Canal approximately 3 miles northwest of the site, (CNDDDB, 2004).
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	None	N/A	Vernal Pools.	Extremely low to none: the project site does not contain suitable habitat for vernal pool branchiopods. The closest occurrence in the CNDDDB (2004) is located approximately 9 miles northeast of the project site.
California tiger salamander	<i>Ambystoma californiense</i>	T	SC	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) with surrounding grassland/ woodland habitats containing summer refugia (i.e., burrows).	Extremely low to none: there is no suitable habitat for California tiger salamander within the project site. An occurrence is documented in the CNDDDB (2004) approximately 4.5 miles southwest of the project site.

<sup>1</sup> T = Threatened; E = Endangered; SC= Species of Concern.

<sup>2</sup> T = Threatened; E = Endangered; R = Rare; SC= State of California Species of Special Concern.

<sup>3</sup> CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; List 2 includes species that are rare, threatened, or endangered in California, but more common elsewhere.

very low to none. Nine sensitive plant species were identified in the CNDDDB search: alkali milk-vetch (*Astragalus tener* var. *tener*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), palmate-bracted bird's-beak (*Cordylanthus palmatus*), rose-mallow (*Hibiscus lasiocarpus*), Greene's tuctoria (*Tuctoria greenel*), Delta button celery (*Eryngium racemosum*), recurved larkspur (*Delphinium recurvatum*), round-leaved filaree (*Erodium macrophyllum*), and Sanford's arrowhead (*Sagittaria sanfordii*).

The leveled agricultural fields that make up the vast majority of the site are not suitable for sensitive plants. Duck Creek and several of the drainages or tributaries provide low quality habitat for some of these sensitive wetland species that have been previously found in the greater project vicinity. To determine if any of these sensitive plant species are present in on-site drainages, surveys would need to be undertaken at the appropriate times of year when the plants are identifiable.

**SENSITIVE WILDLIFE:** The potential for intensive use of habitats within the project site by sensitive wildlife species is generally considered low. Sensitive wildlife species that have been recorded in greater project vicinity in the CNDDDB (2004) include Swainson's hawk, burrowing owl (*Athene cunicularia*), giant garter snake (*Thamnophis gigas*), tricolored blackbird (*Agelaius tricolor*), vernal pool fairy shrimp (*Branchinecta lynchi*), and California tiger salamander (*Ambystoma californiense*). Swainson's hawk and burrowing owl have at least a moderate potential to occur within the project site on more than a transitory or very occasional basis and are discussed further below. Since some of the on-site waterways are potential habitat for giant garter snake and sensitive fish species, these aquatic species are also discussed below.

**SWAINSON'S HAWK:** Swainson's hawk is listed as Threatened by CDFG and is a Federal Species of Special Concern. In the Central Valley, this hawk typically nests in oak or cottonwood trees in or near riparian habitats. Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, alfalfa, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March, and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August. The CNDDDB (2004) contains several records of nesting Swainson's hawk in the greater project vicinity, and the project site provides suitable foraging as well as nesting habitat

for this species. There were several stick nests observed in trees on site, although it is a little early in the season to see nesting Swainson's hawks. There are several documented occurrences of nesting pairs reported in the CNDDDB (2004) within the project site and the potential for future use of the site by this species is considered high.

**BURROWING OWL:** The burrowing owl is a State of California Species of Concern and is protected by the federal Migratory Bird Treaty Act. Burrowing owls are a year-long resident in a variety of grasslands as well as scrublands that have a low density of trees and shrubs with low growing vegetation; burrowing owls which nest in the Central Valley may winter elsewhere. The primary habitat association of the burrowing owl is burrows for nesting. The owl usually nests in old ground squirrel burrows, although they have been known to dig their own burrows in softer soils. In urban areas, burrowing owls often utilize artificial burrows including pipes, culverts, and piles of concrete pieces. This semi-colonial owl breeds from March through August, and is most active while hunting during dawn and dusk. Burrowing owls could be adversely affected by on-site construction if they nest in burrows within the site or in off-site burrows near the site.

There are ground squirrels as well as ground squirrel burrows observed within the project site, although no burrowing owl signs (i.e., whitewash, pellets, feathers) were observed in any of the burrows. Despite these negative findings, there are documented occurrences of burrowing owl recorded approximately 0.5 miles south of the project site and the site contains suitable foraging and nesting habitat. Due to the size of the site, presence of suitable habitat, and nearby observations of the species, the likelihood of future occupancy in the site by burrowing owls is considered moderate.

**GIANT GARTER SNAKE:** The giant garter snake is listed as a Threatened species under the state and federal endangered species acts. This species is associated with freshwater marshes and low gradient streams and has adapted to drainage canals and irrigation ditches within the Central Valley. Duck Creek and some of the tributaries, drainages, and irrigation canals may be considered potential habitat for giant garter snake. They support emergent wetland vegetation (i.e., cattail and tule) and Duck Creek is subject to year-round inundation, both of which are constituent habitat elements of the species.

Although the aquatic habitats within the site are marginally suitable for giant garter snake, the likelihood of occurrence of this species in the project site is considered very low due to the location of the site so far to the east. Giant garter snake is more abundant

to the west in expansive delta marshes. They have not been documented in the greater project vicinity in the recent past and have never been recorded east of Highway 99 in this region. The nearest occurrence of this species is located within the Stockton Diverting Canal, located northwest of the project site.

SENSITIVE FISH: A number of sensitive fish species occur in Delta waterways during various times of the year. These include delta smelt (*Hypomesus transpacificus*), fall/late-fall run, spring-run and winter-run chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*O. mykiss*), green sturgeon (*Acipenser medirostris*), river lamprey (*Lampetra ayersi*), Pacific lamprey (*Lampetra tridentata*), and longfin smelt (*Spirinchus thaleichthys*). It is considered likely that some of these sensitive fish utilize off-site, more downstream reaches of Duck Creek, at least on a seasonal basis. However, sensitive fish are not expected to occur in the on-site portion of Duck Creek on more than a very occasional basis, if at all, due to lack of suitable spawning and rearing habitat.

## Conclusions and Recommendations

- The likelihood of occurrence of listed, candidate, and other sensitive plants within the site is considered very low.
- Duck Creek and some of the tributaries or drainages are potential Waters of the U.S., and under the jurisdiction of both ACOE and CDFG. A wetland delineation, based on current regulations of ACOE, would need to be conducted to firmly establish the extent of jurisdictional Waters of the U.S., including wetlands, in the project site.
- Potentially jurisdictional waters of the U.S. should be avoided to the maximum extent practicable through thoughtful project design. If any on- or off-site improvements involve work within areas that are determined to be jurisdictional waters of the U.S., impacts should be avoided to the maximum extent practicable through thoughtful project design. If fill (i.e. utility lines, structures, culverts, road crossings, outfall structures, etc.) is to be placed within jurisdictional waters of the U.S., including wetlands, wetland permits and/or certification may be required from several agencies including ACOE, CDFG, and Regional Water

Quality Control Board. Additionally an ACOE permit action would likely trigger a Section 7 consultation with the U.S. Fish & Wildlife Service on potential impacts to giant garter snake and with the National Marine Fisheries service on sensitive fish.

- Development of the project site will result in a loss of Swainson's hawk foraging habitat, and will contribute to a cumulative loss of Open Space and associated biological resource values. Mitigation for the loss Open would be best accomplished through participation in the San Joaquin County Multi-species Habitat Conservation Plan (HCP), if possible. While a portion of the site is NOT situated in an area that is already designated for coverage by the HCP, it may be feasible to seek an amendment to the HCP to allow coverage of this area.
- If the project participates in the HCP, standard Take Avoidance measures outlined in the HCP for nesting Swainson's hawks and burrowing owl should be undertaken. Otherwise, pre-construction surveys for nesting Swainson's hawks within 0.25 miles of the project site and burrowing owls within 250 feet of the site should be conducted for construction activities between March 1 and September 15 (for hawks) and February 1 through August 31 (for owls). If active nests are found, a qualified biologist should determine the need (if any) for temporal restrictions on construction. These determination(s) should be made pursuant to criteria set forth by CDFG (1994) and/or CDFG (1995).
- If participation in the HCP is deemed infeasible for all or part of the project site, mitigation for the loss of Swainson's hawk foraging habitat would likely need to be undertaken pursuant to CDFG's (1995) mitigation guidelines. These guidelines identify the need for which providing compensatory habitat mitigation at a ratio of 1:1 for areas where farmland is converted to development within one mile of an active nest territory, and at lower ratios for sites further from active nest territories.
- If the project participates in the HCP, standard Take Avoidance measures outlined in the HCP for nesting Swainson's hawks and burrowing owl should be undertaken. Otherwise, pre-construction surveys for

nesting Swainson's hawks within 0.25 miles of the project site and burrowing owls within 250 feet of the site should be conducted for construction activities between March 1 and September 15 (for hawks) and February 1 through August 31 (for owls). If active nests are found, a qualified biologist should determine the need (if any) for temporal restrictions on construction. The determination(s) should be pursuant to criteria set forth by CDFG (1994) and/or CDFG (1995).

- On-site trees could be used by nesting raptors and other protected birds. Any trees that need to be removed to facilitate with future development should be felled outside of the general bird nesting season (February 1 through August 31) or a nesting bird survey should be conducted immediately prior to tree removal. If active nests are found, tree felling should be delayed until the young fledge.
- We observed no other outstanding wetlands, sensitive species, or biological issues of concern within the project site.

Thank you, again, for asking Moore Biological Consultants to assist with the project. Please feel free to call me at (209) 365-6828 with any questions.

Sincerely,



Diane S. Moore, M.S.  
Principal Biologist

## References and Literature Consulted

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