BIOLOGICAL RECONNAISSANCE SURVEY

FOR

SENSITIVE SPECIES AND HABITATS

FOR THE

ROCKWELL POND SPECIFIC PLAN PROJECT

(SELMA, FRESNO COUNTY, CALIFORNIA)

Prepared for

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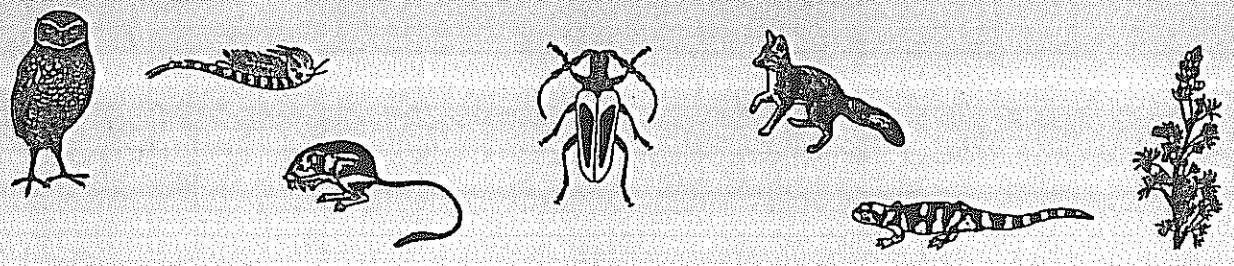

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1. Summary

Land Use Associates is preparing environmental documents for approximately a 251-acre parcel for future commercial, industrial, and residential development. The development is known as the Rockwell Pond Specific Plan Project. The project site is located just west of the City of Selma (Fresno County, California). The site occurs along west side of Highway 99 and is bordered on the south by Floral Avenue and on the east by De Wolf Avenue. Specifically, the site occurs in Section 36, Township 15 South, Range 21 East, of the Conejo 7.5 minute quadrangle map of the U. S. Geological Survey.

A biological reconnaissance survey was conducted by Halstead & Associates, Environmental/Biological Consultants on 17 May 2007 to assess sensitive species, habitats, and other biological resource issues which might occur on or adjacent to the project site. The survey included a site visit and a search of the California Department of Fish and Game's (CDFG) California Natural Diversity Data Base (CNDDB) to determine records of sensitive species and habitats in the project vicinity. The site is comprised of vineyards, onion and squash fields, fallow fields which are recently pulled vineyards, the Rockwell Pond recharge basin, and a few single-family farm residences. Adjacent lands include vineyards, fallow fields which are recently pulled vineyards, single-family farm residences, the Rockwell Pond recharge basin, and a commercial development near Highway 99 with businesses such as Walmart, Penneys, Sears, Burger King, and an Arco gas station. Lands in the general vicinity include agricultural lands such as vineyards and row crops, single-family farm residences, commercial developments along Highway 99, and the City of Selma.

A records search of the CNDDB shows that San Joaquin Kit Fox, Swainson's Hawk, Burrowing Owl, and a variety of other sensitive species are known to occur in the general vicinity of the project site. Within the Rockwell Pond recharge basin, three potential sensitive wildlife issues were found that require further surveys and study. The potential issues involve the San Joaquin Kit Fox, Swainson's Hawk, and Burrowing Owl. Detailed or protocol surveys for each of the three species need to be conducted to determine if they occur on or forage upon the project site. Upon completion of the surveys, it can be determine if (1) project impacts will occur to them, (2) if permits from resources and regulatory agencies will be necessary, and (3) if mitigation measures are necessary for the project.

The Rockwell Pond recharge basin will likely meet the criteria of wetland habitat. A detailed wetland or delineation survey needs to be conducted to confirm the wetland habitat, and to determine the acreage and quality of wetland habitat potentially impacted by the project. Upon completion of the wetland survey, it can be determine if (1) project impacts will occur to wetland habitat, (2) if permits from resources and regulatory agencies will be necessary, and (3) if mitigation measures are necessary for the project. That information and the protocol wildlife survey information will be used in the environmental document to comply with the California Environmental Quality Act (CEQA).

Besides the Rockwell Pond recharge basin and its potential wildlife and wetland issues, sensitive wildlife, plants, or habitats such as riparian vegetation, creeks, streams, or wetlands do

not occur on or adjacent to the project site. Habitats for sensitive species (such as vernal pools and vernal swales, livestock ponds without fishes, alkaline soils, adobe-heavy clay soils, hardpan soils, rocky cliffs, alkali sink scrub habitat, valley saltbush scrub habitat, elderberry bushes, grasslands with rolling hills, large nesting trees, cottonwood forests, riparian habitat, lakes, ponds with thick and lush cattail vegetation, marshes, swamps, creeks, sloughs, or rivers) do not occur on or adjacent to the project site, and thus the species do not occur on the project site.

Overall, negative or adverse significant impacts could potentially occur to sensitive species and habitats due to the project. Protocol surveys are recommended for the San Joaquin Kit Fox, Swainson's Hawk, Burrowing Owl, and wetlands to obtain needed biological information for use in evaluating potential project impacts and permitting of the project with resource and regulatory agencies. We conclude that some of CEQA's Significance Criteria regarding sensitive wildlife and habitat impacts could potentially occur. For other criteria, the project will not interfere with animal movements or migrations, impede the use of native wildlife nursery sites, or conflict with habitat or natural community conservation plans.

2. Background

Land Use Associates (286 W. Cromwell Avenue, Fresno, California, 93711, (559) 256-4250) is preparing environmental documents for approximately a 251-acre parcel for future commercial, industrial, and residential development. The development is known as the Rockwell Pond Specific Plan Project.

Halstead & Associates, Environmental/Biological Consultants were hired to conduct a biological reconnaissance survey, prepare a biological resources report, and recommend additional biological surveys and studies, if necessary. The information will be used for planning purposes and to guide future environmental work should it be necessary. The purpose of the biological reconnaissance survey is to determine if sensitive wildlife, plants, or habitats occur on the project site, could be impacted by the project, and could threaten the feasibility of the project. The information will also be used in preparing the environmental documents for CEQA and in permitting the project with resource and regulatory agencies.

3. Project Location

The approximately 251-acre project site is located just west of the City of Selma (Fresno County, California). The site occurs along west side of Highway 99 and is bordered on the south by Floral Avenue and on the east by De Wolf Avenue. Specifically, the site occurs in Section 36, Township 15 South, Range 21 East, of the Conejo 7.5 minute quadrangle map of the U. S. Geological Survey (Appendix A).

4. Project Description

Land Use Associates is preparing specific plan environmental documents for approximately a 251-acre parcel for future commercial, industrial, and residential development. The development is known as the Rockwell Pond Specific Plan Project (Appendix A).

5. Project Site Description

The project site is approximately a 251-acre parcel adjacent to the City of Selma. The site is comprised of vineyards, onion and squash fields, fallow fields which are recently pulled vineyards, the Rockwell Pond recharge basin, and a few single-family farm residences (Appendices B and G). Adjacent lands include vineyards, fallow fields which are recently pulled vineyards, single-family farm residences, the Rockwell Pond recharge basin, and a commercial development near Highway 99 with businesses such as Walmart, Penneys, Sears, Burger King, and an Arco gas station (Appendices B and G). Lands in the general vicinity include agricultural lands such as vineyards and row crops, single-family farm residences, commercial developments along Highway 99, and the City of Selma.

6. Regulatory Overview

To ensure the long-term protection of the environment and natural resources, laws and regulations have been implemented through multiple environmental protection Acts, which include:

Section 404 of the Clean Water Act (33 U.S.C. 1251-1376);
Section 10 of the Rivers and Harbors Act (33 U.S.C. 401 et seq.);
Executive Order 11990, Protection of Wetlands (May 24, 1977);
National Environmental Policy Act (42 U.S.C. 4321 et seq.);
Federal Endangered Species Act (16 U.S.C. 1531-1543);
Fish and Wildlife Coordination Act (16 U.S.C. 661-666);
California Environmental Quality Act (P.R.C. 21000 et seq.);
California Endangered Species Act (California Fish and Game Code 2050 et seq.);
Native Plant Protection Act (California Fish and Game Code 1900-1913);
Fish and Wildlife Protection and Conservation (California Fish and Game Code);
Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711); and
Bald and Golden Eagle Protection Act (16 USC 668).

Implementation and regulation of these Acts has been delegated to several state and federal agencies. The following section briefly describes the regulation and which, if any, agency governs.

Wetlands and Other Waters of the United States

United States Army Corps of Engineers

Waters of the United States, including wetlands and creek channels are subject to Federal and State agency regulations in the State of California. The U. S. Army Corps of Engineers (Corps) has jurisdiction over Waters of the United States under Section 404 of the Clean Water Act. Waters of the United States may include interstate lakes, rivers, streams, mudflats, natural ponds, tributaries to Waters of the United States, and adjacent wetlands. Wetlands under Corps' jurisdiction are determined using technical criteria for hydrology, soil, and vegetation described in the Corps' Wetland Delineation Manual (1987).

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water filled depressions (33 CFR, Part 328).

Lands including pasture as defined by the U. S. Natural Resource Conservation Service (NRCS) are subject to regulation under Section 404 if the land use changes from agricultural to some other form, such as commercial or residential. Although regulatory authority under Section 404 rests with the Corps, in the past responsibility for determination of jurisdictional status on agricultural land was shared with NRCS throughout the United States. However, in 2000, the NRCS withdrew from its participation in delineating agricultural wetlands to be converted to some other form of land use than agricultural.

Construction activities within jurisdictional waters are regulated by the Corps. Placement of fill into jurisdictional waters requires issuance of a permit by the Corps as well as state water quality certification pursuant to Section 401 of the Clean Water Act. The Regional Water Quality Control Board is the state agency charged with implementing water quality certification in California.

California Department of Fish and Game Streambed Alteration Agreement

Any project-related activity with the potential to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by the CDFG, or use material from the streambed requires that prior notification be provided to the CDFG and may require issuance of a Streambed Alteration Agreement pursuant to Sections 1600-1616 of the Fish and Game Code.

Special-Status Species

Special-status plant and wildlife species are species that have been afforded special recognition and protection by federal, state, or local resource conservation agencies and organizations. These species are generally considered rare, threatened, or endangered due to declining or limited populations. Special-status species include:

Plants and animals that are legally protected or proposed for protection under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);

Plants and animals defined as endangered or rare under the California Environmental Quality Act (CEQA) (Section 15380);

Animals designated as species of special concern by the U. S. Fish and Wildlife Service (USFWS) or CDFG;

Animals listed as "fully protected" in the Fish and Game Code of California (Sections 3511, 4700, 5050, and 5515); and

Plants listed in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California.

Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (Act) recognized that many species of fish, wildlife, and plants are in danger of or threatened with extinction and established a national policy that all federal agencies should work toward conservation of these species. The Secretary of the Interior and the Secretary of Commerce are designated in the Act as responsible for identifying endangered and threatened species and their critical habitats, carrying out programs for the conservation of these species, and rendering opinions regarding the impact of proposed federal actions on endangered species and specifies civil and criminal penalties for unlawful activities.

Biological assessments are required under Section 7 of the Act if listed species or critical habitat may be present in the area affected by any major construction activity conducted by, or subject to issuance of a permit from, a federal agency as defined in Part 404.02. Under section 7(a)(3) of the Act, every federal agency is required to consult with the USFWS or U. S. National Marine Fisheries Service on a proposed action if the agency determines that its proposed action may affect an endangered or threatened species.

Section 9 of the Endangered Species Act prohibits the "take" of any fish or wildlife species listed under the FESA as endangered or threatened. Take, as defined by the FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such action." However, Section 10 allows for the "incidental take" of endangered and threatened species of wildlife by non-Federal entities. Incidental take is defined by the FESA as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Section 10(a)(2)(A) requires an applicant for an incidental take permit to submit a "conservation plan" that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. Section 10(a)(2)(B) provides statutory criteria that must be satisfied before an incidental take permit can be issued.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing

regulations (50 CFR 21).

Bald and Golden Eagle Protection Act

Specifically protects Bald and Golden Eagles from harm or trade.

California Endangered Species Act

The California Endangered Species Act (Fish and Game Code Sections 2050-2098) established a State policy to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The Fish and Game Commission is charged with establishing a list of endangered and threatened species. State agencies must consult with the Department of Fish and Game to determine if a proposed project is likely to jeopardize the continued existence of any endangered or threatened species.

Section 2081 of the Fish and Game Code allows the "take" of a species listed as threatened or endangered by the California Endangered Species Act. Take is defined as any act that involves direct mortality or other actions that may result in adverse impacts when attempting to take individuals of a listed species. Under Section 2081, the state Department of Fish and Game may issue a permit to authorize take for scientific, educational or management purposes, or take that is incidental to otherwise lawful activities.

California Fish and Game Code Native Plant Protection Policy

The goals described in Chapter 10 of the California Native Plant Protection Policy are as follows:

> The intent of the Legislature and the purpose of this chapter is to preserve, protect, and enhance endangered or rare plants of this state (Section 1900). For purposes of this Chapter, a "native plant" means a plant that grows in a wild uncultivated state that is normally found native to the plant life of this state (Section 1901).
>
> The commission may adopt regulations governing the taking, possession, propagation, transportation, exportation, importation, or sale of any endangered or rare native plants. Such regulations may include, but shall not be limited to, requirements for persons who perform any of the foregoing activities to maintain written records and to obtain permits, which may be issued by the department (Section 1907).
>
> No person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or a rare native plant, except as otherwise provided in this chapter (Section 1908).
>
> All state departments and agencies shall, in consultation with the department, utilize their authority in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered or rare native plants. Such programs include, but are not limited to, the identification, delineation, and protection of habitat critical to the

continued survival of endangered or rare native plants (Section 1911).

California Fish and Game Code

Section 3503. It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Section 3503.5. Protects all birds-of-prey and their eggs and nests.

Section 3513. Makes it unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act.

Other Special-Status Species Classifications

Impacts on federal and California species of special concern (FSC and CSC, respectively), and species included on CNPS lists shall be considered significant if one of the following would result: a) direct mortality; b) permanent loss of existing habitat; c) temporary loss of habitat that may result in increased mortality or lowered reproductive success; or d) avoidance of biologically important habitat for substantial periods that could increase mortality or cause lowered reproductive success (Section 15065, CEQA Guidelines and CDFG Code Sections 1900-1913).

Title 14, California Code of Regulations, Sections 670.2 and 670.5

Lists animals designated as threatened or endangered in California. California Species of Concern (CSC) is a category designated by CDFG for species considered to be indicators of regional habitat changes, or candidate species for future state listing. CSC do not have special legal status, but are used by CDFG as a management tool when considering the future use of any land parcel.

Fresno County and City of Selma General Plans

Fresno County and to a lesser extent, the City of Selma region contain important wetland, riverine, and wildlife habitats. These areas support many specialized plant and animal species. Policies in the General Plans seek to protect natural areas and to preserve the diversity of habitat in the county and city. Open Space and Conservation elements of the plans contain policies that pertain to the preservation and protection of biological resources.

Significance Criteria

The CEQA Guidelines in its Appendix G provides guidance for assessing the significance of potential environmental impacts. Relative to biological resources, a project will normally have a significant effect on the environment if it will:

- 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 CDFG or USFWS.

- 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 CDFG or

USFWS.

- 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.

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

7. Survey Methods

A search of the CDFG's CNDDB for the Conejo 7.5 quadrangle map and the eight surrounding quadrangle maps (Fresno South, Malaga, Sanger, Caruthers, Selma, Riverdale, Laton, and Burris Park) was conducted to review records of sensitive species and habitats in the project area. These sensitive species and habitat records are listed in Appendices C and D, and in report Section 10. A list of potential sensitive wildlife, plants, and habitats was developed and used to focus the biological and habitat surveys. Other sensitive species known to occur in the general region of the project site were reviewed, searched for, and considered in the field surveys. These species are listed in Appendices E and F. Aerial photographs and soil maps of the project site were examined to establish habitats on, adjacent to, and near the project site (Appendix B).

A biological reconnaissance survey was conducted on 17 May 2007 to determine if sensitive species, habitats, or other biological resource issues occur on the site. The project site was walked, and driven on main and crossroads during the surveys. The surveys included a search for any evidence of suitable habitat for sensitive species, species occurrence such as burrows, tracks, trails, prey remains, diggings, and scat (feces), prey remains, nests, sensitive plants, and sensitive habitats such as creeks, streams, and wetlands. Visual surveys were conducted with high-powered binoculars. Photographs of the project site were taken to document site conditions (Appendix G).

Detailed or protocol sampling surveys - at the appropriate time of year - to prove the absence or presence of potential sensitive wildlife and plants or a wetland delineation were not conducted for this reconnaissance study.

8. Wildlife Resources in the Project Area

Wildlife species that inhabit the project area are typical of the valley floor agricultural lands. Mammals such as Domestic Dog and Cat, Striped Skunk, and Virginia Opossum are the predominant large animals in the area. Species commonly occurring in the area include animals such as California Ground Squirrel, Audubon Cottontail, Pocket Gopher, Mourning Dove, Red-winged Blackbird, Brewers Blackbird, European Starling, Scrub Jay, American Crow, Northern Mockingbird, Western Kingbird, Rock Dove, American Kestrel, Red-tailed Hawk, American Robin, Killdeer, House Finch, House Sparrow, and a variety of other sparrows and warblers. A variety of other birds use the area during the migration seasons. Reptiles in the area include the Western Fence Lizard, Terrestrial Garter Snake, and Gopher Snake. Amphibians occurring in the area along ditches and water retention basins include Tree Frog, Western Toad, and Bullfrog.

9. Plant Resources in the Project Area

The plant species that inhabit the project area are typical of the valley floor agricultural lands. The agricultural lands on the project site and project vicinity have been leveled, disced, planted, irrigated, and clean farmed in vineyards, onions, and squash. The edges of the dirt roads, fields, and farmland have a variety of weedy nonnative annual plants and grasses such as puncture vine, telegraph plant, pineapple weed, prickly lettuce, and ripgut brome. Lands around farm residences have been planted with a variety of ornamental and nonnative trees, shrubs, annual plants, and grasses. Fallow fields in the area are recently pulled vineyards which now have a variety of weedy plant species.

Habitats or microhabitats for sensitive plant species (such as vernal pools, ponds, alkaline soils, adobe-heavy clay soils, hardpan soils, alkali sink scrub habitat, valley saltbush scrub habitat, grasslands with rolling hills, riparian habitat, marshes, swamps, creeks, sloughs, or rivers) are not present on or adjacent to the project site.

10. Sensitive Species and Habitats in the Project Area

The CDFG's CNDDB denotes a few sensitive species from the Conejo 7.5 minute quadrangle map (Appendix C). The species are listed below and information about them, their habitat association, and occurrence record is presented in Appendix C. Also included on the list are the American Peregrine Falcon, Burrowing Owl, and Bald Eagle, as they are wide ranging species of concern throughout California. Other species known to inhabit the general region of the project site were also considered and searched for during the surveys (Appendices D thru F). For each of these sensitive species, their legal status, habitat association, and a determination of affects by the project are listed for plants and for wildlife in Appendices E and F, respectively.

Sensitive species and habitats recorded from the Conejo quadrangle map include:

Birds
Swainson's Hawk
American Peregrine Falcon
Bald Eagle
Burrowing Owl

Mammals
San Joaquin Kit Fox

Additional sensitive species and habitats from the eight surrounding quadrangle maps (Appendix D), though they may occur many miles from the project sites, in different habitats, and at different elevations are listed below. General information about these species, their habitat association, and their occurrence record is presented in Appendix D.

Mammals: San Joaquin Pocket Mouse

Birds: Yellow-billed Cuckoo

Amphibians: California Tiger Salamander, Western Spadefoot Toad

Insects: Valley Elderberry Longhorn Beetle

Crustaceans: Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp

Plants: Panoche Pepper-grass, Brittlescale, Greene's Tuctoria

Habitats: Valley Sacaton Grassland

11. Survey Results

The project site is comprised of vineyards, onion and squash fields, fallow fields which are recently pulled vineyards, the Rockwell Pond recharge basin, and a few single-family farm residences (Appendices B and G). Adjacent lands include vineyards, fallow fields which are recently pulled vineyards, single-family farm residences, the Rockwell Pond recharge basin, and a commercial development near Highway 99 with businesses such as Walmart, Penneys, Sears, Burger King, and an Arco gas station (Appendices B and G). Lands in the general vicinity include single-family farm residences, commercial developments along Highway 99, the City of Selma, and agricultural lands such as vineyards and row crops.

Soils on the project site (see Soils Map, Appendix B) are of the non-wetland type, except for the Rockwell Pond recharge basin. Evidence of wetland vegetation such as rush, bullrush, and willow trees were observed in the Rockwell Pond recharge basin. The recharge basin will likely meet the criteria of wetland habitat, and detailed or delineation surveys should be conducted to confirm the wetland habitat and to determine the acreage of wetland impacted by

the project.

The search of the CDFG's CNDDB showed that a variety of sensitive wildlife, plants, and habitats occur in the general region of the project site - see Section 10 and Appendices C thru F. No sensitive species were observed on, adjacent to, or in the vicinity of the project site during our one-day reconnaissance survey. However, the Rockwell Pond does have potential habitat for the Burrowing Owl and San Joaquin Kit Fox. Numerous California Ground Squirrel burrows were observed around and adjacent to the pond which could be inhabited by the owl and/or fox. A nesting record for the Swainson's Hawk occurs approximately 3 miles south of the project site near the intersection of Highway 43 and Clarkson Avenue. Detailed or protocol surveys for the Burrowing Owl, San Joaquin Kit Fox, and Swainson's Hawk should be conducted to determine if they occur on or forage upon the project site and if they could be impacted by the project.

Habitats for other sensitive species (such as vernal pools and vernal swales, livestock ponds without fishes, alkaline soils, adobe-heavy clay soils, hardpan soils, rocky cliffs, alkali sink scrub habitat, valley saltbush scrub habitat, elderberry bushes, grasslands with rolling hills, large nesting trees, cottonwood forests, riparian habitat, lakes, ponds with thick and lush cattail vegetation, marshes, swamps, creeks, sloughs, or rivers) were not observed on or adjacent to the project site, and thus those sensitive species do not occur on or adjacent to the project site.

Wildlife and plants which were observed on the project site and in the vicinity of the project are typical of the valley floor agricultural lands. No raptor (e.g., Swainsons Hawk, Red-tailed Hawk, American Kestrel) nests were observed on the project site; however, they may forage upon the project site. We found nothing to indicate that there was any significant animal movements or dispersal patterns, corridors, or nursery sites on or through the project site. We did not find or know of any conflicts with local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance. We did not find or know of any conflicts with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No sensitive habitats, other than wetland habitat in Rockwell Pond, such as creeks, streams, wetlands, or riparian vegetation were observed on or adjacent to the project site.

12. Conclusions

The records search of the CDFG's CNDDB shows that San Joaquin Kit Fox, Swainson's Hawk, Burrowing Owl, and a variety of other sensitive species are known to occur in the general vicinity of the project site. Within the Rockwell Pond recharge basin, three potential sensitive wildlife issues were found that require further surveys and study. The potential issues involve the San Joaquin Kit Fox, Swainson's Hawk, and Burrowing Owl. Detailed or protocol surveys for each of the three species need to be conducted to determine if they occur on or forage upon the project site. Upon completion of the surveys, it can be determine if (1) project impacts will occur to them, (2) if permits from resources and regulatory agencies will be necessary, and (3) if mitigation measures are necessary for the project. That information will be used in the

environmental document to comply with CEQA.

The Rockwell Pond recharge basin will likely meet the criteria of wetland habitat. Waters for the pond include those from the Kings River which is a navigable river. Wetland vegetation such as rush, bullrush, and willow trees were observed in the Rockwell Pond recharge basin. A detailed wetland or delineation survey needs to be conducted to confirm the wetland habitat, and to determine the acreage and quality of wetland habitat potentially impacted by the project. Upon completion of the wetland survey, it can be determine if (1) project impacts will occur to wetland habitat, (2) if permits from resources and regulatory agencies will be necessary, and (3) if mitigation measures are necessary for the project. That information will be used in the environmental document to comply with the CEQA.

Besides the Rockwell Pond recharge basin and its issues, sensitive wildlife, plants, or habitats such as riparian vegetation, creeks, streams, or wetlands do not occur on or adjacent to the project site. Habitats for sensitive species (such as vernal pools and vernal swales, livestock ponds without fishes, alkaline soils, adobe-heavy clay soils, hardpan soils, rocky cliffs, alkali sink scrub habitat, valley saltbush scrub habitat, elderberry bushes, grasslands with rolling hills, large nesting trees, cottonwood forests, riparian habitat, lakes, ponds with thick and lush cattail vegetation, marshes, swamps, creeks, sloughs, or rivers) do not occur on or adjacent to the project site, and thus the species do not occur on the project site.

Thus, negative or adverse significant impacts could potentially occur to sensitive species, sensitive habitats, and biological resources due to the project. We further conclude that some of the Significance Criteria noted in Section 6 regarding wildlife and habitat impacts could potentially occur. For other criteria, the project will not interfere with animal movements or migrations, impede the use of native wildlife nursery sites, or conflict with habitat or natural community conservation plans.

13. Recommendations

Information from this report should only be used in the preparation of the Initial Study document for the project. The following surveys are recommended to obtain needed biological information for use in evaluating potential project impacts and permitting of the project with resource and regulatory agencies.

San Joaquin Kit Fox

A protocol survey using CDFG and USFWS methods should be conducted by a qualified biologist should be conducted to determine if the fox occurs on or uses the project site for foraging. The surveys will involve night spotlighting, den searches, and scent stations. The survey protocols are presented in Appendices J-L.

Swainsons Hawk

A nesting survey using CDFG and Swainson's Hawk research committee methods should be conducted by a qualified biologist to determine if the hawk occurs near the project site

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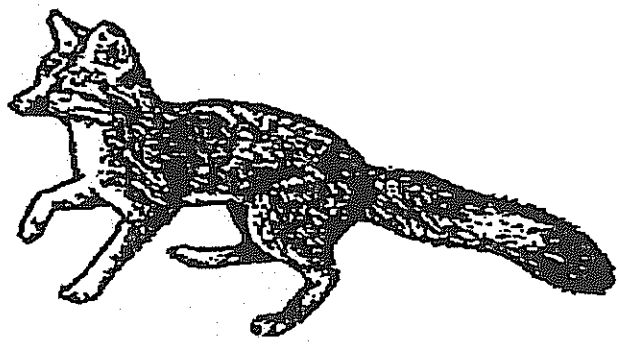
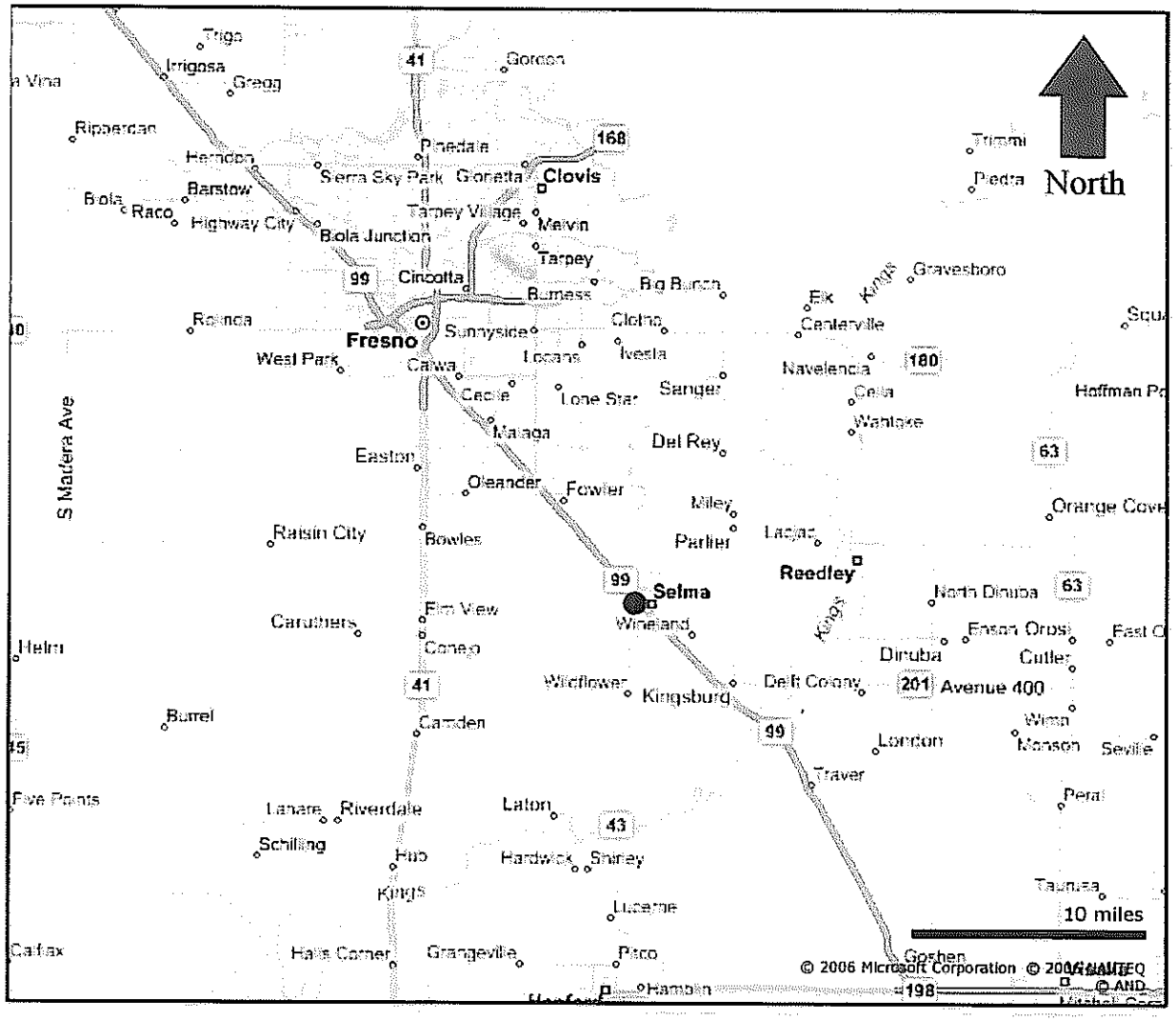
APPENDIX A

Project Location Maps



HALSTEAD & ASSOCIATES
Endangered Species / Environmental Consultants
296 Burgan Avenue, Clovis, CA 93611

Project Site —



Fresno County, California

Conejo Quadrangle Map T 15 S, R 21 E

HALSTEAD & ASSOCIATES
Endangered Species / Environmental Consultants
296 Burgan Avenue, Clovis, CA 93611

Project Site —

Fresno County, California

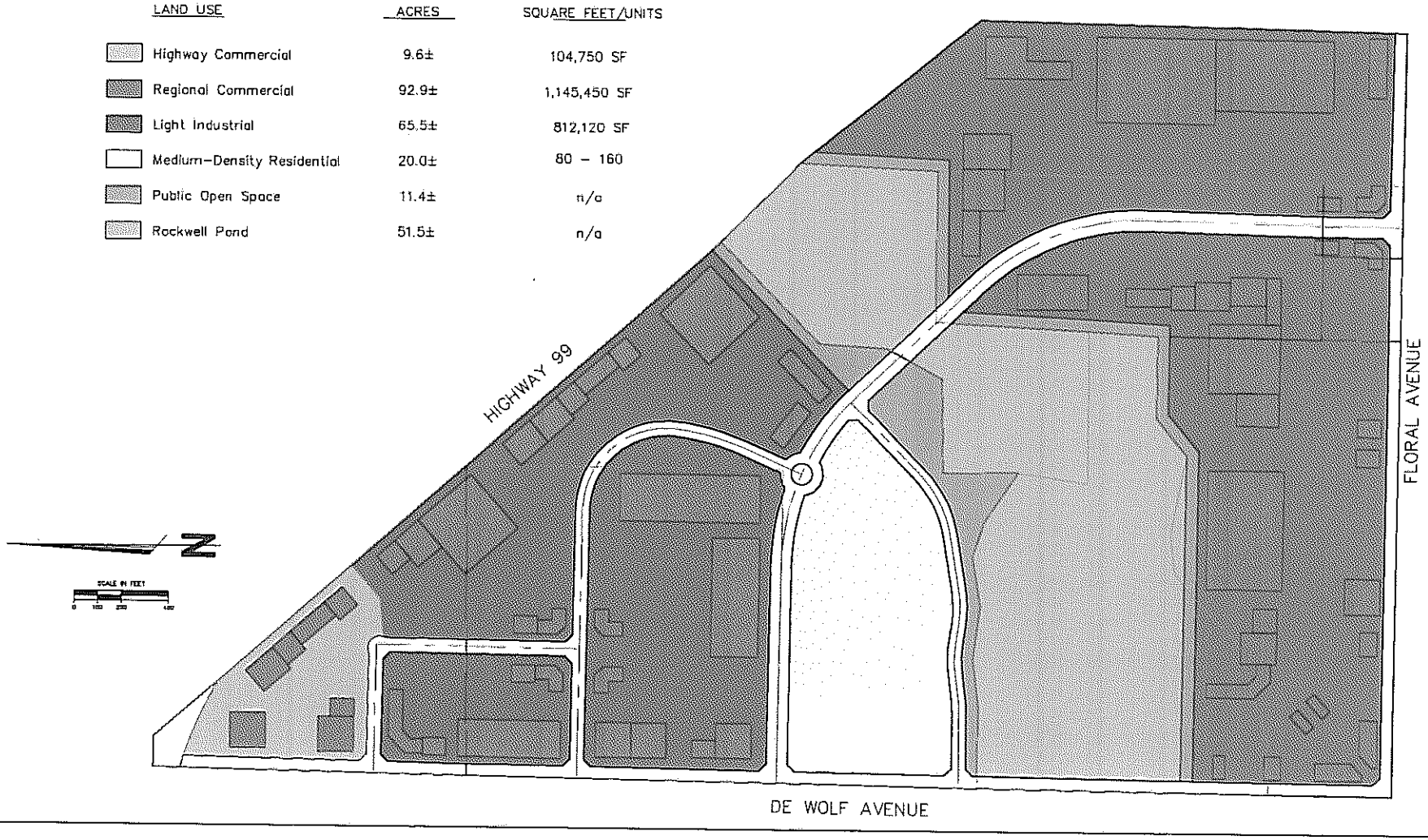
HALSTEAD & ASSOCIATES
Endangered Species / Environmental Consultants
296 Burgan Avenue, Clovis, CA 93611

Project Site —

ROCKWELL POND SPECIFIC PLAN AREA

SELMA, CA

LAND USE	ACRES	SQUARE FEET/UNITS
Highway Commercial	9.6±	104,750 SF
Regional Commercial	92.9±	1,145,450 SF
Light Industrial	65.5±	812,120 SF
Medium-Density Residential	20.0±	80 – 160
Public Open Space	11.4±	n/a
Rockwell Pond	51.5±	n/a



CLIFF TUTELIAN
CITY OF SELMA
FRESNO COUNTY, CALIFORNIA

ROCKWELL POND PLAN AREA

DESIGN ENGINEER:
LICENSE NO:
DRAFTED BY: JNG | CHECKED BY:
SCALE: AS SHOWN
DATE: 3/16/2007
JOB NO: 10870301
DWG. NO:
SHEET
1 OF 1

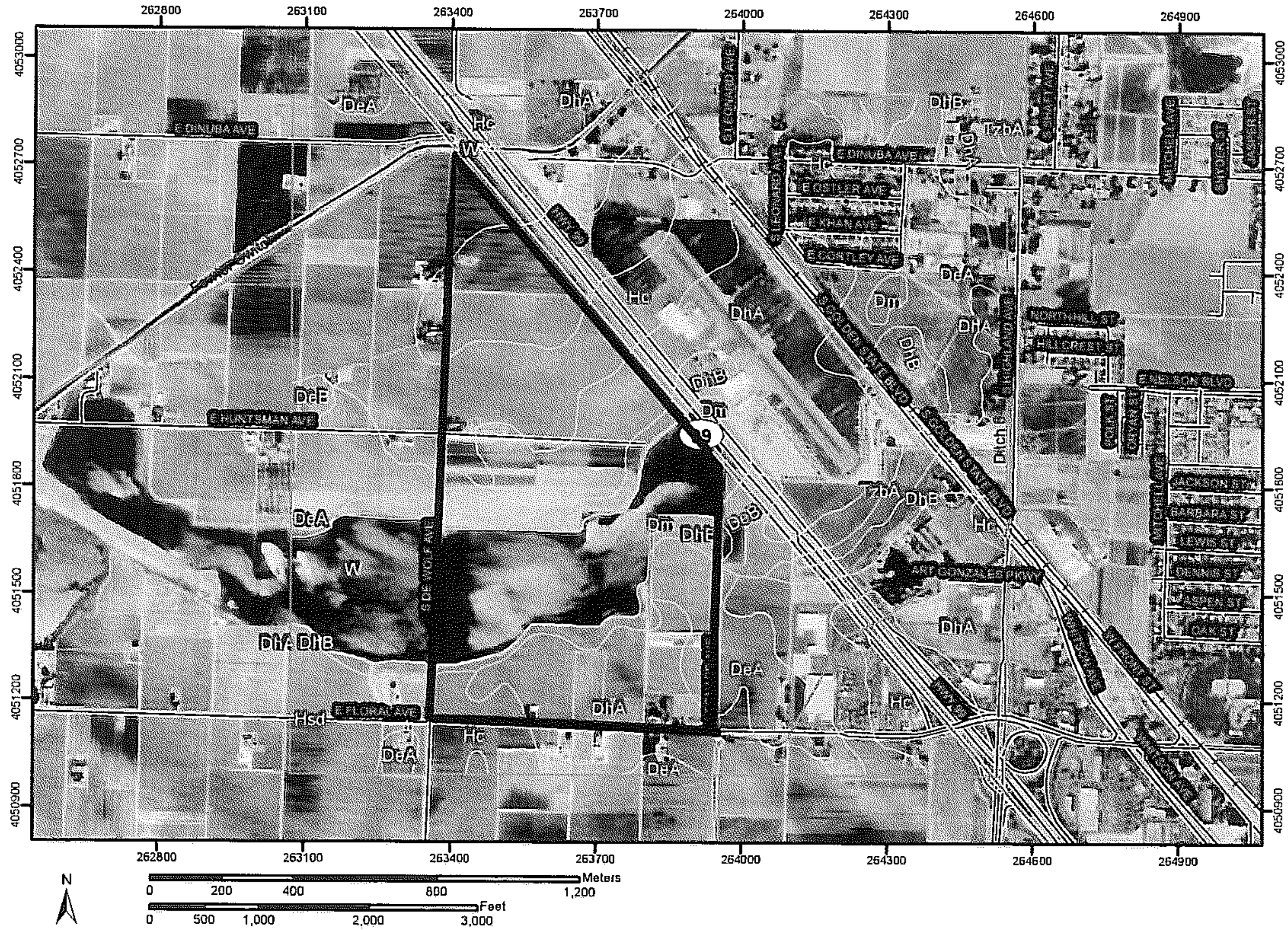
APPENDIX B

Habitat and Soil Maps

Fresno County, California

HALSTEAD & ASSOCIATES
Endangered Species / Environmental Consultants
296 Burgan Avenue, Clovis, CA 93611

Habitat Map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4052400
4052100
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4051200
4050900
DeA
DhA
DhB
TzbA
Hc
W
E DINUBA AVE
Dm
DeB
E HUNTSMAN AVE
DeE
DhA DhB
Hsd
E FLORAL AVE
ART GONZALES PKWY
N
0
200
400
800
1,200
Meters
0
500
1,000
2,000
3,000
Feet

Map Unit Legend

Eastern Fresno Area, California (CA654)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DeA	Delhi sand, 0 to 3 percent slopes	107.0	11.4%
DeB	Delhi sand, 3 to 9 percent slopes	20.8	2.2%
DhA	Delhi loamy sand, 0 to 3 percent slopes	355.8	37.8%
DhB	Delhi loamy sand, 3 to 9 percent slopes	67.3	7.2%
Dm	Dello loamy sand	4.8	0.5%
Hc	Hanford sandy loam	255.6	27.2%
Hsd	Hesperia sandy loam	21.8	2.3%
TzbA	Tujunga loamy sand, 0 to 3 percent slopes	8.7	0.9%
W	Water	98.8	10.5%
Totals for Area of Interest (AOI)		940.6	100.0%

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 3, Jan 10, 2007

Date(s) aerial images were photographed: 8/17/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

APPENDIX C

Natural Diversity Data Base Search:

Conejo Quadrangle Map

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS/R-E-D
1	San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2T3	S2S3	
2	Swainson's hawk *Buteo swainsoni*	ABNKC19070	Species of Concern	Threatened	G5	S2	

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G5	**CDFG Status:**	
State:	Threatened	**State:**	S2		

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 829 **Map Index:** 43431 **EO Index:** 43431

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BROWN, N. 2000 (OBS)

Dates Last Seen
Element: 2000-07-10
Site: 2000-07-10

Record Last Updated: 2000-08-14

Quad Summary: CONEJO (3611956/357C)

County Summary: FRESNO

Lat/Long: 36.50472° / -119.62767°
UTM: Zone-11 N4043143 E264668
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/10 mile

Township: 16S
Range: 22E
Section: 30 **Qtr:** SE
Meridian: M
Elevation: 300 ft

Location: NE CORNER OF CLARKSON AVENUE AND HIGHWAY 43 (HIGHLAND AVENUE), SOUTH OF SELMA.

Location Detail:

Ecological: HABITAT CONSISTS OF A EUCALYPTUS GROVE, WHICH WAS BEING CLEANED/TRIMMED AT THE TIME OF THE OBSERVATION. SOME ALFALFA FOUND GROWING BETWEEN THE ORCHARD ROWS.

Threat:

General: NESTING PRESUMED DUE TO THE ACTIONS OF THE ADULTS: THEY BOTH STAYED IN THE IMMEDIATE VICINITY DESPITE THE DISTURBANCE OF TRIMMING/CUTTING IN THE EUCALYPTUS GROVE.

Owner/Manager: PVT

Vulpes macrotis mutica

San Joaquin kit fox

Element Code: AMAJA03041

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G4T2T3	**CDFG Status:**	
State:	Threatened	**State:**	S2S3		

Habitat Associations

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.

Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

Occurrence No. 10 **Map Index:** 23593 **EO Index:** 9242

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: MORRELL, S. 1975 (MAP)

Dates Last Seen
Element: 1975-XX-XX
Site: 1975-XX-XX

Record Last Updated: 1993-06-10

Quad Summary: LATON (3611946/335B), RIVERDALE (3611947/336A), CONEJO (3611956/357C)

County Summary: FRESNO, KINGS

Lat/Long: 36.46034° / -119.71919°
UTM: Zone-11 N4038446 E256330
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 17,160.0 ac

Township: 17S
Range: 21E
Section: 05 **Qtr:** XX
Meridian: M
Elevation: 255 ft

Location: NORTHWEST OF LATON; 22 MILES WEST NORTHWEST OF VISALIA.

Location Detail: ONE OBSERVATION BETWEEN 1972-1975.

Ecological:

Threat: UNKNOWN.

General: A FOX WAS OBSERVED IN THE VICINITY OF RR OVERPASS OVER CLOVIS AVE. APPROX. 3.0 MILES NORTHWEST OF LATON.

Owner/Manager: UNKNOWN

APPENDIX D

Natural Diversity Data Base Search:

Eight Surrounding Quadrangle Maps

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS/R-E-D
1	California tiger salamander *Ambystoma californiense*	AAAAA01147	Proposed Threatened		G2G3	S2S3	SC
2	Greene's tuctoria *Tuctoria greenei*	PMPOA6N010	Endangered	Rare	G2	S2.2	1B/2-3-3
3	Panoche pepper-grass *Lepidium jaredii ssp. album*	PDBRA1M0G2	Species of Concern		G1T1	S1.2	1B/3-2-3
4	San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2T3	S2S3	
5	San Joaquin pocket mouse *Perognathus inornatus inornatus*	AMAFD01061	Species of Concern		G4T2T3	S2S3	
6	Swainson's hawk *Buteo swainsoni*	ABNKC19070	Species of Concern	Threatened	G5	S2	
7	Valley Sacaton Grassland	CTT42120CA			G1	S1.1	
8	brittlescale *Atriplex depressa*	PDCHE042L0	Species of Concern		G2Q	S2.2	1B/2-2-3
9	burrowing owl *Athene cunicularia*	ABNSB10010	Species of Concern		G4	S2	SC
10	valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened		G3T2	S2	
11	vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened		G2G3	S2S3	
12	vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered		G2G3	S2S3	
13	western spadefoot *Spea (=Scaphiopus) hammondii*	AAABF01030	Species of Concern		G3	S3	SC
14	western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Candidate	Endangered	G5T2	S1	

Ambystoma californiense

California tiger salamander

Element Code: AAAAA01147

Status		NDDB Element Ranks		Other Lists	
Federal:	Proposed Threatened	**Global:**	G2G3	**CDFG Status:**	SC
State:	None	**State:**	S2S3		

Habitat Associations

General: POPULATIONS IN SANTA BARBARA & SONOMA COUNTIES CURRENTLY LISTED AS ENDANGERED. PROPOSAL TO LIST AS THREATENED STATEWIDE.

Micro: NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS & VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING

Occurrence No. 522 **Map Index:** 44980 **EO Index:** 44980 **Dates Last Seen**

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J.A. & P.S. 1999 (OBS)

Element: 1999-03-01
Site: 1999-03-01
Record Last Updated: 2001-02-28

Quad Summary: BURRIS PARK (3611945/335A)
County Summary: KINGS

Lat/Long: 36.37793° / -119.50895°
UTM: Zone-11 N4028791 E274936
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

Township: 18S
Range: 23E
Section: 08 **Qtr:** W
Meridian: M
Elevation: 260 ft

Location: WEST SIDE OF CROSS CREEK, 1.3 MILES SOUTH OF SETTLERS DITCH, NW OF VISALIA
Location Detail:
Ecological: HABITAT CONSISTS OF NON-NATIVE ANNUAL GRASSLAND W/ VERNAL POOLS; GRASSLAND TO THE SOUTH & EAST, FARMLAND TO THE NORTH & WEST. SCAPHIOPUS HAMMONDI, BRANCHINETA LYNCHI, LEPIDURUS PACKARDI, & ATHENE CUNICULARIA FOUND IN THE VICINITY.
Threat: POSSIBLE THREAT OF DEVELOPMENT ON SURROUNDING FARMLAND.
General: SEVERAL EGG MASSES OBSERVED ON 1 MAR 1999.
Owner/Manager: PVT

Ambystoma californiense

California tiger salamander

Element Code: AAAAA01147

Status		NDDB Element Ranks		Other Lists	
Federal:	Proposed Threatened	**Global:**	G2G3	**CDFG Status:**	SC
State:	None	**State:**	S2S3		

Habitat Associations

General: POPULATIONS IN SANTA BARBARA & SONOMA COUNTIES CURRENTLY LISTED AS ENDANGERED. PROPOSAL TO LIST AS THREATENED STATEWIDE.

Micro: NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS & VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING

Occurrence No. 583 **Map Index:** 46277 **EO Index:** 46277 **Dates Last Seen**

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: JENNINGS, M. & M. HAYES 1994 (PERS)

Element: 1936-05-16
Site: 1936-05-16
Record Last Updated: 2002-08-20

Quad Summary: MALAGA (3611966/357B), FRESNO SOUTH (3611967/358A), CLOVIS (3611976/378C), FRESNO NORTH (3611977/379D)

County Summary: FRESNO

Lat/Long: 36.77388° / -119.77951°
UTM: Zone-11 N4073392 E251931
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 5 mile

Township: 13S
Range: 20E
Section: 27 **Qtr:** XX
Meridian: M
Elevation: 300 ft

Location: FRESNO
Location Detail:
Ecological:
Threat:
General: 1879 RECORD FROM THE USNM (#11794), NO OTHER INFORMATION GIVEN. CORNELL UNIVERSITY MUSEUM OF VERTEBRATES # 3017 (2 SPECIMENS) COLLECTED 16 MAY 1936 BY L.F. HADSELL. JENNINGS CONSIDERS THIS SITE EXTIRPATED.
Owner/Manager: UNKNOWN

Ambystoma californiense

California tiger salamander

Element Code: AAAAA01147

Status		NDDB Element Ranks		Other Lists	
Federal:	Proposed Threatened	**Global:**	G2G3	**CDFG Status:**	SC
State:	None	**State:**	S2S3		

Habitat Associations

General: POPULATIONS IN SANTA BARBARA & SONOMA COUNTIES CURRENTLY LISTED AS ENDANGERED. PROPOSAL TO LIST AS THREATENED STATEWIDE.

Micro: NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS & VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING

Occurrence No. 612 **Map Index:** 46426 **EO Index:** 46426 **Dates Last Seen**

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: JENNINGS, M. & M. HAYES 1994 (PERS)

Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 2001-11-07

Quad Summary: BURRIS PARK (3611945/335A)
County Summary: KINGS

Lat/Long: 36.47325° / -119.54682°
UTM: Zone-11 N4039456 E271818
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 17S
Range: 22E
Section: 11 **Qtr:** XX
Meridian: M
Elevation: 275 ft

Location: LOCATION GIVEN ONLY AS KINGS RIVER BELOW KINGSBURG IN KINGS COUNTY.
Location Detail:
Ecological:
Threat:
General: COLLECTION / OBSERVATION SOMETIME BEFORE 1925. JENNINGS CONSIDERS THIS SITE EXTIRPATED.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G4	**CDFG Status:**	SC
State:	None	**State:**	S2		

Habitat Associations

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 397 **Map Index:** 44978 **EO Index:** 44978 **Dates Last Seen**

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J.A. & P.S. 1999 (OBS)

Element: 1999-03-01
Site: 1999-03-01
Record Last Updated: 2001-02-28

Quad Summary:
County Summary: KINGS

Lat/Long: 36.38209° / -119.50860°
UTM: Zone-11 N4029252 E274980
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

Township: 18S
Range: 23E
Section: 08 **Qtr:** W
Meridian: M
Elevation: 260 ft

Location: WEST SIDE OF CROSS CREEK, 1 MILE SOUTH OF SETTLERS DITCH, NW OF VISALIA
Location Detail:
Ecological: HABITAT CONSISTS OF NON-NATIVE ANNUAL GRASSLAND WITH VERNAL POOLS; SURROUNDED BY GRASSLAND TO THE SOUTH AND EAST, FARMLAND TO THE NORTH AND WEST.
Threat: POSSIBLE THREAT OF DEVELOPMENT ON SURROUNDING FARMLAND.
General: 4 ADULTS OBSERVED AT THE BURROW SITE ON 1 MAR 1999.
Owner/Manager: PVT

Atriplex depressa

brittlescale

Element Code: PDCHE042L0

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G2Q	**CNPS List:**	1B
State:	None	**State:**	S2.2	**R-E-D Code:**	2-2-3

Habitat Associations

General: CHENOPOD SCRUB, MEADOWS, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.

Micro: USUALLY IN ALKALI SCALDS OR ALK. CLAY IN MEADOWS OR ANNUAL GRASSLND; RARELY ASSOC W/RIPARIAN, MARSHES, OR V.P'S. 1-320M.

Occurrence No. 13 **Map Index:** 24422 **EO Index:** 7077 **Dates Last Seen**

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: TAYLOR, D. 1993 (PERS)

Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 1993-10-21

Quad Summary: LATON (3611946/335B)
County Summary: FRESNO, KINGS

Lat/Long: 36.43517° / -119.68881°
UTM: Zone-11 N4035577 E258975
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 3/5 mile

Township: 17S
Range: 21E
Section: 22 **Qtr:** SW
Meridian: M
Elevation: 250 ft

Location: LATON.
Location Detail:
Ecological:
Threat:
General: BASED ON COLLECTION BY T.H. KEARNEY #33 US. NO DATE GIVEN.
Owner/Manager: UNKNOWN

Branchinecta lynchi

vernal pool fairy shrimp

Element Code: ICBRA03030

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G2G3	**CDFG Status:**	
State:	None	**State:**	S2S3		

Habitat Associations

General: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No. 206 **Map Index:** 41569 **EO Index:** 41569 **Dates Last Seen**

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J. & P. HALSTEAD 1999 (OBS)

Element: 1999-03-04
Site: 1999-03-04
Record Last Updated: 1999-09-08

Quad Summary: BURRIS PARK (3611945/335A)
County Summary: KINGS

Lat/Long: 36.38153° / -119.50823°
UTM: Zone-11 N4029189 E275011
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

Township: 18S
Range: 23E
Section: 08 **Qtr:** NW
Meridian: X
Elevation: 260 ft

Location: 0.2 MILE WEST OF CROSS CREEK, 1.8 MILES SE OF JUNCTION OF 4TH AVENUE AND EXCELSIOR AVENUE, ~6 MILES SW OF BURRIS PARK.
Location Detail: VERNAL POOL(S) IN AREA "B". CURRENT LAND USE IS CATTLE GRAZING
Ecological: VERNAL POOLS IN NON-NATIVE GRASSLAND
Threat: DEVELOPMENT TO FARMLAND
General: 100'S OBSERVED IN COMBINATION OF THIS AND ONE IN AREA "A". COLLECTION DEPOSITED AT CAS.
Owner/Manager: PVT

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G5	**CDFG Status:**	
State:	Threatened	**State:**	S2		

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 40 **Map Index:** 14674 **EO Index:** 27258 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1979-07-30
Origin:	Natural/Native occurrence	**Site:**	1979-07-30
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1989-08-10
Main Source:	DEPT OF FISH & GAME 1984 (PERS)		

Quad Summary: RIVERDALE (3611947/336A)

County Summary: FRESNO

Lat/Long:	36.40577° / -119.79236°	**Township:**	17S	
UTM:	Zone-11 N4032578 E249597	**Range:**	20E	
Mapping Precision:	NON-SPECIFIC	**Section:**	34	**Qtr:** SW
Symbol Type:	POINT	**Meridian:**	M	
Radius:	1/5 mile	**Elevation:**	230 ft	

Location: ON E SIDE HWY 41 BETWEEN LAGUNA & EXCELSIOR ABOUT 0.4 MI N OF EXCELSIOR.

Location Detail:

Ecological:

Threat:

General: DFG SWHA #FR004. ONE ADULT OBSERVED, BUT NO NEST FOUND.

Owner/Manager: PVT

Buteo swainsoni

Swainson's hawk

Element Code: ABNKC19070

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G5	**CDFG Status:**	
State:	Threatened	**State:**	S2		

Habitat Associations

General: (NESTING) BREEDS IN STANDS WITH FEW TREES IN JUNIPER-SAGE FLATS, RIPARIAN AREAS AND IN OAK SAVANNAH.

Micro: REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Occurrence No. 41 **Map Index:** 14637 **EO Index:** 27257 **Dates Last Seen**

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT OF FISH & GAME 1984 (PERS)

Element: 1979-07-30
Site: 1979-07-30
Record Last Updated: 1989-08-10

Quad Summary:
County Summary: FRESNO

Lat/Long: 36.42327° / -119.81709°
UTM: Zone-11 N4034585 E247435
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile

Township: 17S
Range: 20E
Section: 29 **Qtr:** SE
Meridian: M
Elevation: 225 ft

Location: SW CORNER OF WOOD AND WALNUT ROADS INTERSECTION, APPROXIMATELY 2.5 MILES NORTH OF THE NORTH FORK KINGS RIVER

Location Detail:

Ecological: NEST TREE IS AN OAK.

Threat:

General: DFG SWHA #FR005. ONE ADULT AND TWO FLEDGLINGS OBSERVED AT THE NEST ON 30 JUL 1979.

Owner/Manager: PVT

Coccyzus americanus occidentalis

western yellow-billed cuckoo

Element Code: ABNRB02022

Status		NDDB Element Ranks		Other Lists	
Federal:	Candidate	**Global:**	G5T2	**CDFG Status:**	
State:	Endangered	**State:**	S1		

Habitat Associations

General: (NESTING) RIPARIAN FOREST NESTER, ALONG THE BROAD, LOWER FLOOD-BOTTOMS OF LARGER RIVER SYSTEMS.

Micro: NESTS IN RIPARIAN JUNGLES OF WILLOW, OFTEN MIXED WITH COTTONWOODS, W/ LOWER STORY OF BLACKBERRY, NETTLES, OR WILD GRAPE.

Occurrence No. 87 **Map Index:** 14944 **EO Index:** 25589 **Dates Last Seen**

Occ Rank:	None	**Element:**	1902-07-10
Origin:	Natural/Native occurrence	**Site:**	1902-07-10
Presence:	Extirpated		
Trend:	Unknown	**Record Last Updated:**	1989-08-10
Main Source:	GAINES, D. 1977 (LIT)		

Quad Summary: SANGER (3611965/357A), MALAGA (3611966/357B), ROUND MOUNTAIN (3611975/378D), CLOVIS (3611976/378C)

County Summary: FRESNO

Lat/Long:	36.75271° / -119.63986°	**Township:**	13S	
UTM:	Zone-11 N4070690 E264333	**Range:**	21E	
Mapping Precision:	NON-SPECIFIC	**Section:**	36	**Qtr:** SW
Symbol Type:	POINT	**Meridian:**	M	
Radius:	1 mile	**Elevation:**	345 ft	

Location: FANCHER CRK, 6 MI NE OF FRESNO.

Location Detail:

Ecological:

Threat:

General: REPORTED AS UNCOMMON BUT NESTING BY TYLER (1913).

Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 67 **Map Index:** 33010 **EO Index:** 12215 **Dates Last Seen**

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: PENCE, W. 1991 (OBS)

Element: 1991-07-09
Site: 1991-07-09
Record Last Updated: 1998-08-11

Quad Summary: RIVERDALE (3611947/336A)
County Summary: FRESNO

Lat/Long: 36.40292° / -119.75254°
UTM: Zone-11 N4032160 E253159
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

Township: 17S
Range: 20E
Section: 36 **Qtr:** SE
Meridian: M
Elevation: 245 ft

Location: KINGS RIVER (NORTH BANK), JUST NORTH OF THE KINGS COUNTY LINE, ~6 MILES ESE OF RIVERDALE.
Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.
Ecological: HABITAT CONSISTS OF A MATURE, LARGE CLUMP/GROVE, SOME SHOWING EVEIDENCE OF FIRE DAMAGE.
Threat:
General: OLD EXIT HOLE ON DEAD WOOD OBSERVED.
Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 70 **Map Index:** 33007 **EO Index:** 4066 **Dates Last Seen**

Occ Rank:	Excellent	**Element:**	1991-05-01
Origin:	Natural/Native occurrence	**Site:**	1991-05-01
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1998-08-11
Main Source:	BARR, C. 1991 (OBS)		

Quad Summary: SANGER (3611965/357A)

County Summary: FRESNO

Lat/Long:	36.67840° / -119.53215°	**Township:**	14S
UTM:	Zone-11 N4062184 E273732	**Range:**	22E
Mapping Precision:	SPECIFIC	**Section:**	25 **Qtr:** SW
Symbol Type:	POINT	**Meridian:**	M
Radius:	80 meters	**Elevation:**	330 ft

Location: COLLINS CREEK, TRIBUTARY TO KINGS RIVER, IN THE VICINITY OF CHANNEL ROAD, ~2 MILES SE OF SANGER.

Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF DENSE RIPARIAN WOODLAND WITH OAKS, COTTONWOODS, AND ELDERBERRIES.

Threat:

General: BOTH OLD AND RECENT EXIT HOLES FOUND IN SEVERAL LARGE, OLD ELDERBERRIES.

Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 167 **Map Index:** 39533 **EO Index:** 34535 **Dates Last Seen**

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J. & J. OLDHAM 1990 (OBS)

Element: 1989-04-18
Site: 1989-04-18
Record Last Updated: 1998-08-25

Quad Summary:
County Summary: FRESNO

Lat/Long: 36.70086° / -119.50636°
UTM: Zone-11 N4064616 E276102
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 41.1 ac

Township: 14S
Range: 23E
Section: 19 **Qtr:** NE
Meridian: M
Elevation: 345 ft

Location: KINGS RIVER, 0.25 MILE NE OF ANNADALE AND RIVERBEND AVENUES, 2.8 MILES EAST OF SANGER.
Location Detail: RIPARIAN, GRAVEL MINING PITS/PONDS.
Ecological: RIPARIAN WITH ELDERBERRY HABITAT PRESENT.
Threat: MINING OPERATIONS
General: 1 FEMALE LAYING EGGS OBSERVED BUT NOT COLLECTED. EGGS AND EMERGENCE HOLES ON ONE ELDERBERRY NOTED.
Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 168 **Map Index:** 39534 **EO Index:** 34536 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1990-06-01
Origin:	Natural/Native occurrence	**Site:**	1990-06-01
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1998-08-25
Main Source:	HALSTEAD, J. & J. OLDHAM 1990 (OBS)		

Quad Summary:

County Summary: FRESNO

Lat/Long:	36.69427° / -119.52570°	**Township:**	14S	
UTM:	Zone-11 N4063930 E274355	**Range:**	22E	
Mapping Precision:	SPECIFIC	**Section:**	24	**Qtr:** NE
Symbol Type:	POINT	**Meridian:**	M	
Radius:	80 meters	**Elevation:**	340 ft	

Location: ALONG CHANNEL ROAD, 0,5 MILE SOUTH OF ANNADALE AVE INTERSECTION, 1.9 MILES SE OF SANGER.

Location Detail:

Ecological: ELDERBERRY AND OAK FOREST ALONG ROAD.

Threat:

General: MANY ELDERBERRIES ALONG ROAD. A FEW ELDERBERRY TREES WITH EMERGENCE HOLES. NO ADULTS OBSERVED.

Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status

Federal: Threatened
State: None

NDDB Element Ranks

Global: G3T2
State: S2

Other Lists

CDFG Status:

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 178 **Map Index:** 40240 **EO Index:** 35242 **Dates Last Seen**

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: PG&E 1998 (LIT)

Element: 1998-04-16
Site: 1998-04-16
Record Last Updated: 1998-11-24

Quad Summary:
County Summary: FRESNO

Lat/Long: 36.70507° / -119.51215°
UTM: Zone-11 N4065097 E275597
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 8.6 ac

Township: 14S
Range: 23E
Section: 19 **Qtr:** NW
Meridian: M
Elevation: 256 ft

Location: TRANSMISSION LINES, 0.4 MILE N OF INTERSECTION OF RIVERBEND & ANNADALE AVES & KINGS RIVER, 2.5 MILES E OF SANGER.

Location Detail: EXIT HOLE FOUND IN DEAD WOOD 650 FEET NORTHEAST OF TOWER 33/167. POTENTIAL HABITAT (OTHER AVAILABLE PLANTS) FROM 423 TO 650 FEET NE OF TOWER.

Ecological: RIPARIAN

Threat: ROAD MAINTENANCE, TRANSMISSION LINE MAINTENANCE (INCLUDES: HERBICIDE APPLICATION, VEG CLEARING AND/OR REMOVAL, ETC)

General: EXIT HOLES FOUND IN DEAD WOOD.

Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 179 **Map Index:** 40241 **EO Index:** 35243 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1998-04-16
Origin:	Natural/Native occurrence	**Site:**	1998-04-16
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1998-11-24
Main Source:	PG&E 1998 (LIT)		

Quad Summary:

County Summary: FRESNO

Lat/Long:	36.70191° / -119.51709°	**Township:**	14S	
UTM:	Zone-11 N4064757 E275147	**Range:**	23E	
Mapping Precision:	SPECIFIC	**Section:**	19	**Qtr:** NW
Symbol Type:	POLYGON	**Meridian:**	M	
Area:	19.2 ac	**Elevation:**	350 ft	

Location: TRANSMISSION LINES, 0.35 MILE NW OF INTERSECTION RIVERBEND & ANNADALE AVES, & KINGS RIVER, 2.5 MILES E OF SANGER.

Location Detail: ELDERBERRIESS WITH EXIT HOLES FOUND 289 FT & 180 FT NE; & 112 FT & 52 FT WEST OF TOWER 33/168. POTENTIAL HABITAT (OTHER ELDERBERRY BUSHES) FOUND 102 FT SW; 174, 151 & 62 FT WEST & 30 FT SE OF THE TOWER.

Ecological: AGRICULTURE (ORCHARDS, ROW CROPS, VINEYARD) UNCERTAIN WHICH OF THESE IS AT THIS SITE.

Threat: POTENTAIL THREATS; ROAD MAINTENANCE, TRANSMISSION LINE MAINTENANCE, AGRICULTURAL ACTIVITY.

General: EXIT HOLES FOUND IN BOTH LIVE AND DEAD WOOD.

Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle — **Element Code:** IICOL48011

Status		NDDB Element Ranks		Other Lists	
Federal:	Threatened	**Global:**	G3T2	**CDFG Status:**	
State:	None	**State:**	S2		

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 180 **Map Index:** 40242 **EO Index:** 35244 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1998-04-16
Origin:	Natural/Native occurrence	**Site:**	1998-04-16
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1998-11-24
Main Source:	PG&E 1998 (LIT)		

Quad Summary:

County Summary: FRESNO

Lat/Long:	36.68014° / -119.53810°	**Township:**	14S	
UTM:	Zone-11 N4062392 E273205	**Range:**	22E	
Mapping Precision:	SPECIFIC	**Section:**	25	**Qtr:** SW
Symbol Type:	POINT	**Meridian:**	M	
Radius:	80 meters	**Elevation:**	332 ft	

Location: ~1 MILE ENE OF JCT CENTRAL & ACADEMY AVES, AND 0.4 MILE N OF JCT GOODFELLOW AVE & CHANNEL RD, 2 MILES SE OF SANGER.

Location Detail: 43 FEET NORTHWEST OF TOWER 35/177.

Ecological: AGRICULTURE (ORCHARDS, ROW CROPS, VINEYARD), UNCERTAIN WHICH OF THESE IS AT THIS SITE.

Threat: POTENTAIL THREATS; ROAD MAINTENANCE, TRANSMISSION LINE MAINTENANCE, AGRICULTURAL ACTIVITY.

General: EXIT HOLES FOUND IN LIVE WOOD.

Owner/Manager: UNKNOWN

Lepidium jaredii ssp. album

Panoche pepper-grass

Element Code: PDBRA1M0G2

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G1T1	**CNPS List:**	1B
State:	None	**State:**	S1.2	**R-E-D Code:**	3-2-3

Habitat Associations

General: VALLEY AND FOOTHILL GRASSLAND.

Micro: ALKALI BOTTOMS, SLOPES, WASHES, ALLUVIAL FANS; CLAY AND GYPSUM-RICH SOILS. 65-910M.

Occurrence No. 5 **Map Index:** 31347 **EO Index:** 22253 **Dates Last Seen**

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Main Source: EATON, A. SN JEPS #573 (HERB)

Element: 1893-05-XX
Site: 1893-05-XX
Record Last Updated: 1995-06-19

Quad Summary: RIVERDALE (3611947/336A)
County Summary: FRESNO

Lat/Long: 36.43209° / -119.86103°
UTM: Zone-11 N4035680 E243524
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 3/5 mile

Township: 17S
Range: 19E
Section: 24 **Qtr:** S
Meridian: M
Elevation: 220 ft

Location: RIVERDALE.
Location Detail:
Ecological:
Threat:
General: EXTIRPATED ACCORDING TO D. HILLYARD (1992).
Owner/Manager: UNKNOWN

Lepidurus packardi

vernal pool tadpole shrimp

Element Code: ICBRA10010

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G2G3	**CDFG Status:**	
State:	None	**State:**	S2S3		

Habitat Associations

General: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Occurrence No. 139 **Map Index:** 41568 **EO Index:** 41568 **Dates Last Seen**

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J. & P. HALSTEAD 1999 (OBS)

Element: 1999-03-04
Site: 1999-03-04
Record Last Updated: 1999-09-08

Quad Summary: BURRIS PARK (3611945/335A)
County Summary: KINGS

Lat/Long: 36.38078° / -119.50990°
UTM: Zone-11 N4029109 E274859
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

Township: 18S
Range: 23E
Section: 08 **Qtr:** NW
Meridian: X
Elevation: 260 ft

Location: 0.3 MILE WEST OF CROSS CREEK, 1.8 MILES SE OF JUNCTION OF 4TH AVENUE AND EXCELSIOR AVENUE, ~6 MILES SW OF BURRIS PARK.

Location Detail: VERNAL POOL(S) IN AREA "B". CURRENT LAND USE IS CATTLE GRAZING

Ecological: VERNAL POOLS IN NON-NATIVE GRASSLAND

Threat: CONVERSION TO FARMLAND

General: 100'S OBSERVED IN COMBINATION OF THIS AND ONE IN AREA "A". COLLECTION DEPOSITED AT CAS.

Owner/Manager: PVT

Perognathus inornatus inornatus

San Joaquin pocket mouse — **Element Code:** AMAFD01061

Status		NDDB Element Ranks		Other Lists	
Federal:	Species of Concern	**Global:**	G4T2T3	**CDFG Status:**	
State:	None	**State:**	S2S3		

Habitat Associations

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

Occurrence No. 16 **Map Index:** 14563 **EO Index:** 23951 **Dates Last Seen**

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WEAR, W. 1915 (MUS)

Element: 1915-11-20
Site: 1915-11-20
Record Last Updated: 1989-08-10

Quad Summary: FRESNO SOUTH (3611967/358A), FRESNO NORTH (3611977/379D)
County Summary: FRESNO

Lat/Long: 36.73689° / -119.85793°
UTM: Zone-11 N4069494 E244808
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 14S
Range: 19E
Section: 01 **Qtr:** SW
Meridian: M
Elevation:

Location: 4 MI W FRESNO.
Location Detail:
Ecological:
Threat:
General: MVZ #21989.
Owner/Manager: UNKNOWN

Spea (=Scaphiopus) hammondii

western spadefoot

Element Code: AAABF01030

Status	NDDB Element Ranks	Other Lists
Federal: Species of Concern	**Global:** G3	**CDFG Status:** SC
State: None	**State:** S3	

Habitat Associations

General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.

Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.

Occurrence No. 195 **Map Index:** 44979 **EO Index:** 44979 **Dates Last Seen**

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HALSTEAD, J.A. & P.S. 1999 (OBS)

Element: 1999-03-01
Site: 1999-03-01
Record Last Updated: 2001-02-28

Quad Summary: BURRIS PARK (3611945/335A)
County Summary: KINGS

Lat/Long: 36.38111° / -119.50890°
UTM: Zone-11 N4029144 E274949
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 32.0 ac

Township: 18S
Range: 23E
Section: 08 **Qtr:** W
Meridian: M
Elevation: 260 ft

Location: WEST SIDE OF CROSS CREEK, ~1 MILE SOUTH OF SETTLERS DITCH, NW OF VISALIA
Location Detail:
Ecological: HABITAT CONSISTS OF NON-NATIVE ANNUAL GRASSLAND W/ VERNAL POOLS; GRASSLAND TO THE SOUTH & EAST, FARMLAND TO THE NORTH & WEST. AMBYSTOMA CALIFORNIENSE, BRANCHINETA LYNCHI, LEPIDURUS PACKARDI, & ATHENE CUNICULARIA FOUND IN THE VICINITY.
Threat: POSSIBLE THREAT OF DEVELOPMENT ON SURROUNDING FARMLAND.
General: MANY TADPOLES OBSERVED IN 3 SEPARATE POOLS ON 1 MAR 1999.
Owner/Manager: PVT

Tuctoria greenei

Greene's tuctoria

Element Code: PMPOA6N010

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	Global:	G2	CNPS List:	1B
State:	Rare	State:	S2.2	R-E-D Code:	2-3-3

Habitat Associations

General: VERNAL POOLS, VALLEY AND FOOTHILL GRASSLAND.

Micro: DRY BOTTOMS OF VERNAL POOLS IN OPEN GRASSLANDS. 30-1065M.

Occurrence No. 17 **Map Index:** 15131 **EO Index:** 22351 **Dates Last Seen**

Occ Rank:	None	**Element:**	1956-XX-XX
Origin:	Natural/Native occurrence	**Site:**	1987-06-01
Presence:	Extirpated		
Trend:	Unknown	**Record Last Updated:**	1995-07-19
Main Source:	HOWELL & BARNEBY #29319 RSA (HERB)		

Quad Summary: SANGER (3611965/357A), ROUND MOUNTAIN (3611975/378D)

County Summary: FRESNO

Lat/Long:	36.75022° / -119.55597°	**Township:**	13S	
UTM:	Zone-11 N4070210 E271816	**Range:**	22E	
Mapping Precision:	NON-SPECIFIC	**Section:**	34	**Qtr:** SE
Symbol Type:	POINT	**Meridian:**	M	
Radius:	1/5 mile	**Elevation:**	385 ft	

Location: 3 MILES NORTH OF SANGER.

Location Detail: MAPPED NEAR INTERSECTION OF BELMONT ROAD AND ACADEMY AVENUE.

Ecological: BED OF DRIED POOL.

Threat: AREA IS NOW ORANGE ORCHARDS AND VINEYRDS.

General: SITE ONLY KNOWN FROM 1956 COLLECTION BY HOWELL AND BARNEBY.

Owner/Manager: UNKNOWN

Valley Sacaton Grassland

Element Code: CTT42120CA

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G1	
State: None	**State:** S1.1	

Habitat Associations

General:

Micro:

Occurrence No. 12 **Map Index:** 15270 **EO Index:** 8665 **Dates Last Seen**

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Main Source: BITTMAN, R. ET AL 1985 (OBS)

Element: 1985-03-12
Site: 1985-03-12
Record Last Updated: 1998-07-14

Quad Summary: GOSHEN (3611934/334C), REMNOY (3611935/335D), TRAVER (3611944/334B), BURRIS PARK (3611945/335A)
County Summary: KINGS, TULARE

Lat/Long: 36.36772° / -119.49151°
UTM: Zone-11 N4027618 E276472
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

Township: 18S
Range: 23E
Section: 16 **Qtr:** NW
Meridian: M
Elevation: 260 ft

Location: CROSS CREEK N OF HWY 198, ABOUT 3 MI W OF HWY 99 VIA AVE 328 & DIRT RD CONNECTING TO 320.
Location Detail:
Ecological: HEAVILY GRAZED W/ VERY FEW SPOROBOLUS & SOME DEGRADED VERNAL POOLS, DISTICHLIS, HORDEUM, ERODIUM, ELYMUS DOM. LOW DIVERSITY, LOW NATIVE COVER. POOLS W/ MYOSURUS, LASTHENIA GLABRATA, JUNCUS, LEPIDIUM, PLAGIOBOTHRYS.
Threat: GRAZING HAS DISTURBED THIS SITE.
General: THIS WAS OCC #012 OF CTT42120CA.
Owner/Manager: PVT

Vulpes macrotis mutica

San Joaquin kit fox — **Element Code:** AMAJA03041

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G4T2T3	**CDFG Status:**	
State:	Threatened	**State:**	S2S3		

Habitat Associations

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.

Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

Occurrence No. 2 **Map Index:** 23602 **EO Index:** 8096 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	2002-10-13
Origin:	Natural/Native occurrence	**Site:**	2002-10-13
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	2003-03-10
Main Source:	PRUETT, PAUL E. (OBS)		

Quad Summary: PASTORIA CREEK (3411887/189A), GRAPEVINE (3411888/189B), TEJON RANCH (3511816/213C), TEJON HILLS (3511817/214D), METTLER (3511818/214C), BEAR MOUNTAIN (3511826/213B), ARVIN (3511827/214A), WEED PATCH (3511828/214B), BENA (3511836/238C), EDISON (3511837/239D), LAMONT (3511838/239C), COAL OIL CANYON (3511911/215D), CONNER SW (3511912/215C), PENTLAND (3511913/216D), MARICOPA (3511914/216C), CONNER (3511921/215A), MILLUX (3511922/215B), MOUTH OF KERN (3511923/216A), TAFT (3511924/216B), GOSFORD (3511931/240D), STEVENS (3511932/240C), TUPMAN (3511933/241D), EAST ELK HILLS (3511934/241C), WEST ELK HILLS (3511935/242D), OILDALE (3511941/240A), ROSEDALE (3511942/240B), RIO BRAVO (3511943/241A), BUTTONWILLOW (3511944/241B), LOKERN (3511945/242A), BELRIDGE (3511946/242B), FAMOSO (3511952/263C), WASCO (3511953/264D), WASCO SW (3511954/264C), SEMITROPIC (3511955/265D), LOST HILLS (3511956/265C), MCFARLAND (3511962/263B), POND (3511963/264A), WASCO NW (3511964/264B), LOST HILLS NE (3511965/265A), LOST HILLS NW (3511966/265B), ANTELOPE PLAIN (3511967/266A), DELANO EAST (3511972/287C), DELANO WEST (3511973/288D), ALLENSWORTH (3511974/288C), HACIENDA RANCH (3511975/289D), LONE TREE WELL (3511976/289C), WEST CAMP (3511977/290D), AVENAL GAP (3511978/290C), PIXLEY (3511983/288A), ALPAUGH (3511984/288B), HACIENDA RANCH NE (3511985/289A), DUDLEY RIDGE (3511987/290A), LOS VIEJOS (3511988/290B), TIPTON (3611913/311D), TAYLOR WEIR (3611914/311C), CORCORAN (3611915/312D), EL RICO RANCH (3611916/312C), KETTLEMAN CITY (3611918/313C), TULARE (3611923/311A), PAIGE (3611924/311B), WAUKENA (3611925/312A), GUERNSEY (3611926/312B), STRATFORD (3611927/313A), GOSHEN (3611934/334C), REMNOY (3611935/335D), HANFORD (3611936/335C), LEMOORE (3611937/336D), TRAVER (3611944/334B), BURRIS PARK (3611945/335A), LATON (3611946/335B)

County Summary: KINGS, KERN, TULARE

Lat/Long:	35.68261° / -119.33160°	**Township:**	29S
UTM:	Zone-11 N3951251 E289001	**Range:**	24E
Mapping Precision:	NON-SPECIFIC	**Section:**	XX **Qtr:** XX
Symbol Type:	POLYGON	**Meridian:**	S
Area:	562,900.0 ac	**Elevation:**	285 ft

Location: AREA BETWEEN I-99 AND THE CALIFORNIA AQUEDUCT, NORTH TO LATON; SE TO THE GRAPEVINE; WEST TO MILE 175 OF THE AQUEDUCT.

Location Detail: NUMEROUS SITINGS THROUGHOUT THIS AREA BETWEEN 1973 AND 2002.

Ecological: ANNUAL GRASSLAND, VALLEY SALTBUSH SCRUB, VALLEY SINK SCRUB, AGRICULTURE, AND DEVELOPED AREAS.

Threat: AGRICULTURE, GRAZING, DEVELOPMENT, COMPETITION FROM COYOTES AND RED FOX AND ROAD KILLINGS.

Vulpes macrotis mutica

San Joaquin kit fox — **Element Code:** AMAJA03041

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G4T2T3	**CDFG Status:**	
State:	Threatened	**State:**	S2S3		

Habitat Associations

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.

Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

General: A LARGE AMOUNT OF INFORMATION ON THIS AREA IS IN THE VULPES MACROTIS MUTICA ELEMENT FILE.

Owner/Manager: UNKNOWN

Vulpes macrotis mutica

San Joaquin kit fox

Element Code: AMAJA03041

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G4T2T3	**CDFG Status:**	
State:	Threatened	**State:**	S2S3		

Habitat Associations

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.

Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

Occurrence No. 9 **Map Index:** 23592 **EO Index:** 9244 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1982-XX-XX
Origin:	Natural/Native occurrence	**Site:**	1982-XX-XX
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1995-11-08
Main Source:	ENERGY MEASUREMENT GROUP (LIT)		

Quad Summary: LEMOORE (3611937/336D), VANGUARD (3611938/336C), RIVERDALE (3611947/336A), BURREL (3611948/336B), CALFLAX (3612031/337D), FIVE POINTS (3612041/337A)

County Summary: FRESNO, KINGS

Lat/Long:	36.34707° / -119.94516°	**Township:**	18S	
UTM:	Zone-11 N4026472 E235692	**Range:**	19E	
Mapping Precision:	NON-SPECIFIC	**Section:**	20	**Qtr:** XX
Symbol Type:	POLYGON	**Meridian:**	M	
Area:	49,880.0 ac	**Elevation:**	225 ft	

Location: LEMOORE NAVAL AIR STATION; APPROX 35 MILES WEST OF VISALIA.

Location Detail: TWO DENS AND TWO OBSERVATIONS REPORTED BETWEEN 1972 AND 1975.

Ecological:

Threat: MILITARY OPERATIONS AND COYOTE PREDATION.

General:

Owner/Manager: DOD, PVT

Vulpes macrotis mutica

San Joaquin kit fox

Element Code: AMAJA03041

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	**Global:**	G4T2T3	**CDFG Status:**	
State:	Threatened	**State:**	S2S3		

Habitat Associations

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.

Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

Occurrence No. 10 **Map Index:** 23593 **EO Index:** 9242 **Dates Last Seen**

Occ Rank:	Unknown	**Element:**	1975-XX-XX
Origin:	Natural/Native occurrence	**Site:**	1975-XX-XX
Presence:	Presumed Extant		
Trend:	Unknown	**Record Last Updated:**	1993-06-10
Main Source:	MORRELL, S. 1975 (MAP)		

Quad Summary: LATON (3611946/335B), RIVERDALE (3611947/336A), CONEJO (3611956/357C)

County Summary: FRESNO, KINGS

Lat/Long:	36.46034° / -119.71919°	**Township:**	17S
UTM:	Zone-11 N4038446 E256330	**Range:**	21E
Mapping Precision:	NON-SPECIFIC	**Section:**	05 **Qtr:** XX
Symbol Type:	POLYGON	**Meridian:**	M
Area:	17,160.0 ac	**Elevation:**	255 ft

Location: NORTHWEST OF LATON; 22 MILES WEST NORTHWEST OF VISALIA.

Location Detail: ONE OBSERVATION BETWEEN 1972-1975.

Ecological:

Threat: UNKNOWN.

General: A FOX WAS OBSERVED IN THE VICINITY OF RR OVERPASS OVER CLOVIS AVE. APPROX. 3.0 MILES NORTHWEST OF LATON.

Owner/Manager: UNKNOWN

APPENDIX E

Special-Status Plants

in the

Vicinity of the Project Site

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Obovate-leaved thornmint *Acanthomintha obovata obovata*	--	--	4	Chaparral, cismontane woodland, valley and foothill grassland. Heavy clay, alkaline, serpentine soils.	April-July	395-1,500 m	No
Forked fiddleneck *Amsinckia vernicosa furcata*	FSC	--	4	Cismontane woodland, valley and foothill grassland.	February-May	50-1,000 m	No
Bodie Hills rock cress *Arabis bodiensis*	FSC	--	1B	Alpine boulder and rock field, Great Basin scrub, pinyon and juniper woodland, and possibly subalpine coniferous forest.	June-August	2,195-3,530 m	No
Kern Plateau milk-vetch *Astragalus lentiginosus kernensis*	FSC	--	1B	Subalpine coniferous forest. Meadows and seeps.	June-July	2,240-2,750 m	No
Raven's milk-vetch *Astragalus monoensis ravenii*	FSC	--	1B	Alpine boulder and rock field, upper montane coniferous forest. Gravelly soils.	July-September	3,355-3,460 m	No
Heartscale *Atriplex cordulata*	FSC	--	1B	Chenopod scrub, meadows and seeps, valley and foothill grassland. Sandy/saline or alkaline soils.	April-October	1-375 m	No
Brittlescale *Atriplex depressa*	FSC	--	1B	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Alkaline or clay soils.	May-October	1-320 m	No
Earlimart oracha *Atriplex erecticaulis*	FSC	--	1B	Valley and foothill grassland in southern San Joaquin valley. Alkaline soils.	August-September	40 –100 m	No
Lesser saltscale *Atriplex minuscula*	FSC	--	1B	Chenopod scrub, playas, valley and foothill grassland. Alkaline or sandy soils.	May-October	15-200 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Vernal pool saltbush *Atriplex persistens*	FSC	--	1B	Vernal pools. Alkaline soils.	June-October	10-115 m	No
Subtle orache Atriplex subtillis	FSC	--	1B	Valley and foothill grasslands.	June-October	40-100 m	No
Lost Hills saltbush (=crownscale) *Atriplex vallicola*	FSC	--	1B	Chenopod scrub, valley and foothill grasslands Vernal pools in alkaline soils.	April-August	50-63 m	No
Scalloped moonwort *Botrychium crenulatum*	FSC	--	2	Lower montane conifer forest. Meadows, seeps, marshes, and swamps.	June-September	1,500-3,280 m	No
Slender moonwart (=narrowleaf grapefern) *Botrychium lineare*	FC	--	1B	Upper montane coniferous forest. Known in CA from a single small occurrence near Piute Pass.	Unknown	2,600 m	No
Kaweah brodiae *Brodiaea insignis*	FSC	SE	1B	Cismontane woodland, valley and foothill grassland.	April-June	150-1,400 m	No
Alkali Mariposa lily *Calochortus striatus*	FSC	--	1B	Chaparral, chenopod scrub, Mojavean desert scrub. Meadows and seeps.	April-June	70-1,595 m	No
Shirley Meadows Mariposa lily *Calochortus westonii*	FSC	--	1B	Lower montane coniferous forest. Meadows and seeps.	May-June	1,500-2,105 m	No
Mariposa pussy-paws *Calyptridium pulchellum*	FT	--	1B	Chaparral, cismontane woodland. Sandy or gravelly, granitic soils.	April-August	400-1,220 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
South Coast Range morning-glory *Calystegia collina venusta*	FSC	--	4	Chaparral, cismontane woodland, valley and foothill grasslands. Serpentinite or sedimentary.	April-June	425-1,130 m	No
San Benito evening-primrose *Camissonia benitensis*	FT	--	1B	Chaparral, cismontane woodland. Serpentinite alluvium, clay or gravelly soils.	May-June	600-1,280 m	No
Mono Hot Springs evening-primrose *Camissonia sierrae alticola*	FSC	--	1B	Lower montane coniferous forest, upper montane coniferous forest. Granitic, gravel and sand pan soils.	May-August	1,340-2,410 m	No
Carpenteria (=tree-anemone) *Carpenteria californica*	--	ST	1B	Chaparral, cismontane Woodland. Usually granitic soils.	May-July	340-1,340 m	No
Succulent owl's-clover *Castilleja campestris succulenta*	FT	SE	1B	Vernal pools (often with acidic soils).	April-May	50-750 m	No
Lemmon's jewelflower Caulanthus coulteri lemmonii	FSC	--	1B	Pinyon and juniper woodland, valley and foothill grasslands.	March-May	80-1,220 m	No
California jewelflower *Caulanthus californicus*	FE	SE	1B	Chenopod scrub, pinyon and juniper woodland, valley and foothill grasslands. Sandy soils.	February-May	70-1,000 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Hoover's spurge *Chamaesyce hooveri*	FT	--	1B	Vernal pools.	July-August	25-250 m	No
San Benito spineflower *Chorizanthe biloba immemora*	FSC	--	1B	Chaparral, cismontane woodland.	May-September	600-800 m	No
Slough thistle *Cirsium crassicaule*	FSC	--	1B	Chenopod scrub, riparian scrub. Marshes and sloughs.	May – August	3 – 1,000 m	No
Springville clarkia *Clarkia springvillensis*	FT	SE	1B	Chaparral, cismontane woodland, valley and foothill grasslands. Granitic soils.	May-July	245-1,220 m	No
Palmate-bracted bird's-beak *Cordylanthus palmatus*	FE	SE	1B	Chenopod scrub, valley and foothill grasslands. Alkaline soils.	May-October	5-155 m	No
Fresno County bird's-beak *Cordylanthus tenuis barbatus*	FSC	--	4	Lower montane coniferous forest.	July-August	1,300-2,000 m	No
Piute cypress *Cupressus arizonica nevadensis*	FSC	--	1B	Closed-cone conifer forest, chaparral, cismontane woodland, pinyon and juniper woodland.	March-July	720-1,830 m	No
Ewan's larkspur *Delphinium hansenii ewanianum*	FSC	--	4	Cismontane woodland, valley and foothill grasslands. Rocky soils.	March-May	60-600 m	No
Recurved larkspur *Delphinium recurvatum*	FSC	--	1B	Chenopod scrub, cismontane woodland, valley and foothill grasslands. Alkaline soils.	March-May	3-750 m	No
Pierpoint Springs liveforever *Dudleya cymosa costafolia*	FSC	--	1B	Chaparral, cismontane woodland. Carbonate soils.	May-July	1,435-1600 m	No
Hoover's eriastrum (=wooly-star) *Eriastrum hooveri*	FT	--	4	Chenopod scrub, valley and foothill grasslands. Clay soils.	March-September	100-550 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Kern River daisy *Erigeron multiceps*	FSC	--	1B	Upper montane coniferous forest (openings). Meadows and seeps.	June-September	1,500-2,500 m	No
Cottony Buckwheat *Eriogonum gossypinum*	FSC	--	4	Chenopod scrub, valley and foothill grasslands. Clay soils.	March-September	100-550 m	No
Mouse buckwheat *Eriogonum nudum murinum*	FSC	--	1B	Chaparral, cismontane woodland, valley and foothill grasslands. Sandy soils.	June – November	365-1,130 m	No
Twisselmann's buckwheat *Eriogonum twisselmannii*	FSC	Rare	1B	Upper montane conifer forest. Granitic soils.	July-September	2,375-2,805 m	No
Spiny-sepaled coyote-thistle (=button-celery) *Eryngium spinosepalum*	FSC	--	1B	Valley and foothill grassland. Vernal pools.	April-May	100-255 m	No
Kaweah Lakes fawn-lily *Erythronium grandiflorus pusaterii*	FSC	--	1B	Subalpine conifer forest. Meadows and seeps.	May-July	2,100-2,775 m	No
Stinkbells *Fritillaria agrestis*	FSC	--	4	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grasslands. Clay, sometimes serpentinite soils.	March-June	10-1,555 m	No
Greenhorn adobe-lily *Fritillaria striata*	FSC	ST	1B	Cismontane woodland, valley and foothill grasslands. Clay soils.	February-April	135-1,455 m	No
Serpentine bedstraw *Galium andrewsii gatense*	FSC	--	4	Chaparral, cismontane woodland, lower montane coniferous forest. Serpentinite, rocky soils.	April-July	150-1,450 m	No
Boggs Lake hedge-hyssop *Gratiola heterosepala*	--	SE	1B	Marshes and swamps (lake margins), vernal pools. Clay soils.	April-August	10-2,375 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Hollisteria *Hollisteria lantana*	FSC	--	--	Grasslands with clay soils.	Unknown	15-975 m	No
Vernal Barley *Hordeum intercedens*	--	--	3	Coastal dunes, coastal scrub, valley and foothill grasslands (saline flats and depressions), vernal pools.	March - June	5 –1000 m	No
Tulare horkelia *Horkelia tularensis*	FSC	--	1B	Upper montane conifer forest. Rocky soils.	July-August	2,300-2,875 m	No
Short-leaved hulsea *Hulsea brevifolia*	FSC	--	1B	Montane conifer forest. Granitic or volcanic, gravelly or sandy soils.	May-August	1,500-3,200 m	No
Field ivesia *Ivesia campestris*	FSC	--	1B	Subalpine conifer forest upper montane conifer forest. Meadows and seeps.	June-August	1,975-3,350 m	No
Delta tule-pea *Lathyrus jepsonii jepsonii*	FSC	--	1B	Marshes and swamps (freshwater and brackish).	May-September	0-4 m	No
Rayless layia *Layia discoidea*	FSC	--	1B	Chaparral, cismontane woodland, lower montane coniferous forest. Serpentinite soils, talus and alluvial terraces.	May	795-1,585 m	No
Pale-yellow layia *Layia heterotricha*	FSC	--	1B	Cismontane woodland, pinyon and juniper woodland, valley and foothill grasslands. Alkaline or clay soils.	March-June	300-1,600 m	No
Munz's tidy-tips *Layia munzii*	FSC	--	1B	Chenopod scrub, valley and foothill grasslands. Alkaline and clay soils.	March-April	150-700 m	No
Madera linanthus *Linanthus serrulatus*	FSC	--	1B	Cismontane woodland, lower montane conifer forest.	April-May	300-1,300 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Panoche peppergrass *Lepidium jaredii album*	FSC	--	1B	Valley and foothill grasslands. Alluvial fans and washes.	February-June	185-275 m	No
Yosemite lewisia *Lewisia disepala*	FSC	--	1B	Lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest. Granitic, sandy soils.	March-June	1,340-3,500 m	No
Long-petaled lewisia *Lewisia longipetala*	FSC	--	1B	Alpine boulder and rock field, subalpine coniferous forest. Mesic, rocky, granitic soils.	April-July	2,500-2,925 m	No
Orange lupine *Lupinus citrinus citrinus*	FSC	--	1B	Chaparral, cismontane woodland, lower montane coniferous forest. Granitic soils.	April-July	380-1,700 m	No
DeDecker's lupine *Lupinus padre-crowleyi*	FSC	Rare	1B	Great Basin scrub, riparian forest, riparian scrub, upper montane conifer forest. Decomposing granitic soils.	July-August	3,200-4,000 m	No
Showy madia *Madia radiata*	FSC	--	1B	Cismontane woodland, valley and foothill grasslands.	March-May	25-900 m	No
Kaweah monkeyflower *Mimulus norrisii*	FSC	--	1B	Chaparral, cismontane woodland. Carbonate, rocky soils.	March-May	365-1,300 m	No
San Joaquin wooly-threads *Monolopia* (=*Lembertia*) *congdonii*	FE	--	1B	Chenopod scrub, valley and foothill grasslands. Sandy soils.	February-May	60-800 m	No
Calico monkeyflower *Mimulus pictus*	FSC	--	1B	Cismontane woodland. Granitic soils.	March-May	100-1,300 m	No
Flax-like monardella Monardella linoides oblonga	FSC	--	1B	Montane conifer forest, pinyon and juniper woodland.	June-August	900-2,470 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Little mousetail *Myosurus minimus apus*	FSC	--	3	Valley and foothill grasslands. Vernal pools with alkaline soils.	March-June	20-640 m	No
Piute Mountains navarretia *Navarretia setiloba*	FSC	--	1B	Cismontane woodland, pinyon and juniper woodland, valley and foothill grasslands. Clay or gravelly loam soils.	April-June	305-2,100 m	No
Twisselmann's nemacladus *Nemacladus twisselmannii*	FSC	--	1B	Upper montane conifer forest. Sandy or rocky granitic soils.	July	2,240-2,450 m	No
San Joaquin Valley Ocutt grass *Orcuttia inaequalis*	FT	SE	1B	Vernal pools.	April-September	30-755m	No
Hairy Orcutt grass *Orcuttia pilosa*	FE	SE	1B	Vernal pools.	May-September	55-200 m	No
Purple mountain-parsley *Oreonana purpurascens*	FSC	--	1B	Subalpine conifer forest, upper montane conifer forest. Metamorphic soils.	May-June	2,395-2,865 m	No
Charlotte's phacelia *Phacelia nashiana*	FSC	--	1B	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Granitic, sandy soils.	March-June	600-2,200 m	No
Nine Mile Canyon phacelia *Phacelia novemmillensis*	FSC	--	1B	Cismontane woodland, pinyon and juniper woodland, upper montane conifer forest. Sandy or gravelly soils.	May-June	1,645-2,640 m	No
Hartweg's golden sunburst *Pseudobahia bahiifolia*	FE	SE	1B	Cismontane woodland, valley and foothill grasslands. Clay soils.	March-April	15-50 mm	No
San Joaquin adobe sunburst *Pseudobahia peirsonii*	FT	SE	1B	Cismontane woodland, valley and foothill grasslands. Adobe clay soils.	March-April	90-800 m	No
Aromatic canyon gooseberry *Ribes menziesii ixoderme*	FSC	--	1B	Chaparral, cismontane woodland.	April	610-1,160 m	No

Special-Status Plant Species

Species	Status			Habitat Description	Bloom Period	Elevational Range	Affected by Project
	Federal	State	CNPS				
Sequoia gooseberry *Ribes tularense*	FSC	--	1B	Montane conifer forest	May	1,500-2,075 m	No
Sanford's arrowhead *Sagittaria sanfordii*	--	--	1B	Marshes and swamps (assorted shallow freshwater).	May-October	<610 m	No
Keck's checker-mallow (=checkerbloom) *Sidalcea keckii*	FE	--	1B	Cismontane woodland, valley and foothill grasslands. Serpentinite and clay soils.	April-May	120-425 m	No
Tehipite Valley jewelflower *Streptanthus fenestratus*	FSC	--	1B	Lower montane coniferous forest, upper montane coniferous forest.	April-July	1,065-1,750 m	No
Alpine streptanthus (=jewel-flower) *Streptanthus gracilis*	FSC	--	1B	Subalpine coniferous forest, upper montane coniferous forest. Granitic rocky soils.	July-August	2,800-3,500 m	No
Parasol (=Bolander's) clover *Trifolium bolanderi*	FSC	--	1B	Montane coniferous forest. Meadows and seeps.	June-August	2,075-2,600 m	No
Greene's tuctoria (=Orcutt grass) *Tuctoria greenei*	FE	Rare	1B	Vernal pools.	May-September	30-1,070 m	No
King's gold *Twisselmannia californica*	FCS	--	1B	Chaparral scrub. Subalkaline sandy clay soil.	March	65 m	No

Federal status:

FE	Listed as endangered under the Federal Endangered Species Act
FT	Listed as threatened under the Federal Endangered Species Act
PE	Proposed for listing as endangered under the Federal Endangered Species Act
PT	Proposed for listing as threatened under the Federal Endangered Species Act
FC	Candidate species for listing under the Federal Endangered Species Act
FSC	Species of concern as identified by the U.S. Fish and Wildlife Service

State Status:

SE	Listed as endangered under the California Endangered Species Act
ST	Listed as threatened under the California Endangered Species Act
CSC	Species of concern as identified by the California Department of Fish and Game
Rare	Species identified as rare by the California Department of Fish and Game

California Native Plant Society Status (CNPS 2003):

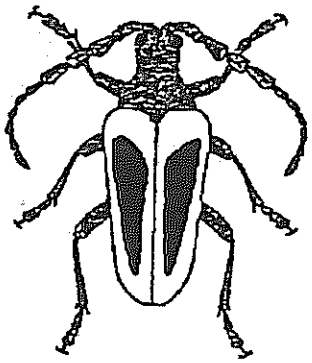
1A	Plant species that are presumed extinct in California
1B	Plant species that are rare, threatened, or endangered in California and elsewhere.
2	Plant species that are rare, threatened, or endangered in California, but are more common elsewhere
3	Plant species that lack the necessary information to assign them to a listing status
4	Plant species that have a limited distribution or that are infrequent throughout a broader area in California

APPENDIX F

Special-Status Wildlife

in the

Vicinity of the Project Site



Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	--	Endemic to the grasslands of the Central Valley, Central Coast Mountains, and South Coast Mountains of California, in static rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassed swales, earth slumps or basalt-flow depression pools.	No
Midvalley fairy shrimp *Branchinecta mesovallensis*	FSC	--	Midvalley Fairy Shrimp is a newly described species that inhabits pools in only a handful of counties within the Great Central Valley including Sacramento, Solano, Merced, Madera, San Joaquin, Fresno and Contra Costa counties. A small, soft-bodied crustacean that lives in vernal pools (seasonal wetlands that fill with water during fall and winter rains).	No
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	--	Inhabits seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	No
California linderiella *Linderiella occidentalis*	FE	--	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in pools has very low alkalinity, conductivity and total dissolved solids.	No
Sierra pygmy grasshopper *Tetrix sierrana*	FSC	--	Known only from Sugar Pine, Madera County (type locality), at an elevation of 4,300-5,000 feet.	No
Dry Creek cliff strider bug *Oravelia pege*	FSC	--	Known only from Dry Creek, an intermittent creek in Fresno County at an elevation of about 1,000 feet. Found in cracks and crevices of sheer rocky cliffs moistened by seeping water.	No
Ciervo aegilian scarab beetle *Aegialia concinna*	FSC	--	The Ciervo aegialian scarab beetle has been associated with Delta and inland dune systems and sandy substrates; however, plant associations specific to this species have not been reported.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
San Joaquin tiger beetle *Cicindela tranquebarica* ssp.	FSC	--	Distribution is limited to vernal pools, alkali wetlands and scalds, and nearby open areas from Merced to Fresno County (possibly Kings County).	No
San Joaquin dune beetle *Coelus gracilis*	FSC	--	Inhabits sites with sandy substrates in fossil dunes along the western edge of the San Joaquin Valley.	No
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	--	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberry stems 2 to 8 inches in diameter; some preference shown for "stressed" elderberries.	No
Wooly hydroporus diving beetle *Hydroporus hirsutus*	FSC	--	Sierra Nevada at 12,600 ft. elevation, aquatic habitat, Mount Goethe (Fresno County).	No
Hopping's blister beetle *Lytta hoppingi*	FSC	--	Foothills at the southern end of the Central Valley.	No
Molestan blister beetle *Lytta molesta*	FSC	--	Inhabits the Central Valley of California from Contra Costa to Kern and Tulare counties. Flowers and foliage of various plants in grasslands.	No
Moesta blister beetle *Lytta moesta*	FSC	--	Grasslands of the Central Valley of California and foothills of the Sierra Nevada in Fresno and Tulare Counties.	No
Morrison's blister beetle *Lytta morrisoni*	FSC	--	Valley and foothill grasslands of the Central Valley of California.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Boharts's blue butterfly *Philotiella speciosa bohartorum*	FSC	--	Known from the foothills of the southern Sierra Nevada near Briceburg, Mariposa County. Associated with pink spineflower (probable food).	No
San Emigdio blue butterfly *Plebulina emigdionis*	FSC	--	Found in desert canyoons and along riverbeds on the southernmost edge of the San Joaquin Valley. Host plant is *Atriplex canescens*.	No
Denning's cryptic caddisfly *Cryptochia denningi*	FSC	--	Small, cold springs in the Sierra Nevada at high elevations.	No
Kings Canyon cryptochian caddisfly *Cryptochia excella*	FSC	--	Small, cold springs in the Sierra Nevada at 6,400 ft. elevation.	No
Doyen's trigonoscuta dune weevil *Trigonoscuta doyeni*	FSC	--	Inhabits fossil dunes along the western edge of the San Joaquin Valley.	No
Fish				
River lamprey *Lampetra ayresi*	FSC	CSC	Ranges from the Sacramento-San Joaquin Delta region northward; however, it appears most numerous in the Sacramento and san Joaquin Rivers.	No
Kern brook lamprey *Lampetra hubbsi*	FSC	CSC	Inhabits waters of the San Joaquin River system and the Kern River. Spawning occurs in gravel-bottomed areas, the ammoceoetes utilize muddy-bottomed areas to burrow and feed.	No
Pacific lamprey *Lampetra tridentata*	FSC	--	Most costal streams and rivers of California.	No
Green sturgeon *Acipenser medirostris*	FSC	CSC	Primarily marine, this species seldom migrates inland beyond the estuaries of large rivers.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	FT	--	Occurs in a wide variety of cold waters, including large alkaline lakes, small mountain lakes, major rivers and small tributaries. Range includes Truckee, Carson, Walker River, Donner Creek and Pyramid, Walker, Donner, Independence and Summit Lakes.	No
Paiute cutthroat trout *Oncorhynchus clarki seleniris*	FT	--	Inhabits cool, well oxygenated waters; cannot tolerate presence of other salmonids; requires clean gravel for spawning.	No
Central Valley steelhead *Oncorhynchus mykiss*	FT	--	Critical habitat was designated to include all river reaches accessible to listed steelhead in the Sacramento and San Joaquin Rivers and tributaries in California. The river reaches and estuarine areas of the Sacramento-San Joaquin delta are also included.	No
Little Kern golden trout *Oncorhynchus mykiss whitei*	FT	--	Native to the Little Kern River in Tulare County. Found in clear, cold mountain streams and lakes at 5,000 to 9,000 feet elevation.	No
Volcano Creek golden trout *Oncorhynchus mykiss aquabonita*	FSC	CSC	Native to the Kern Plateau in wide, shallow and exposed streams with little riparian vegetation. Water is clear and usually cold, but summer temperatures can vary from 3 to 22 degrees Celsius.	No
Kern River golden trout *Oncorhynchus mykiss gilberti*	FSC	CSC	Endemic to the upper Kern River and its tributaries. Cool, clear, fast flowing streams where riffles are abundant.	No
Hardhead *Mylopharodon conocephalus*	--	CSC	Low to mid-elevation streams in the Sacramento – San Joaquin drainage, deep pools with sand – gravel – boulder bottoms and slow water velocity.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Delta smelt *Hypomesus transpacificus*	FT	ST	This species inhabits the Sacramento-San Joaquin Delta and seasonally inhabits the Suisun Bay, Carquinez Strait and San Pablo Bay. This species is seldom found at salinities above 10 PPT, and is most often found at salinities below 2 PPT. Spawning appears to occur in side channels and sloughs in the middle reaches of the Delta.	No
Longfin smelt *Spirinchus thaleichthys*	FSC	CSC	This species prefers moderately saline water and may be found in major bays and estuaries from San Francisco Bay northward. It lives in the bay waters throughout the summer moving into the lower reaches of the rivers that flow into these bays in the fall to spawn.	No
Sacramento splittail *Pogonichthys macrolepidotus*	FT	CSC	Inhabits slow moving river sections and dead end sloughs. Requires flooded vegetation for spawning adults and foraging for young. Endemic to lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes.	No
Amphibians				
California tiger salamander *Ambystoma californiense*	FSC	CSC	Annual grasslands and grassy understory of valley-foothill hardwood habitats in central and northern California. Requires underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	No
Mount Lyell salamander *Hydromantes platycephalus*	FSC	CSC	Inhabits rock fields in mixed conifer, red fir, lodgepole pine and subalpine communities. Utilizes rock fissures, seeps, shade, and low-growing plants. Elevational range extends from 4,000 to 11,600 feet.	No
Kern Canyon Slender Salamander *Batrachoseps simatus*	FT	--	Found only in Kern River Canyon, Tulare and Kern Counties. Occurs in blue oak savannah: prefers digger pine-oak types at 1,000-4,000 feet.	No
Western spadefoot toad *Spea (=Scaphoipus) hammondii*	FSC	CSC	Occurs primarily in grassland environments, but can also be found in valley-foothill hardwood woodlands. Shallow, temporary ponds are used for breeding and egg-laying.	No
Yosemite toad *Bufo canorus*	FSC	CSC	Inhabits wet meadows in the central Sierra Nevada between elevations of 6,400 and 11,300 feet.	No
California red-legged frog *Rana aurora draytonii*	FT	CSC	Lowlands and foothills in a variety of aquatic, riparian and upland environments near permanent sources of water.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Foothill yellow-legged frog *Rana boylii*	FSC	CSC	Partially shaded, shallow streams with riffles and rocky substrates in a variety of vegetation communities.	No
Mountain yellow-legged frog *Rana muscosa*	FSC	CSC	Inhabits ponds, lakes and streams associated with montane, riparian, lodgepole pine, subalpine conifer and wet meadow communities.	No
Reptiles				
Western pond turtle *Clemmys marmorata*	FSC	CSC	Includes both subspecies (*C. m. pallida* and *C. m. marmorata*). Aquatic habitat of ponds, marshes, streams, and irrigation ditches that have abundant emergent or riparian vegetation.	No
Blunt-nosed leopard lizard *Gambelia sila*	FE	--	Associated with *Atriplex* and other alkali sink shrubs. Densities of the species may be correlated with high number of unused small mammal burrows.	No
California horned lizard *Phrynosoma coronatum frontale*	FSC	CSC	Found in a variety of habitats including scrubland, grassland, coniferous forest, and broadleaf forests. Common in lowlands along sandy washes where low shrubs provide cover.	No
Silvery legless lizard *Anniella pulchra pulchra*	FSC	CSC	Typically occurs in sandy or loose loamy soils under sparse vegetation. Soil moisture is essential, with the species showing a preference towards soils with high moisture content.	No
San Joaquin coachwhip (=whipsnake) *Masticophis flagellum ruddock*	FSC	CSC	Inhabits open, dry environments with little or no tree cover. Found in valley grassland and saltbrush scrub in the San Joaquin Valley. Mammal burrows are used for refuge and oviposition sites.	No
Giant garter snake *Thamnophis gigas*	FT	ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Birds				
Common loon *Gavia immer*	FSC	CSC	Estuarine and subtidal marine habitats along the coast. Uncommon on large deep lakes in valleys and foothills throughout the state.	No
Double crested cormorant *Phalacrocorax auritus*	None	CSC	Colonial nester on coastal cliffs and offshore islands. Fairly widespread during migration, foraging in fresh emergent wetlands, wet meadows and irrigated or flooded pastures and croplands.	No
American bittern *Botaurus lentiginosus*	FSC	--	Inhabits fresh or saline emergent wetlands.	No
Western least bittern *Ixobrychus exilis hesperis*	FSC	CSC	Inhabits large, fresh emergent wetlands with dense emergent vegetation such as cattails and tules.	No
Snowy egret *Egretta thula*	MB	--	Inhabits fresh and saline emergent wetlands coastal estuaries, ponds, slow-moving rivers, irrigation ditches and wet fields.	No
Great Blue Heron *Ardea herodias*	--	--	Inhabits fresh and saline emergent wetlands coastal estuaries, ponds, slow-moving rivers, irrigation ditches and wet fields.	No
White faced ibis *Plegadis chihi*	FSC/MN BMC	CSC	Breeds in dense, fresh emergent wetlands; however, this species has declined in California and no longer breeds regularly. Fairly widespread during migration, foraging in fresh emergent wetlands, wet meadows and irrigated or flooded pastures and croplands.	No
Aleutian Canada goose *Branta canadensis leucoparia*	FT	--	The Central Valley is the main wintering ground of this subspecies. Typically forages in fields near their roosting areas (lakes and ponds).	No
California condor *Gymnogyps californianus*	FE	SE/CFP	Requires vast expanses of open savannah, grasslands, and foothill chaparral with cliffs, large trees and snags for roosting and nesting.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
White-tailed kite *Elanus leucurus*	FSC	FP	Low rolling foothills/valley margins with scattered oaks and river bottomlands or marshes adjacent to deciduous woodland. Open grasslands, meadows or marshes are utilized for foraging. Isolated, dense-topped trees in close proximity to foraging areas are used for nesting and perching.	No
Bald eagle *Haliaeetus leucocephalus*	FT	SE/CFP	Breeds and roosts in remote coniferous forest in close proximity to a river, stream lake, reservoir, marsh or other large wetland areas.	No
Golden Eagle *Aquila chrysaetos*	--	CSC	Found in annual grassland to above timberline forest habitats. Favors grass/forb, shrub/sapling, and open-canopied young woodlands of blue oak. Requires cliffs or large live or dead trees for nesting.	No
Northern goshawk *Accipiter gentilis*	FSC	CSC	Breeds and forages in mature stands of coniferous, mixed and deciduous forest.	No
Swainson's hawk *Buteo swainsoni* (nesting)	--	ST	Breeds in stands of sparse juniper-sage flats, riparian areas and in oak savannahs. Requires adjacent suitable foraging habit such as grasslands, alfalfa or grain fields supporting rodent populations.	Potential
Cooper's Hawk *Accipiter cooperi*	--	CSC	Breeds from digger pine-oak up to ponderosa pine and black oak woodland zone; prefers dense stands of live oaks or riparian sites. In winter, found in a variety of wooded habitats.	No
Sharp-shinned Hawk *Accipiter striatus*	--	CSC	Breeds in pole to mature tree stages of ponderosa pine, black oak, riparian deciduous, mixed-conifer, and Jeffrey pine types. Moves downslope for fall, winter, and spring periods as far as blue oak savannah, occasionally even into annual grasslands for feeding.	No
Ferruginous hawk *Buteo regalis*	FSC	CSC	A winter migrant that inhabits grasslands, prairies and brushy open country.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
American peregrine falcon *Falco peregrinus anatum*	D	SE	Inhabits open country, breeding near rivers, wetlands, lakes or other aquatic features, nests on cliffs, banks, dunes, mounds and human-made structures.	No
Prairie falcon *Falco mexicanus*	--	CSC	Ranges from annual grasslands through alpine meadows. Primarily associated with perennial grasslands, lodgeole pine of varying canopy closures, and alpine meadows. Requires open terrain for foraging and cliffs for nesting	No
Greater sandhill crane *Grus canadensis tabida*	--	ST	In summer this species is found in wet meadow, shallow lacustrine and fresh emergent wetland habitats. It winters primarily in Sacramento and San Joaquin valleys from Tehama Co. south to Kings Co. where it inhabits annual and perennial grasslands, moist croplands with rice or corn stubble and open emergent wetlands.	No
Mountain plover *Charadrius montanus*	FPT	CSC	Short grass plains, low rolling grass hills, freshly plowed agricultural fields and newly sprouting grain fields. Often associated with short vegetation and bare ground.	No
Western Snowy Plover *Charadrius alexandrinus nivosus*	FT	CSC	Beaches and dry mud or salt falts; sand margins of rivers, lakes, and ponds.	No
Long-billed curlew *Numenius americanus*	FSC	CSC	Uncommon to locally very common as a winter visitant from early July to early April along most of the California coast, and in the Central and Imperial valleys. Preferred winter habitats include large coastal estuaries, upland herbaceous areas and croplands.	No
Black tern *Chlidonias niger*	FSC	CSC	Commonly inhabits bays, salt ponds, river mouths and pelagic waters during spring and fall migrations. Restricted to freshwater environments while breeding.	No
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FSC	CSC	An inhabitant of riparian forests in broad, lower flood-bottoms of larger river systems. Possibly extirpated from the area.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Short-eared owl *Asio flammeus*	FSC	CSC	Open areas, such as annual and perennial grasslands, prairies, meadows, irrigated lands and fresh emergent wetlands.	No
California Spotted Owl *Strix occidentalis occidentalis*	FSC	CSC	Typically breeds in stands of mixed coniferous forest containing a mixture of tree sizes with usually at least two canopy layers, and a total canopy coverage in excess of seventy percent (may be as low as thirty percent at high elevations). In Southern California, usually associated with oak and oak-conifer communities.	No
Flammulated owl *Otus flammeolus*	FSC	--	Breeds in conifer habitats of the Sierra Nevada from ponderosa pine type up to red fir forests. Nest in cavities. Special requirements are yellow pine or black oak in nesting habitat	No
Western burrowing owl *Athene cunicularia hypugaea*	FSC	CSC	Burrow sites occur in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. A subterranean nester dependent upon burrowing mammals, most notably, the California ground squirrel.	Potential
Great Gray Owl *Strix nebulosa*	--	SE	Breeds in mixed-conifer and red fir forests; prefers dense stands bordering meadows.	No
Vaux's swift *Chaetura vauxi*	FSC	CSC	Prefers redwood and Douglas-fir communities; nests are typically placed in large hollow trees and snags. Forages high in the air over most communities; however, shows an apparent preference for foraging above rivers and lakes.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Black swift *Cypseloides niger*	FSC	CSC	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and on sea-bluffs above the surf.	No
Costa's hummingbird *Calypte costae*	FSC	--	Most prevalent in southern California, but does breed locally along the western edge of the San Joaquin Valley up to Santa Clara County. Inhabits primarily arid environments, including costal scrub, desert scrub, desert wash, lower-elevation chaparral and edges of desert and valley foothill riparian.	No
Rufous hummingbird *Selasphorus rufus*	FSC	--	Found in a wide variety of habitats with nectar producing flowers. Uses valley foothill hardwood, valley foothill hardwood coniferous, riparian and various chaparral habitats.	No
Lewis' woodpecker *Melanerpes lewis*	FSC	--	An uncommon, local winter resident, inhabiting oak savannas, and open deciduous and conifer environments. Breeds locally along the eastern slopes of the Coast Ranges.	No
Nuttall's woodpecker *Picoides nuttallii*	FSC	--	Most often found in riparian vegetation bordered by or mixed with oaks. Prefers oaks for foraging and oaks for nesting. Nests in snags.	No
White-headed woodpecker *Picoides albolarvatus*	FSC	--	Found in conifer forest in the Sierra Nevada from ponderosa pine type up to rid fir type. Prefers areas with large trees providing 40 to 70 percent canopy coverage. Nests in snags	No
Red-breasted sapsucker *Sphyrapicus ruber*	FSC MNBMC	--	Breeds in timbered stands of low to intermediate density in ponderosa pine, black oak, riparian deciduous, and mixed-conifer types. Prefers to nest in deciduous trees along water courses.	No
Oak titmouse *Baeolophus inornatus*	FSC	--	Breeds in wooded sites from blue oak savannah up to ponderosa pine and black oak woodland types. Nests in oak cavities.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
American dipper *Cinclus mexicanus*	FSC	--	Confined to flowing, rocky streams and rivers, but occasionally forages along alpine lakeshores. Nests in recess or on ledge, usually within 3 to 6 feet of stream surface on inaccessible rock wall, log, or bridge.	No
Olive-sided flycatcher *Contopus cooperi*	FSC	--	A summer resident that utilizes a wide variety of forest and woodland habitats. Mixed conifer, montane hardwood-conifer, Douglas fir, redwood, red fir and lodgepole pine are preferred nesting habitats.	No
Little willow flycatcher *Empidonax traillii brewsteri*	--	SE	A spring and fall migrant at lower elevations, primarily in riparian habitats from central/coastal California north. Previously bred throughout much of the lowland and montane portions of its range. Breeding is now primarily limited to the Sierra Nevada and Cascade Ranges.	No
Loggerhead shrike *Lanius ludovicianus*	FSC	CSC	Inhabits open areas with sparse shrubs, trees and other perches.	No
Bank swallow *Riparia riparia*	--	ST	A colonial nesting species, nests primarily in riparian and other lowland habitats. Vertical banks/cliffs composed of fine textured/sandy soils near streams, rivers, lakes or the ocean are required to excavate nesting hole.	No
San Joaquin LeConte's thrasher *Toxostoma lecontei macmillanorum*	FSC	CSC	Primarily inhabits desert scrub, alkali desert scrub, desert succulent shrub and open desert wash communities. Rarely recorded north of Inyo and Kern counties since the 1950's.	No
California thrasher *Toxostoma redivivum*	FSC	--	A common resident of foothills and lowlands in cismontane California. Occupies moderate to dense chaparral habitats, and to a lesser extent, thickets in young or open valley foothill riparian habitat.	No
Hermit warbler *Dendroica occidentalis*	FSC	--	A summer visitor and migrant, breeds in mature ponderosa pine, montane hardwood-conifer, mixed conifer, redwood, Douglas fir, red fir and Jeffery pine communities.	No
Grasshopper sparrow *Ammodramus savannarum*	FSC	--	A summer resident, occurring in dry, dense grasslands, containing a variety of grass, tall forbs and scattered shrubs.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Brewer's sparrow *Spizella breweri*	FSC	--	Breeds in extensive shrub stands with moderate canopy coverage. Most commonly associated with sagebrush.	No
Tricolored blackbird *Agelaius tricolor*	FSC	CSC	Inhabits dense cattail marshes, marshy meadows and rangeland. A highly colonial species, it is most numerous in the Central Valley and the vicinity of California.	No
Lawrence's goldfinch *Carduelis lawrencei*	FSC	--	Inhabits valley foothill hardwood, valley foothill hardwood-conifer and chaparral communities. Breeds in open oak, or other arid woodland, and chaparral communities in close proximity to water.	No
Bell's sage sparrow *Amphispiza belli belli*	FSC	CSC	Nests in chaparral dominated by fairly dense stands of chamise. Found in Coastal sage scrub in south of range.	No
Mammals				
Mt. Lyell shrew *Sorex lyelli*	FSC	CSC	Very little is known about this species: all records are from the vicinity of Mt. Lyell. This species appears to favor riparian areas and other moist situations.	No
Pale Townsend's big eared bat *Corynorhinus townsendii pallescens*	FSC	CSC/BLM Sensitive	Inhabits a wide variety of environments, but most common in mesic sites. Roosting, maternity and hibernacula sites free from human disturbance are required.	No
Pacific western big-eared bat *Corynorhinus townsendii townsendii*	FSC	CSC/BLM Sensitive	Occupies the humid, coastal regions of northern and central California in a wide variety of habitats. Roosts in caves, buildings and mine tunnels. This species is highly sensitive to human disturbance at roosting, maternity and hibernacula sites.	No
Spotted bat *Euderma maculatum*	FSC	CSC/BLM Sensitive	Occurs in a variety of environments, ranging from deserts and grasslands to mixed conifer forests; roosts in rock crevices along cliffs or caves.	No
Small-footed myotis bat *Myotis ciliolabrum*	FSC	BLM Sensitive	Inhabits relatively arid wooded and brushy uplands in close proximity to water from sea level to about 8,900 feet. Maternity colonies may occur in buildings, caves and mines.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Long-eared myotis bat *Myotis evotis*	FSC	BLM Sensitive	May be found in a variety of brush, woodland and forest communities from sea level to about 9,000 feet; shows a preference toward coniferous woodlands and forests. Nursery colonies located in buildings, crevices, spaces under bark and in snags; night roosting in caves.	No
Fringed myotis bat *Myotis thysanodes*	FSC	BLM Sensitive	May be found in a variety of environments; valley and foothill hardwood, hardwood-conifer and pinyon-juniper woodland provide optimal habitat. Maternity colonies and roosts located in caves, mines, buildings and crevices.	No
Long-legged myotis bat *Myotis volans*	FSC	BLM Sensitive	This species is most commonly associated with woodland and forest communities above 4,000 feet. However, may also forage in chaparral, coastal scrub, Great Basin shrub habitats and in early successional stages of woodlands and forests. Occurrence records range from sea level to 11,400 feet. Roosts in rock crevices, buildings, under tree bark, in snags, mines and caves.	No
Pallid Bat *Antrozous pallidus*	--	CSC	Common in arid and semiarid areas at relatively low elevations throughout the western Sierra Nevada. Found from annual grasslands through mixed-conifer forests. Requires caves, crevices, or buildings for roosting and breeding colonies.	No
Yuma myotis bat *Myotis yumanensis*	FSC	CSC/BLM Sensitive	Optimal environments include open forests and woodlands in proximity to bodies of water used for foraging; maternity colonies in caves, mines, crevices and buildings.	No
Greater western mastiff-bat *Eumops perotis californicus*	FSC	CSC	This species utilizes a wide range of open habitats including coastal scrub, annual grasslands and conifer woodlands. Roosts in or on buildings, crevices in cliffs, trees and in tunnels.	No
San Joaquin (=Nelson's) antelope squirrel *Ammospermophilus nelsoni*	FSC	ST	This species inhabits the arid grassland, shrubland and alkali sink habitats of the San Joaquin Valley and adjacent foothills.	No
Giant kangaroo rat *Dipodomys ingens*	FE	SE	Prefers fine sandy loam with sparse vegetation in native annual grasslands occurring along the southwestern edge of the San Joaquin Valley, to southwestern Kern County and northern Santa Barbara County.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
Short-nosed kangaroo rat *Dipodomys nitratoides brevinasis*	FSC	--	Inhabits grasslands with scattered shrubs, and desert-shrub associations on powdery soils.	No
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE	SE	An inhabitant of alkali-sink open grassland environments in western Fresno County. Bare alkaline clay-based soils subject to seasonal inundation with more friable soil mounds around shrubs and grasses.	No
Tipton kangaroo rat *Dipodomys nitratoides nitratoides*	FE	SE	Occurs in the arid-land (uncultivated) communities of the Tulare Basin valley floor. They occupy alluvial fan and floodplain soils, ranging from fine sands to clay-sized particles. Woody shrubs are usually sparsely scattered with low to moderate ground cover of grasses and forbs.	No
San Joaquin pocket mouse *Perognathus inornatus inornatus*	FSC	--	Inhabits grasslands and blue oak savannas. Requires friable soils.	No
Riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	FE	CSC	Known from an area along the San Joaquin, Stanislaus and Tuolumne rivers in Stanislaus and San Joaquin Counties. An inhabitant of riparian communities containing a mixture of trees, brush and suitable nesting sites.	No
Southern grasshopper mouse *Onychomys torridus ramona*	FSC	CSC	Grasshopper mice are mainly found in the prairie and south-western desert areas.	No
Tulare grasshopper mouse *Onychomys torridus tularensis*	FSC	CSC	An inhabitant of hot, arid valleys and scrub deserts in the southern San Joaquin Valley	No
San Joaquin kit fox *Vulpes macrotis mutica*	FE	ST	Open, level areas with loose-textured soils are preferred. Inhabits a variety of communities including sagebrush scrub, alkali meadows, creosote bush scrub and valley grasslands.	Potential
Sierra Nevada red fox *Vulpes vulpes necator*	FSC	ST	Inhabits a variety of communities from wet meadows to forested areas; prefers forests that are interspersed with meadows or alpine fell-fields. Dense vegetation and rocky areas provide cover and den sites.	No
California wolverine *Gulo gulo luteus*	FSC	ST/CFP	Occurs in a variety of communities, including subalpine conifer, alpine dwarf-shrub, barren, mixed conifer and lodgepole pine forests at or near timberline. Typically associated with areas of low human disturbance.	No

Special-Status Wildlife Species

Species	Status		Habitat Association	Affected by Project
	Federal	State		
American (=Pine) marten *Martes americana*	FSC	--	Prefers multi-storied, mature mixed coniferous forests with high (>50 percent) canopy coverage, and an abundance of large snags and downed woody debris. Riparian corridors may be used for foraging and as travelways.	No
Pacific fisher *Martes pennanti pacifica*	FSC	CSC	Prefers multi-storied, mature mixed coniferous forests with high (>50 percent) canopy coverage and an abundance of large snags and downed woody debris. Dense riparian corridors are utilized as dispersal corridors. Foraging often occurs in small (<2 acre) forest openings with significant ground cover.	No
Sierra Nevada bighorn sheep *Ovis canadensis californiana*	FE	SE/CFP	Found only in the southern and central reaches of California's Sierra Nevada.	No

Federal status:

FE	Listed as endangered under the Federal Endangered Species Act
FT	Listed as threatened under the Federal Endangered Species Act
FPT	Proposed for listing as threatened under the Federal Endangered Species Act
FC	Candidate species for listing under the Federal Endangered Species Act
FSC	Species of concern as identified by the U.S. Fish and Wildlife Service
FD	Delisted in accordance with the Federal Endangered Species Act
MNBMC	Migaratory Nongame Birds of Management Concern

State Status:

SE	Listed as endangered under the California Endangered Species Act
ST	Listed as threatened under the California Endangered Species Act
CSC	Species of concern as identified by the California Department of Fish and Game
CFP	Listed as fully protected by the California Fish and Game Code
Rare	Species identified as rare by the California Department of Fish and Game

SENSITIVE PLANT COMMUNITIES:

Southern Interior Cypress Forest
Sycamore Alluvial Woodland
Great Valley Valley Oak Riparian Forest
Northern Claypan Vernal Pool
Northern Hardpan Vernal Pool
Central Valley Drainage Hardhead/Squawfish Stream
Valley Saltbush Scrub
Valley Sink Scrub
Big Tree Forest
Valley Sacaton Grassland

APPENDIX G

Photographs of the Project Site

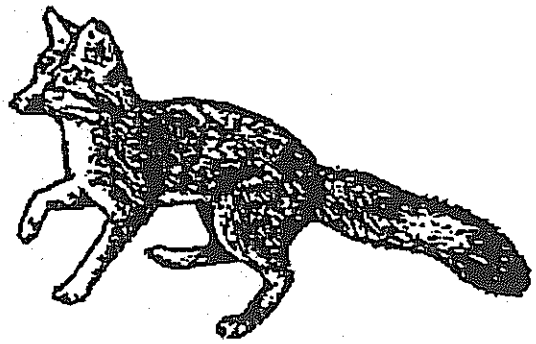


Figure 1. Fallow land on the project site.

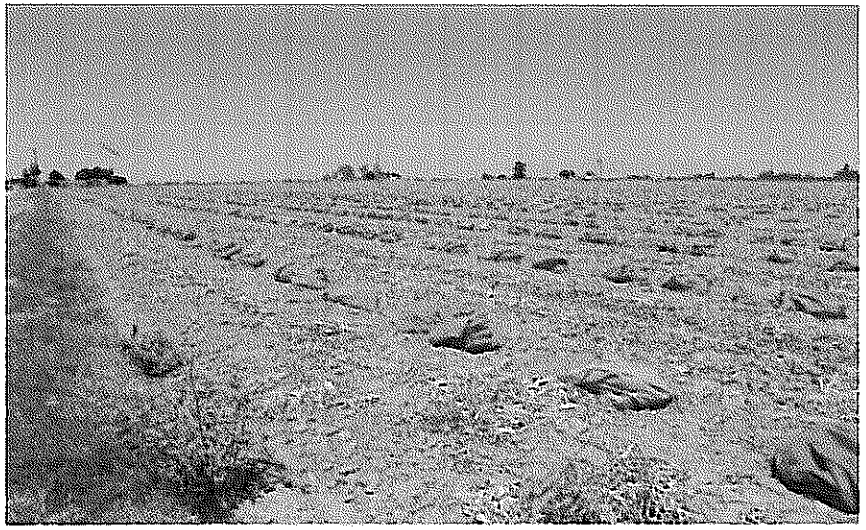


Figure 2. Onion field on the project site.

Figure 3. Grape vineyard on the project site.

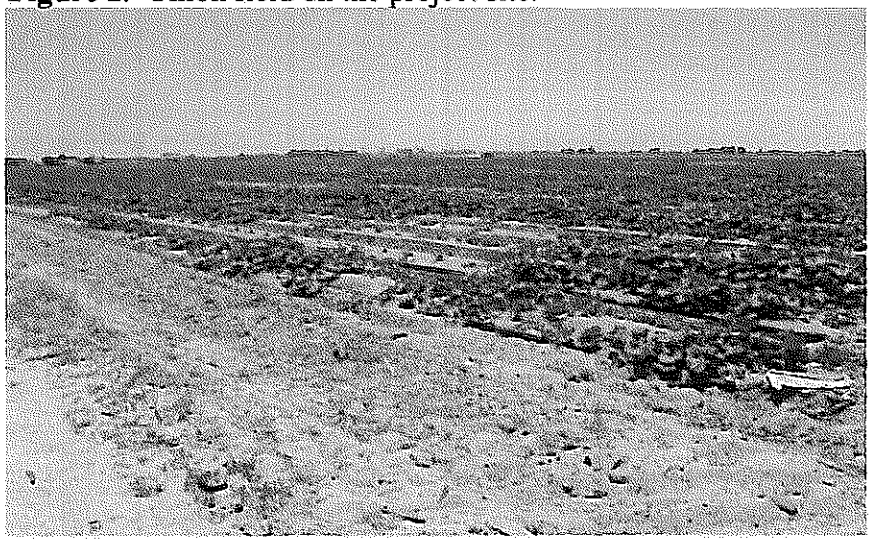


Figure 4. Squash field on the project site.

Examples of crops lands on the project site. Photos by H&A in May 2007.

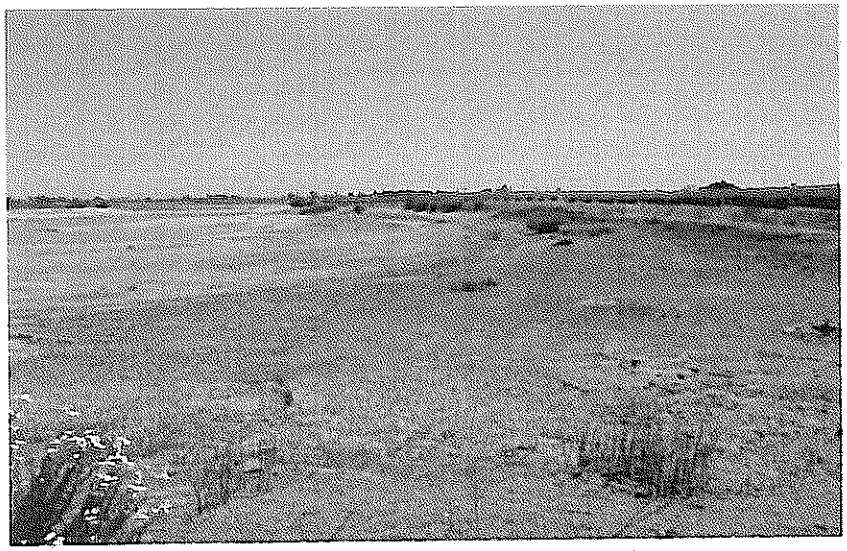


Figure 1. View of Rockwell pond looking South.

Figure 2. View of Rockwell pond looking East.

Figure 3. Rockwell Pond looking Southwest.

Figure 4. Fallow land adjacent to Rockwell Pond.

Landscape views of Rockwell Pond. Photos by H&A in May 2007.

Figure 1. Squirrel burrows on the project site.

Figure 2. Squirrel burrow on the project site.

Figure 3. Potential dens on the project site.

Figure 4. Potential den on the project site.

Examples of potential San Joaquin Kit Fox dens on the project site. Photos by H&A in May 2007.

APPENDIX H

Burrowing Owl Mitigation (CDFG 1994)

DRAFT
STAFF REPORT ON BURROWING OWL MITIGATION

California Department of Fish and Game, Fresno (1994)

Introduction

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates to protect native species of fish and wildlife. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to burrowing owls (*Speotyto cunicularia*) staff (WMD, ESD and Regions) has prepared this report. To ensure compliance with legislative and commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); and (2) other authorizations the Department gives to protect proponents for projects impacting burrowing owls.

This report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes preapproved mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature, the Fish and Game Commission and the Department's public trust responsibilities. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation of burrowing owls and should compliment multi-species habitat conservation planning efforts currently underway.

A range-wide conservation strategy for this species should also be prepared. Any range-wide conservation strategy should establish criteria for avoiding the need to list the species pursuant to either the California or federal Endangered Species Acts through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific efforts.

California's burrowing owl population is clearly declining and, if declines continue, the species may qualify for listing. Because of the intense pressure for development of suitable burrowing owl nesting and foraging habitat (open, flat and gently rolling grasslands and grass/shrub lands) in California, conflicts between owls and development projects often occur. Owl survival can be affected by disturbance and foraging habitat loss even when impacts to individual birds and nests/burrows are avoided. Inadequate information about the presence of owls is available prior to project approval if often lacking. Following project approval there is no legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests. The absence of standardized survey methods often impacts consistent impact assessment.

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, arid scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat. Both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

Project Review

The measures included in this report are intended to provide a decision-making process that should be implemented whenever there is potential for an action or project to adversely affect burrowing owls. For projects subject to the California Environmental Quality Act (CEQA), the process begins by conducting surveys to determine if burrowing owls are foraging or nesting on or adjacent to the project site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls, their burrows and foraging habitat should be incorporated into the CEQA document as enforceable conditions. The measures in this document are intended to conserve the species by protecting and maintaining viable populations of the species throughout their range in California. This may often result in protecting and managing habitat for the species at sites away from rapidly/urbanizing/developing areas. Projects and situations vary and mitigation measures should be adapted to fit specific circumstances.

Projects not subject to CEQA review may have to be handled separately since the legal handle the Department has to deal with burrowing owls in this situation are often limited.

Legal Status

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. To avoid violation of the take provisions of these laws generally requires that project-related disturbance at active nesting

territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered "talking" and is potentially punishable by fines and/or imprisonment.

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur. (Sections 2 1001 {c), 21083. Guidelines 15380, 15064, 15065). To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15370). Avoidance or mitigation to reduce impacts to less than significant levels must be included in a project or the CEQA lead agency must make and justify findings of overriding considerations.

Impact Assessment

Habitat Assessment
The project site and a 150-meter (approximately 500 ft.) buffer (where possible and appropriate based on habitat) should be surveyed to assess the presence of burrowing owls and their habitat (Thomsen 1971, Martin 1973). If occupied habitat is detected on or adjacent to the site, measures to avoid, minimize, or mitigate the project's impacts to the species should be incorporated into the project, including burrow preconstruction surveys to ensure avoidance of direct take. It is also recommended that preconstruction surveys be conducted if the species was not detected but is likely to occur on the project site.

Burrow surveys
Burrow surveys should be conducted by walking suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 ft.) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows outside of the project area which may be impacted by factors such as noise and vibration (heavy equipment, etc.) during project construction. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.) and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors should be used to walk adjacent transects. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.). Disturbance to

occupied burrows should be avoided during all seasons. Surveys should be conducted during both the wintering and nesting seasons, unless the species is detected on the first survey.

Definition of impacts
The following should be considered impacts to the species:

- Disturbance within 50 meters (approx. 160 ft.) which may result in harassment of owls at occupied burrows;
- Destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and
- Destruction and/or degradation of foraging habitat adjacent (within 100 meters) of an occupied burrow(s).

Written Report
A report should be prepared for the Department that gives the results of the survey. The report should include:

- Date and time of visit(s) including weather and visibility conditions and survey methodology;
- A description of the site including location, size, topography, vegetation communities, and animals observed during visit(s);
- An assessment of habitat suitability for burrowing owls;
- A map and pictures of the site;
- Results of survey transects including a map showing the location of all burrow(s) (natural or artificial) and owl(s), including the numbers at each burrow if present and tracks, feathers, pellets, or other items (prey remains, animal scat);
- The behavior of owls during the survey should be carefully recorded (from a distance) and included;
- Both winter and nesting season surveys should be summarized along with any productivity information and a map showing territorial boundaries and home ranges; and
- Any historical information (local bird club, Audubon society, other biologists, etc.) regarding the presence of burrowing owls on site should be included.

Mitigation

The objective of these measures is to avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owl populations. If burrowing owls are detected using the project area, mitigation measures to minimize and offset the potential impacts should be included as enforceable measures during the CEQA process.

Mitigation actions should be carried out prior to the burrowing owl breeding season, generally from February 1 through August 31 (Thomsen 1971, Zard 1974). Since the timing of nesting activity may vary with latitude and climatic conditions, this time frame should be adjusted accordingly. Preconstruction surveys of suitable habitat at the project site(s) and buffer zone(s) should be conducted to ensure no additional burrowing owls have established territories since the initial surveys. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.

Although the mitigation measures may be included as enforceable project conditions in the CEQA process, it may also be desirable to formalize them in an Memorandum of Understanding (MOU) between the Department and the project sponsor. An MOU is needed when lands (fee title or conservation easement) are being transferred to the Department.

Specific Mitigation Measures

1. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the Department verifies that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and capable of independent survival.

2. To offset the loss of foraging and burrow habitat, a minimum of 6.5 acres of foraging habitat (calculated on a 100-m (approx. 300 ft.) foraging radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. (The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. The protected habitat should contribute to the long-term conservation of the species and the ecosystem(s) on which they depend).

3. When destruction of occupied burrows is unavoidable, existing unsuitable burrows should be enhanced (enlarged or cleared of debris) or created (by installing artificial burrows) in a ratio of 1:1 at the protected lands site.

4. If owls must be moved away from the disturbance area, passive relocation techniques should be used rather than trapping. At least one week should be allowed to accomplish this and allow the owls to acclimate the alternate burrows.

5. The project sponsor should provide funding for management and monitoring of the protected lands. The monitoring plan should include mitigation success criteria and an annual report to the California Department of Fish and Game.

Impact Avoidance

If avoidance is the preferred method of dealing with potential project impacts, then no disturbance should occur within 50 m. (approx. 160 ft.) of occupied burrows during the nonbreeding season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be **permanently** preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird. The configuration of the protected habitat should be approved by the Department.

Owls should be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Passive Relocation

One natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily until the owls have relocated to the new burrow. The formerly occupied burrows may then be excavated. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Projects not subject to regulatory action

The Department is often contacted regarding the presence of burrowing owls on construction sites, parking lots and other areas for which there is no CEQA action or for which the CEQA process has been completed. In this situations, the Department should seek to reach agreement with the project sponsor to implement the specific mitigation measures described above. If they are unwilling to do so, active relocation should not normally be an option, rather they should be advised that passive relocation is their only option.

APPENDIX I

Survey Protocol and Mitigation Guidelines

(Burrowing Owl Consortium)

BURROWING OWL CONSORTIUM

Survey Protocol & Mitigation Guidelines

INTRODUCTION

California's burrowing owl population is clearly in peril and if declines continue unchecked the species may qualify for listing. Because of the intense pressure for development of open, flat grasslands in California, resource managers frequently face conflicts between owls and development projects. Owls can be affected by disturbance and habitat loss, even though there may be no direct impacts to the birds themselves or their burrows. There is often inadequate information about the presence of owls on a project site until ground disturbance is imminent. When this occurs there is usually insufficient time to evaluate impacts to owls and their habitat. The absence of standardized field survey methods impairs adequate and consistent impact assessment during regulatory review processes, which in turn reduces the possibility of effective mitigation.

These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or the resources that support them. The process begins with a four-step survey protocol to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Each project and situation is different and these procedures may not be applicable in some circumstances. Finally, these are not strict rules or requirements that must be applied in all situations. They are guidelines to consider when evaluating burrowing owls and their habitat, and they suggest options for burrowing owl conservation when land use decisions are made.

Section 1 describes the four phase Burrowing Owl Survey Protocol. Section 2 contains the Mitigation Guidelines. Section 3 contains a discussion of various laws and regulations that protect burrowing owls and a list of references cited in the text.

We have submitted these documents to the California Department of Fish and Game (CDFG) for review and comment. These are untested procedures and we ask for your comments on improving their usefulness.

SECTION 1 - BURROWING OWL SURVEY PROTOCOL

PHASE I: HABITAT ASSESSMENT

The first step in the survey process is to assess the presence of burrowing owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat: both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by an observation of at least one burrowing owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if burrowing owl habitat occurs on the site. If burrowing owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not burrowing owl habitat.

PHASE II: BURROW SURVEY

1. A survey for burrows and owls should be conducted by walking through suitable habitat over the entire project site and in areas within 150 meters (approx 500 ft.) of the project impact zone. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project area and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project area.

2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (approx. 160 ft.) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.

3. If burrows or burrowing owls are recorded on the site, a map should be prepared of the burrow concentration areas. A breeding season survey and census (Phase III) of burrowing owls is the next step required.

4. Prepare a report (Phase IV) of the burrow survey stating whether or not burrows are present.

5. A preconstruction survey may be required by project-specific mitigations no more than 30 days prior to ground disturbing activity.

PHASE III: BURROWING OWL SURVEYS, CENSUS AND MAPPING

If the project site contains burrows that could be used by burrowing owls, then survey efforts should be directed towards determining owl presence on the site. Surveys in the breeding season are required to describe if, when, and how the site is used by burrowing owls. If no owls are observed using the site during the breeding season, a winter survey is required.

Survey Methodology

A complete burrowing owl survey consists of four site visits. During the initial site visit examine burrows for owl sign and map the locations of occupied burrows.

Subsequent observations should be conducted from as many fixed points as necessary to provide visual coverage of the site using spotting scopes or binoculars. It is important to minimize disturbance near occupied burrows during all seasons. Site visits must be repeated on four separate days. Conduct these visits from two hours before sunset to one hour after or from one hour before to two hours after sunrise. Surveys should be conducted during weather that is conducive to observing owls outside their burrows. Avoid surveys during heavy rain, high winds (> 20 mph), or dense fog.

Nesting Season Survey. The burrowing owl nesting season begins as early as February 1 and continues through August 31 (Thomsen 1971, Zarn 1974). The timing of nesting activities may vary with latitude and climatic conditions. If possible, the nesting season survey should be conducted during the peak of the breeding season, between April 15 and July 15. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record numbers of pairs and juveniles, and behavior such as courtship and copulation. Map the approximate territory boundaries and foraging areas if known.

Survey for Winter Residents (non-breeding owls).Survey for Winter Residents (non-breeding owls).Survey for Winter Residents (non-breeding owls). Winter surveys should be conducted between December 1 and January 31, during the period when wintering owls are most likely to be present. Count and map all owl sightings, occupied burrows, and burrows with owl sign.

Surveys Outside the Winter and Nesting Seasons. Positive results (i.e., owl sightings) outside of the above survey periods would be adequate to determine presence of owls on site. However, results of these surveys may be inadequate for mitigation planning because the numbers of owls and their pattern of distribution may change during winter and nesting seasons. Negative results during surveys outside the above periods are not conclusive proof that owls do not use the site.

Preconstruction Survey.Preconstruction Survey.Preconstruction Survey. A preconstruction survey may be required by project-specific mitigations and should be conducted no more than 30 days prior to ground disturbing activity.

PHASE IV: RESOURCE SUMMARY, WRITTEN REPORT

A report should be prepared for CDFG that gives the results of each Phase of the survey protocol, as outlined below.

Phase I: Habitat Assessment

1. Date and time of visit(s) including weather and visibility conditions; methods of survey.

2. Site description including the following information: location, size, topography, vegetation communities, and animals observed during visit(s).

3. An assessment of habitat suitability for burrowing owls and explanation.

4. A map of the site.

Phase II: Burrow Survey

1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. A more detailed site description should be made during this phase of the survey protocol including a partial plant list of primary vegetation, location of nearest freshwater (on or within one mile of site), animals observed during transects.

3. Results of survey transects including a map showing the location of concentrations of burrow(s) (natural or artificial) and owl(s), if present.

Phase III: Burrowing Owl Surveys, Census and Mapping

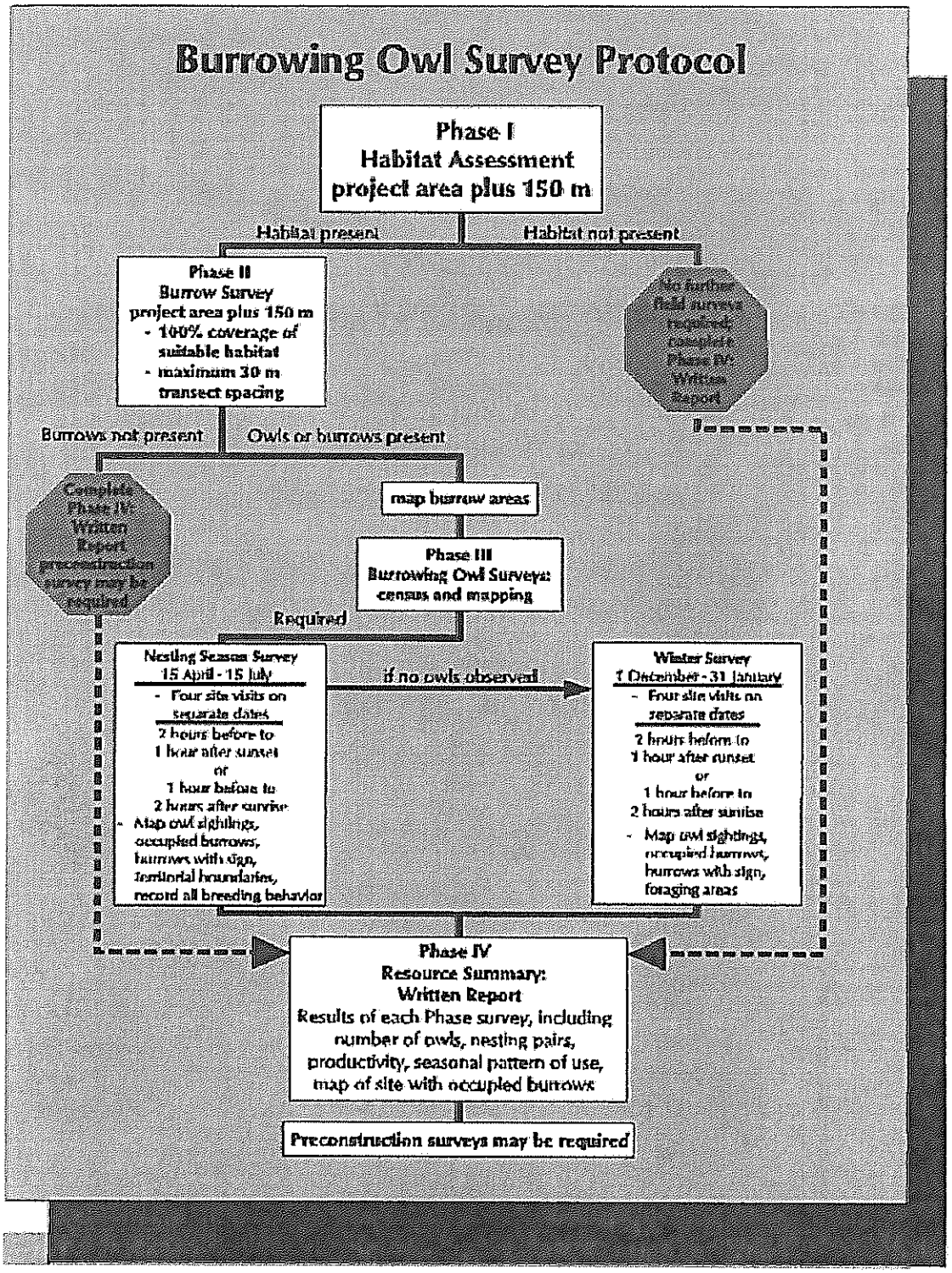
1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. Report and map the location of all burrowing owls and owl sign. Burrows occupied by owl(s) should be mapped indicating the number of owls at each burrow. Tracks, feathers, pellets, or other items (prey remains, animal scat) at burrows should also be reported.

3. Behavior of owls during the surveys should be carefully recorded (from a distance) and reported. Describe and map areas used by owls during the surveys. Although not required, all behavior is valuable to document including feeding, resting, courtship, alarm, territorial, parental, or juvenile behavior.

4. Both winter and nesting season surveys should be summarized. If possible include information regarding productivity of pairs, seasonal pattern of use, and include a map of the colony showing territorial boundaries and home ranges.

5. The historical presence of burrowing owls on site should be documented, as well as the source of such information (local bird club, Audubon society, other biologists, etc.).


Burrowing Owl Survey Protocol
Phase I
Habitat Assessment
project area plus 150 m
Habitat present
Habitat not present
Phase II
Burrow Survey
project area plus 150 m
- 100% coverage of suitable habitat
- maximum 30 m transect spacing
No further field surveys required; complete Phase IV: Written Report
Burrows not present
Owls or burrows present
Complete Phase IV: Written Report preconstruction survey may be required
map burrow areas
Phase III
Burrowing Owl Surveys: census and mapping
Required
Nesting Season Survey
15 April - 15 July
- Four site visits on separate dates
2 hours before to 1 hour after sunset
or
1 hour before to 2 hours after sunrise
- Map owl sightings, occupied burrows, burrows with sign, territorial boundaries, record all breeding behavior
if no owls observed
Winter Survey
1 December - 31 January
- Four site visits on separate dates
2 hours before to 1 hour after sunset
or
1 hour before to 2 hours after sunrise
- Map owl sightings, occupied burrows, burrows with sign, foraging areas
Phase IV
Resource Summary:
Written Report
Results of each Phase survey, including number of owls, nesting pairs, productivity, seasonal pattern of use, map of site with occupied burrows
Preconstruction surveys may be required

SECTION 2 - BURROWING OWL MITIGATION GUIDELINES

The objective of these mitigation guidelines is to minimize impacts to burrowing owls and the resources that support viable owl populations. These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or their resources. The process begins with a four-step survey protocol (see *Burrowing Owl Survey Protocol*) to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures described below are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Mitigation actions should be carried out prior to the burrowing owl breeding season, generally from February 1 through August 31 (Thomsen 1971, Zarn 1974). The timing of nesting activity may vary with latitude and climatic conditions. Project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied them in the interim period between the initial surveys and ground disturbing activity. Repeat surveys should be conducted not more than 30 days prior to initial ground disturbing activity.

DEFINITION OF IMPACTS

1. Disturbance or harassment within 50 meters (approx. 160 ft.) of occupied burrows.

2. Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.

3. Degradation of foraging habitat adjacent to occupied burrows.

GENERAL CONSIDERATIONS

1. Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and

incubation or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date.

2. A minimum of 6.5 acres of foraging habitat, calculated on a 100-m (approx. 300 ft.) foraging radius around the natal burrow, should be maintained per pair (or unpaired resident single bird) contiguous with burrows occupied within the last three years (Rich 1984, Feeney 1992). Ideally, foraging habitat should be retained in a long-term conservation easement.

3. When destruction of occupied burrows is unavoidable, burrows should be enhanced (enlarged or cleared of debris) or created (by installing artificial burrows) in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.

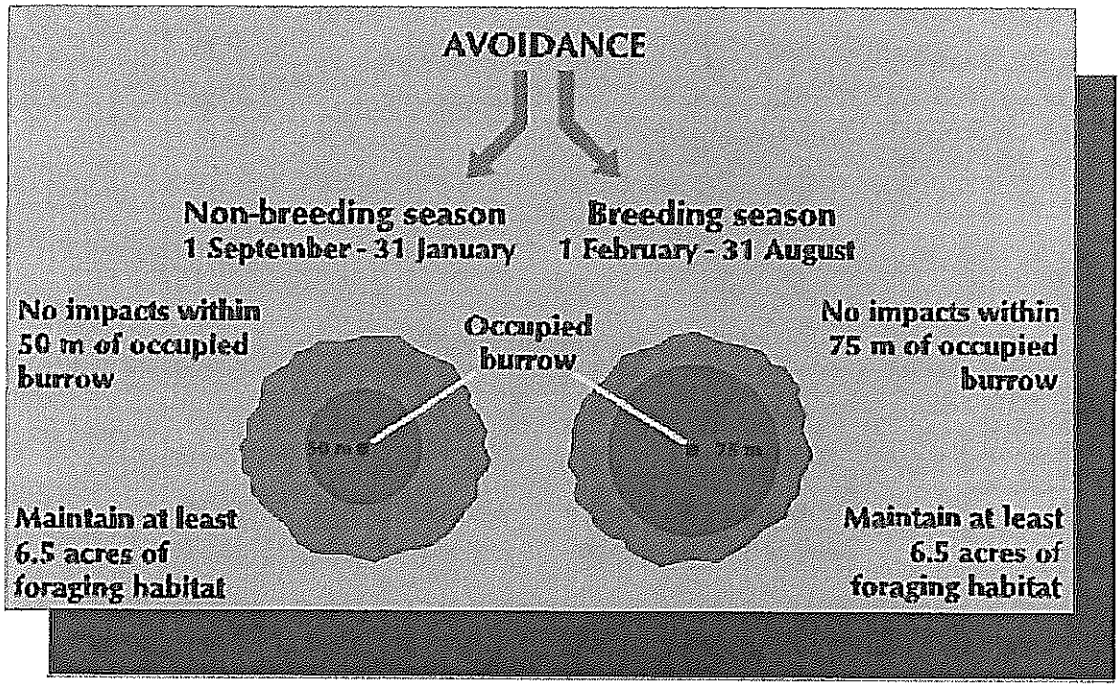
4. If owls must be moved away from the disturbance area, passive relocation (see below) is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows.

5. The mitigation committee recommends monitoring the success of mitigation programs as required in Assembly Bill 3180. A monitoring plan should include mitigation success criteria and an annual report should be submitted to the California Department of Fish and Game.

AVOIDANCE

Avoid Occupied Burrows

No disturbance should occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird.

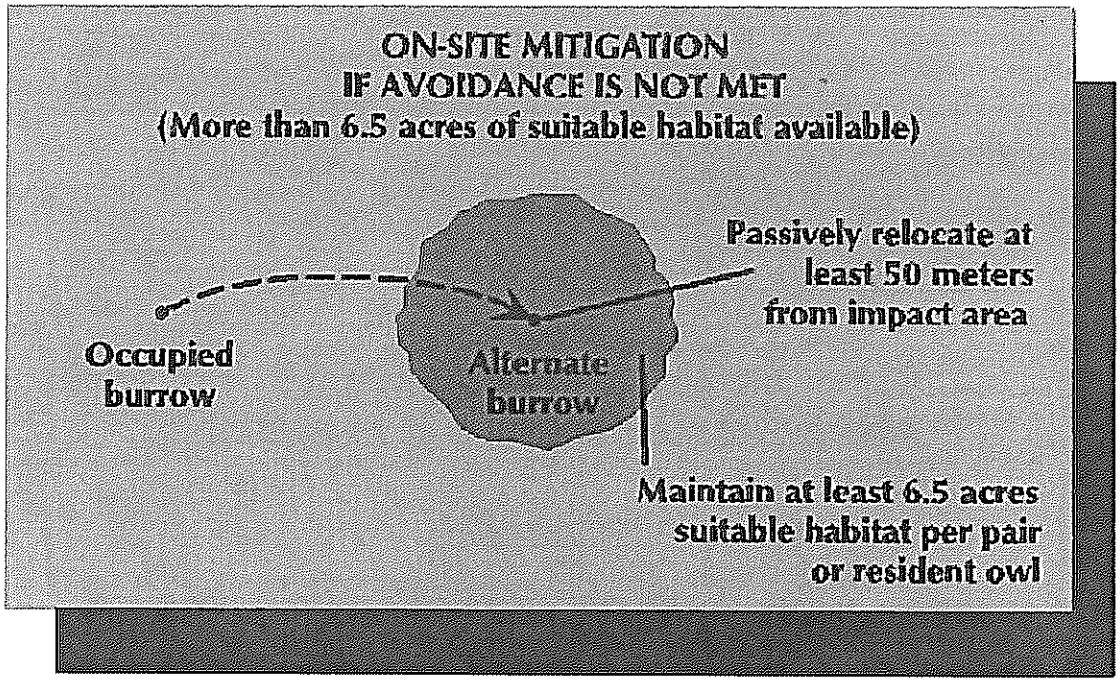


MITIGATION FOR UNAVOIDABLE IMPACTS

On-site Mitigation

On-site passive relocation should be implemented if the above avoidance requirements cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 m from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls (Figure 3). Relocation of owls should only be implemented during the non-breeding season. On-site habitat should be preserved in a conservation easement and managed to promote burrowing owl use of the site.

Owls should be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One alternate natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.



Off-site Mitigation

If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the *Burrowing Owl Survey Protocol*, and the site approved by CDFG. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

1. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

2. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

3. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

SECTION 3 - LEGAL STATUS

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001{c}, 21083. Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impacts to less than significant levels.

CEQA AND SUBDIVISION MAP ACT

CEQA Guidelines Section 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of, or restrict the range of a threatened or endangered species. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIR's for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002, subd. (a)(3), 15021, subd. (a)(2), 15091, subd. (a).).

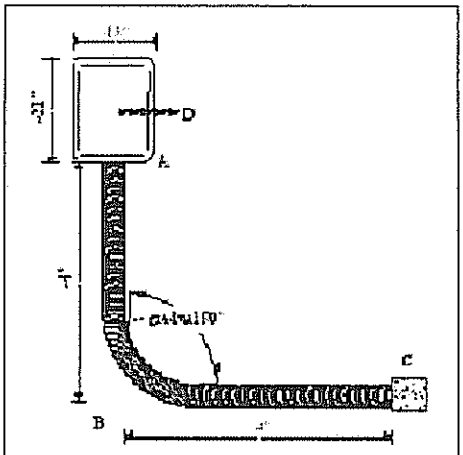
To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15370).

Section 66474 (e) of the Subdivision Map Act states "a legislative body of a city or county shall deny approval of a tentative map or parcel map for which a tentative map was not required, if it makes any of the following findings:...(e) that the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish and wildlife or their habitat". In recent court cases, the court upheld that Section 66474(e) provides for environmental impact review separate from and independent of the requirements of CEQA (Topanga Assn. for a Scenic Community v. County of Los Angeles, 263 Cal. Rptr. 214 (1989).). The finding in Section 66474 is in addition to the requirements for the preparation of an EIR or Negative Declaration.

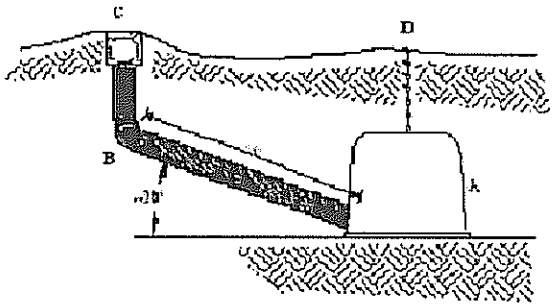
ARTIFICIAL BURROWING OWL BURROW DESIGN

Prepared by: Albion Environmental, Inc., 1414 Soquel Avenue, No. 205

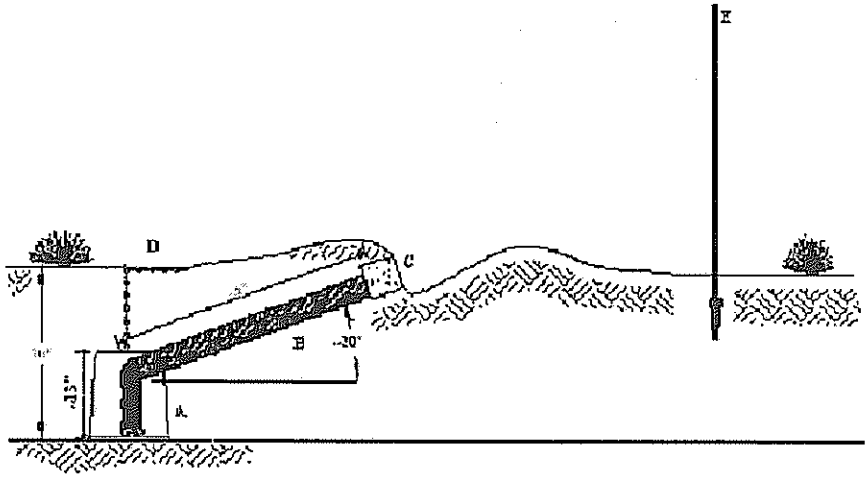
Santa Cruz, CA 95062 (831) 469-9128



TOP VIEW



FRONT VIEW



A - plastic irrigation valve box
B - 4" diameter perforated corrugated plastic pipe
C - 6" square hollow concrete block
D - chain or plastic rope marking location of nesting chamber on ground surface
E - 5' - 6' perch post (optional)

APPENDIX J

Survey Methodologies for San Joaquin Kit Fox

(CDFG 1990)

CALIFORNIA DEPARTMENT OF FISH AND GAME
REGION 4
APPROVED SURVEY METHODOLOGIES
FOR SENSITIVE SPECIES

SAN JOAQUIN KIT FOX, Vulpes macrotis mutica

Status: CT, FE

Methods: Three methods should be used to survey for San Joaquin kit fox (SJKF): 1) night spotlighting, 2) line transects (to identify known and potential den sites), and 3) scent stations.

1) Night spotlighting should be conducted on a minimum of six nights (within a 14-day period) using 400,000 (minimum) candle power spotlights. Surveys should be conducted using at least two observers with spotlights (one for each side of the road). For adequate visibility the observer's eye level should be a minimum of 60 inches above the road surface. This generally precludes the use of cars and small trucks for spotlight surveys. The survey vehicle should be operated at 10 m.p.h. or less. The entire project area should be surveyed, as well as approximately a two-mile area around the subject property. Vehicles should only be operated on existing roads to avoid adversely impacting endangered species or their habitat. Spotlighting should be conducted for a minimum of 3 hours each night and the routes should be varied so that specific locations are not spotlighted at the same time each survey period. Whenever eyeshine or animal movement is detected, the vehicle should be stopped and the animal identified using binoculars (minimum 7x35) or spotting scopes. Sightings of SJKF, their prey, and competing predators should be recorded for later mapping, and the time, mileage, weather, and moon phase noted. Spotlight surveys should not be conducted when visibility is less than 2 miles.

2) Daytime line transect surveys for dens, tracks, scat, etc., should be conducted by walking the property at 10-30 meter (30 to 100-foot) intervals so that the area is completely covered in a systematic manner. Transect width should be adjusted based on vegetation height, topography, etc., to facilitate the detection of dens and other sign. When a den or burrow is discovered, the observer should determine if it has the potential to be used by SJKF and if it is currently occupied (please refer to the attached USFWS SJKF den definitions). Potential burrow openings are generally round or oval in shape, 10-25 centimeters (4-10 inches) in diameter, and often have multiple openings. SJKF activities at a den site should be determined by noting a variety of factors (fresh digging, presence of prey remains, tracks, or scat near the opening). All known and potential dens should be accurately mapped. Photographs of the dens should be taken along with information on topography, vegetation, land use, den characteristics, and activity.

3) Scent stations should be established at a minimum density of five scent stations per 640 acres. One scent station should be placed at the center of the project site with the other four placed 1/4 mile away (i.e. a domino 5 pattern). A minimum of 5 scent stations is required for all projects unless otherwise agreed to by CDFG and USFWS. If a linear corridor is being surveyed, five scent stations should be established per linear mile. Scent stations should not be set adjacent to heavily traveled roads to reduce the potential for kit fox/vehicle collisions. Scent stations should be operated for a minimum of six nights (within a 14-day period), and checked each morning for visitation, re-baited and tracks cleared when necessary. All tracks observed (i.e. kit fox, dogs, kangaroo rats, etc.) should be recorded on pre-formatted data sheets.

Scent stations should be situated on relatively level ground and cover a circle approximately 1 meter (39-inches) in diameter. All vegetation and debris should be cleared and a thin layer (1-2 cm) of fine-grained tracking material (diatomaceous earth, fire clay, finely sifted soil) sifted over the site. (The tracking substrate must be of a consistency to delineate the lines of a human hand when placed on the tracking medium). Smoked tracking plates are also acceptable. The scent stations should be baited with cat food placed at the center of the scent station (i.e. directly on the tracking substrate) or with "Predator Survey Disks". Because kit fox have been observed to occasionally avoid scent stations baited with predator survey disks and fish-based baits, no more than 50% of the scent stations should use these types of bait. The disks are available from Pocatello Supply Depot, 238 E. Dillon, Pocatello, ID 83201, or (208) 236-6920.

Timing: The optimum survey period is between May 1 and September 30. Surveys conducted outside of the optimum period should include a minimum ten nights of scent station operation. The period of lowest detectability is December, January and February. Survey methods for detecting kit fox during these months should be reviewed with the agencies prior to commencing field work. When presence of SJKF is confirmed, the agencies should be contacted for further instructions.

DEPARTMENT OF FISH AND GAME
REGION 4
1234 East Shaw Avenue
Fresno, CA 93710
(209) 222-3761

May 8, 1990

Dear Sensitive Species Surveyor

Attached are the survey methodologies for San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat and San Joaquin antelope squirrel. These methodologies were developed by Region 4 of the California Department of Fish and Game with input from the United States Fish and Wildlife Service, the Bureau of Land Management and various species experts. Standardized methodologies were developed to provide consultants, local, state and federal agencies with minimum acceptable standards for surveys that are conducted to determine the presence of state-listed species. All project specific surveys conducted after June 15, 1990 should use these methodologies. We want to emphasize that these survey methods were designed to optimize the chance of detecting the presence of a listed species should it occur on a project site. They are not designed to determine the absence of a species. If a listed species presence is detected prior to conducting surveys using these techniques, no additional surveys need to be conducted until the Regional office is contacted.

When the presence of a listed species is detected, we request you notify the Region 4 office at (209) 222-3761 for further instructions on what additional information will be needed to assess the projects's potential impact on listed species. This will assist in expediting the review of the project and help control the project sponsors biological survey costs. We also suggest that the USFWS be contacted for further advice as soon as federally-listed species are detected.

Field surveyors should also be aware that both state and federal permits are required for trapping/handling of listed species. For further information regarding permits for state-listed species, please contact Mr. John Gustafson at (916) 322-1260. For additional information regarding permits for federally-listed species, please contact the USFWS at (916) 978-4866. Please remember that if you are trapping within the known range of a listed species, the possibility exists that you may capture a listed species. Absent a permit from the Department and USFWS for their capture, you could be in violation of the State and/or Federal Endangered Species Acts.

If you have any questions, comments regarding the methodologies or if you want to propose the use of alternative methodologies, please contact Ron Rempel, Associate Wildlife Biologist, at the above address or telephone number.

Sincerely,

for George D. Nokes
Regional Manager

Attachments

REGION 4

SURVEY METHODOLOGIES

for

SAN JOAQUIN KIT FOX

BLUNT NOSED LEOPARD LIZARD

SAN JOAQUIN ANTELOPE SQUIRREL

TIPTON KANGAROO RAT

GIANT KANGAROO RAT

1990

Compiled by:

Ron Rempel
Associate Wildlife Biologist

Gail Presley
Wildlife Biologist

APPENDIX K

San Joaquin Kit Fox Survey Protocol

for the Northern Range (USFWS 1999)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO:
1-1-99-TA-1533

June 28, 1999

Memorandum

To: Distribution

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Dissemination of Survey Protocol for the San Joaquin Kit Fox for the Northern Range

The U.S. Fish and Wildlife Service (Service) provides the attached survey protocol for determining habitat suitability and appropriate mitigation for the San Joaquin kit fox (*Vulpes macrotis mutica)* in the northern part of its range. The attached survey protocol is subject to revision by the Service at any time. Successful implementation of the survey protocol will require ongoing contact with the Service before, during, and after early evaluations and field surveys. Questions regarding this guidance may be addressed to Sheila Larsen or Peter Cross of the Sacramento Fish and Wildlife Office at (916) 979-2710. Please note that after July 23, 1999 the Service will be moving to a new address, 2800 Cottage Way, West 2605, Sacramento, California 95826. No new telephone number is available at this time.

Karen J. Miller
for Wayne S. White

Attachment

U.S. FISH AND WILDLIFE SERVICE
SAN JOAQUIN KIT FOX SURVEY PROTOCOL
FOR THE NORTHERN RANGE

Prepared by the Sacramento Fish and Wildlife Office
June 1999

"The purposes of the Endangered Species Act of 1973, as amended, are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . and to provide a program for the conservation of such endangered and threatened species." (The Endangered Species Act of 1973, as amended)

The language contained in the Endangered Species Act of 1973, as amended (Act), requires the U.S. Fish and Wildlife Service (Service) to not only protect individual animals, but has the further obligation of providing listed species with functioning ecosystems so protections provided by the Act are no longer necessary. For the Service to achieve this goal and to allow the project applicant to proceed with their project in a timely manner, the Service has developed the U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range where foothill grasslands, oak savannah, and adjacent agricultural lands are the primary kit fox habitats.

To avoid unnecessary expenditures and delays for projects located within the northern range of the San Joaquin kit fox, the project applicant, along with a qualified biologist, must conduct an early evaluation with the Service.

EARLY EVALUATION REQUIREMENTS

To enable the Service to evaluate the project's impacts to the San Joaquin kit fox the following information is required:

1. A brief description of the proposed project and a map. The project description needs to include the project name, county where the project is located, the estimated area (acreage) of the project site, and an estimate of acres of potential San Joaquin kit fox habitat (see appendix II). The map must show the precise location of the project site, the location of known kit fox dens and/or sightings on the project site, and delineate kit fox habitat. The map should be either an original or high quality copy of a U.S. Geological Survey topographic map (exact scale, 7.5 minute, 1"=24,000 ft., including township and range).

2. Compile sighting records within a ten-mile radius of the boundaries of the project site. Both the Service and the California Natural Diversity Data Base (CNDDB) shall be contacted for sighting records;

3. Describe vegetation communities found on the project site using CNDDB classification;

4. Describe the continuity of the vegetative communities between the project site and the ten-mile radius;

5. Habitat suitability of the project site to be assessed by completing one set of walking transects (e.g., evaluate prey base and denning potential);

6. An analysis of adverse effects of the project on kit foxes, if any;

7. Provide recommendations for mitigating the adverse effects of the project on kit foxes, where applicable; and

8. An analysis of cumulative effects (appendix II), if any.

Upon receiving all of the above information, the Service will evaluate the information as to whether or not the project site represents kit fox habitat, the quality of the habitat, and the value of that habitat to the recovery of the kit fox (see appendix II). The Service will set forth its reasoning for such determination in writing within 30 days. If it is determined that the project will not result in take (see appendix II), the project applicant may proceed with the project. If the Service determines that take will occur as the project is currently presented, the project applicant should initiate discussions with the Service to determine appropriate project modifications to protect kit fox, including avoidance, minimization, restoration, preservation, or compensation. Project modifications to protect kit fox include efforts to moderate, reduce or alleviate the impacts of a proposed activity, including a) avoiding the impact by not taking a certain action or parts of an action; b) minimizing impacts by limiting the degree or magnitude of the action; c) rectifying the impact by repairing, rehabilitating or restoring the affected environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; e) compensating for the impact by replacing or providing substitute resources or environments. The project applicant must obtain Service concurrence that no take of kit fox will occur, as defined in section 9 of the Act. The Service recognizes that there are cases where early evaluation of the project site may be inconclusive. In that case, the applicant may choose (1) to enter into discussions with the Service on appropriate project modifications or (2) complete the balance of the protocol level survey.

If kit fox or kit fox sign are found using the survey protocol presented here, the project applicant will need to consult with the Service to determine appropriate project modifications and permit requirements to protect kit fox.

If kit fox or kit fox sign are NOT found using this survey protocol, but kit fox sightings or occurrences are documented within a 10-mile radius, the Service will interpret the results, and appropriate project modifications, if necessary, will be discussed with the applicant. Factors the Service will consider in interpreting such cases include the number and dates of kit fox sightings, distance of such sightings from the project site, the continuity of habitat or vegetative types between kit fox sightings and the project site, habitat suitability within the project site (e.g., prey

base and denning potential), available results of surveys in the project vicinity, and the opinions of other kit fox experts. If, based on such information, the Service determines that a project site represents kit fox habitat, it will, if requested by the applicant or the applicant's representative, set forth its reasoning for such determination in writing.

If this survey protocol (and early evaluation process) is implemented as described, and if negative results are obtained and no kit fox sightings are within a 10-mile radius, and the Service concurs in writing, the Service will not require project modifications to reduce effects on kit fox. The protocol level surveys are described below.

SURVEY PROTOCOL

The hilly terrain and tall grasses of the northern range make it extremely difficult to identify small canids using spotlights. In addition, the large home range of kit fox in the northern range decreases the likelihood of detecting a kit fox in a particular area at a particular moment in time. As kit foxes have proven difficult to detect in such areas, this protocol includes more intensive survey efforts than utilized in the southern range of the San Joaquin kit fox. This survey protocol applies to all natural lands and other vegetative communities as follows:

1. native or nonnative grasslands and associated scrub;

2. oak savannah adjacent to grasslands;

3. agricultural lands on the San Joaquin Valley floor within 3 miles of foothill grasslands or extensive valley grasslands;

4. lands that are dryland farmed; and

5. ruderal land that is associated with above-described areas.

The survey protocol should be used within the aforementioned habitats in the San Joaquin kit fox range north of the following boundary: the western intersection of the Merced/Fresno county lines, then along the Merced/Fresno county lines to the intersection of the Merced/Madera county line and State Route 152, then east along State Route 152 to the intersection of State Route 99, and then an imaginary line directly east from that intersection.

The Service can provide a list of quads where San Joaquin kit fox habitat exists. The quad list is not necessarily inclusive and the Service should be contacted for guidance concerning other land use types that may be inhabited by San Joaquin kit foxes.

Once initiated, surveys conducted pursuant to this protocol may be suspended prior to completion if: (a) upon closer inspection or new information the project site represents kit fox habitat, or (b) kit fox are positively identified within the project site or within 2 miles of the boundaries of the project site. If kit fox are identified, the Service must be notified immediately and a California Natural Diversity Data Base form must be completed and mailed.

Below are general requirements of all surveys; details are contained in appendix I. Adjustments to this protocol may only be made with Service concurrence.

1. One walking transect to detect known, natal, and potential kit fox dens (appendix II) must be conducted on all areas within the project site in the previously described vegetative communities. Walking transects must be conducted such that 100% visual coverage of the project areas is achieved. Typically, this requires transect widths of 30

to 100 feet depending on the height of vegetative cover and other visual obstructions. To identify opportunities and "hot spots" for later spotlighting and camera/scent stations, walking transects of at least 50% of the project site must be conducted prior to initiation of spotlighting. The remainder of the walking transects must be completed prior to the placing of camera and scent stations. At least one walking transect survey must be conducted between May 1 and September 30.

2. Spotlighting of the project vicinity must be conducted for a minimum of 10 nights within a 15 day period (weather permitting). "Project vicinity" means the actual project site plus an area encompassing a 2-mile radius around the project site. Prior to accessing private property, the surveyor must obtain permission. However, if permission cannot be obtained, spotlighting of the project site and publicly accessible routes within the 2-mile radius must be conducted. Spotlighting must be conducted so that coverage of the project vicinity is maximized and is consistent with good professional judgment. Areas where canids were observed, but not identified need to have additional camera and scent stations placed in the vicinity within 24 hours.

3. Spotlighting surveys cannot be conducted in the same area where camera and scent stations are in place, except as mentioned above. Camera stations must be established within the project area at a minimum density of eight per 640 acres (1 square mile -- or at a similar density for project sites larger or smaller than 640 acres) and maintained for a minimum of 10 consecutive nights. At least one camera station must be established for project sites smaller than 80 acres. When the number of camera stations on the project acreage does not divide evenly, the required number of stations must be rounded up. Consecutive nights of surveys may be interrupted if weather conditions are inappropriate, provided that 10 nights of effort are completed as promptly as practicable.

4. Concurrently with camera stations, scent stations must be established within the project area at a minimum of eight per 640 acres and maintained for a minimum of 10 consecutive nights (weather conditions permitting). The number of scent stations required for project areas larger or smaller than 640 acres should be rounded up. On project sites larger than 640 acres, camera and scent stations may be rotated as necessary to obtain complete coverage (i.e., where the number of available cameras is not sufficient to simultaneously cover the entire site).

   Camera and scent stations must be established in accordance with methods that maximize the success of attracting and detecting kit foxes, and that is consistent with good professional judgment.

5. Surveys must be conducted between May 1 and November 1 using the methods described above.

6. Results of these surveys together with other pertinent information must be compiled into a survey report or biological assessment and submitted to the Service for review and comment. The report must contain the following mandatory elements:

   a. the early evaluation information and results;

   b. a description of specific methodologies utilized during the project survey and any adjustments from the survey protocol;

   c. survey results and a map showing the location of camera and scent stations;

   d. any other available environmental documents such as draft environmental impact reports or biological assessments; and

   e. an appendix containing the resumes of all biologists who assisted with the project surveys.

REQUIRED QUALIFICATIONS OF BIOLOGISTS

Biologists conducting the early evaluation and field surveys described in this protocol must have demonstrable experience in kit fox biology, identification, and survey techniques. The senior biologist should have a university degree in wildlife biology or a related science, at least 360 hours of field experience in traditional kit fox survey techniques (den surveys, camera and scent stations, and spotlighting) including a minimum of 48 hours of spotlighting experience, and have seen a kit fox during a spotlighting survey within five years of conducting the present survey or can provide comparable experience. The assisting biologist(s) needs to have 30 hours of spotlighting experience, be able to identify coyote, red fox and gray fox in a spotlight, and needs to have seen a kit fox either in the wild, at a zoo or as a museum mount. Other qualifications are not necessarily excluded by this condition, provided the surveyor can demonstrate to the Service good professional judgment and experience.

Resumes submitted to the Service must include specific information concerning kit fox survey experience, experience surveying for other canids, other professional experience, and education. The Service suggests that the biologist contact the Service if there are any questions regarding their qualifications.

ADDITIONAL INFORMATION, LIMITATIONS, AND CAVEATS

With respect to this survey protocol, the following apply:

1. Surveys are to be conducted only after the early evaluation process has been completed. Surveys are only to be conducted with prior approval of the Service, and that the Service, along with the applicant, has determined that surveys are appropriate.

2. Specific circumstances may justify or necessitate modification of this survey protocol on a case-by-case basis. Such modifications are allowable under this protocol if: (a) the applicant or its representative explains to the Service in writing why modifications of the protocol are necessary; and (b) the Service concurs with such adjustments in writing.

3. The Service recognizes that certain types of projects (e.g., linear projects such as pipelines, phased projects, and projects involving small land areas) may raise special issues with respect to the implementation of this protocol. These applicants must consult with the Service prior to initiating surveys.

4. The Service reserves the right to reject kit fox surveys conducted under this protocol as inadequate if:

   a. specific methods described under the Survey Protocol are not implemented and prior written exception to the protocol was not obtained;

   b. surveyor qualifications are demonstrably inadequate or inconsistent with the description under Required Qualifications of Biologists; or

   c. survey methods are conducted in a manner that is demonstrably inconsistent with the Survey Protocol.

5. The applicant should consult the California Department of Fish and Game to determine their responsibilities under the California Endangered Species Act.

6. The applicant shall not be required to conduct additional kit fox surveys for 2.5 years (30 months) from the date of completion of protocol surveys. If by the end of this 2.5 year period, (1) a grading permit has not been issued for any project requiring such a permit, or (2) project construction (i.e., actual ground disturbing activities) has not been initiated, or (3) other specific project activities at issue with respect to this protocol have not been initiated, then the Service must be contacted as all understandings and agreements described above shall have terminated.

7. IF THE APPLICANT CONDUCTS THE PRESCRIBED SURVEYS WITHOUT FINDING ANY KIT FOX, AND KIT FOXES ARE LATER DETERMINED TO OCCUPY THE PROJECT SITE, ALL PROJECT ACTIONS LIKELY TO RESULT IN INCIDENTAL TAKE OF KIT FOXES SHALL CEASE IMMEDIATELY AND THE SERVICE SHALL BE CONTACTED IMMEDIATELY FOR FURTHER GUIDANCE.

APPENDIX I: Mandatory Requirements for Surveys

These requirements have been adapted from the California Department of Fish and Game, Region 4, Approved Survey Methodologies. This appendix details mandatory requirements set forth in the survey protocol.

1. Spotlighting shall be conducted:

   a. for a minimum of two hours within a one sq. mile area, and adjusted appropriately for larger or smaller areas.

   b. The routes should be varied so that specific locations are not spotlighted at the same time each session.

   c. Whenever eye shine or animal movement is detected, the vehicle should be stopped and the animal identified using binoculars (minimum 7x35, light gathering styles preferred) or spotting scopes. If the animal is considered an "unidentified canid," a surveyor's flag or other form of marking shall be placed there to expedite returning to the spot for timely placement of an additional 2 camera and 2 scent stations for 3 consecutive nights.

   d. Any sightings of kit foxes, other predators, and prey species should be noted for mapping.

   e. Spotlighting shall be conducted using at least two observers with spotlights. Spotlights must be 400,000 candlelight or brighter. The Service recommends 800,000 candlelight.

   f. Vehicles must be driven no more than 10 mph and shall be operated on existing roads only.

2. Walking transects shall be conducted as follows:

   a. Survey for dens, sign (tracks, scat, prey remains), and prey availability. It is essential that locations of dens, sign, and prey availability be mapped (e.g., ground squirrel colonies). Scat can now be determined to species. Contact the Service for more information.

   b. Transect width must be adjusted based on vegetation height, topography, etc., to facilitate the detection of dens and other sign.

   c. When a den, appropriate ground squirrel burrow, or badger excavation, etc. is discovered, the biologist should determine its status (appendix II) and map the

location. Most dens which are occupied by kit foxes show no sign. Den status can usually be determined with 3 days of dusting with a tracking medium.

3. Scent stations shall be managed as follows:

   a. Scent stations must measure a minimum of one square yard, and may be either metal, aluminum, or other appropriate surface, covered with appropriate tracking medium. The tracking medium must be kept in a condition which allows the tracks of small canids to be detected. The use of track boxes in areas of heavy dew or fog may prolong the effectiveness of the tracking medium. Track boxes can be used with prior approval by the Service.

   b. Track plates must be secured to the ground by spikes or other means (such as wood backing) to prevent wobbling, being blown away or otherwise disturbed.

   c. Scent stations must be checked each morning and animal visitations recorded. All tracks of small canids and unidentifiable canid tracks should be lifted or photographed and included in the report.

   d. Scent stations shall be re-baited as necessary to encourage nighttime visitation. If a small can is used, such as a cat food can, then it should be nailed into the ground or somehow secured so an animal cannot walk off with it.

   e. Scent stations should be placed in a manner that will foster visitations by carnivores (e.g., adjacent to existing wildlife trails or near dens).

   f. Grass and brush should be cleared from around scent stations to prevent windblown grasses or bushes brushing the track plates and destroying tracks.

   g. If a scent station results in a visitation by an unidentified canid, an additional camera should be set up at the scent station for a minimum of four additional nights and the vacated camera station should be converted to a scent station.

4. Camera stations shall be managed as follows:

   a. Camera stations can be baited trigger cameras and/or infrared beam trip cameras. Cameras must be set to allow triggering or tripping by small canids.

   b. Camera stations should be set so as to foster visitations by small canids, but limit triggering or tripping by domestic livestock.

c. Cameras with motor driven drives must be used to allow multiple photographs to be taken per night. If infrared beams are used, the beam delay should not exceed 30 seconds.

d. Bait and batteries shall be checked on a daily basis.

e. When theft of cameras is a concern, the cameras can be concealed in bee boxes or by other means.

f. Grass and brush should be cleared from around camera stations to prevent windblown grasses or bushes triggering the shutter release.

5. Surveyors must fill out and send to the California Natural Diversity Data Base (CNDDB) all observations of the presence of San Joaquin kit foxes (e.g., sightings, carcasses, scat, tracks). A CNDDB form is available as appendix III.

APPENDIX II: Definitions

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Harm" - is defined in the Act to include significant habitat modification or degradation that results in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or resting.

"Harass" - is defined in the Act as actions that create the likelihood of injury to listed species to such an extent as to disrupt normal behavior patterns which include, but are not limited to, breeding, foraging, or resting.

"Cumulative Effects" - The cumulative or incremental environmental impact of the effect of the action together with impacts of past, present, and reasonably foreseeable future actions. The action area includes all areas to be affected directly or indirectly by the action, not merely the immediate area involved in the action.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that <u>is used or has been used at any time in the past</u> by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable

subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition, either term applies.

"Atypical Den" - Any manmade structure which has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.

"Habitat" - Habitat refers to the resources and conditions present in an area that; (1) produces occupancy (including foraging areas and dispersal corridors, etc.); or (2) provides potential for occupancy (e.g., listed species who are so reduced in numbers that they cannot use some areas of habitat, but would do so if their numbers were greater and/or they had the opportunity); or (3) was historically occupied; and (4) are important to the survival, reproduction, and/or recovery of the species.

"Habitat Quality" - The quality of the habitat should be considered a continuous variable, ranging from low to medium to high quality habitats, based on the ability to provide resources for survival, reproduction, and recovery, respectively.

"Habitat Value" - The value of the habitat refers to the importance of the habitat to the recovery of the kit fox. This should be considered a continuum with indefinite boundaries or acreage; low, medium, and high.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO:
1-1-99-TA-1533

June 28, 1999

Memorandum

To: Distribution

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Dissemination of Survey Protocol for the San Joaquin Kit Fox for the Northern Range

The U.S. Fish and Wildlife Service (Service) provides the attached survey protocol for determining habitat suitability and appropriate mitigation for the San Joaquin kit fox (*Vulpes macrotis mutica)* in the northern part of its range. The attached survey protocol is subject to revision by the Service at any time. Successful implementation of the survey protocol will require ongoing contact with the Service before, during, and after early evaluations and field surveys. Questions regarding this guidance may be addressed to Sheila Larsen or Peter Cross of the Sacramento Fish and Wildlife Office at (916) 979-2710. Please note that after July 23, 1999 the Service will be moving to a new address, 2800 Cottage Way, West 2605, Sacramento, California 95826. No new telephone number is available at this time.

Karen J. Miller
for Wayne S. White

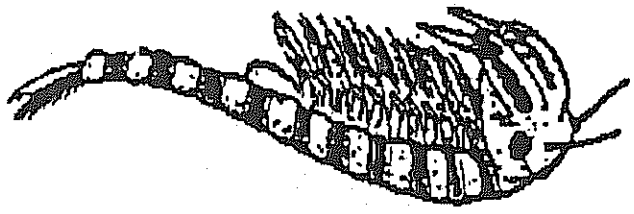
Attachment

APPENDIX L

Standard Recommendations

for the Protection of the San Joaquin Kit Fox

(USFWS 1999)



U.S. FISH AND WILDLIFE SERVICE
STANDARDIZED RECOMMENDATIONS
FOR PROTECTION OF THE SAN JOAQUIN KIT FOX
PRIOR TO OR DURING GROUND DISTURBANCE

Prepared by the Sacramento Fish and Wildlife Office
June 1999

INTRODUCTION

The following document includes many of the San Joaquin kit fox (*Vulpes macrotis mutica*) protection measures typically recommended by the U. S. Fish and Wildlife Service (Service), prior to and during ground disturbance activities. However, incorporating relevant sections of these guidelines into the proposed project is not the only action required under the Endangered Species Act of 1973, as amended (Act). Project applicants should contact the Service in Sacramento to determine the full range of requirements that apply to your project; the address and telephone number are given at the end of this document. Formal authorization for the project may be required under either section 7 or section 10 of the Act. Implementation of the measures presented in this document may be necessary to avoid violating the provisions of the Act, including the prohibition against "take" (defined as killing, harming, or harassing a listed species, including actions that damage or destroy its habitat). Such protection measures may also be required under the terms of a biological opinion pursuant to section 7 of the Act resulting in incidental take authorization (authorization), or an incidental take permit (permit) pursuant to section 10 of the Act. The specific measures implemented to protect kit fox for any given project shall be determined by the Service based upon the applicant's consultation with the Service.

The purpose of this document is to make information on kit fox protection strategies readily available and to help standardize the methods and definitions currently employed to achieve kit fox protection. The measures outlined in this document are subject to modification or revision at the discretion of the Service.

All surveys, den destructions, and monitoring described in this document must be conducted by a qualified biologist. A qualified biologist (biologist) means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the San Joaquin kit fox. In addition, biologist(s) must be able to identify coyote, red fox, gray fox, and kit fox tracks, and to have seen a kit fox in the wild, at a zoo, or as a museum mount.

SMALL PROJECTS

Small projects are considered to be those projects with small foot prints such as an individual in-fill oil well, communication tower, or bridge repair. These projects must stand alone and not be part of, or in any way connected to larger projects (i.e., bridge repair or improvement to serve a

future urban development). The Service recommends that on these small projects, the biologist survey the proposed project boundary and a 200-foot area outside of the project footprint to identify habitat features, and make recommendations on situating the project to minimize or avoid impacts. If habitat features cannot be completely avoided, then preconstruction surveys should be conducted.

Preconstruction/preactivity surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Surveys should identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, and assess the potential impacts to the kit fox by the proposed activity. The status of all dens should be determined and mapped (see Survey Protocol).

Written results of preconstruction/preactivity surveys must be received by the Service within five days after survey completion and prior to the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered within the project area or within 200-feet of the project boundary, the Service shall be immediately notified. If the preconstruction/preactivity survey reveals an active natal pupping or new information, the project applicant should contact the Service immediately to obtain the necessary take authorization/permit.

If take authorization/permit has already been issued, then the biologist may proceed with den destruction within the project boundary, except natal/pupping dens (active or inactive). Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated, see den destruction section).

OTHER PROJECTS

It is likely that all other projects occurring within kit fox habitat will require a take authorization/permit from the Service. This determination would be made by the Service during the early evaluation process (see Survey Protocol). These other projects would include, but are not limited to: linear projects; projects with large footprints such as urban development; and projects which in themselves may be small but have far reaching impacts (i.e., water storage or conveyance facilities that promote urban growth or agriculture, etc.).

The take authorization/permit issued by the Service may incorporate some or all of the protection measures presented in this document. The take authorization/permit may include measures specific to the needs of the project, and those requirements supersede any requirements found in this document.

EXCLUSION ZONES

The configuration of exclusion zones around the kit fox dens should have a radius measured outward from the entrance or cluster of entrances. The following radii are minimums, and if they cannot be followed the Service must be contacted:

Potential den	50 feet
Known den	100 feet
Natal/pupping den (occupied and unoccupied)	Service must be contacted
Atypical den	50 feet

Known den: To ensure protection, the exclusion zone should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Exclusion zone fencing should be maintained until all construction related or operational disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the dens.

Potential and Atypical dens: Placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

Construction and other project activities should be prohibited or greatly restricted within these exclusion zones. Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited within the exclusion zones.

DESTRUCTION OF DENS

Disturbance to all San Joaquin kit fox dens should be avoided to the maximum extent possible. Protection provided by kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of the species. Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed. The value to kit foxes of potential, known, and natal/pupping dens differ and therefore, each den type needs a different level of protection. **Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the Service.**

Natal/pupping dens: Natal or pupping dens which are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service. Therefore, project activities at some den sites may have to be postponed.

Known Dens: Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infra-red beam camera to determine the current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use. If kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrances(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of the biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant, for example during the animal's normal foraging activities. The Service encourages hand excavation, but realizes that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised.

Destruction of the den should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation a kit fox is discovered inside the den, the excavation activity shall cease immediately and monitoring of the den as described above should be resumed. Destruction of the den may be completed when in the judgement of the biologist, the animal has escaped from the partially destroyed den.

Potential Dens: If a take authorization/permit has been obtained from the Service, den destruction may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then destruction shall cease and the Service shall be notified immediately.

CONSTRUCTION AND OPERATIONAL REQUIREMENTS

Habitat subject to permanent and temporary construction disturbances and other types of project-related disturbance should be minimized. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting project goals to be achieved. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be

included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a 20-mph speed limit in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. To the extent possible, night-time construction should be minimized. Off-road traffic outside of designated project areas should be prohibited.

2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2 feet deep should be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the procedures under number 13 of this section must be followed.

3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipe becoming trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in closed containers and removed at least once a week from a construction or project site

5. No firearms shall be allowed on the project site.

6. To prevent harassment, mortality of kit foxes or destruction of dens by dogs or cats, no pets should be permitted on project sites.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control

must be conducted, zinc phosphide should be used because of proven lower risk to kit fox.

8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped individual. The representative will be identified during the employee education program. The representative's name and telephone number shall be provided to the Service.

9. An employee education program should be conducted for any project that has expected impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and agency personnel involved in the project. The program should include the following: a description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the above-mentioned people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Game (CDFG), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for advice.

12. Any contractor, employee, or military or agency personnel who inadvertently kills or injures a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFG immediately in the case of a dead, injured or entrapped kit fox. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or biologist.

13. The Sacramento Fish and Wildlife Office and CDFG will be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during

project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers given below. The CDFG contact is Mr. Ron Schlorff at 1416 9th Street, Sacramento, California 95814, (916) 654-4262.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service, until July 23, 1999 at:

Endangered Species Division
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340
(916) 979-2710

After July 23, 1999 please direct mail to:
Endangered Species Division
2800 Cottage Way, West 2605
Sacramento, California 95826
(no telephone number available yet,
please call the old number for a forwarding number)

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means " . . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

"Atypical Den" - Any manmade structure which has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-99-TA-1534

February 15, 2001

Memorandum

To: Distribution

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Dissemination of Standard Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance

The U.S. Fish and Wildlife Service (Service) provides the attached standard recommendations for the protection of the San Joaquin kit fox (*Vulpes macrotis mutica)* prior to or during ground disturbing activities. The attached standard recommendations are subject to revision by the Service at any time. Successful implementation of the standard recommendations will require ongoing contact with the Service before and during the ground disturbance. Questions regarding this guidance may be addressed to Sheila Larsen or Susan Jones of the Sacramento Fish and Wildlife Office at (916) 414-6600.

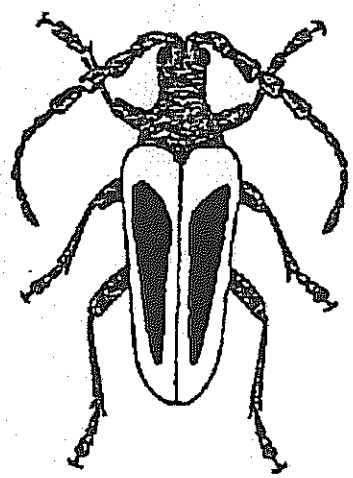
for Wayne S. White

Attachment

APPENDIX M

Staff Report Regarding Mitigation

for Impacts to Swainson's Hawk (CDFG)



Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni* in the Central Valley of California

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates which, if implemented, are intended to help stabilize and reverse dramatic population declines of threatened and endangered species. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to Swainson's hawks in the Central Valley, Staff (WMD, ESD and Regions) has prepared this report. To ensure compliance with legislative and Commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); (2) Fish and Game Code Section 2081 Management Authorizations (Management Authorizations); and (3) Fish and Game Code Section 2090 Consultations with State CEQA Lead Agencies.

The report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes "model" mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature and Fish and Game Commission. Alternative mitigation measures, tailored to specific projects, may be developed if consistent with this report are intended to help achieve the conservation goals for the Swainson's hawk and should complement multi-species habitat conservation planning efforts currently underway.

The Department is preparing a recovery plan for the species and it is anticipated that this report will be revised to incorporate recovery plan goals. It is anticipated that the recovery plan will be completed by the end of 1995. The Swainson's hawk recovery plan will establish criteria for species recovery through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific recovery efforts.

During project review the Department should consider whether a proposed project will adversely affect suitable foraging habitat within a ten (10) mile radius of an active (used during one or more of the last 5 years) Swainson's hawk nest(s). Suitable Swainson's

hawk foraging habitat will be those habits and crops identified in Bechard (1983), Bloom (1980), and Estep (1989). The following vegetation types/agricultural crops are considered small mammal and insect foraging habitat for Swainson's hawks:

alfalfa
fallow fields
beet, tomato, and other low-growing row or field crops
dry-land and irrigated pasture
rice land (when not flooded)
cereal grain crops (including corn after harvest)

The ten mile radius standard is the flight distance between active (and successful) nest sites and suitable foraging habitats, as documented in telemetry studies (Estep 1989, Babcock 1993). Based on the ten mile radius, new development projects which adversely modify nesting and/or foraging habitat should mitigate the project's impacts to the species. The ten mile foraging radius recognizes a need to strike a balance between the biological needs of reproducing pairs (including eggs and nestlings) and the economic benefit of development(s) consistent with Fish and game Code Section 2053.

Since over 95% of Swainson's hawk nests occur on private land, the Department's mitigation program should include incentives that preserve agricultural lands used for the production of crops, which are compatible with Swainson's hawk foraging needs, while providing an opportunity for urban development and other changes in land use adjacent to existing urban areas.

LEGAL STATUS

Federal

The Swainson's hawk is a migratory bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations (C.F.R.) Part 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 C.F.R. 21).

State

The Swainsons' hawk has been listed as a threatened species by the California Fish and Game Commission pursuant to the California Endangered Species Act (CESA), see Title 14, California Code of

Regulations, Section 670.5(b)(5)(A).

LEGISLATIVE AND COMMISSION POLICIES
LEGAL MANDATES AND STANDARDS

The FGC policy for threatened species is, in part, to: "Protect and preserve all native species...and their habitats..." This policy also directs the Department to work with all interested persons to protect and preserve sensitive resources and their habitats. Consistent with this policy and direction, the Department is enjoined to implement measures that assure protection for the Swainson's hawk.

The California State Legislature, when enacting the provisions of CESA, made the following findings and declarations in Fish and Game Code Section 2051:

> a)"Certain species of fish, wildlife, and plants have been rendered extinct as a consequence of man's activities, untempered by adequate concern and conservation";
>
> b)"Other species of fish, wildlife, and plants are in danger of, or threatened with, extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment because of overexploitation, disease, predation, or other factors (emphasis added)"; and
>
> c)"These species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern" (emphasis added).

The Legislature also proclaimed that it "is the policy of the state to conserve, protect, restore, and enhance any endangered or threatened species and its habitat and that it is the intent of the Legislature, consistent with conserving the species, to acquire lands for habitat for these species" (emphasis added).

Section 2053 of the Fish and Game Code states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent

alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" (emphasis added).

Section 2054 states "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided" (emphasis added).

Loss or alteration of foraging habitat or nest site disturbance which results in: (1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainsons's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be a violation of Section 2080 of the Fish and Game Code. This interpretation of take has been judicially affirmed by the landmark appellate court decision pertaining to CESA (DFG v. ACID, 8 CA App.4, 41554). The essence of the decision emphasized that the intent and purpose of CESA applies to all activities that take or kill endangered or threatened species, even when the taking is incidental to otherwise legal activities. To avoid potential violations of Fish and Game Code Section 2080, the Department recommends and encourages project sponsors to obtain 2081 Management Authorizations for their projects.

Although this report has been prepared to assist the Department in working with the development community, the prohibition against take. (Fish and Game Code Section 2080) applies to all persons, including those engaged in agricultural activities and routine maintenance of facilities. In addition, sections 3503, 3503.5, and 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

To avoid potential violation of Fish and Game Section 2080 (i.e. killing of a listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1 - September 15 annually). Delineation of specific activities which could cause nest abandonment (take) of Swainson's hawk during the nesting period should be done on a case-by-case basis.

CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 {c}, 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports findings of Overriding Consideration. The CEQA Lead Agency's

Findings of Overriding Consideration does not eliminate the project sponsor's obligation to comply with Fish and Game Code Section 2080.

NATURAL HISTORY

The Swainson' hawk (*Buteo swainsoni*) is a large, broad winged buteo which frequents open country. They are about the same size as a red-tailed hawk (*Buteo jamaicensis*), but trimmer, weighing approximately 800-1100 grams (1.75 - 2 lbs.). They have about a 125 cm. (4+foot) wingspan. The basic body plumage may be highly variable and is characterized by several color morphs - light, dark, and rufous. In dark phase birds, the entire body of the bird may be sooty black. Adult birds generally have dark backs. The ventral or underneath sections may be light with a characteristic dark, wide "bib" from the lower throat down to the upper breast, light colored wing linings and pointed wing tips. The tail is gray ventrally with a subterminal dusky band, and narrow, less conspicuous barring proximally. The sexes are similar in appearance; females however, are slightly larger and heavier than males, as is the case in most sexually dimorphic raptors. There are not recognized subspecies (Palmer 1988).

The Swainson's hawk is a long distance migrator. The nesting grounds occur in northwestern Canada, the western U.S., and Mexico and most populations migrate to wintering grounds in the open pampas and agricultural areas of South America (Argentina, Uruguay, southern Brazil). The species is included among the group of birds known as "neotropical migrants". Some individuals or small groups (20-30 birds) may winter in the U.S., including California (Delta Islands). This round trip journey may exceed 14,000 miles. The birds return to the nesting grounds and establish nesting territories in early March.

Swainson's hawks are monogamous and remain so until the loss of a mate (Palmer 1988). Nest construction and courtship continues through April. The clutch (commonly 3-5 eggs) is generally laid in early April to early May, but may occur later. Incubation lasts 34-35 days, with both parents participating in the brooding of eggs and young. The young fledge (leave the nest) approximately 42-44 days after hatching and remain with their parents until they depart in the fall. Large groups (up to 100+ birds) may congregate in holding areas in the fall and may exhibit a delayed migration depending upon forage availability. The specific purpose of these congregation areas is as yet unknown, but is likely related to: increasing energy reserves for migration; the timing of migration;

aggregation into large migratory groups (including assisting the young in learning migration routes); and providing a pairing and courtship opportunity for unattached adults.

Foraging Requirements

Swainson's hawk nests in the Central Valley of California are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. These open fields and pastures are the primary foraging areas. Major prey items for Central Valley birds include: California voles (*Microtus californicus*), valley pocket gophers (*Thomomys bottae*), deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi*), meadowlarks (*Sturnella neglecta*),other passerines, grasshoppers (*Conocephalinae sp.*), crickets (*Gryllidae sp.*), and beetles (Estep 1989). Swainson's hawks generally search for prey by soaring in open country and agricultural fields similar to northern harriers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*). Often several hawks may be seen foraging together following tractors or other farm equipment capturing prey escaping from farming operations. During the breeding season, Swainson's hawks eat mainly vertebrates (small rodents and reptiles), whereas during migration vast numbers of insects are consumed (Palmer 1988).

Department funded research has documented the importance of suitable foraging habitats (e.g., annual grasslands, pasture lands, alfalfa and other hay crops, and combinations of hay, grain and row crops) within an energetically efficient flight distance from active Swainson's hawk nests (Estep pers. comm.). Recent telemetry studies to determine foraging requirements have shown that birds may use in excess of 15,000 acres of habitat or range up to 18.0 miles from the nest in search of prey (Estep 1989, Babcock 1993). The prey base (availability and abundance) for the species is highly variable from year to year, with major prey population (small mammals and insects) fluctuations occurring based on rainfall patterns, natural cycles and agricultural cropping and harvesting patterns. Based on these variables, significant acreages of potential foraging habitat (primarily agricultural lands) should be preserved per nesting pair (or aggregation of nesting pairs) to avoid jeopardizing existing populations. Preserved foraging areas should be adequate to allow additional Swainson's hawk nesting pairs to successfully breed and use the foraging habitat during good prey production years.

Suitable foraging habitat is necessary to provide an adequate energy source for breeding adults, including support of nestlings and fledglings. Adults must achieve an energy balance between the

needs of themselves and the demands of nestlings and fledglings, or the health and survival of both may be jeopardized. If prey resources are not sufficient, or if adults must hunt long distances from the nest site, the energetics of the foraging effort may result in reduced nestling vigor with an increased likelihood of disease and/or starvation. In more extreme cases, the breeding pair, in an effort to assure their own existence, may even abandon the nest and young (Woodbridge 1985).

Prey abundance and availability is determined by land and farming patterns including crop types, agricultural practices and harvesting regimes. Estep (1989) found that 73.4 % of observed prey captures were in fields being harvested, disced, mowed, or irrigated. Preferred foraging habitats for Swainson's hawks include:

alfalfa;
fallow fields;
beet, tomato, and other low-growing row or field crops;
dry-land and irrigated pasture;
rice land (during the non-flooded period); and
cereal grain crops (including corn after harvest).

Unsuitable foraging habitat types include crops where prey species (even if present) are not available due to vegetation characteristics (e.g. vineyards, mature orchards, and cotton fields, dense vegetation).

Nesting Requirements

Although the Swainson's hawk's current nesting habitat is fragmented and unevenly distributed, Swainson's hawks nest throughout most of the Central Valley floor. More than 85% of the known nests in the Central Valley are within riparian systems in Sacramento, Sutter, Yolo, and San Joaquin counties. Much of the potential nesting habitat remaining in this area is in riparian forests, although isolated and roadside trees are also used. Nest sites are generally adjacent to or within easy flying distance to alfalfa or hay fields or other habitats or agricultural crops which provide an abundant and available prey source. Department research has shown that valley oaks (*Quercus lobata*), Fremont's cottonwood (*Populus fremontii*), willows (*Salix spp.*), sycamores (*Platanus spp.*), and walnuts (*Juglans spp.*) are the preferred nest trees for Swainson's hawks (Bloom 1980, Schlorff and Bloom 1983, Estep 1989).

Fall and Winter Migration Habitats

During their annual fall and winter migration periods, Swainson's

hawks may congregate in large groups (up to 100+ birds). Some of these sites may be used during delayed migration periods lasting up to three months. Such sites have been identified in Yolo, Tulare, Kern and San Joaquin counties and protection is needed for these critical foraging areas which support birds during their long migration.

Historical and Current Population Status

The Swainson's hawk was historically regarded as one of the most common and numerous raptor species in the state, so much so that they were often not given special mention in field notes. The breeding population has declined by an estimated 91% in California since the turn of the century (Bloom 1980). The historical Swainson's hawk population estimates are based on current densities and extrapolated based on the historical amount of available habitat. The historical population estimate is 4,284-17,136 pairs (Bloom 1980). In 1979, approximately 375 (±50) breeding pairs of Swainson's hawks were estimated in California, and 280 (75%) of those pairs were estimated to be in the Central Valley (Bloom 1980). In 1988, 241 active breeding pairs were found in the Central Valley, with an additional 78 active pairs known in northeastern California. The 1989 population estimate was 430 pairs for the Central Valley and 550 pairs statewide (*Estep, 1989*). This difference in population estimates is probably a result of increased survey effort rather than an actual population increase.

Reasons for decline

The dramatic Swainson's hawk population decline has been attributed to loss of native nesting and foraging habitat, and more recently to the loss of suitable nesting trees and the conversion of agricultural lands. Agricultural lands have been converted to urban land uses and incompatible crops. In addition, pesticides, shooting, disturbance at the nest site, and impacts on wintering areas may have contributed to their decline. Although losses on the wintering areas in South America may occur, they are not considered significant since breeding populations outside of California are stable. The loss of nesting habitat within riparian areas has been accelerated by flood control practices and bank stabilization programs. Smith (1977) estimated that in 1850 over 770,000 acres of riparian habitat were present in the Sacramento Valley. By the mid-1980s, Warner and Hendrix (1984) estimated that there was only 120,000 acres of riparian habitat remaining in the central Valley (Sacramento and San Joaquin Valleys combined). Based on Warner and Hendrix's estimates approximately 93% of the San Joaquin Valley and 73% of the Sacramento Valley riparian habitat has been eliminated since 1850.

MANAGEMENT STRATEGIES

Management and mitigation strategies for the Central Valley population of the Swainson's hawk should ensure that:

suitable nesting habitat continues to be available (this can be accomplished by protecting existing nesting habitat from destruction or disturbance and by increasing the number of suitable nest trees); and

foraging habitat is available during the period of the year when Swainson's hawks are present in the Central Valley (this should be accomplished by maintaining or creating adequate and suitable foraging habitat in areas of existing and potential nest sites and along migratory routes within the state).

A key to the ultimate success in meeting the Legislature's goal of maintaining habitat sufficient to preserve this species is the implementation of these management strategies in cooperation with project sponsors and local, state and federal agencies.

DEPARTMENT'S ROLES AND RESPONSIBILITIES IN PROJECT CONSULTATION AND ADMINISTRATION OF CEQA AND THE FISH AND GAME CODE

The Department, through its administration of the Fish and Game Code and its trust responsibilities, should continue its efforts to minimize further habitat destruction and should seek mitigation to offset unavoidable losses by (1) including the mitigation measures in this document in CEQA comment letters and/or as management conditions in Department issued Management Authorizations or (2) by developing project specific mitigation measures (consistent with the Commission's and the Legislature's mandates) and including them in CEQA comment letters and/or as management conditions in Fish and Game Code Section 2081 Management Authorizations issued by the Department and/or in Fish and Game Code Section 2090 Biological Opinions.

The Department should submit comments to CEQA Lead Agencies on all projects which adversely affect Swainson's hawks. CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 {c}, 21083. Guidelines 15380, 15064, 15065). Impacts must be: (1) avoided; or (2) appropriate mitigation must be provided to reduce impacts to less than significant levels; or (3) the lead agency must make and support findings of overriding consideration. If the CEQA Lead Agency makes a Finding of Overriding

Consideration, it does not eliminate the project sponsor's obligation to comply with the take prohibitions of Fish and Game Code Section 2080. Activities which result in (1) nest abandonment; (2) starvation of young; and/or (3) reduced health and vigor of eggs and nestlings may result in the take (killing) of Swainson's hawks incidental to otherwise lawful activities (urban development, recreational activities, agricultural practices, levee maintenance and similar activities. The taking of Swainson's hawk in this manner may be a violation of Section 2080 of the Fish and Game Code. To avoid potential violations of Fish and Game Code Section 2080, the Department should recommend and encourage project sponsors to obtain 2081 Management Authorizations.

In aggregate, the mitigation measures incorporated into CEQA comment letters and/or 2081 Management Authorizations for a project should be consistent with Section 2053 and 2054 of the Fish and Game Code. Section 2053 states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy". Section 2054 states: "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternative, individual projects may be approved if appropriate mitigation and enhancement measures are provided."

State lead agencies are required to consult with the Department pursuant to Fish and Game Code Section 2090 to ensure that any action authorized, funded, or carried out by that state agency will not jeopardize the continued existence of any threatened or endangered species. Comment letters to State Lead Agencies should also include a reminder that the State Lead Agency has the responsibility to consult with the Department pursuant to Fish and Game Code Section 2090 and obtain a written findings (Biological Opinion). Mitigation measures included in Biological Opinions issued to State Lead Agencies must be consistent with Fish and Game Code Sections 2051-2054 and 2091-2092.

NEST SITE AND HABITAT LOCATION INFORMATION SOURCES

The Department's Natural Diversity Data Base (NDDB) is a continually updated, computerized inventory of location information on the State's rarest plants, animals, and natural communities. Department personnel should encourage project proponents and CEQA

Lead Gencies, either directly or through CEQA comment letters, to purchase NDDB products for information on the locations of Swainson's hawk nesting areas as well as other sensitive species. The Department's Nongame Bird and Mammal Program also maintains information on Swainson's hawk nesting areas and may be contacted for additional information on the species.

Project applicants and CEQA Lead Agencies may also need to conduct site specific surveys (conducted by qualified biologists at the appropriate time of the year using approved protocols) to determine the status (location of nest sites, foraging areas, etc.) of listed species as part of the CEQA and 2081 Management Authorization process. Since these studies at the earliest possible time in the project review process. To facilitate project review and reduce the potential for costly project delays, the Department should make it a standard practice to advise developers or others planning projects that may impact one or more Swainson's hawk nesting or foraging areas to initiate communication with the Department as early as possible.

MANAGEMENT CONDITIONS

Staff believes the following mitigation measures (nos. 1-4) are adequate to meet the Commission's and Legislature's policy regarding listed species and are considered as preapproved for incorporation into any Management Authorizations for the Swainson's hawk issued by the Department. The incorporation of measures 1.4 into a CEQA document should reduce a project's impact to a Swainson's hawk(s) to less than significant levels. Since these measures are Staff recommendations, a project sponsor or CEQA Lead agency may choose to negotiated Management Conditions must be consistent with Commission and Legislative policy and be submitted to the ESD for review and approval prior to reaching agreement with the project sponsor or CEQA Lead Agency.

Staff recommended Management Conditions are:

1. No intensive new disturbances (e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities) or other project related activities which may cause nest abandonment or forced fledging, should be initiated within 1/4 mile (buffer zone) of an active nest between March 1 - September 15 or until August 15 if a Management Authorization or Biological Opinion is obtained for the project. The buffer zone should be increased to 1/2 mile in nesting areas away from urban development (i.e. in areas where disturbance [e.g. heavy equipment operation associated with construction, use of cranes or draglines, new

rock crushing activities] is not a normal occurrence during the nesting season). Nest trees should not be removed, a Management Authorization (including conditions to off-set the loss of the nest tree) must be obtained with the tree removal period specified in the Management Authorization, generally between October 1 - February 1. If construction or other project related activities which may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project sponsor) by a qualified biologist (to determine if the nest is abandoned) should be required. If it is abandoned and if the nestlings are still alive, the project sponsor shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s). Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 1/4 mile of an active nest should not be prohibited.

2. Hacking as a substitute for avoidance of impacts during the nesting period may be used in unusual circumstances after review and approval of a hacking plan by ESD and WMD. Proponents who propose using hacking will be required to fund the full costs of the effort, including any telemetry work specified by the Department.

3. To mitigate for the loss of foraging habitat (as specified in this document), the Management Authorization holder/project sponsor shall provide Habitat Management (HM) lands to the Department based on the following ratios:

(a) Projects within 1 mile of an active nest tree shall provide:

> one acre of HM land (at least 10% of the HM land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90% of the HM lands protected by a conservation easement [acceptable to the Department] on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk) for each acre of development authorized (1:1 ratio); or
>
> one-half acre of HM land (all of the HM land requirements shall be met by fee title acquisition or a conservation easement [acceptable to the Department] which allows for the active management of the habitat for prey production on the HM lands) for each acre of

development authorized (0.5:1 ratio).

(b) Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acres of HM land for each acre of urban development authorized (0.75:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

(c) Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acres of HM land for each acre of urban development authorized (0.5:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or a conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

4. Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at the rate of $400 per HM land acre (adjusted annually for inflation and varying interest rates).

Some project sponsors may desire to provide funds to the Department for HM land protection. This option is acceptable to the extent the proposal is consistent with Department policy regarding acceptance of funds for land acquisition. All HM lands should be located in areas which are consistent with a multi-species habitat conservation focus. Management Authorization holders/project sponsors who are willing to establish a significant mitigation bank (>900 acres) should be given special consideration such as 1.1 acres of mitigation credit for each acre preserved.

PROJECT SPECIFIC MITIGATION MEASURES

Although this report includes recommended Management Measures, the Department should encourage project proponents to propose alternative mitigation strategies that provide equal or greater protection of the species and which also expedite project environmental review or issuance of a CESA Management Authorization. The Department and sponsor may choose to conduct cooperative, multi-year field studies to assess the site's habitat value and determine its use by nesting and foraging Swainson's hawk. Study plans should include clearly defined criteria for

judging the project's impacts on Swainson's hawks and the methodologies (days of monitoring, foraging effort/efficiency, etc.) that will be used.

The study plans should be submitted to the Wildlife Management Division and ESD for review. Mitigation measures developed as a result of the study must be reviewed by ESD (for consistency with the policies of the Legislature and Fish and Game Commission) and approved by the Director.

EXCEPTIONS

Cities, counties and project sponsors should be encourage to focus development on open lands within already urbanized areas. Since small disjunct parcels of habitat seldom provide foraging habitat needed to sustain the reproductive effort of a Swainson's hawk pair, Staff does not recommend requiring mitigation pursuant to CEQA nor a Management Authorization by the Department for infill (within an already urbanized area) projects in areas which have less than 5 acres of foraging habitat and are surrounded by existing urban development, unless the project area is within 1/4 mile of an active nest tree.

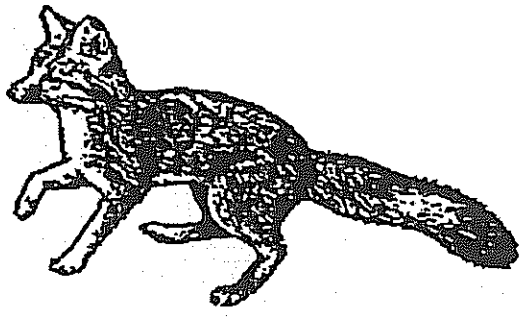
REVIEW

Staff should revise this report at least annually to determine if the proposed mitigation strategies should be retained, modified or if additional mitigation strategies should be included as a result of new scientific information.

APPENDIX N

Recommended Timing and Methology for Swainson's Hawk Nesting Surveys in California's Central Valley

(Swainson's Hawk Technical Advisory Committee 2000)



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 set of survey recommendations was developed by the Swainson's Hawk Technical Advisory Committee (TAC) to maximize the potential for locating nesting Swainson's hawks, and thus reducing the potential for nest failures as a result of project activities/disturbances. The combination of appropriate surveys, risk analysis, and monitoring has been determined to be very effective in reducing the potential for project-induced nest failures. As with most species, when the surveyor is in the right place at the right time, Swainson's hawks may be easy to observe; but some nest sites may be very difficult to locate, and even the most experienced surveyors have missed nests, nesting pairs, mis-identified a hawk in a nest, or believed incorrectly that a nest had failed. There is no substitute for specific Swainson's hawk survey experience and acquiring the correct search image.

METHODOLOGY

Surveys should be conducted in a manner that maximizes the potential to observe the adult Swainson's hawks, as well as the nest/chicks second. To meet the California Department of Fish and Game's (CDFG) recommendations for mitigation and protection of Swainson's hawks, surveys should be conducted for a ½ mile radius around all project activities, and if active nesting is identified within the ½ mile radius, consultation is required. In general, the TAC recommends this approach as well.

Minimum Equipment

Minimum survey equipment includes a high-quality pair of binoculars and a high quality spotting scope. Surveying even the smallest project area will take hours, and poor optics often result in eye-strain and difficulty distinguishing details in vegetation and subject birds. Other equipment includes good maps, GPS units, flagging, and notebooks.

Walking vs Driving

Driving (car or boat) or "windshield surveys" are usually preferred to walking if an adequate roadway is available through or around the project site. While driving, the observer can typically approach much closer to a hawk without causing it to fly. Although it might appear that a flying bird is more visible, they often fly away from the observer using trees as screens; and it is difficult to determine from where a flying bird came. Walking surveys are useful in locating a nest after a nest territory is identified, or when driving is not an option.

Angle and Distance to the Tree

Surveying subject trees from multiple angles will greatly increase the observer's chance of detecting a nest or hawk, especially after trees are fully leafed and when surveying multiple trees

in close proximity. When surveying from an access road, survey in both directions. Maintaining a distance of 50 meters to 200 meters from subject trees is optimal for observing perched and flying hawks without greatly reducing the chance of detecting a nest/young: Once a nesting territory is identified, a closer inspection may be required to locate the nest.

Speed
Travel at a speed that allows for a thorough inspection of a potential nest site. Survey speeds should not exceed 5 miles per hour to the greatest extent possible. If the surveyor must travel faster than 5 miles per hour, stop frequently to scan subject trees.

Visual and Aural Ques
Surveys will be focused on both observations and vocalizations. Observations of nests, perched adults, displaying adults, and chicks during the nesting season are all indicators of nesting Swainson's hawks. In addition, vocalizations are extremely helpful in locating nesting territories. Vocal communication between. hawks is frequent during territorial displays; during courtship and mating; through the nesting period as mates notify each other that food is available or that a threat exists; and as older chicks and fledglings beg for food.

Distractions
Minimize distractions while surveying. Although two pairs of eyes may be better than one pair at times, conversation may limit focus. Radios should be off, not only are they distracting, they may cover a hawk's call.

Notes and Species Observed
Take thorough field notes. Detailed notes and maps of the location of observed Swainson's hawk nests are essential for filling gaps in the Natural Diversity Data Base; please report all observed nest sites. Also document the occurrence of nesting great homed owls, red-tailed hawks, red-shouldered hawks and other potentially competitive species. These species will infrequently nest within 100 yards of each other, so the presence of one species will not necessarily exclude another.

TIMING

To meet **the minimum level** of protection for the species, surveys should be completed for **at least** the two survey periods immediately prior to a project's initiation. For example, if a project is scheduled to begin on June 20, you should complete 3 surveys in Period III and 3 surveys in Period V. However, it is always recommended that surveys be completed in Periods II, III and V. **Surveys should not be conducted in Period IV.**

The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawks from San Joaquin County to Northern Yolo County. Dates should be adjusted in consideration of early and late nesting seasons, and geographic differences (northern nesters tend to nest slightly later, etc). If you are not sure, contact a TAC member or CDFG biologist.

Survey dates **Justification and search image**	**Survey time**	**Number of Surveys**
I. *January-March 20 (recommended optional)*	*All day*	*1*

Prior to Swainson's hawks returning, it may be helpful to survey the project site to determine potential nest locations. Most nests are easily observed from relatively long distances, giving the surveyor the opportunity to identify potential nest sites, as well as becoming familiar with the project area. It also gives the surveyor the opportunity to locate and map competing species nest sites such as great homed owls from February on, and red-tailed hawks from March on. After March 1, surveyors are likely to observe Swainson's hawks staging in traditional nest territories.

II. *March 20 to April 5*	*Sunrise to 1000* *1600 to sunset*	*3*

Most Central Valley Swainson's hawks return by April 1, and immediately begin occupying their traditional nest territories. For those few that do not return by April 1, there are often hawks ("floaters") that act as place-holders in traditional nest sites; they are birds that do not have mates, but temporarily attach themselves to traditional territories and/or one of the site's "owners." Floaters are usually displaced by the territories' owner(s) if the owner returns.

Most trees are leafless and are relatively transparent; it is easy to observe old nests, staging birds, and competing species. The hawks are usually in their territories during the survey hours, but typically soaring and foraging in the mid-day hours. Swainson's hawks may often be observed involved in territorial and courtship displays, and circling the nest territory. Potential nest sites identified by the observation of staging Swainson's hawks will usually be active territories during that season, although the pair may not successfully nest/reproduce that year.

III. *April 5 to April 20*	*Sunrise to 1200* *1630 to Sunset*	*3*

Although trees are much less transparent at this time, 'activity at the nest site increases significantly. Both males and females are actively nest building, visiting their selected site frequently. Territorial and courtship displays are increased, as is copulation. The birds tend to vocalize often, and nest locations are most easily identified. This period may require a great deal of "sit and watch" surveying.

IV. *April 21 to June 10*	*Monitoring known nest sites only* ***Initiating Surveys is not recommended***	

Nests are extremely difficult to locate this time of year, and even the most experienced surveyor will miss them, especially if the previous surveys have not been done. During this phase of nesting, the female Swainson's hawk is in brood position, very low in the nest, laying eggs, incubating, or protecting the newly hatched and vulnerable chicks; her head may or may not be visible. Nests are often well-hidden, built into heavily vegetated sections of trees or in clumps of mistletoe, making them all but invisible. Trees are usually not viewable from all angles, which may make nest observation impossible.

Following the male to the nest may be the only method to locate it, and the male will spend hours away from the nest foraging, soaring, and will generally avoid drawing attention to the nest site. Even if the observer is fortunate enough to see a male returning with food for the female, if the female determines it is not safe she will not call the male in, and he will not approach the nest; this may happen if the observer, or others, are too close to the nest or if other threats, such as rival hawks, are apparent to the female or male.

V. ***June 10 to July 30 (post-fledging)***	***Sunrise to 1200*** ***1600 to sunset***	*3*

Young are active and visible, and relatively safe without parental protection. Both adults make numerous trips to the nest and are often soaring above, or perched near or on the nest tree. The location and construction of the nest may still limit visibility of the nest, young, 'and adults.

DETERMINING A PROJECT'S POTENTIAL
FOR IMPACTING SWAINSON'S HAWKS

LEVEL OF RISK	REPRODUCTIVE SUCCESS (Individuals)	LONGTERM SURVIVABILITY (Population)	NORMAL SITE CHARACTERISTICS (Daily Average)	NEST MONI-TORING
HIGH	Direct physical contact with the nest tree while the birds are on eggs or protecting young. (Helicopters in close proximity)	Loss of available foraging area. Loss of nest trees.	Little human-created noise, little human use: nest is well away from dwellings, equipment yards, human access areas, etc. *Do not include general cultivation practices in evaluation.*	MORE
	Loss of nest tree after nest building is begun prior to laying eggs.	Loss of potential nest trees.		
	Personnel within 50 yards of nest tree (out of vehicles) for extended periods while birds are on eggs or protecting young that are < 10 days old.	Cumulative: Multi-year, multi-site projects with substantial noise/personnel disturbance.		
	Initiating construction activities (machinery and personnel) within 200 yards of the nest after eggs are laid and before young are > 10 days old.	Cumulative: Single-season projects with substantial noise/personnel disturbance that is greater than or significantly different from the daily norm.		
	Heavy machinery only working within 50 yards of nest.		Substantial human-created noise and occurrence: nest is near roadways, well-used waterways, active airstrips, areas that have high human use. *Do not include general cultivation practices in evaluation.*	
	Initiating construction activities within 200 yards of nest before nest-building begins or after young > 10 days old.	Cumulative: Single-season projects with activities that "blend" well with site's "normal" activities.		
LOW	All project activities (personnel and machinery) greater than 200 yards from nest.			LESS