APPENDIX B

Biological Assessment

BIOLOGICAL RESOURCE ASSESSMENT

for the proposed

Mountain View Bravo, LLC - Kern Canyon Ranch

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1.0 INTRODUCTION

1.1 Purpose

This biological resource assessment has been prepared by Bio Resources Consulting at the request of the Nossaman, Guthner, Knox & Elliott, LLP (NGKE) to assist the law firm in evaluating the potential impacts to special status biological resources which may be affected by the proposed Mountoun View Bravo, LLC Kern Canyon Ranch project. The proposed project is generally located in a rural area within the city limits of Bakersfield in the northeast quadrant of the city. The activities associated with the implementation of the proposed project have the potential to impact special status species and their habitat. This report is intended solely for use by NGKE as part of its background data for advising Mountain View Bravo concerning California Environmental Quality Act compliance.

This biological resource assessment includes: a discussion of the potentially occurring special status plant and wildlife species, survey methods and results, potential impacts to special status species, and mitigation measures intended to minimize impacts to listed species to less than significant levels. Potentially occurring state and federal-listed threatened and endangered species were the focus of the field surveys. Other special status species, such as California Department of Fish and Game (CDFG) species of special concern, were noted if encountered.

1.2 Project Description

The proposed project is located in the northeast portion of the City of Bakersfield in Kern County, California (Figure 1). Implementation of the Kern Canyon Ranch project would result in the eventual buildout of approximately 694 acres in Sections 17, 18, 19, and 20, Township 29 South, Range 29 East, Mount Diablo Base and Meridian. Proposed land uses include residential and commercial, as well as a realignment of State Route 178. The area included in the biological resource assessment consisted of the following areas and their associated approximate acreages: Section 17 (640 acres), and portions of Sections 18 (40 acres), 19 (9 acres), and 20 (5 acres).

1.3 Regulatory Framework

The primary regulations affecting biological resource impacts are discussed in this section. Activities associated with construction and operation of facilities associated with the proposed project have the potential to impact federal and/or state-listed species. Therefore, the project is subject to the California Endangered Species Act (CESA) and the Federal Endangered Species Act (FESA). The project would also be subject to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Section 5050 (Fully Protected Reptiles and Amphibians). Finally, the project also has two intermittent streams within the site which may be subject to the Clean Water Act and California Fish and Game Code Sections 1600-1603. The following paragraphs provide a brief summary of the applicable provisions of these regulations.

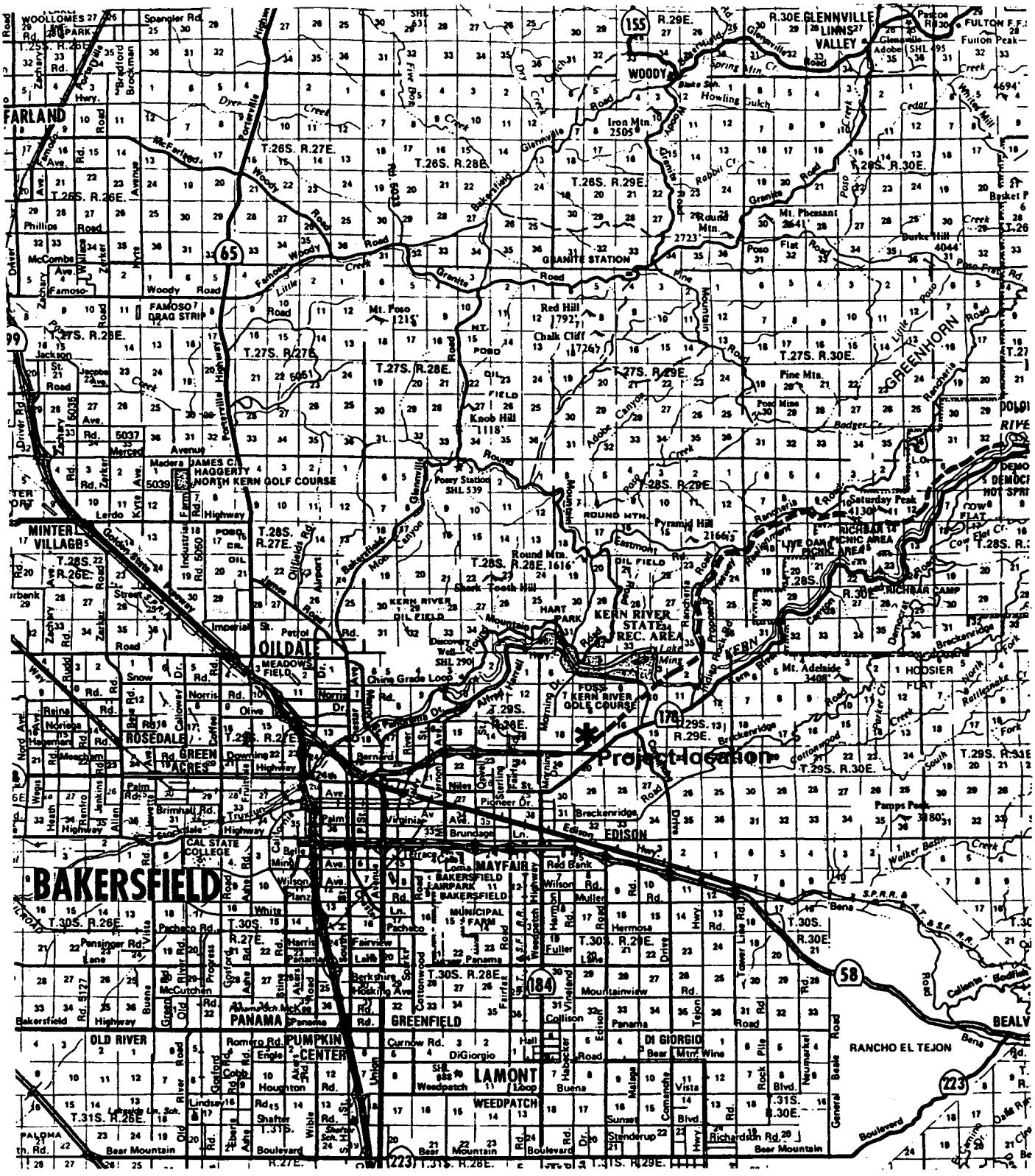


Figure 1 - Project Location
Mountain View Bravo, LLC - Kern Canyon Ranch

Bio Resources Consulting

1.0 INTRODUCTION

Federal and State Endangered Species Acts

FESA protects federally-listed threatened and endangered species. Section 9 of FESA prohibits acts which result in "take" of threatened or endangered species. "Take" is defined as killing, harming, or harrassment of listed species. "Harm" has been further defined to include killing or injuring due to significant obstruction of essential behavior patterns (i.e. breeding, feeding, or sheltering) through significant habitat modification or degradation.

Two sections of FESA contain provisions for allowing "take" which is incidental to otherwise lawful activities. Under Section 7, a federal agency which proposes to conduct, fund or approve an action which may result in "take" of listed species is required to consult with the U.S. Fish and Wildlife Service (USFWS). The result of this formal consultation is a Biological Opinion, which includes either a jeopardy or nonjeopardy decision issued by USFWS to the consulting federal agency. Included in the Biological Opinion is the possible issuance of authorization for "incidental take". Section 10(a) of FESA provides a method for permitting a state or private action which may result in "incidental take". Under Section 10(a), the project proponent must provide the USFWS with a Habitat Conservation Plan for the affected species, and publish notification of the application for a permit in the Federal Register.

CESA provisions to permit impacts of California-listed rare, threatened, or endangered species are similar in that there is a permit process. The applicant must enter into a management agreement with the California Department of Fish and Game (CDFG). This management agreement specifically defines the permitted activities and how the applicant must act to protect affected species.

The project area lies within the geographic area covered by an existing HCP, the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP). The MBHCP was implemented in August 1994 by the City of Bakersfield and the County of Kern to allow development and similar activities to occur in exchange for habitat conservation for the affected species.

Section 404 of the Clean Water Act (CWA)

The U.S. Army Corps of Engineers (ACOE), under Section 404 of the Clean Water Act, regulates discharges of dredged or fill material in "waters of the United States." The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations (CFR). The definition of "waters of the United States" includes "...intrastate lakes, rivers, streams (including intermittent streams)...the use, degradation or destruction of which could affect interstate or foreign commerce..." and tributaries of water defined as waters of the United States.

Some intermittent washes may also qualify as waters of the United States. Areas which meet the definition of waters of the United States, or the definition of wetlands, could be under ACOE jurisdiction. At the discretion of the ACOE, impacts to these areas could require a permit,

depending on the type and size of the activity within ACOE jurisdiction.

California Fish and Game Code: Sections 1600 - 1603

Any activity that will divert or obstruct the natural flow or change the bed, bank, or channel of any river, stream, or lake must provide a Streambed Alteration Notification to CDFG. Additionally, Streambed Alteration Notification is required if streambed material is proposed for removal. Providing Streambed Alteration Notification to CDFG may result in a Streambed Alteration Agreement between the project applicant and CDFG. Construction activities in intermittent streams may also require a Streambed Alteration Agreement.

Migratory Bird Treaty Act

Among other provisions, this treaty prohibits destruction of nests, eggs, and/or young of all designated migratory bird species. With very limited exceptions, all birds are included in this prohibitions.

California Fish and Game Code Section 5050

This section designates the blunt-nosed leopard lizard, among other reptiles and amphibians, as a "fully protected" species. As a "fully protected" species, "take" of blunt-nosed leopard lizards is specifically prohibited, even though other sections of the code may provide for "incidental take" of the species.

2.0 ENVIRONMENTAL SETTING

The information presented in this section is a summary of pertinent information regarding the climate, rivers and drainages, vegetation, and special status species of the project vicinity.

2.1 Climate

The project site is located in the southern San Joaquin Valley, a broad treeless plain in the rain shadow of the Coast Ranges. The region's climate can be characterized as Mediterranean, with hot, dry summers and cool, moist winters. Summer high temperatures typically exceed 100° Fahrenheit (F), with an average of 110 days per year over 90° F. Winter temperatures in the San Joaquin Valley are mild, with an average of 16 days per year with frost (Twisselmann 1967).

Rainfall varies increases from west to east, with the west side of the valley receiving an average of around 4 inches per year and the east side averaging about 6 inches per year. Winter fog, called "tule fog", sometimes forms during the months of November, December, and January, supplementing the annual precipitation. On average, approximately 90 percent of the rainfall occurs between November 1 and April 1. The region periodically experiences drought cycles, the most recent occurring during the mid and late 1980's (Twisselmann 1967).

These conditions have contributed to the formation of vegetation adapted to dry conditions, and which is distinguishable from the Mojave Desert to the east due to tule fog, higher humidity, and isolation from continental climatic influences by mountain ranges (Twisselmann 1967).

2.2 Rivers and Drainages

There are no rivers within the project area.

Two unnamed intermittent streams are located within the project area and indicated on the USGS topographic map for the Oil Center quadrangle. These drainages originate on Section 17 and Section 18 and merge just south of the project site. Combined these drainages total approximately 1 1/4 miles long and extending south off of the project site. Both drainages are primarily dry, with storm events being the primary time that flow may be present. Surface water during these events typically quickly dries or percolates prior to any flow reaching any permanent water source.

2.3 Vegetation

For purposes of this biological resource assessment, the vegetation of the project area may be adequately described utilizing the descriptions defined in Holland (1986). Where an equivalent series has been identified by Sawyer and Keeler-Wolf (1995), the series is shown in parentheses.

Non-native grassland (California annual grassland series)

This community is the primary vegetation of the survey area, and is distributed throughout the project area, both as a community and as an understory component to valley saltbush scrub and riparian vegetation. In the vicinity of the project site, this community is likely maintained by frequent fires. Non-native grasses dominate (bromes, foxtail, fescues, and oats), with showy annual forbs present to a varying degree depending on rainfall. Forbs which are typically present include red-stemmed filaree (*Erodium cicutarium*), owl's clover (*Castilleja exserta* and *C. attenuata*), lupines (*Lupinus* spp.), goldfields (*Lasthenia californica*), fiddleneck, gilia, and several mustards. Cover may be sparse to dense, with annuals typically germinating in late fall and most species flowering in early to late spring. This community is widely distributed through California, usually below 3000 feet.

Valley Saltbush Scrub (allscale series)

In the project area, shrub cover in this vegetation community is typically dominated by common saltbush (*Atriplex polycarpa*). Other shrub species which may be present include spiny saltbush (*A. spinifera*), cheesebush (*Hymenoclea salsola*), and pale-leaf goldenbush (*Isocoma acradenia* var. *bracteata*). The understory typically consists of winter-germinating annuals dominated by non-native grasses such as bromes (*Bromus* spp.), wild oats (*Avena barbata* and *A. fatua*), foxtail (*Hordeum* spp.), and fescues (*Vulpia* spp.). Native spring-flowering annuals may include bird's eye gilia (*Gilia tricolor*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), white layia (*Layia glandulosa*), and several species of phacelia (*Phacelia* spp.). On the project site, this community is very limited and appears to be the result of seeding along a previously disturbed pipeline right-of-way.

2.4 Special Status Species

Conversion and development of natural vegetation found in the southern San Joaquin Valley have occurred for a variety of urban, agricultural, petroleum, and other land uses which have resulted in substantial population declines for several plant and wildlife taxa. These population declines have resulted the listing of several species as rare, threatened or endangered under the respective state and federal endangered species acts.

The occurrence of state- and federal-listed rare, threatened, and endangered species with the potential to be affected by the proposed project were included in this biological resource assessment. In addition, species considered to have "special status" which are not formally listed but which meet the definition of "rare" or "endangered" pursuant to the California Environmental Quality Act should be considered. For this reason, impacts to species classified as rare and endangered by the California Native Plant Society and CDFG species of special concern are evaluated in this report. Special status wildlife and plant species for which suitable habitat is found on the proposed project site are shown in Tables 2.1 and 2.2, respectively. Species accounts for these special status taxa are contained in Appendix A.

Table 2.1
Special Status Wildlife Species with Potential to Occur within the Vicinity of the Kern Canyon Ranch Project

Species	Status* Federal/State	Habitat
Reptiles		
Gambelia sila blunt-nosed leopard lizard	E/E	Open saltbush scrub and grassland habitats, roads and open washes
Phrynosoma coronatum California horned lizard	SC / CSC	Open shrublands and grasslands with sandy soils
Birds		
Accipiter cooperi Cooper's hawk	- / CSC	Regular migrant and winter visitor in open woodlands, riparian areas
Accipiter striatus sharp-shinned hawk	- / CSC	Frequently seen during winter in riparian areas
Aquila chrysaetos golden eagle	BEPA / CSC	Resident of open grasslands and low foothills
Athene cunicularia burrowing owl	- / CSC	Valley grasslands and open saltbush scrub
Circus cyaneus Northern harrier	- / CSC	Common resident of marshlands and grasslands
Falco mexicanus prairie falcon	- / CSC	Resident which forages in open grassland areas, nests in cliff faces or on ledges
Lanius ludovicianus Loggerhead shrike	SC / CSC	Resident which forages in scrub and adjacent grassland habitats, may nest in riparian woodland
Toxostoma lecontei LeConte's thrasher	- / CSC	Prefers mature saltbush scrub for nesting
Mammals		
Ammospermophilus nelsoni San Joaquin antelope squirrel	- / T	Shrublands, especially along washes
Dipodomys nitratoides brevinasus short-nosed kangaroo rat	SC/CSC	Western and southern San Joaquin Valley, saltbush scrub and other low foothill habitats
Perognathus inornatus inornatus San Joaquin pocket mouse	CSC	Sacramento and San Joaquin valleys, surrounding foothills; saltbush scrub and grassland habitats
Taxidea taxus American badger	- / CSC	Grasslands and shrublands of the San Joaquin Valley and surrounding low foothills
Vulpes macrotis mutica San Joaquin kit fox	E / T	Grassland and scrub habitats of the San Joaquin Valley and surrounding foothills

2.0 ENVIRONMENTAL SETTING

*** STATUS ABBREVIATIONS:**

Federal
- E - federally listed as endangered
- T - federally listed as threatened ([1] - Bald eagle and golden eagle are also protected by the Bald Eagle Protection Act)
- C - federal candidate category 1 for listing as threatened or endangered; sufficient information is available to publish a proposed rule regarding listing
- SC - former Category 2 Candidates for listing; now "federal species of concern"

State
- E - state-listed as endangered
- T - state-listed as threatened
- CSC - CDFG species of special concern

NOTES:

1. All bird species included in this table are also protected by the federal Migratory Bird Treaty Act

2. Sources: CDFG (2000), CDFG (1992), MBHCP Steering Committee (1994), and Zeiner (1988)

Table 2.2
Special Status Plant Species with Potential to Occur within the Vicinity of the Kern Canyon Ranch Project

Species	Status* Fed/State/CNPS	Habitat
Caulanthus californicus California jewelflower	E/E/1B	Saltbush scrub
Delphinium gypsophilum ssp. *gypsophilum* gypsum-loving larkspur	- / - / 4	saltbush scrub and grasslands of low foothills, especially north-facing slopes
Eriastrum hooveri Hoover's wooly star	T[1] / - / 4	Open, sparsely vegetated areas in saltbush scrub and grassland
Eriogonum gossypinum cottony buckwheat	-- / --/ 4	Open slopes, especially south-facing
Lembertia congdonii San Joaquin wooly threads	E/ - /1B	Grassland, primarily sandy soils
Opuntia basilaris var. *treleasei* Bakersfield cactus	E/E/1B	Mesas and washes with sandy soils
Stylocline citroleum Oil neststraw	-- / -- /1B	Saltbush scrub

*** STATUS ABBREVIATIONS:**

Federal — E - federally listed as endangered
T - federally listed as threatened ([1] Hoover's wooly star was recently announced as one of several species to be "downlisted"; however, a federal register notice has not yet been published)

State — E - state-listed as endangered

CNPS — 1B - plants which are considered to be rare and endangered in California and elsewhere by the California Native Plant Society
4 - a watch list

Sources: CDFG (2000), CDFG (1997), Skinner and Pavlik (1994), and MBHCP Steering Committee (1994)

3.0 METHODS

The list of special status species which could potentially occur in the vicinity of the project site was compiled by consulting pertinent literature, accessing the CDFG Natural Diversity Data Base, and contacting certain persons familiar with local and regional biological resources.

Biological field surveys were conducted in January, 2000. After an initial evaluation, it was determined that listed small mammals were very unlikely to occur on the proposed project site. Therefore, the transect surveys were focused on habitat evaluation plus detecting San Joaquin kit fox and burrowing owl. The surveys were not conducted at an appropriate time for detecting blunt-nosed leopard lizard or special status annual plant species. Two hundered-foot belt transects were walked with each observer being responsible for evaluating all burrows and dens within 100 feet of the centerline of the transect. If observed, important habitat elements for special status species were noted and mapped (i.e. open ground for blunt-nosed leopard lizard). In addition, plant communities were mapped.

Direct observations of special status species and their "sign" (scat, tracks, tail drags, etc.) were noted if encountered during the surveys. San Joaquin kit fox were assumed to be present in the project vicinity based on past direct observation of kit fox and presence of known kit fox dens near the project site. Therefore, scent station surveys and spotlighting were not conducted for this species.

Only known San Joaquin kit fox dens were mapped, including suspected pupping dens. Known dens are those burrows or artificial structures which measure between approximately 4 and 12 inches in height, which exhibit sign (scat, tracks, claw marks, prey remains) indicating past or present kit fox use, or other characteristics which, in the judgement of the biologist, are characteristic of dens which have been used by kit fox.

Potential San Joaquin kit fox dens are burrows or artificial structures which meet the same size criteria as known dens, but exhibit no sign of kit fox use. Due to the large number of squirrel colonies within the survey containing burrows meeting the criteria for potential dens and the length of time before project construction is likely to commence, potential kit fox dens were not mapped.

4.0 RESULTS

4.1 Wildlife

A list of wildlife species observed during the surveys is included in Appendix B. No listed threatened or endangered wildlife species were directly observed during the surveys. However, other sign of site utilization by listed wildlife species was observed.

4.1.1 Listed Wildlife Species

Blunt-nosed leopard lizard (*Gambelia sila*)

Species specific surveys for blunt-nosed leopard lizard were not conducted. Suitable habitat for this species was distributed throughout the project site, especially in sparsely vegetated grassland flats and along unpaved trails and roads. However, a good portion of the project site consisted of very dense annual grasses such as foxtail (*Hordeum leporinum*), bromes (*Bromus* spp.), and wild oats (*Avena barbata*), which are generally poor habitat for this species.

Direct observations by the author and discussions with other biologists familiar with the area resulted in several known locations for this species in the vicinity of the project site which did not appear in the CNDDB report. Three of these sightings were reported along the western boundary of Section 17, within the proposed Kern Canyon Ranch project (Rado and Mitchell 1993).

San Joaquin Antelope Squirrel (*Ammospermophilus nelsoni*)

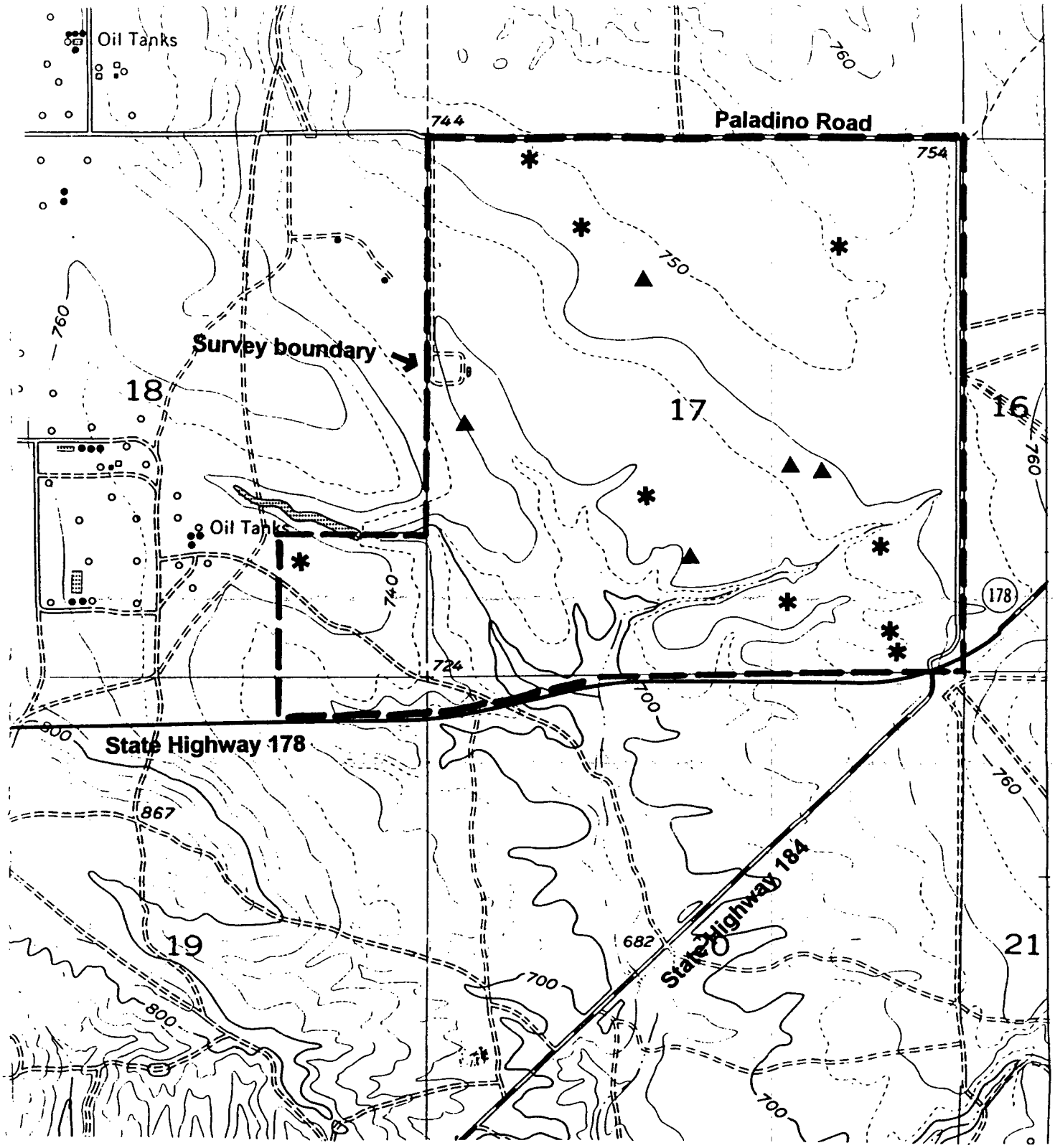
Surveys were conducted under appropriate conditions to observe this species. However, San Joaquin antelope squirrels were not observed during site surveys. Although suitable habitat is present, it is unlikely that this species occurs on the project site. Despite extensive surveys in the vicinity of the project site, no San Joaquin antelope squirrels have been observed recently. It is thought that they may be extirpated from this area based on the fact that no antelope squirrels have been observed north or east of Bakersfield since the 1970's (Williams 1986).

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Five known San Joaquin kit fox dens were observed in the Section 17 portion of the proposed project (Figure 2). Potential dens were common throughout the survey area, primarily within the widespread ground squirrel colonies in the survey area. Kit fox scat was observed throughout the survey area; therefore, it is likely that San Joaquin kit fox forage over the entire site.

4.1.2 Other Wildlife Species of Concern

Several burrowing owls and burrowing owl burrows were observed throughout the survey area (Figure 2). Loggerhead shrikes and a golden eagle were also observed during the survey. No other unlisted species of concern were directly observed during the surveys. No diagnostic kangaroo rat sign (scat, tracks, tail drags, burrows) was observed.



▲ - Known San Joaquin kit fox den

✱ - Burrowing owl burrow

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4.0 RESULTS

4.2 Vegetation

4.2.1 Plant Communities

Plant communities are described in Section 2.3, Vegetation. In addition, plants observed during the surveys are listed in Appendix C. This plant list is extremely limited, based on the winter season of the the survey. The survey area consisted primarily of non-native grassland with some areas of saltbush scrub present along the western boundary of Section 17 in an area that appeared to have been reseeded in association with a pipeline right-of-way.

4.2.2 Listed Plant Species

California Jewelflower (*Caulanthus californica*)

California jewelflower was not observed during the surveys; however, surveys were completed too late in the season to identify this annual. The nearest presumed extant location for California jewelflower is several miles to northeast, off of Rancheria Road in the low Greenhorn Range foothills. Although some marginally suitable habitat was present, frequent grass fires, discing, offroad vehicle use, oil development, and other disturbances make it unlikely that this species occurs in the project area.

Hoover's wooly star (*Eriastrum hooveri*)

The survey was not conducted at an appropriate time for observation of Hoover's wooly star. No populations of this species are known from the vicinity of the project site and it is considered unlikely that it is present.

San Joaquin wooly threads (*Lembertia congdonii*)

An occurrence for San Joaquin wooly threads is recorded by the CNDDB approximately four miles west of the proposed project site. However, this population was last seen in 1905 and is very likely extirpated. No suitable habitat was observed during the surveys for the project, primarily due to the fact that the entire site has been disced in the past. Although the survey was not conducted during an appropriate season for observation of this species, it is unlikely that it occurs within the project area. In addition, other surveys conducted during the appropriate period in the vicinity have not resulted in observation of this species (Rado and Mitchell 1993, BRC 1998).

Bakersfield Cactus (*Opuntia basilaris* var. *treleasei*)

Sixteen existing populations of Bakersfield cactus are reported by the CNDDB on the USGS Oil Center Quadrangle. The nearest existing population is found in Section 24, T. 29 S., R. 28 E., M.D.B. and M., approximately one mile west of the proposed project site (CDFG 2000). In

addition, a small population was reported less than ½ mile northwest of the project site's northwestern corner (BRC 1998). These populations represent remnant populations of this cactus, which once formed "dense almost impenetrable colonies" throughout the area (Moe and Twisselmann 1994).

Surveys for Bakersfield cactus may be conducted at any time during the year. Bakersfield cactus was not observed within the proposed project area during the surveys.

4.2.3 Other Plant Species of Concern

Although the surveys were not conducted during an appropriate period for identification of sensitive annual plants, based on the disturbance history of the project site, it is considered unlikely that any of these species would be impacted by the proposed project.

5.0 IMPACTS

5.1 Impact Significance

Impacts to biological resources may be considered significant if a project has the potential to substantially degrade the environment, substantially reduce the habitat of a fish or wildlife species or cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. Additionally, Appendix G of the California Environmental Quality Act Guidelines lists several effects which may result in a project being deemed "to have a significant effect on the environment", with the following pertaining to biological resources:

- Conflict with adopted environmental plans and goals of the community where it is located;
- Substantially affect an endangered, rare, or threatened species of animal or plant or the habitat of the species;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species; or,
- Substantially diminish habitat for fish, wildlife, or plants.

The word "substantial", in the case of effects on rare or endangered plants and animals would depend on the sensitivity and status of the species potentially affected, as well as the type and magnitude of the effect. Generally, "take" of any listed threatened or endangered species would constitute a significant effect. For other than listed species, significance depends on the duration and intensity of the impact and, absent statutory protection, would be the responsibility of the local lead agency to determine. For this report, losses of habitat or population that are expected to be measurable 5 or more years after the initial impact are considered to be long term, and impacts of lesser duration are considered short term. Impacts that are short term or small in scope are typically less likely to be significant, but the threshold for significance will be lower for resources of concern to the public and regulatory agencies. All impacts to biological resources associated with the proposed project would be considered long term.

5.2 Direct Impacts

5.2.1 Special Status Species Included in the MBHCP

"Take" of listed threatened and/or endangered species may occur in association with implementation of the proposed Kern Canyon Ranch project. Based on the current survey results, the only listed species likely to occur on the proposed project site are San Joaquin kit fox and blunt-nosed leopard lizard. Four known San Joaquin kit fox dens were observed in Section 17. Potential kit fox dens would be impacted by project construction. Destruction or disturbance to burrows or dens could displace threatened and endangered species into adjacent areas which are

either unsuitable or already occupied. Individual kit foxes and/or blunt-nosed leopard lizards could be crushed in burrows within the construction area. An increase in vehicle traffic and access to offroad areas in the project area would also expose wildlife to an increased probability of vehicular mortality.

Other special status species which may occur within the project area which are also covered under the MBHCP include San Joaquin pocket mouse. Although direct observations of this species cannot be made without conducting small mammal trapping, many small mammal burrows suitable for this species were observed during the survey throughout the proposed project site.

5.2.2 Special Status Species not Included in the MBHCP

Other upland special status species which are likely to occur in the project area would be subject to the same potential direct impacts as listed species. Species which were observed during surveys or are likely to occur within the project area include Cooper's hawk, sharp-shinned hawk, burrowing owl, northern harrier, prairie falcon, and loggerhead shrike. Impacts to these species could occur as a result of all project implementation.

Other special status species not included in the MBHCP which are unlikely to be impacted due to the small amount of suitable habitat or probable infrequent use of the site vicinity include, golden eagle and LeConte's thrasher.

It is unlikely that any unlisted special status plant species would be impacted by the proposed project.

5.2.3 Breeding Birds

Grasslands and saltbush scrub contain habitat elements which potentially support breeding birds, their nest and young. Species such as burrowing owls use burrows in grassland habitats and several ground-nesters, such as western meadowlark and killdeer, use this habitat type as well. If project construction occurs during bird nesting season (for most species, March 15 through July 31), nests, eggs, and/or young of species protected by the Migratory Bird Treaty Act could be disturbed, in violation of this statute.

5.2.4 Vegetation

Habitat loss through conversion to agricultural, urban, and oilfield uses is the primary reason for the listing of threatened and endangered species of the southern San Joaquin Valley. The implementation of the proposed project would result in permanent loss of approximately 684 acres of non-native grassland and approximately 10 acres of saltbush scrub vegetation.

5.2.5 Rivers and Drainages

Although no riparian or wash vegetation is present, areas potentially regulated by ACOE and CDFG within the unnamed blueline streams within the proposed project area would be impacted by project activities. Project impacts to these blueline streams would be potentially significant.

5.3 Indirect Impacts

5.3.1 Offsite Habitat Degradation

Increased human activity along the margins of the project area are likely to result in degradation of adjacent habitat. Increased litter, noise, vegetation trampling, and the potential for wildlife harassment are likely to occur.

Maintenance of vegetation free areas adjacent to facilities favors introduction of alien plant species into these and adjacent areas. Landscaping could result in introduction of invasive alien plant species to adjacent habitat areas, decreasing the habitat quality for native species.

These impacts would be potentially significant.

5.4 Cumulative Impacts

The continuing loss of non-native grassland and saltbush scrub habitats which support special status species endemic to the southern San Joaquin Valley represents a cumulative impact of the project. The urban development which could follow the proposed project would serve to exacerbate this habitat loss. All of the lands that would be served by the proposed water facilities are included within the City of Bakersfield 2010 boundary, the limits of the MBHCP. Compensation for habitat loss through this habitat conservation plan would reduce these impacts. Cumulative impacts from development in general within the 2010 boundary have additionally been analyzed in the MBHCP (MBHCP Steering Committee 1993).

6.0 PROPOSED MITIGATION

6.1 Measures to Mitigate Direct Impacts

6.1.1 Special Status Species Included in the MBHCP

The proposed project site is within the plan area for the Mettropolitan Bakersfield Habitat Conservation Plan (MBHCP). Therefore, for upland species included within the MBHCP, primary mitigation would consist of participation in this program through compensation for habitat disturbance and implementation of take avoidance measures.

The following is a summary of measures in the MBHCP which pertain to this project site:

- Compensation for each acre of disturbance at the current mitigation fee;
- Monitoring and excavation of each known San Joaquin kit fox den which cannot be avoided by construction activities; and
- Notification of wildlife agencies of relocation opportunity prior to ground disturbance in areas where known kit fox dens.

To implement measures regarding San Joaquin kit fox, a map of the known dens observed during this survey shall be submitted to the MBHCP Implementation Trust Group. In addition, a preactivity survey shall be conducted not more than 30 days prior to the onset of construction activities in areas subject to development to determine the necessity of den excavation.

The following measures shall be implemented to further reduce impacts to these species:

- All pipes, culverts, or similar structures with a diameter greater than 4 inches shall be capped or blocked to prevent entry by San Joaquin kit fox and other wildlife. If pipe is not capped (i.e. short pipe segments stockpiled prior to use), it should be inspected for kit fox. If any kit fox are observed within pipe, they shall be allowed to escape unimpeded;
- all trenches or steep-walled excavations greater than three feet deep shall include escape ramps to allow wildlife to escape. Each excavation shall contain at least one ramp, with long trenches containing at least one ramp every 1/4 mile. Slope of ramps shall be no steeper than 1:1;
- all employees, contractors, or other persons involved in the construction of the project shall attend a "tailgate" session informing them of the biological resource protection measures which will be implemented for the project. The orientation shall be conducted by a qualified biologist and shall include information regarding the life history of the protected species, reasons for special status, a summary of applicable environmental law, and measures intended to reduce impacts.

6.0 PROPOSED MITIGATION

Because "take" of blunt-nosed leopard lizards is also currently prohibited by Section 5050 of the California Fish and Game Code, additional measures are necessary to comply with this section:

- Surveys for blunt-nosed leopard lizards shall be conducted following CDFG protocols. These surveys should be conducted between April 15 and June 30 under the specified time and temperature conditions. This survey is necessary to determine the current status of blunt-nosed leopard lizards on the project site.

- If blunt-nosed leopard lizards are detected, the applicant shall submit methods for compliance with Fish and Game Code Section 5050 to CDFG for review and approval.

The MBHCP covers the following listed species which have been identified as being potentially impacted by the proposed project: blunt-nosed leopard lizard and San Joaquin kit fox. Based on the broad, ecosystem-based approach of the MBHCP, compensation through participation in this plan would be sufficient to mitigate for loss of habitat for other potentially occurring upland non-listed special status species potentially occupying the project area.

6.1.2 Special Status Species not Included in the MBHCP

No additional mitigation measures are necessary.

6.1.3 Breeding Birds

Native bird and raptor nests are protected under the Migratory Bird Treaty Act. If possible, all site grading and activities which could directly impact native bird and/or raptor nests (including burrowing owl) should be conducted between September 1 and January 31, during the non-breeding season for most bird species. If these activities must be conducted during the breeding season (February 1 through August 31), a biologist shall survey the vegetation for bird nests prior to grading. If no active bird nests are located, grading in areas where no active nests are present could occur during breeding season. The following measure will be implemented to reduce potential impacts to native birds and raptors:

- In compliance with Sections 3503 and 3503.5 of the California Fish and Game Code, if grading is to occur during the native bird and raptor nesting breeding season (February 1 through August 31), a qualified biologist shall determine the presence of any native bird and raptor nests prior to or concurrent with grading activities. In addition, CDFG will be contacted to obtain and comply with all appropriate procedures relative to grading operations in proximity to any active nests identified. Resulting mitigation measures may include restricting construction activities near native bird and raptor nesting sites during and immediately following the breeding season.

- A preconstruction survey shall include a survey for burrowing owl. If active burrowing owl burrows are detected outside of breeding season (September 1 through January 31), passive and/or active relocation efforts may be undertaken if approved by CDFG and USFWS. If active burrowing owl burrows are detected during breeding season (February 1 through August 31), no disturbance to these burrows shall occur without obtaining appropriate permitting through the Migratory Bird Treaty Act.

6.1.3 Vegetation

Loss of vegetation associated with non-native grassland and valley saltbush scrub would be adequately mitigated through implementation of measures included in Section 6.1.1, above.

6.1.4 Rivers and drainages

CDFG and ACOE should be contacted to determine whether the intermittent streams on the project site fall within the jurisdiction of either of these agencies. Subsequent to the formal delineation, the following mitigation measure will be implemented to reduce potential impacts to jurisdiction streambeds to a less than significant level:

- Prior to the issuance of a grading permit and/or approval of plans and specifications, there will be a determination as to whether the proposed project could potentially affect jurisdictional streambeds. If there is a potential to affect jurisdictional streambeds, California Fish and Game Code, Section 1601 Streambed Alteration Agreement and/or a Clean Water Act permit from ACOE will be obtained from CDFG and/or ACOE, respectively. The CDFG and ACOE typically require mitigation plans to be prepared prior to the loss of habitat within streambeds.

6.2 Measures to Mitigate Indirect Impacts

6.2.1 Offsite Habitat Degradation

- During construction, site boundaries shall be clearly marked with flagging, fencing, or other suitable material to prevent construction equipment and vehicles from impacting adjacent habitat areas potentially occupied by special status species.

- All trash and food waste shall be disposed of in closed containers and regularly removed from the project construction site. Absolutely no deliberate feeding of wildlife shall be allowed.

- The following invasive exotic plants shall not be used in any project residential or commercial landscaping: tamarisk (all species) and pampas grass. In addition,

vegetation at any ponds or water features shall be managed in a way such that none of the invasive exotic plants listed by the Department of Agriculture allowed to become established. Typical invasive exotic plants that can become problematic in this region include: water hyacinth and pampas grass.

6.3 Significance of Impacts After Mitigation

Implementation of the mitigation measures included in this section will reduce potential project impacts to identified biological resources to less than significant levels.

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APPENDIX A

Brief Descriptions of Special Status Species Known to Occur (historically and currently) in the Vicinity of the Project Site in Similar Habitats

Reptiles

Gambelia sila
blunt-nosed leopard lizard

The blunt-nosed leopard lizard is a relatively robust lizard with a large head and blunt snout. It was historically distributed over the San Joaquin Valley adjacent lower foothills, plains, and valleys. Adult total length may reach up to 13 inches. Coloration consists of a light grayish, tan, or brown background with a conspicuous pattern of dark overlaying spots and/or pale crossbars. During the spring courtship season both sexes may develop reddish markings on the sides, tail, and ventral surfaces. Juveniles usually show a similar, but more yellowish pattern.

Blunt-nosed leopard lizards are active during the day, primarily between the months of April and October. Peak daily activity usually occurs when air temperatures are between 75 and 95 degrees Fahrenheit. Animals overwinter underground in rodent burrows. Food consists primarily of insects such as grasshoppers, although smaller lizards may also be consumed.

Leopard lizards occur on sparsely vegetated plains, lower canyon slopes, on valley floors, and in washes. Associated vegetation may include a variety of grasses, saltbush, golden bush, iodine bush, and seepweed.

Phrynosoma coronatum
California horned lizard

The California horned lizard is a flat bodied lizard that is up to 6 inches in length. It has a large crown of spines on the posterior portion of its head. The cranial spines of the California horned lizard tend to be similar in size, whereas the central two spines tend to be longer in the other subspecies. There are large dark spots on the side of its neck and there are two rows of pointed scales at the fringe of its trunk. Coloration is reddish, brown, yellow, or gray with dark blotches on the back; coloration is variable and is possibly dependent upon soil coloration. This lizard lays a clutch of 6 to 12 eggs in May or June, and hatchlings emerge in July or September. Their main food source is ants.

This lizard is diurnal and will inflate with air when frightened to avoid predation. Other defensive strategies include threatening would-be enemies with an open mouth and hissing noises, tilting its head to expose the cranial spines, biting, and spraying blood from the corner of its eyes.

The California horned lizard occurs along the coast north of San Francisco Bay to Los Angeles, and inland into the Sacramento and San Joaquin valleys. It inhabits open areas of sandy soil with low sparse vegetation.

Birds

Accipiter cooperi
Cooper's hawk

This medium-sized hawk (length = 14-20 inches; wing span = 29-37 inches) is mostly brown above, with the male being more bluish above and more heavily marked (barred) below. The tail is strongly barred on the underside. Juveniles are lighter below, with fine streaks in the chest area. As in most raptors, the female is substantially larger than the male (app 1/4 to 1/3 larger). The long tail and short, rounded wings are characteristic of the genus *Accipiter*. Also diagnostic of the genus is the flight profile, which consists of a series of strong, rapid beats followed by a glide. Cooper's hawks can be confused with the similar but smaller sharp-shinned hawk, as these two species have similar coloration and body proportions. However, the larger size, proportionately larger head, more distinaive black cap, and longer, more rounded tail distinguishes the Cooper's hawk.

Accipiter striatus
Sharp-shinned hawk

Sharp-shinned hawks are similar in appearance to Cooper's hawks, but smaller. Their diet consists primarily of birds. In the project area, riparian woodlands provide suitable habitat for this species.

Aquila chrysaetos
Golden eagle

The golden eagle is a large, brown raptor (length = 30-40 inches; wing span = 80-88 inches) that, in the western states, occurs primarily in open, mountainous areas, foothills, canyons, and plains. Large size and flat-winged soaring distinguish the golden eagle from large hawks. Immature golden eagles may be distinguished from immature bald eagles by their thinner bills and relatively smaller heads. In flight, as viewed from below, immature golden eagles show more clearly defined white patches at the base of the primaries and also a distinctive white tail with a dark terminal band.

The golden eagle is a circumpolar species that occurs over much of the United States and southern Canada. In the western United States, it is a year-round resident. Nesting occurs in trees and on cliff faces. Their diet consists primarily of mammals (mostly lagomorphs and ground squirrels), birds, and snakes.

Athene cunicularia
Burrowing owl

Adult burrowing owls are sandy colored over the head, back, and wings, with barring on the breast and belly. Juveniles are smaller, and buffy below. Burrowing owls are medium-sized (body length averages 9.5 inches), yellow-eyed owls with disproportionately long legs. The tail is very short; the head is rounded and lacks ear tufts. The long, exposed lower legs, and the characteristic "bowing" behavior that the bird displays when approached or otherwise disturbed, quickly distinguish this owl from all other small owls. During the nesting season, the burrowing owl often perches on a low post or at the entrance to a burrow. Calls are often synchronized with bowing behavior. When approached or flushed, both sexes commonly give a sharp "chatter" call.

Resident burrowing owls begin pair formation as early as December, and migratory birds begin upon their arrival in the breeding area, usually in March and April. Six to eleven eggs are laid during late March to early

May. Incubation lasts about four weeks. Nests are generally located in bare, level ground in abandoned mammal burrows.

Burrowing owls inhabit dry, open grasslands, rolling hills, desert floors, prairies, savannas, agricultural land. and other areas of open, bare ground. These owls will also inhabit open areas near human habitation, such as airports, golf courses, shoulders of roads, railroad embankments, and the banks of irrigation ditches and reservoirs.

Buteo swainsoni
Swainson's hawk

Swainson's hawk is a medium-sized (to 18 inches), dark breasted hawk of grasslands and open woodlands in California, preferring riparian trees for nesting. Certain types of agricultural fields adjacent to riparian areas also provide foraging habitat for nesting pairs. Diet includes rabbits, lizards, snakes, frogs, and occasionally insects.

Reduction of riparian habitat in California has reduced the nesting range of this species to primarily the Sacramento Valley, with occasional nesting to the south through Kern County. Fairly large numbers of these hawks migrate through the Central and San Joaquin valleys to their wintering grounds in South America.

Circus cyaneus
Northern harrier

The northern harrier is a medium-sized (length = 17-24 inches; wing span = 38-48 inches), relatively slender hawk that is most easily recognized by its conspicuous white rump. Wings are comparatively long, as in falcons, but are more rounded. This raptor is unusual in that sexual dichromatism is pronounced: females are mostly brown above and white with brown streaks below, whereas males are generally grayish above, white below, and the wing tips are black. Also diagnostic is the erratic flight of leisurely wing beats and swift glides, usually low to the ground, and with wing tips up-turned. Harriers also often perch close to the ground.

Northern harriers range throughout North America, and in California they are usually year-round residents (some southern California birds may be over-winter visitors). Formerly known as the marsh hawk, these birds primarily inhabit marshes, fields, and prairies. Diet consists primarily of small rodents, though frogs, reptiles, and insects are also taken (Ehrlich *et al* 1988).

Falco mexicanus
Prairie falcon

The prairie falcon is a medium-sized falcon (length = 15 -20 inches; wing span ~ 35-43 inches) of mostly brown coloration. The underside is creamy white and heavily spotted with brown. Long, pointed wings and long tail distinguish this species from other, non-falcon raptors. Prairie falcons are very powerful flyers, and are among the fastest of birds. Among similar species, the peregrine falcon has a darker dorsal surface and more black on the face. In flight the Prairie Falcon is easily identified by the presence of dark patches in the axillary region (= wingpits).

Prairie falcons occur in arid portions of western North America. Northern individuals (e.g., from eastern Washington and southern Canada) may winter in Mexico, whereas in California the species is a year-round resident. This is a bird of generally dry, open country such as plains, prairies, and deserts, and can be relatively common in canyon country, where it is attracted to the nesting sites afforded by cliffs and rock

outcrops. The diet of prairie falcons consists primarily of small mammals and birds, although a variety or other prey species may also be taken (e.g, lizards, insects) (Ehrlich *et al* 1988).

Lanius ludovicianus
Loggerhead shrike

The loggerhead shrike is a robin-sized bird (length = 9 inches) with a raptor-like, hooked bill. Dorsal coloration is bluish-gray, and ventral coloration is whitish, with very faint barring. Juveniles are more brownish. Most distinctive is the black eye mask, and in flight, the white wing patches on the contrasting dark wings. Distinguished from the northern mockingbird, which it resembles in flight, by darker wing and smaller white wing patches. The mockingbird also lacks conspicuous eye patch and hooked bill, and has slower wing beats.

This shrike occurs over most of the U.S., Mexico, and central Canada. In California, the shrike occurs as a resident over most of the state, being absent from high mountain regions. Habitat consists of open areas, such as savannas and deserts, where bushes, small trees, or other perch sites are available. Lacking talons, the shrike impales its prey to facilitate feeding, or to store it for future consumption. Diet includes a variety of insects and spiders, small reptiles, rodents, and small birds (Ehrlich *et al* 1988).

Toxostoma lecontei
LeConte's thrasher

LeConte's thrasher is the palest in color of all the thrashers. It has sandy gray plumage with a somewhat dark tail. The bill and eye are dark and it has a yellowish tinge on the rump. Its bill is down-turned and it is often observed perching atop saltbush shrubs, other tall shrubs, and fence posts.

LeConte's thrashers inhabit arid, sparsely vegetated deserts of southern Nevada, western Arizona, extreme northwestern Mexico, and southeastern Califomia. It is also found in the arid SanJoaquin Valley. It runs with surprising speed across open desert or along washes. It is uncommon throughout most of its range and is rare in the San Joaquin Valley.

Mammals

Ammospermophilus nelsoni
San Joaquin antelope squirrel

The San Joaquin antelope squirrel is a small, yellow-brown squirrel with two distinguishing white stripes along dorsal side of the body. In contrast to other listed mammals in their range, these squirrels are diurnal and are active year-round. Their young are apparently born in March and appear above ground in early April (Kakiba-Russell et al. 1991). San Joaquin antelope squirrels are most often found in grasslands or open shrublands. Associated shrubs include saltbush, ephedra, bladder pod (*Isomeris arborea*), goldenbush (*Isocoma acradenius= Haplopappus a.*), snakeweed (*Gutierrezia bracteata*), and others. San Joaquin antelope squirrels are omnivorous, with a diet consisting primarily of grass and herb seeds and insects (CDFG 1989). It appears that San Joaquin antelope squirrels rarely occupy burrows they have dug; instead, they tend to use burrows dug by kangaroo rats. In grassy, shrubless areas, Harris and Stearns (1990) found San Joaquin antelope squirrels only in areas with high kangaroo rat densities.

The San Joaquin antelope squirrel originally occurred on the western side of the San Joaquin Valley from southern Merced County south to Kern County, the Carrizo Plain in San Luis Obispo County, and the Cuyama Valley in San Luis Obispo and Santa Barbara counties (CDFG 1980). Prior to cultivation of the San

Joaquin Valley, the San Joaquin antelope squirrel occupied approximately 3,456,000 acres (Williams 1980). More than 80 percent of this estimated original geographic range is now under cultivation, with this species having been nearly extirpated on the eastern side of the San Joaquin Valley (Wlliams 1980). No large tracts of prime habitat remain, and only about 15 percent of the remaining habitat is considered to be good to fair in quality. San Joaquin antelope squirrels now occur only in the southwestern portion of the San Joaquin Valley and in adjacent valleys to the west (Williams 1980).

Dipodomys nitratides brevinasus
Short-nosed kangaroo rat

The short-nosed kangaroo rat is a small species of the genus *Dipodomys*, measuring up to 9 inches in total length. It is one of three recognized subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides*). Overall appearance is that of a compact rodent, with a flattened head, small ears, short neck, and cylindrical body. The hind legs are elongated and serve as the principal means of locomotion. The long tufted tail, comprising about one-half of the total length of the animal, provides balance. Coloration is brownish above changing to whitish ventrally. The presence of four toes on the feet of this taxon helps to distinguish it from other sympatric kangaroo rat species (Uptain 1989).

Short-nosed kangaroo rats excavate shallow burrows from which animals emerge at night to forage for seeds. Often, all or a significant portion of the nightly harvest is cached for later use. When foraging, kangaroo rats hold seeds in fur-lined pouches on the sides of the mouth. Little information is available on the population densities of short-nosed kangaroo rats.

Short-nosed kangaroo rats are generally found on flat and gently sloping terrain and on hill tops in scrub vegetation (primarily saltbush). They are found on friable, sometimes alkaline soils. Light to moderate grazing by livestock probably enhances habitat for short-nosed kangaroo rats (Wlliarns 1986).

Short-nosed kangaroo rats are found on the western side of the San Joaquin Valley, from near Los Banos, Merced County, southward west of the San Joaquin River in a line approximately coincident with the Kettleman Hills, Lost Hills, and Elk Hills of the southern end of the Valley. They also occur in the Panoche Valley, San Benito County, the Sunflower Valley, Kings County, the Antelope Plain in Kern County, the Carrizo Plain in San Luis Obispo County, the Cuyama Valley in San Luis Obispo and Santa Barbara counties, and at the edge of the valley floor around the southern end of the San Joaquin Valley from the vicinity of Maricopa on the west, to east of Bakersfield on the east (Hall 1981, Williams 1985, and unpubl data. in Williams 1986).

Perognathus inornatus inornatus
San Joaquin pocket mouse

San Joaquin pocket mouse is a small buff-brown pocket mouse with some guard hairs but no bristles or spines as in some other pocket mice. This species has an indistinct lateral line along its side and a unicolored tail. The San Joaquin pocket mouse measures between 5 and 6.2 inches long with a 2.5 to 3 inch long tail (Jameson and Peeters 1988).

San Joaquin pocket mice are found throughout all habitat types in the San Joaquin Valley and surrounding foothills. The species' distribution is not well-defined and they have been historically found from the Sacramento Valley south through the San Joaquin Valley and into the lower elevations of the Sierra and Coast Ranges (Thomas Reid and Associates 1990).

Taxidea taxus
American badger

American badgers are low, squat animals with conspicuous silver-tipped pelage dorsally and a short, black-tipped tail. The most striking visual feature of this species is its striped face, consisting of a median white stripe proceeding from the tip of its nose to the back of its head. This stripe is flanked by alternating white and dark stripes giving way to bright, white-outlined ears. The badger's wide flattened body is supported by short but powerful legs. The front feet are fitted with noticeably long claws that are especially well-suited for digging out the burrows of the rodents on which it feeds.

Historically, badgers are thought to have been fairly widespread in the open grassland habitats of the lower San Joaquin Valley. Their modern San Joaquin Valley distribution is essentially restricted to the limited, often isolated and remote tracts of native grassland and shrubland habitats. Cultivated lands have been reported to provide little usable habitat for this species, and badgers are believed to be declining throughout Califomia (Williams 1986).

Badgers are solitary animals. They usually forage for burrowing prey such as gophers, ground squirrels, marmots, and kangaroo rats, although they are known to take a variety of nesting mammals, reptiles, and birds.

Vulpes macrotis mutica
San Joaquin kit fox

The San Joaquin kit fox is one of the eight recognized subspecies kit fox. It resembles a small lanky dog in appearance, with disproportionately large ears containing an abundance of large, white inner guard hairs. The San Joaquin kit fox is the largest subspecies of kit fox, with adults weighing 4.5 to 5 pounds (2-2.3 kg). Total length is about 32 inches, including up to a 12-inch black-tipped tail. Coloration ranges from light buff to grayish along the back and tail, gray, rust, or yellowish along the sides, and white on the belly (O'Farrell 1983).

San Joaquin kit foxes are generally nocturnal and are opportunistic carnivores. They feed on rodents, lagomorphs, birds, reptiles and insects, as well as on carrion such as road kills. Studies indicate that the primary food items may vary geographically and seasonally (Kakiba-Russell et al. 1991).

Dens are typically excavated in loose soil (O'Farrell 1983), but also occur in harder clay soils in the northem portion of their range. Dens are not found in saturated soils or in areas subjected to periodic flooding (Kakiba-Russell et al. 1991). Individual animals may utilize from 3 to 24 separate dens (Morrell 1972). Number of den entrances may range from 1 to 36 (O'Farrell 1983), and may extend into several tunnels and chambers reaching depths of up to 10 feet (O'Farrell 1987). Most dens are vacant at any given time. During times when dens are unoccupied kit fox, they may be occupied by other burrowing animals such as badger, ground squirrels, skunks, and burrowing owls (Kakiba-Russell et al. 1991). Although occupied dens may show freshly excavated soil, scats, and prey remains (O'Farrell 1987), sign may also be inconspicuous or absent (Hall 1983). Typical den entrances are characteristically higher than wide, and are small enough to prevent access by large carnivores such as coyotes. Den entrance hole dimensions are generally about 8 to 10 inches in height and less than 8 inches in width (O'Farrell 1987), but may be as small as 4 inches in width. Burrows of other animals, particularly Califomia ground squirrels (Spermophilus beecheyi), are opportunistically enlarged and utilized as den sites by San Joaquin kit foxes (Balestreri 1981). Most dens are found in areas with slope angles of less than 40 degrees, and natal and pupping dens are found more frequently on gentle slopes or in flat terrain. Man-made structures such as culverts and pipes may also be used as dens (O'Farrell 1983).

Individual San Joaquin kit foxes have an average home range of 1 to 2 square miles (Knapp 1978; Morrell 1972). Courtship and mating occur in December and January. Pups are typically born in February and March, and begin to disperse at around five months of age (Morrell 1972; O'Farrell 1983). About 75% percent of kit fox pups die before the age of eight months (O'Farrell 1984).

San Joaquin kit foxes occur in Valley Saltbush Scrub, Valley Sink Scrub, Interior Coast Range Saltbush Scrub, Upper Sonoran Sub-shrub Scrub, Non-native Grassland, and Valley Sacaton Grassland. In general, kit fox are not found in densely wooded areas, wetland areas, or areas subject to frequent periodic flooding. Habitats altered by agricultural and urban developments are unsuitable for long-term kit fox inhabitance (Kakiba-Russell et al. 1991).

The San Joaquin kit fox was historically distributed over a large portion of central California, extending roughly from southeastern Contra Costa County south along the eastern flanks of the Interior Coast Range to the southern San Joaquin Valley, including major portions of western Kern County and Tulare County. San Joaquin kit fox were also distributed through adjacent valleys, foothills, and plains, including portions of San Luis Obispo County, Monterey County, and the Santa Clara Valley on the western side of the Interior Coast Range (Morrell 1975).

Habitat conversion for agricultural and a variety of urban uses has been the principal cause of kit fox population declines, and the reason for both state and federal listing of this species. O'Farrell (1983) estimated that approximately 42 percent of suitable kit fox habitat was lost as a result of such developments. Since that estimate was made, substantial additional habitat loss has occurred. Mortality of kit foxes has been documented from attacks by coyotes, road kills, conversion of habitat, shooting, drowning, entombment, pneumonia, and starvation (Morrell 1975; Knapp 1978; O'Farrell et al. 1986; Berry et al. 1987). Additionally, the use of certain rodenticides has resulted in secondary mortality, since kit foxes are vulnerable to poisoning through consumption of poisoned rodents (USFWS 1985b).

Plants

Caulanthus californicus
California jewelflower

The California jewelflower is an annual reaching a height of 6 to 15 inches. Foliage is gray-green, with heart-shaped clasping stem leaves and wavy margined strap-shaped basal leaves. Unopened flowers appear deep maroon in color. Open flowers are white to greenish-yellow. Suitable habitat for this species is non-alkaline to slightly alkaline sandy loam soils of relatively undisturbed grassland communities below an elevation of 3,000 feet.

Historically, the range of the species included the upper San Joaquin and adjacent valleys from Coalinga in the northwest to the Cuyama Valley in the southwest. Of 55 historical locations, approximately twenty extant populations remain (Skinner and Pavlik 1994). Recently, extant populations have been found on the Carrizo Plain in San Luis Obispo County, and in the Kreyenhagen Hills of Fresno County. An attempt has been made to establish an artificial population at the Paine Wildflower Preserve, Kern County.

Delphinium gypsophilum ssp. *gypsophilum*
Gypsum-loving larkspur

Gypsum-loving larkspur is a perennial in the buttercup family which reaches a height of up to 4 ½ feet. It has a white, inconspicuous flower within generally white sepals along the flowering raceme.

As its name implies, gypsum-loving larkspur frequently occurs on gypsum-rich soils in chenopod scrub and grassland habitats. In favorable years, it occurs on north-facing slopes with other soil types as well.

Eriastrum hooveri
Hoover's wooly star

Hoover's wooly star is a small annual species that reaches a height to 6 inches. Stems typically support erect branches. Leaves are entire and linear, three-cleft with two lateral lobes. The small and inconspicuous flowers are organized into small heads. Corollas range in color from pale bluish to white or cream yellow. Capsules are oblong-ellipsoid with two to four seeds each. Flower usually appear in mid-to late spring (April to May). The habitat for Hoover's wooly star is valley grassland with scattered saltbush (*Atriplex polycarpa* or *A. spinifera*). The plants are often found in openings in Atriplex Scrub where cryptogamic crusts have developed on the soil surface. Associated species include red brome, annual fescue, and goldfields (*Lasthenia californica*).This small, ephemeral, annual species was once fairly widespread on the crusty alkaline soils of the San Joaquin Valley.Much of its native habitat has been converted to agriculture. Hoover's wooly star is known to occur from Fresno County and Kern County (Bakersfield area and west and northwest of Bakersfield). It is known from the Carrizo Plain (San Luis Obispo County) and the Cuyama Valley Santa Barbara County). The species has subsequently been found at many sites bordering the Elk Hills in Kern County (R. Lewis, pers. comm 1996) and is in the process of being downlisted.

Eriogonum gossypinum
Cottony buckwheat

Cottony buckwheat is a small annual buckwheat with wooly, gray-green leaves and a conspicuously cottony inflorescence. The flower is white to rose and glandular. The species grows on exposed clay hills, typically south-facing. Its general distribution includes the southwestern San Joaquin Valley and low foothills of the Greenhorn Range.

Lembertia congdonii
San Joaquin wooly threads

San Joaquin wooly-threads is a small, inconspicuous annual which may be 1 to 10 inches in height at maturity. Stems are multiple, decumbent and often somewhat succulent. Leaves and stems are typically loosely floccose to woolly-haired. Leaves are 1.5 inches long by about 0.25 inch wide with wavy margins. Individual flowers are arranged in heads that are clustered towards the ends of branches. Each head has four to seven phyllaries that are commonly blacktipped. Tiny yellow ray and disk flowers appear in late February or March. Ray flowers and their akenes are clearly distinguished from those of the disk.

San Joaquin wooly-threads are found in valley grassland habitat types with silty sand or sandy loam soils at elevations ranging from 400 feet to 1,200 feet. Valley saltbush is often the dominant shrub in these habitat types. The preferred microhabitat for this species consists of areas with reduced annual grass competition. It is generally not found where annual grasses are extremely dense and tall (Taylor 1987). This species is somewhat prostrate, allowing it to persist under grazing pressure. Known extant populations in Kern County occur along the Kern River near I-5, near Lost Hills, and on the Belridge Plain.

This species was once fairly common in the San Joaquin Valley. Jepson (1923) described it as being much more common during years of high spring rainfall, an observation that is consistent with other reports. Various land conversion activities have eliminated most of its habitat, which is why it was listed by the USFWS as an endangered species.

Opuntia basilaris var. *treleasei*
Bakersfield cactus

Bakersfield cactus is a beavertail-type cactus with bright, magenta-pink flowers. It generally flowers between April and May. The pads differ from the common beavertail cactus in that Bakersfield cactus has spines. Spine length is highly variable through the range of this cactus. Bakersfield cactus occurs primarily on sandy soils of alluvial plains, washes, and ridges, in grassland and saltbush scrub vegetation.

Although it was once common from just north of Bakersfield south along the western flank of the foothills to the vicinity of Wheeler Ridge, much of the cactus has been eliminated through urbanization and disking of grazing lands. Remaining populations are fragmented, occurring in pockets which have been less disturbed.

APPENDIX B

Wildlife Observed During Surveys for the
Proposed Kern Canyon Ranch Project

Scientific name	Common name
Amphibians and Reptiles	
Cnemidophorus tigris	Western whiptail
Uta stansburiana	Side-blotched lizard
Birds	
Ardea herodias	Great blue heron
Buteo jamaicensis	Red-tailed hawk
Calypte anna	Anna's hummingbird
Carpodacus mexicanus	House finch
Cathartes aura	Turkey vulture
Charadrius vociferus	Killdeer
Corvus corax	Common raven
Eremophila alpestris	Horned lark
Euphagus cyanocephalus	Brewer's blackbird
Falco sparverius	American kestrel
Lanius ludovicianus	Loggerhead shrike
Mimus polyglottos	Northern mockingbird
Passer domesticus	House sparrow
Passerculus sandwichensis	Savannah sparrow
Sturnella neglecta	Western meadowlark
Sturnus vulgaris	European starling
Zenaida macroura	Mourning dove
Zonotrichia albicollis	White-crowned sparrow
Mammals	
Canis latrans	Coyote
Lepus californicus	Black-tailed jackrabbit
Spermophilus beecheyi	California ground squirrel
Sylvilagus audubonii	Desert cottontail

APPENDIX C

Vascular Plants Observed During Surveys for the
Proposed Kern Canyon Ranch Project

Scientific Name	Common Name
ASTERACEAE	
Ambrosia acanthicarpa	Annual bur-sage
Centaurea melitensis	Tocalote
Conyza coulteri	Mare's tail
Heterotheca grandiflora	Telegraph weed
Hymenoclea salsola	Cheeseweed
Isocoma acradenia var. *bracteosa*	Pale-leaf goldenbush
Lactuca serriola	Prickly lettuce
BORAGINACEAE	
Amsinckia sp.	Fiddleneck
BRASSICACEAE	
Hirschfeldia incana	Summer mustard
Sisymbrium sp.	
CHENOPODIACEAE	
Atriplex polycarpa	Common saltbush
Atriplex serenana	
Salsola tragus	Russian thistle
EUPHORBIACEAE	
Chamaesyce ocellata ssp. *ocellata*	Yerba golondrina
Eremocarpus setigerus	Dove weed
GERANIACEAE	
Erodium sp.	filaree
LAMIACEAE	
Marrubium vulgare	Horehound

Trichostema lanceolatum	Vinegar weed
Trichostema ovatum	San Joaquin turpentine weed
MALVACEAE	
Malva parviflora	Cheeseweed
POACEAE	
Avena barbata	Slender wild oats
B. diandrus	Ripgut brome
B. hordeaceus	Downy brome
B. madritensis ssp. *rubens*	Red brome
Cynodon dactylon	Bermuda grass
Distichlis spicata	Salt grass
H. murinum ssp. *leporinum*	Foxtail
Schismus sp.	
SOLANACEAE	
Datura wrightii	Jimson weed
Solanum eleagnifolium	Bull nettle
ZYGOPHYLLACEAE	
Tribulus terrestris	Puncture vine