Draft
Supplemental Recirculated Environmental Impact Report

SCH# 2014041005

Volume 9
Volume 5 Appendix F of the Previously Circulated DEIR

GRAPEVINE SPECIFIC AND COMMUNITY PLAN (2019)
Tejon Ranchcorp

Specific Plan Amendment No. 157, Map 500
General Plan Amendment No. 9, Map 202
General Plan Amendment No. 10, Map 202
General Plan Amendment No. 4, Map 218R
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Agricultural Preserve #19 - Exclusion

Kern County
Planning and Natural Resources Department
Bakersfield, California

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Appendices

<u>NOTE TO REVIEWER OF ELECTRONIC FILES</u>:

To assist you in reviewing this electronic document, “bookmarks” and/or “links” have been provided for easier navigation between sections. When available, bookmarks are located in the panel to the left. Links are highlighted in BLUE in the Table of Contents. Clicking on either the bookmarks or links will take you to the selected item. This document may consist of multiple linked PDF files. If saving this document to your computer, you must save all corresponding files to a directory on your hard drive to maintain the manner in which these PDF documents are linked.

Appendix F

Biological Resources Technical Report for the Grapevine Specific Plan

Biological Resources Technical Report for the Grapevine Specific Plan

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JANUARY 2016

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Acronym	Meaning
ACOE	U.S. Army Corps of Engineers
AI	activity index
amsl	above mean sea level
APLIC	Avian Power Line Interaction Committee
BAGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BO	Biological Opinion
BTR	Biological Resources Technical Report
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DU	dwelling unit
DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FESA	federal Endangered Species Act
GIS	geographic information system
HCP	Habitat Conservation Plan
HUC	Hydrologic Unit Code
LID	low-impact development
I-5	Interstate 5
MBTA	Migratory Bird Treaty Act
MM	mitigation measure
mph	miles per hour
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
OHWM	ordinary high-water mark
PG&E	Pacific Gas & Electric
Ranch	Tejon Ranch
Ranchwide Agreement/RWA (on figures)	Tejon Ranch Conservation and Land Use Agreement
RMP	Resource Management Plan
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SR	State Route

Acronym	Meaning
SSURGO	Soil Survey Geographic Database
State Water Board	State Water Resources Control Board
TIC	Tejon Industrial Complex
TMV	Tejon Mountain Village
TRC	Tejon Ranch Company
TRCC	Tejon Ranch Commerce Center
TU MSHCP	Tehachapi Uplands Multiple Species Habitat Conservation Plan
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VFHCP	Valley Floor Habitat Conservation Plan
WEAP	Worker Environmental Awareness Program
WQTR	Water Quality Technical Report

EXECUTIVE SUMMARY

The Grapevine project (proposed project) would implement the Grapevine Specific and Community Plan (collectively referred to as the "Specific Plan") within the 8,010-acre Specific Plan Area. The Specific Plan designates approximately 3,232 acres (about 40%) for ongoing open space use and approximately 4,778 acres (about 60%) for development of a new residential community and employment center. The proposed project is located on the 270,000-acre Tejon Ranch (the Ranch) in Kern County and is within the Ranchwide Agreement Grapevine Development Area (15,644 acres), an area identified for development in the Tejon Ranch Conservation and Land Use Agreement (Ranchwide Agreement). The Ranchwide Agreement is a landmark agreement reached in 2008 with leading environmental organizations to permanently preserve over 90% of the Ranch as open space and limit development to designated areas near existing infrastructure, such as Interstate 5 (I-5).

To analyze impacts to biological resources, this biological resources technical report examines on-site impacts within the Specific Plan as well as off-site impacts related to required infrastructure. The term "study area" is used to collectively describe both the 8,010-acre Specific Plan Area and the 77-acre off-site impact areas; the study area totals 8,087 acres. The study area is located in two main geographic areas: (1) the foothills of the Tehachapi Mountains and San Emigdio Mountains on the southern portion of the site (foothills), which is located in proposed project open space, and (2) the San Joaquin Valley floor, which includes (a) riparian areas, which would generally be avoided and are located in proposed project open space; and (b) the remainder of the valley floor, consisting of grazed and agricultural lands where the majority of development would occur.

The configuration of the proposed project is consistent with the Ranchwide Agreement open space strategy, which concentrates development along existing infrastructure and includes open space areas within the riparian corridors in the valley and adjacent foothills that would preserve a substantial unconstrained regional habitat linkage east and west of the Grapevine project for continued use by protected wildlife species. As such, the project land plan has been designed to avoid sensitive biological resources, such as the Tehachapi and San Emigdio Mountain foothills and the valley floor riparian areas. Additionally, 85 acres of open space along a 100-foot buffer north of the California Aqueduct and 7,233 acres of the San Joaquin Valley floor within the Ranch, including the adjacent foothills, have been proposed for off-site mitigation of project-related biological impacts. Combined, the proposed project would conserve approximately 10,550 acres in open space. The applicant has proposed additional biological resource protection measures for consideration as mitigation measures by Kern County as part of the California Environmental Quality Act (CEQA) process.

There are no federal jurisdictional waters or wetlands in the study area. California Department of Fish and Wildlife (CDFW)- and Regional Water Quality Control Board (RWQCB)-jurisdictional waters are present in the study area. To ensure a conservative analysis with respect to impacts to waters of the state under the jurisdiction of CDFW and RWQCB, the biological resources technical report analyzes impacts to those features previously determined to be jurisdictional by Dudek, as well as the remaining 38 unnamed USGS features. The impacts to waters of the state would be mitigated to a less-than-significant level through preservation, restoration, and enhancement within the 10,550 acres of open space, including the 7,233-acre Grapevine Off-Site Mitigation Area.

The proposed project would also mitigate for impacts to special-status wildlife species and benefit many other biological resources through the conservation of 10,550 acres of open space. The 7,233-acre Grapevine Off-Site Mitigation Area includes mitigation for San Joaquin kit fox (*Vulpes macrotis mutica*) and 16 other special-status species, including blunt-nosed leopard lizard (*Gambelia sila*), bald eagle (*Haliaeetus leucocephalus*), and Nelson's antelope squirrel (*Ammospermophilus nelsoni*), as well as 13 non-listed special-status species, of which one is a state candidate for listing (Townsend's big-eared bat (*Corynorhinus townsendii*)) and one is a state fully protected species (golden eagle (*Aquila chrysaetos*)). Mitigation for special-status species also includes resource protection measures, including pre-construction surveys, avoidance measures, and habitat enhancement. As a result the proposed project would result in less-than-significant impacts to special-status wildlife species.

Two special-status plants were observed within the study area in 2013: Piute Mountains navarretia (*Navarretia setiloba*; California Rare Plant Rank (CRPR) 1B.1) and calico monkeyflower (*Mimulus pictus*; CRPR 1B.2). The calico monkeyflower would be conserved in project open space. Approximately 71% to 76% of the Piute Mountains navarretia in the study area would be conserved in proposed project open space, and 24% to 29% of the Piute Mountains navarretia on site would be impacted by the proposed project. With conservation of open space in the Specific Plan Area, permanent impacts to 24% to 29% of the Piute Mountains navarretia would be less than significant.

Finally, the proposed project has the potential to significantly affect the regional east–west habitat linkage along the valley floor/foothills transition zone; however, conservation of open space along the southern boundary in the transition zone and along the creek corridors, as well as reserving a band along both the north and south sides of the California Aqueduct, would provide for east–west wildlife movement through existing I-5 culverts and underpasses post-development, rendering those impacts less than significant. The proposed project would preserve the existing north-south movement corridors. The California Aqueduct currently serves as somewhat of a barrier to north–south and northeast–southwest movement within the valley floor portion of the site and habitat movement on a landscape level north-south is limited by existing agriculture off-site to the north; however, the landscape features such as Grapevine Creek and a tributary to Cattle Creek facilitate localized wildlife movement at present, and would be expected to continue to do so post-development. In addition to habitat corridor conservation on site, there are several biological resource protection measures to reduce impacts to wildlife movement, such as lighting and irrigation restrictions and open space management, and preservation of the Off-Site Mitigation Area preserves key linkage habitat, which would reduce impacts to less than significant.

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1 INTRODUCTION

1.1 Purpose and Scope

In accordance with the requirements of the California Environmental Quality Act (CEQA), the Kern County California CEQA Implementation Document (Kern County Board of Supervisors 2004), the Kern County Environmental Checklist Form (Kern County 2012), and the Kern County Guide for the Preparation of Environmental Impact Reports (EIRs) (Kern County 2006a), the purpose of this biological resources technical report (BTR) for the Grapevine Specific Plan (proposed project) is to: (1) document the biological resources that are present in the study area, which includes the 8,010-acre Grapevine Specific Plan Area and the off-site impact areas; (2) analyze the potential direct and indirect impacts to special-status biological resources resulting from the proposed project; (3) describe the significance of the potential impacts; and (4) identify recommended avoidance measures and other biological resource protection measures (listed in Appendix A) for consideration by Kern County, the Lead Agency, as part of the CEQA process.

1.2 Project Description

The proposed project would implement the Grapevine Specific and Community Plan (collectively referred to as the "Specific Plan") within the 8,010-acre Specific Plan Area. The Specific Plan designates approximately 3,232 acres (about 40%) for ongoing open space use and approximately 4,778 acres (about 60%) for development of a new residential community and employment center. Implementation of the proposed project requires 77 acres of infrastructure-related impacts outside of the 8,010-acre Specific Plan Area, which are described in this BTR as off-site impacts. In order to describe the biological environmental setting of the proposed project, including designated open space areas, proposed development, and off-site infrastructure impacts, the term study area is used to describe both the 8,010-acre Specific Plan Area and the 77-acre off-site impact areas; the study area totals 8,087 acres.

1.2.1 Location

The Grapevine study area is in the west-central portion of Tejon Ranch (the Ranch). The Ranch, an approximately 270,000-acre property owned by Tejon Ranchcorp, includes a large portion of the Tehachapi Mountains and smaller portions of the San Joaquin and Antelope Valleys. Generally, the Ranch extends from Interstate 5 (I-5) on the western side to State Route 58 (SR-58) on the northern side and SR-138 on the southern side (Figure 1-1, Regional Location). The 8,087-acre Grapevine study area includes the entire 8,010-acre Grapevine Specific Plan Area on the Ranch and 77 acres of off-site impact areas, 54 acres of which are on the Ranch and 23 acres of which are outside of the Ranch. The proposed project development would be built on a portion of the study area, as described in detail in Section 1.2.3 (see Figure 1-1, Regional Location, and Figure 1-2, Vicinity Map).

The proposed project is within an area identified for development in the Tejon Ranch Conservation and Land Use Agreement (Ranchwide Agreement) known as the Ranchwide Agreement Grapevine Development Area (Figure 1-1). The Ranchwide Agreement is a landmark agreement reached in 2008 with leading environmental organizations (including the Sierra Club, Natural Resources Defense Council, California Audubon Society, Endangered Habitats League, and Planning and Conservation League, referred to as "Resource Groups") to permanently preserve over 90% of the Ranch as open space and limit development to designated areas near existing infrastructure such as I-5. The Ranchwide Agreement Grapevine Development Area is 15,644 acres, and the precise boundaries of the 8,010-acre Grapevine Specific Plan Area may be further adjusted based on the results of the ongoing environmental review and permitting process for the proposed project, but would remain within the Ranchwide Agreement Grapevine Development Area (Figure 1-1).

The study area is entirely within unincorporated Kern County, just south of the junction of I-5 and SR-99 and 25 miles south from downtown Bakersfield. The majority of the study area is on the east side of I-5, but a smaller portion lies on the west side of I-5. The study area is bisected by the California Aqueduct (Figures 1-1 and 1-2). The majority of the study area is located within the San Joaquin Valley floor, but a portion of the study area, generally south of Edmonston Pumping Plant, is also located in the foothills of the Tehachapi and San Emigdio Mountains (Figure 1-3, Geographic Areas).

The study area lies mainly in the Grapevine and Pastoria Creek U.S. Geological Survey (USGS) 7.5-minute quadrangles (USGS, n.d.). One parcel, a portion of two other parcels, and a portion of the off-site impact area lie entirely within the Mettler USGS 7.5-minute quadrangle. The latitude and longitude of the approximate center of the site is 34°57′9″ N and 118°55′39″ W. The Universal Transverse Mercator (UTM) coordinates for the approximate center are UTM Easting (meters) 323999 and UTM Northing (meters) 3869472 in Zone 11.

SOURCES: McIntosh & Associates (2013); TRC 2013a, 2013b

The Grapevine project site (McIntosh & Associates 2013) and Tejon Ranch (2013a) boundaries appear on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1-1

Regional Location

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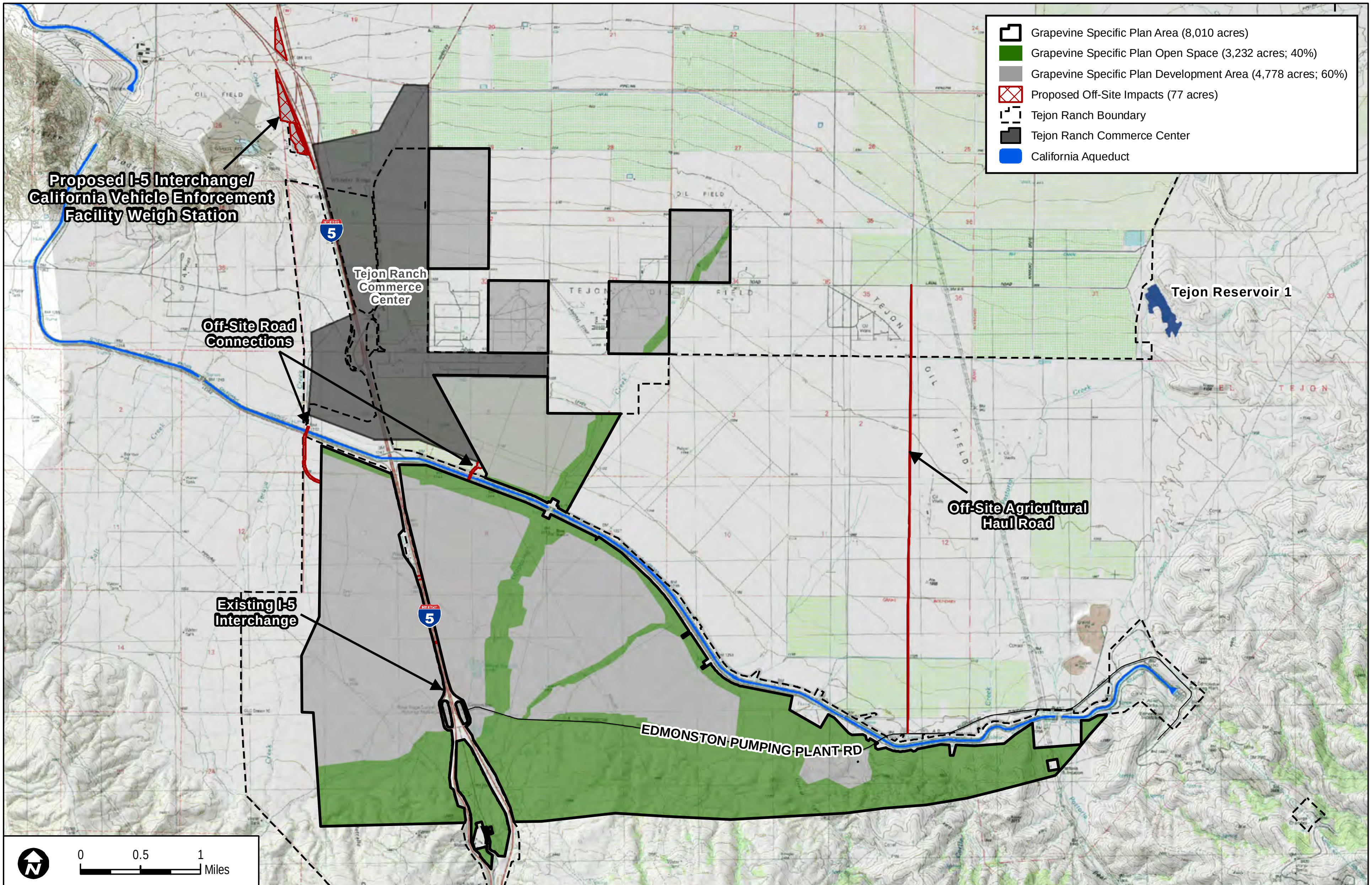

SOURCES: McIntosh & Associates 2014; TRC 2013c

The California aqueduct (TRC 2013c) appears on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1-2

Vicinity Map

GRAPEVINE PROJECT

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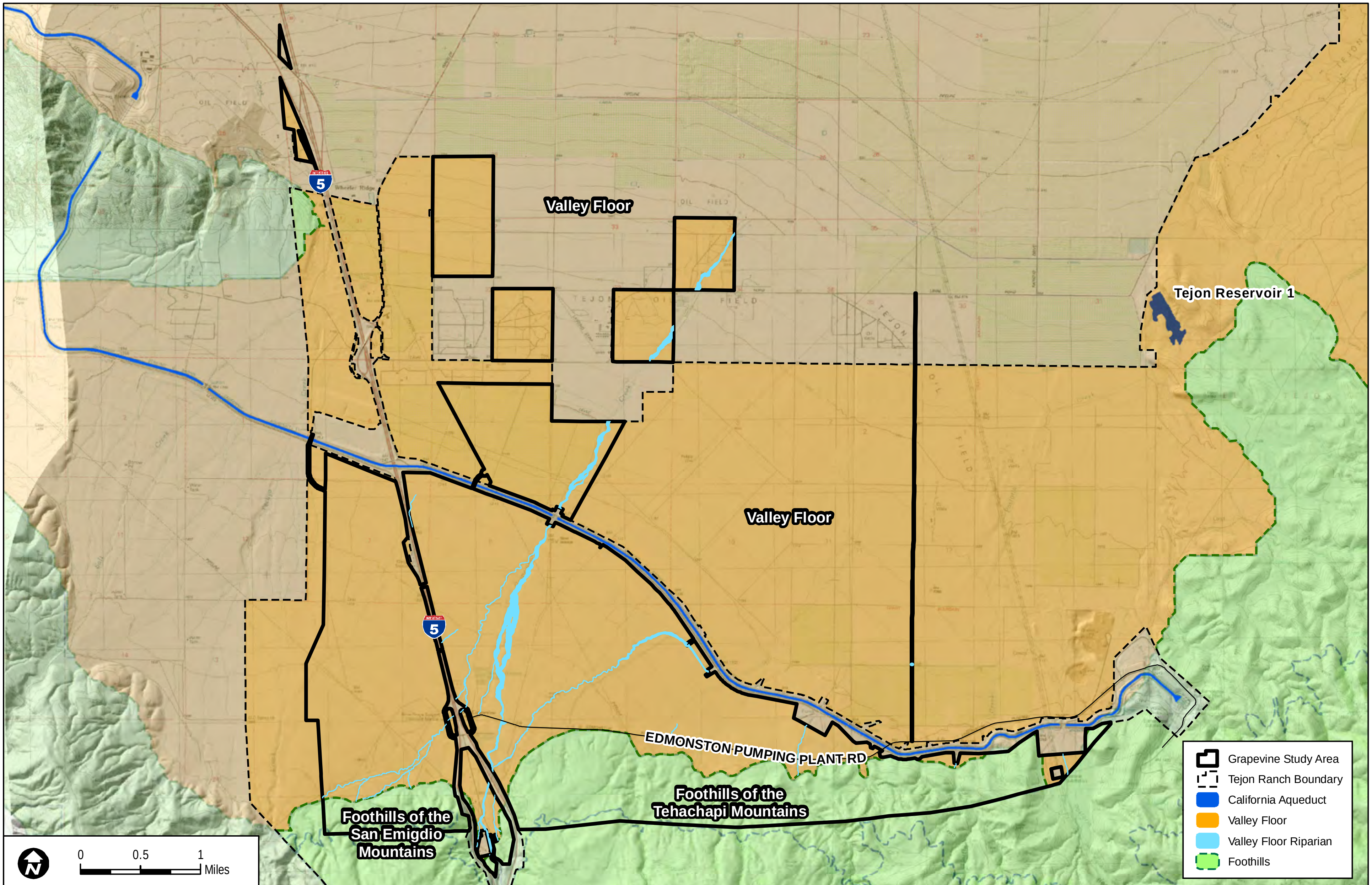

SOURCES: McIntosh & Associates 2014; TRC 2013c

The California aqueduct (TRC 2013c) appears on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1-3

Geographic Areas

GRAPEVINE PROJECT

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1.2.2 Existing Land Uses

The majority of the study area is characteristic of a landscape that has been used for ranching, agriculture, oil production, and managed hunting for many years. The agricultural uses in the study area include almond orchards and wine grapes, as well as several corrals associated with cattle ranching operations. Within the study area, oil and gas production wells consisting of both active and inactive wells are located throughout the valley floor area. Several underground oil and gas pipelines also extend through the study area, as do linear utilities and associated utility easements for water, gas, and electricity. Within the areas adjacent to the existing Grapevine I-5 interchange, there are existing commercial highway service uses, such as restaurants and service stations (Figure 1-4, Existing Land Uses). The portions of I-5 adjacent to the Grapevine study area are four lanes on the south- and north-bound sides of the freeway, for a total of eight through lanes. The northernmost off-site impact area, where the existing California Vehicle Enforcement Facility Weigh Station may be relocated, is located at the junction of I-5 and SR-99. West of this off-site impact area is Wheeler Ridge Sand and Gravel, which is an active sand and gravel mining operation.

The majority of the study area (with the exception of 23 acres generally located along or adjacent to existing infrastructure) is located on the Ranch. Livestock grazing occurs Ranch-wide on approximately 240,000 of the Ranch's 270,000 acres. Under the current management regime, the number of cattle on the Ranch ranges from 8,000 to 17,000; in an average year, the number of cattle is approximately 14,500. Numerous structures associated with grazing, including fences, watering systems, and corrals, are present throughout the Ranch. The specific livestock practices vary from year to year based on a number of factors, including the climate, which can affect the forage quantity and quality. With respect to the study area, in general, on the west side of I-5, the area is grazed by livestock from winter to spring (depending on foraging production), and on the east side of I-5, livestock are moved to the area for birthing and processing in late fall to early winter before returning to higher elevations based on forage production and operational considerations.

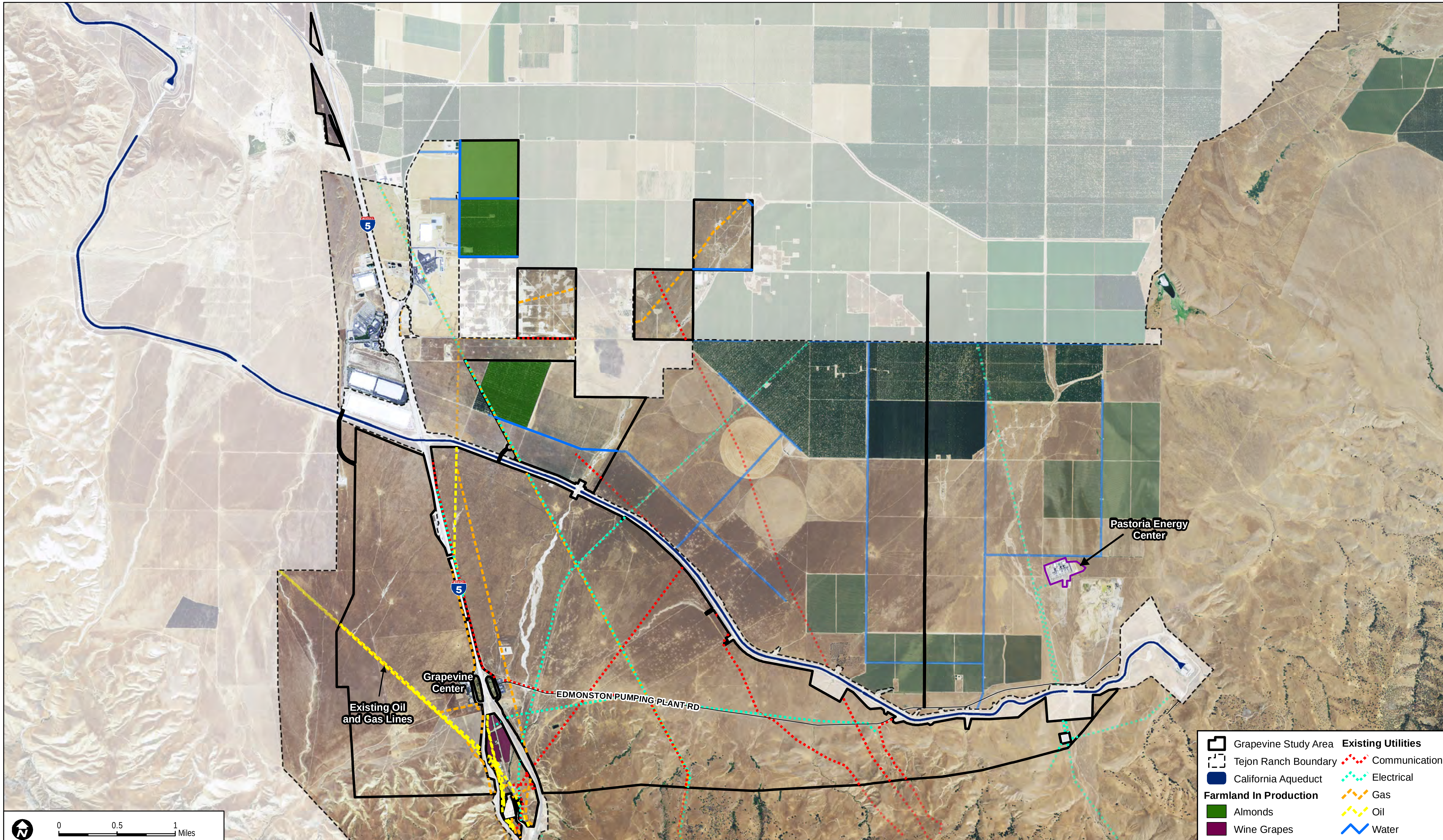
Commercial hunting, regulated by the California Department of Fish and Wildlife (CDFW), is permitted in on-Ranch portions of the study area. However, very little hunting actually occurs there for several reasons. First, because of the general lack of suitable habitat for game species, hunting on the east side of the I-5 is restricted to the foothill areas south of Edmonston Pumping Plant Road where there is no proposed development. Furthermore, access to the area is controlled and during the winter months the access roads are fairly inaccessible due to rain and snow. On the west side of I-5, hunting is typically limited to upland and small game and deer hunting primarily in the foothill regions where more suitable habitat for game species occurs; no development is proposed in this area. Finally, because the Ranch is closed to the general public for hunting and permission from Tejon Ranch Company (TRC) must be granted to access these areas as part of TRC's commercial hunting program, use by hunters is minimal.

The Ranch is also home to the 750-megawatt natural-gas-fired Pastoria Energy Center, owned and operated by Calpine Corp., to the northeast of the study area. Agricultural activities, including irrigated vineyards (35 acres) and pistachio and almond groves (454 acres), are located within the northern portion of the study area (Figure 1-4). Current oil and gas extraction operations are concentrated on disturbed lands to the north, but the entire study area is subject to existing oil and gas leases. Filming also occurs on the Ranch, including occasional filming use of the Grapevine study area.

1.2.3 Project Overview

The proposed project implements the Specific Plan, which designates approximately 3,232 acres (about 40%) for ongoing open space uses (with grazing and open space as the predominant land uses) and approximately 4,778 acres (about 60%) for development of a new residential community and employment center to complement the economic expansion and job growth that has occurred on the Tejon Ranch Commerce Center (TRCC), located immediately north of the Specific Plan Area (Figure 1-2). The proposed project features a series of compact neighborhoods linked by bicycle and pedestrian trails that provide convenient access to grocery and drugstores, professional services, schools, and parks; it also preserves extensive open space and agricultural uses. The proposed project is located along I-5, at the gateway to the Central Valley and one of the land use goals identified in the Specific Plan is to establish a community that creates a positive gateway to Kern County and displays the rich agricultural heritage of the San Joaquin Valley. Therefore, the proposed project would integrate agricultural elements into the community to create an ethos of farm-to-table, such as the use of orchards and vineyards for landscaping and community agriculture, including farming and animal husbandry.

The proposed project is designed as a series of conveniently located village centers, each composed of a mix of housing, neighborhood-serving retail and office uses, schools, parks, and community services. Other potential public facilities, including a fire station, sheriff substation, transit facility/park-and-ride, and water and wastewater treatment facilities, are proposed throughout the community. Outside the village cores, the proposed project includes a mix of residential uses, office, research and development, regional commercial, freeway-oriented commercial, and light industrial/warehouse uses. The overall development for the entire Specific Plan is restricted to a maximum of 12,000 dwelling units and 5,100,000 square feet of commercial and industrial floor area. However, based on the built and permitted commercial/industrial uses at the adjacent TRCC, the proposed project may ultimately support up to 2,000 additional dwelling units.



SOURCES: McIntish & Associates 2013; Kern County 2013

FIGURE 1-4

Existing Land Uses

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The additional 2,000 units would be authorized only with a commensurate reduction of commercial/industrial square footage based on vehicle trip equivalency ratios, and only to the extent that the additional units would not cause any significant new adverse impacts, or increase the severity of previously identified adverse impacts. This mechanism to provide for a future increase in the number of residential units and correlated reduction in commercial and/or industrial uses is necessary to allow flexibility to respond to market demands and to ensure a jobs–housing balance over time, and would be monitored by Kern County staff.

Access to the first phases of the Grapevine community would be from the existing Grapevine Road and Laval Road interchanges. During later phases of development, the existing Grapevine Road/I-5 interchange may be expanded and relocated to the north, and the existing California Vehicle Enforcement Facility Weigh Station may be relocated to the west side of the junction of I-5 and SR-99, as depicted on Figure 1-5, Proposed Project Footprint. The proposed project would also improve an existing TRC agricultural road east of the Specific Plan Area to provide access for truck traffic currently using Edmonston Pumping Plant Road to travel to properties east of the proposed project. The circulation network within the proposed project is composed of two- and four-lane arterials, collector streets, and local streets organized in a grid pattern. All roads within the proposed project would be public. Water and sewer service would be provided by the Tejon–Castac Water District.

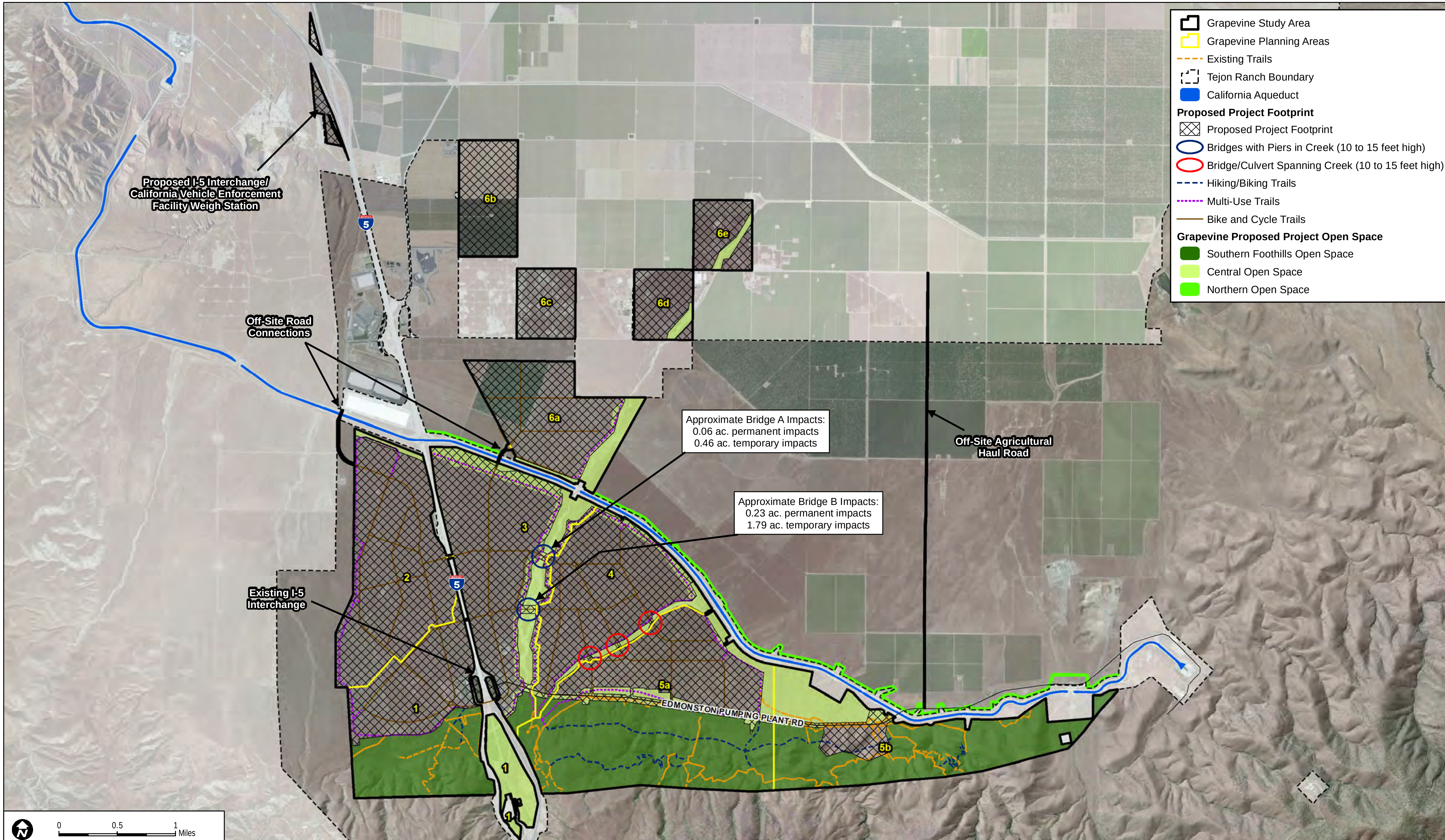
A trails system is proposed that would include a non-vehicular circulation system to provide pedestrian, bicycle, equestrian, and multi-use trails throughout the proposed project, including in open space separated from, but aligned along both Grapevine Creek and a tributary to Cattle Creek, within the southern foothills, and along the open space adjacent to the California Aqueduct, and at other locations throughout the proposed project. Some of these trails would connect to on-street, Class 1 and 2 bike lanes. This trails network would contribute to the recreational experience within the Specific Plan Area while also providing opportunities for alternative means of transportation within the community. The trail system is designed to accentuate the natural and existing features of the proposed project site, thus, some of the trails would be located within the 3,232 acres of designated open space. The proposed trail system is conceptual. However, proposed trail impacts in designated open space have been conservatively estimated to assume a disturbance of approximately 17 acres of land.

1.2.4 Biological Resource Protection Measures

The proposed project has been designed to avoid sensitive biological resources, such as the Tehachapi and San Emigdio Foothills and the valley floor riparian areas, and to preserve key regional biological resource values such as the east–west wildlife habitat linkage along the valley floor/foothill transition zone. Additional biological resource protection measures that are recommended are listed in Appendix A, Biological Resource Protection Measures. A short-form description of each measure is also provided in Table 1-1. Full descriptions of each measure are provided in Section 4.4 in the context of describing proposed project impacts and recommended mitigation measures. It is anticipated that these recommended biological resource protection measures may be appropriate as mitigation measures for purposes of CEQA.

Table 1-1
Biological Resource Protection Measures

Reference	Measure
MM-BTR-APLIC	Bird Collision Avoidance Measures for Aboveground Utilities
MM-BTR-BALD	Bald Eagle Perch Relocation
MM-BTR-C	General Construction-Related Avoidance and Minimization Measures
MM-BTR-CONDOR	Required Notification of Condor Observations, Restrictions on Occupant Behavior and Activities, and Community Service
MM-BTR-DCP	Preparation and Implementation of a Dust Control Plan
MM-BTR-ED	Conservation Education and Awareness Program for Occupants
MM-BTR-FENCE	Project Fencing Design Requirements
MM-BTR-FIRE	Implementation of a Fire Safety Plan and Avoidance of Nesting Birds during Fuel Management Activities
MM-BTR-IF	Prohibition on the Intentional Feeding of Wildlife
MM-BTR-IPM	Restrictions On The Use Of Rodenticides
MM-BTR-LAND	Restrictions on Landscaping Palettes and Plants
MM-BTR-LIGHT	Restrictions on Operation-Related Lighting
MM-BTR-OS	Zoned Exclusive Agriculture and Restrictions on Allowable Uses
MM-BTR-OOS	Conservation of Off-Site Mitigation Area
MM-BTR-PCA	Pre-Construction Surveys and Avoidance and Minimization Measures
MM-BTR-PCR	Compliance with Weed and Pest Control Regulations
MM-BTR-R	Restoration of Temporary Impacts to Uplands with Non-Invasive Species
MM-BTR-RMP	Resource Management Plan
MM-BTR-T	Environmental Awareness Training, Biological Monitoring, and Compliance
MM-BTR-TRAIL	Trail Signage
MM-BTR-TRASH	Requirement for Residents to Use Animal- and Weather-Resistant Trash Receptacles
MM-BTR-WM	Implementation of a Mitigation Plan for Waters of the State
MM-BTR-WLM	Conservation of 100-Foot Buffer North of Aqueduct
MM-BTR-WQ	Implement Measures Included in Water Quality Technical Report



SOURCES: McIntosh & Associates 2014; TRC 2014a

FIGURE 1-5

Proposed Project Footprint

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Some of these measures have general applicability and avoid or minimize impacts to multiple biological resources during proposed project construction and/or operations. For example, Mitigation Measure (MM-) BTR-C is implementation of general construction-related avoidance and minimization measures, and includes the following elements:

- Restrictions on construction work hours
- Flagging/fencing/demarcation
- Restrictions to avoid debris/non-native vegetation/pollution
- Vehicle/equipment and maintenance restrictions
- Restrictions to minimize impacts related to erosion and silt
- Other restrictions on construction activities and personnel.

Other measures are specific to a particular species or activity. For example, MM-BTR-PCA includes pre-construction surveys and avoidance and minimization measures for a number of special-status species or resources, including:

- Bat roosts
- Blunt-nosed leopard lizard (*Gambelia sila*)
- Nelson's antelope squirrel (*Ammospermophilus nelsoni*)
- San Joaquin kit fox (*Vulpes macrotis mutica*)
- Swainson's hawk (*Buteo swainsoni)*
- American badger (*Taxidea taxus*)
- Burrowing owl (*Athene cunicularia*)
- Nesting birds
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Western spadefoot (*Spea hammondii*).

Each measure is described in greater detail in Section 4.

1.2.5 Project Construction

The Specific Plan Area is divided into 11 Plan Areas (1, 2, 3, 4, 5a, 5b, 6a, 6b, 6c, 6d, and 6e), ranging in size from approximately 450 to 1,400 acres. Development would be phased over a period of more than 19 years. The areas that are proposed to remain in open space use are primarily located along the southern portion of the proposed project site at the foothills of the Tehachapi and San Emigdio Mountains, on site in the riparian corridors along Grapevine and a tributary to Cattle Creek and along the southern edge of the California Aqueduct, as well as off site along the northern edge of the California Aqueduct. Restricting these areas to open space uses ensures that the proposed project would avoid the vast majority of impacts to special-status species. However, construction may result in impacts to biological resources.

Most construction activities (e.g., clearing and grading) would result in development, which would have ongoing (operational) permanent impacts, and as such are discussed as an "operations-related (long-term) impact" described in Section 1.2.6. In this BTR, construction-related (short-term) direct impacts are temporary impacts that could occur during construction activities (e.g., placement of underground utilities in open space areas or construction of bridge crossings). Construction-related (short-term) indirect impacts are temporary effects that are immediately related to construction, such as the generation of construction-related dust. All the construction-related impacts are considered temporary impacts and are discussed in detail in Section 4.5.

1.2.6 Project Operations

Proposed project land uses are described in the Specific Plan; they include residential, commercial/industrial, and other ancillary uses. These proposed land uses may result in impacts to biological resources. Such impacts are classified in this BTR as operations-related (long-term) direct or indirect impacts. Operations-related (long-term) direct impacts are permanent impacts that result in the direct loss of biological resources due to development (i.e., the permanent loss of wildlife habitat or the permanent loss of or harm to individual special-status plant and wildlife species from grading and buildout). Operations-related (long-term) direct impacts were quantified by overlaying the proposed project footprint on geographic information system (GIS)-mapped biological resources (Figure 1-5). Operations-related (long-term) indirect impacts are those that result from the proximity of development to biological resources after construction. For example, increased development-related noise and lighting is a potential operations-related (long-term) indirect impact. All the operations-related (long-term) impacts are considered permanent and are discussed in detail in Section 4.6.

1.2.7 Project Land Use Impacts to Biological Resources

The proposed project impacts are categorized as either on-site impacts, which are impacts that occur within the 8,010-acre Grapevine Specific Plan Area, or off-site impacts, which are impacts that are outside of the 8,010-acre Grapevine Specific Plan Area but are associated with the proposed project. The proposed project footprint is the area in which all of the currently defined ground-disturbing direct impacts would occur and totals 5,268 acres. Of the 5,268 acres of land that would be subject to ground-disturbing activities, such as grading, 5,191 acres would occur on site and 77 acres would occur off site (Figure 1-5). As described in Section 1.2.3, after buildout, there would be approximately 4,778 acres of development-zoned uses; thus, approximately 414 acres of land in the proposed project footprint would be disturbed during construction of the proposed project, but would be designated as open space after proposed project buildout. For example, trails and detention basins in open space are included in the 5,268-acre proposed project footprint along with graded areas that would be restored following construction. On-site and off-site impacts are described in more detail in Sections 1.2.7.1 and 1.2.7.2.

1.2.7.1 On-Site Impacts

On-site impacts are impacts that occur within the 8,010-acre Specific Plan Area. Within the proposed project footprint, 5,191 acres are within the Specific Plan Area and are referred to as on-site impacts (see Section 1.3.3), the following categories of proposed land development would result in on-site impacts to biological resources: (1) development and (2) open space uses, including parks and community agriculture (e.g., community farms and gardens, animal husbandry).

1.2.7.2 Off-Site Impacts

The off-site impacts for the proposed project are infrastructure-related and are primarily associated with the circulation of traffic, including the connection of traffic to the I-5, across the California Aqueduct, and between discontinuous proposed project parcels. More specifically, the off-site impacts include a north–south connection across the California Aqueduct from Planning Area 3 to Planning Area 6a; a connection from Planning Areas 2, 6a, and 6b to off-site areas; connections between Planning Areas 6a, 6c, and 6d; and the future potential relocation of the California Department of Transportation (Caltrans) Grapevine Road/I-5 interchange and California Vehicle Enforcement Facility Weigh Station (Figure 1-5). The proposed project would also improve an existing, off-site TRC agricultural road east of the Specific Plan Area to provide access for truck traffic currently using Edmonston Pumping Plant Road to travel to properties east of the proposed project (Figure 1-5). There are 77 acres of off-site impacts, 54 acres of which would be on the Ranch and 23 acres that would be outside of the Ranch.

1.2.8 Open Space

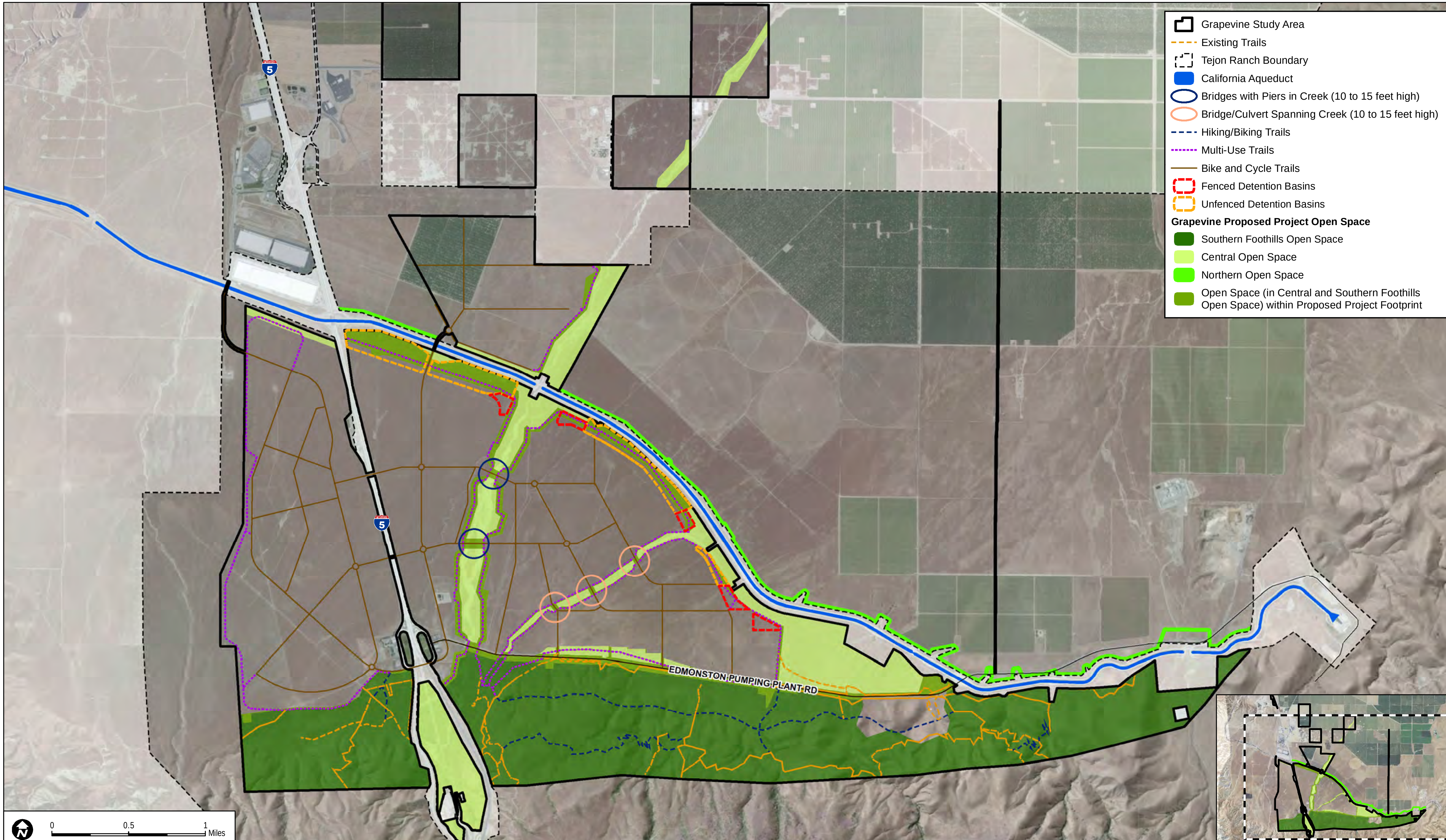
1.2.8.1 Proposed Project Open Space

The Grapevine Specific Plan would designate approximately 3,232 acres (about 40%) for ongoing open space uses (with grazing and open space as the predominant land uses). In addition to the open space designated in the Specific Plan, the proposed project would designate an additional 85 acres of land as open space north of the California Aqueduct, primarily to provide additional open space for wildlife movement (Figures 1-6A, Proposed Project Open Space with

Proposed Trails, and 1-6B, Proposed Project Open Space). This additional 85 acres of land is a 100-foot-wide band of open space that parallels the Department of Water Resources (DWR) easement along the aqueduct on the Ranch. In this BTR, the proposed project open space, also referred to as proposed open space, is being described and referred to herein as follows: (1) on-site open space designated in the Specific Plan that is south of the proposed project development (2,099 acres), referred to as the “southern foothills open space;” (2) the remainder of the on-site open space designated in the Specific Plan, which generally includes Grapevine Creek, the tributary to Cattle Creek, areas south of the California Aqueduct right-of-way, and the vineyards in between the north- and south-bound lanes of the I-5 (1,157 acres), referred to as “central open space;” and (3) an additional 85 acres of open space off site to the north of the California Aqueduct right-of-way, referred to as “northern open space.” Each of these open space areas is shown on Figures 1-6A and 1-6B. These areas would continue to be zoned Exclusive Agriculture, and the grazing, recreation, and other Ranch uses would be managed in accordance with the Resource Management Plan (RMP) required in MM-BTR-RMP and in accordance with the limitations described below.

Of this 3,317 acres of open space, approximately 414 acres are located in the proposed project footprint and would be disturbed during construction of the proposed project (e.g., for trails and detention basins) but would be designated and used as open space after proposed project buildout. For the impact analysis, however, as the land would be altered, this 414 acres is treated as a permanent impact (subject to mitigation) and excluded from the open space calculation to conservatively assess impacts under CEQA.

In the southern foothills open space, which is south of Edmonston Pumping Plant Road, irrigated agriculture and lighting would not be allowed in areas zoned as Exclusive Agriculture, with the exception of downcast lighting associated with new multi-use trails. New multi-use trails in the southern foothills open space would be limited to trails along the planning area interface and those necessary to make trail connections. Along the interface of Planning Area 1, Planning Area 4, and Planning Area 5a, a paved multi-use trail with downcast luminaries directed away from the natural areas would be built in the proposed project footprint (Figure 1-6A) and then designated for recreational open space use. Additionally, along the south of the existing Grapevine I-5 interchange, a bike path would be built that would parallel the southern foothills open space at the pinch point between development and open space; the bike path is internal to the proposed development except at this location. Lighting for this bike path, which would be built in the proposed project footprint, would also be downcast luminaries directed away from the natural areas (Figure 1-6A) and portions that would be located in Exclusive Agriculture would then be designated for recreational open space use. Other trails in the southern foothills open space would largely be unpaved and unlit recreational trails that would be approximately 5 feet wide.



SOURCES: McIntosh & Associates 2014; TRC 2014a

FIGURE 1-6A

Proposed Project Open Space with Proposed Trails

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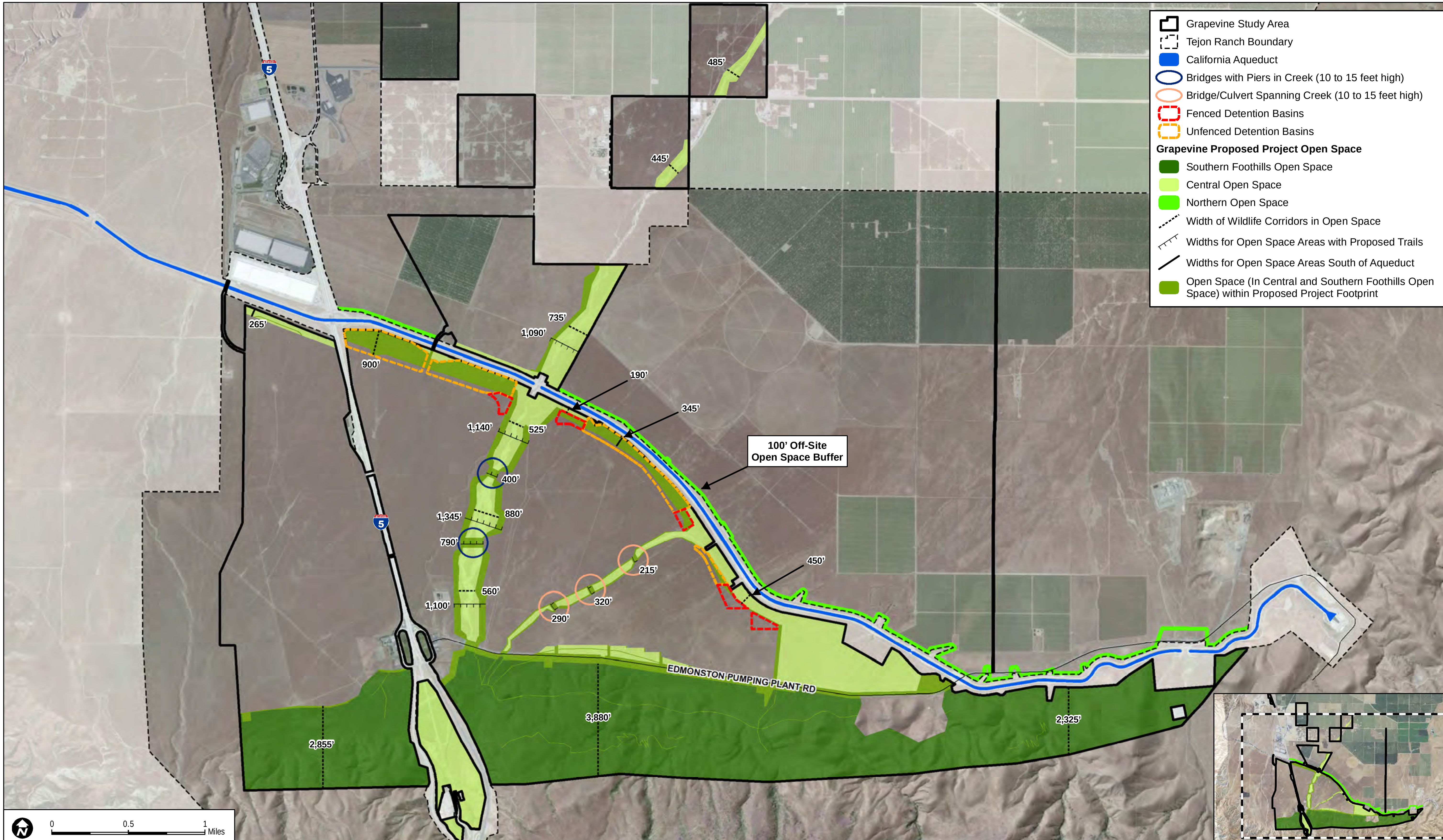

SOURCES: McIntosh & Associates 2014; TRC 2014a

FIGURE 1-6B

Proposed Project Open Space

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In the central open space along Grapevine Creek and the tributary to Cattle Creek, new irrigated agriculture would not be allowed and the open space would largely be reserved as a wildlife corridor. At the interface with the development and within the proposed project footprint, a multi-use trail, with downward luminaries directed away from the natural area, would be constructed and then designated for recreational open space use (Figure 1-6A). For Grapevine Creek, the proposed project includes two new creek crossings. The bridge crossings would have minimum footings to preserve the corridor's functionality for wildlife connectivity (Figure 1-6A). At these proposed bridge crossings, the wildlife corridor would be approximately 150 feet at bridge crossing A and to 580 feet wide at bridge crossing B. For the remainder of Grapevine Creek, the average width of the wildlife corridor is approximately 750 feet wide. Outside of the road crossings, no single location would be less than 500 feet. For the tributary to Cattle Creek, the bridge crossings would span the creek. Outside of the crossing locations, the total average width of the wildlife corridor along this tributary is approximately 200 feet wide, with no location less than 75 feet (Figure 1-6B).

In the central open space along the California Aqueduct, a series of detention basins, designed primarily to capture stormwater runoff, would be constructed in the proposed project footprint at the interface with the proposed development and would then be designated open space. The majority of the detention basin space (i.e., the four largest areas, which range from 1,600 to 4,500 linear feet), would be open (i.e., un-fenced) and would be level in the bottom of the basin itself and have gentle (20% or less) side slopes perpendicular to (i.e., across) the open space (Figure 1-6B). These basins would be dry most of the time. There are also two small detention basins at the interface with development in the open space that would be permanently fenced (Figure 1-6B). [1] Figure 1-6B shows some of the widths of the open space along the aqueduct in conjunction with the detention basins. Along the southern side of the aqueduct at the intersection with the development, a paved multi-use trail with downcast luminaries directed away from the natural areas would be built in the proposed project footprint (Figure 1-6A) and then designated for recreational open space use. There is one proposed bike path that would cross over the aqueduct from Planning Area 3 to Planning Area 6A that would be built in the proposed project footprint (Figure 1-6A) and then designated for recreational open space use; the proposed bike bath is located between the two westernmost detention basins. Other trails in the central open space would largely be unpaved and unlit recreational trails that would be approximately 5 feet wide. Irrigated agriculture would also be permitted in the central open space. Areas that would be irrigated would include, for example, the existing irrigated vineyards located in between the northbound and southbound lanes of I-5, and north of Planning Area 5b and east of Planning Area 5a.

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1 Basins at or over 18 inches in depth must have fencing, per Section 408-4, Fencing, of the Kern County Development Standards.

In the northern open space, the approximately 100-foot-wide band of land north of the aqueduct right-of-way dedicated as open space would complement the central open space by providing open space that would continue to provide east–west movement opportunities for wildlife along both sides of the aqueduct and ensuring access to the existing I-5 wildlife crossing. The northern open space would tie into the proposed project open space in Planning Area 6A, which also provides a movement corridor along the aqueduct. A multi-use trail could be built in this 100-foot band of open space. However, similar to the other open space areas, trails, if any, would be located on the outer edge of the open space with downcast lighting directed away from the proposed open space and would preclude light from casting onto the open space. This area would continue to be zoned Exclusive Agriculture, and the grazing, recreation, and other Ranch uses would be managed in accordance with the RMP required in MM-BTR-RMP.

1.2.8.2 Proposed Off-Site Mitigation Area

The proposed off-site mitigation area is 7,233 acres, consisting of conservation lands in the San Joaquin Valley floor within the area identified for conservation in the Ranchwide Agreement (Figure 1-1). The following criteria were used to select the off-site mitigation area: (1) it is within areas identified for conservation in the Ranchwide Agreement and is located in the San Joaquin Valley floor; (2) it contains suitable habitat for San Joaquin kit fox, an “umbrella” species for valley floor species, including those that would require off-site mitigation; (3) it has higher-quality habitat than the proposed project footprint for valley floor species requiring mitigation, including kit fox; (4) it provides benefits to a number of other special-status plant and wildlife species known to occur in the San Joaquin Valley, either through conserving habitat or habitat connections; (5) it conserves an area considered important for long-term conservation and recovery for kit fox, blunt-nosed leopard lizard, and other species addressed in the Recovery Plan (USFWS 1998); and (6) it conserves valley floor portions of the Ranch that provide unconstrained linkages contiguous with other conserved and managed lands on the Ranch and allows for movement opportunities to off-Ranch areas important to many valley floor species, including kit fox.

1.3 Special Terminology Used

A list of acronyms and abbreviations used in this BTR are provided following the table of contents. In addition, special terms used in this BTR are defined in this section.

1.3.1 Grapevine Specific Plan Area

The Grapevine Specific Plan Area refers to the 8,010-acre area that encompasses both the on-site proposed project footprint (see Section 1.3.3) and on-site open space and is shown in Figure 1-2.

1.3.2 Study Area

The study area includes the 8,010-acre Grapevine Specific Plan Area and the off-site impact areas, as shown in Figure 1-5.

1.3.3 Proposed Project Footprint

The proposed project footprint, depicted on Figure 1-5, is the 5,268-acre area in which all of the direct impacts would occur; the proposed project footprint includes both on-site and off-site direct impacts. The on-site proposed project footprint is an approximately 5,191-acre area within the Grapevine Specific Plan Area in which all of the currently defined ground-disturbing direct impacts would occur, including development and fuel management zones. The proposed project footprint also includes up to 77 acres of off-site impacts from proposed project-related infrastructure development. Therefore, the total proposed project footprint, both on and off site, is 5,268 acres. After buildout, there would be approximately 4,778 acres of development-zoned uses; thus, approximately 414 acres of land in the proposed project footprint would be disturbed during construction of the proposed project, but would be designated as open space after proposed project buildout; the total amount of designated open space would be 3,232 acres. See Section 1.2.7.2 for a more detailed description of the proposed off-site impacts.

1.3.4 Entity Names

The analysis of biological resources in this BTR includes reference to entities that would be responsible for implementing identified resource protection measures during the proposed project's construction period and subsequent operation. Each of these entities is described below.

1.3.4.1 Master Developer

"Master developer" refers to Tejon Ranchcorp and its successors or assignees.

1.3.4.2 Project Biologist

The term "project biologist" refers to the qualified biologist (individual or firm) responsible for the oversight of the implementation of the biological resource protection measures included as Kern County mitigation measures. The project biologist would be hired and funded by the master developer. The project biologist, for example, could be a biologist that is employed by Tejon Ranchcorp and is responsible for multiple Ranch projects and associated biological issues and may be supplemented by a qualified firm, if determined necessary by Tejon Ranchcorp.

1.4 Conservation on Tejon Ranch

1.4.1 Ranchwide Agreement

The Ranchwide Agreement provides for conservation of approximately 240,000 acres (90%) of the Ranch, consisting of: (1) 178,000 acres conserved as designated open space areas; and (2) 62,000 additional acres available for conservation through an option to purchase; that option was exercised, and in March 2011, conservation easements were recorded over these option areas. Conservation easements or deed restrictions that preclude development are required to be recorded on areas identified for conservation under the Ranchwide Agreement in tandem with the entitlements for development projects addressed in the agreement. Based on landform, the 270,000-acre Ranch can be divided into the following sections: (1) the San Joaquin Valley floor, which includes the adjacent foothills and within which the proposed project is located; (2) the Tehachapi Mountain Uplands; and (3) the Antelope Valley floor. Approximately 87,136 acres of the Ranch is in the San Joaquin Valley floor, including the adjacent foothills, and 74,094 acres, or 85%, of that area has been identified for conservation and management as part of the Ranchwide Agreement.

Specifically, the Ranchwide Agreement does the following:

- Allows TRC to continue its historic ranch uses and to pursue its development objectives for several development projects on the Ranch, including the proposed project, without opposition from the Resource Groups.
- Establishes and funds the independent Conservancy, a nonprofit public benefit corporation, which was established in 2008, for the protection and stewardship of these open space lands and the development and implementation of resource management and enhancement programs at the Ranch. Long-term funding of the Conservancy is primarily dependent on transfer fees from home sales related to the three potential development areas on the Ranch, including the proposed project.
- Commits to preserve and protect existing conservation values within lands outside of areas designated for development. This commitment is required to be memorialized in conservation easements for such lands, established in tandem with the entitlements for development projects addressed in the Ranchwide Agreement, that require existing Ranch uses and other foreseeable development-related uses in open space (like emergency access roads/utilities) to be conducted so as to preserve and not impair these conservation values (see the Ranchwide Agreement, Section 3.3).
- Requires the creation and implementation of a Ranch-Wide Management Plan with prescribed management standards to ensure that, within designated conservation

easement areas, existing natural resource and conservation values of the Ranch are protected while existing Ranch uses remain ongoing. Specifically, the Ranch-Wide Management Plan establishes conservation goals and objectives within conservation easement areas with regard to the following: (1) the promotion and restoration of native biodiversity and ecosystem values; (2) protection and enhancement of natural watershed functions and stream and aquatic habitat quality; (3) maintenance of healthy, diverse native forests; (4) protection of human life and property, public safety, and natural resource values from wildfire, recognizing that fire is a natural ecological process; (5) protection and appropriate restoration and interpretation of significant historic and cultural resources; and (6) the protection of scenic vistas and rare visual resources. The Ranch-Wide Management Plan was adopted in June 2013 and prescribes best management practices (BMPs) with conservation easement areas for conservation activities and ongoing Ranch uses, such as soil and water conservation, erosion control, grazing management, pest management, nutrient management, wildlife management, a public access program, water quality, and habitat protection—all to "preserve and enhance" the conservation values already present (see the Ranchwide Agreement, Section 3.3).

The Ranchwide Agreement designated three development areas located adjacent to major infrastructure such as I-5 and the California Aqueduct and sited to avoid significant adverse impacts to protected biological resources and wildlife corridors. These include the proposed project on the San Joaquin Valley floor, Tejon Mountain Village (TMV) in the Tehachapi Uplands, and Centennial in the Antelope Valley (TRC et al. 2008). In accordance with the Ranchwide Agreement, and as a master planned community, the proposed project has been designed with a variety of measures related to reducing its carbon footprint, conserving water, maintaining water quality, and conserving biological resources, as described in Exhibit Q-1 of the Ranchwide Agreement.

1.4.2 Proposed Project Consistency with Ranchwide Agreement

As described further in Section 2.1.1, the proposed project was designed to be consistent with the Ranchwide Agreement requirements by concentrating development along existing infrastructure and including open space areas within the riparian corridors in the valley and the adjacent foothills to preserve a substantial unconstrained regional habitat linkage for continued use by protected wildlife species (Figures 1-6A and 1-6B). The proposed project is located on lands that can generally be classified as consisting of two main geographic areas: (1) the foothills of the Tehachapi Mountains and San Emigdio Mountains on the southern portion of the site (foothills), which is located within proposed open space, and (2) the San Joaquin Valley floor, which consists of (a) riparian areas, which are located within proposed open space, and (b) the remainder of the valley floor proper where there are large areas of previously disturbed lands and where the majority of development is proposed (Figure 1-2).

Approximately 22% of the Grapevine study area, or approximately 1,793 acres, are located in the foothills. All of the scrub, oak riparian woodland, oak savannah, and marsh communities on the Grapevine study area are located in the foothills, as well as much of the riparian scrub and other riparian woodland. Additionally, the broader elevation range and varied slopes of the foothills, along with the contiguity with the more densely vegetated hilltops of the Tehachapi and San Emigdio Mountains south of the Grapevine study area support a variety of habitats and microhabitats for wildlife species that may not occur in the valley floor portions of the study area. Higher-value foraging habitat for California condor, where more hunting and grazing occurs, is located in the foothills portion of the study area. In addition, the only marsh habitat within the Grapevine study area is located in the foothills; thus, marsh-associated species would only be expected in the foothills. Many of the bats use the habitats available in the foothills more frequently than in the valley floor. Because some wildlife species prefer to nest or den away from human activity, the more remote wooded canyons and steeper terrain of the foothills support a large variety of raptors, mammals, and other potentially disturbance-sensitive species.

In the foothills, there is a limited amount of proposed development in grasslands, including 79 acres associated with Planning Area 5b, 12 acres associated with the Edmonston Pumping Plant Road widening, and 5 acres associated with open space uses (i.e., trails). Planning Area 5b will be a low-density residential development with approximately 30 parcels designed to allow for permeability for wildlife movement. The remainder of the foothills would be designated as open space, which would be managed as described in further detail in Section 1.2.8.

Approximately 98%, or 4,700 acres, of the 4,778 acres of zoned development and the 77 acres of off-site infrastructure-related impacts would occur in the valley floor. However, to minimize impacts, the project was designed to avoid the large majority of the valley floor riparian areas as well as preserving wildlife corridors through and across the site. Additionally, 7,233 acres of the San Joaquin Valley floor within the Ranch, including the adjacent foothills, has been proposed for off-site mitigation for proposed project-related biological impacts (Figure 1-1).

2 ENVIRONMENTAL SETTING

This section describes the physical setting (Section 2.1), vegetation communities (Section 2.2), jurisdictional delineation and determinations (Section 2.3), plant resources (Section 2.4), wildlife resources (Section 2.5), and wildlife movement (Section 2.6) for the Grapevine study area. The environmental setting was prepared using multiple sources of information, including a literature review of Ranch and publicly available documents and data and a review of aerial photography and topographic maps. Following review of existing information on biological resources on the site and in the region, project-specific reconnaissance surveys and focused plant and wildlife surveys were conducted.

The specific sources of information and data reviewed prior to conducting field work, and a schedule of surveys, including the survey type, date of survey, biologists who conducted the survey, survey timeframe, and the weather conditions during the survey are provided in Appendix B, Survey Methods.

2.1 Physical Setting

The existing physical conditions of the study area related to biological resources are discussed in this section of the BTR.

2.1.1 Geographic Setting and Terrain

The Grapevine study area is located in both the southern extent of the San Joaquin Valley and in the foothills at the base of the Tehachapi and San Emigdio Mountains in Kern County, California. The off-site impact areas are located within the San Joaquin Valley. The lowest elevation portion of the study area in the San Joaquin Valley starts at approximately 771 feet above mean sea level (amsl), with elevation gradually sloping upwards from north to south. Additionally, the California Aqueduct bisects the study area east of I-5; where the aqueduct crosses the I-5, the study area elevation is approximately 1,255 feet amsl. See Figure 2-1, Elevation and Slope.

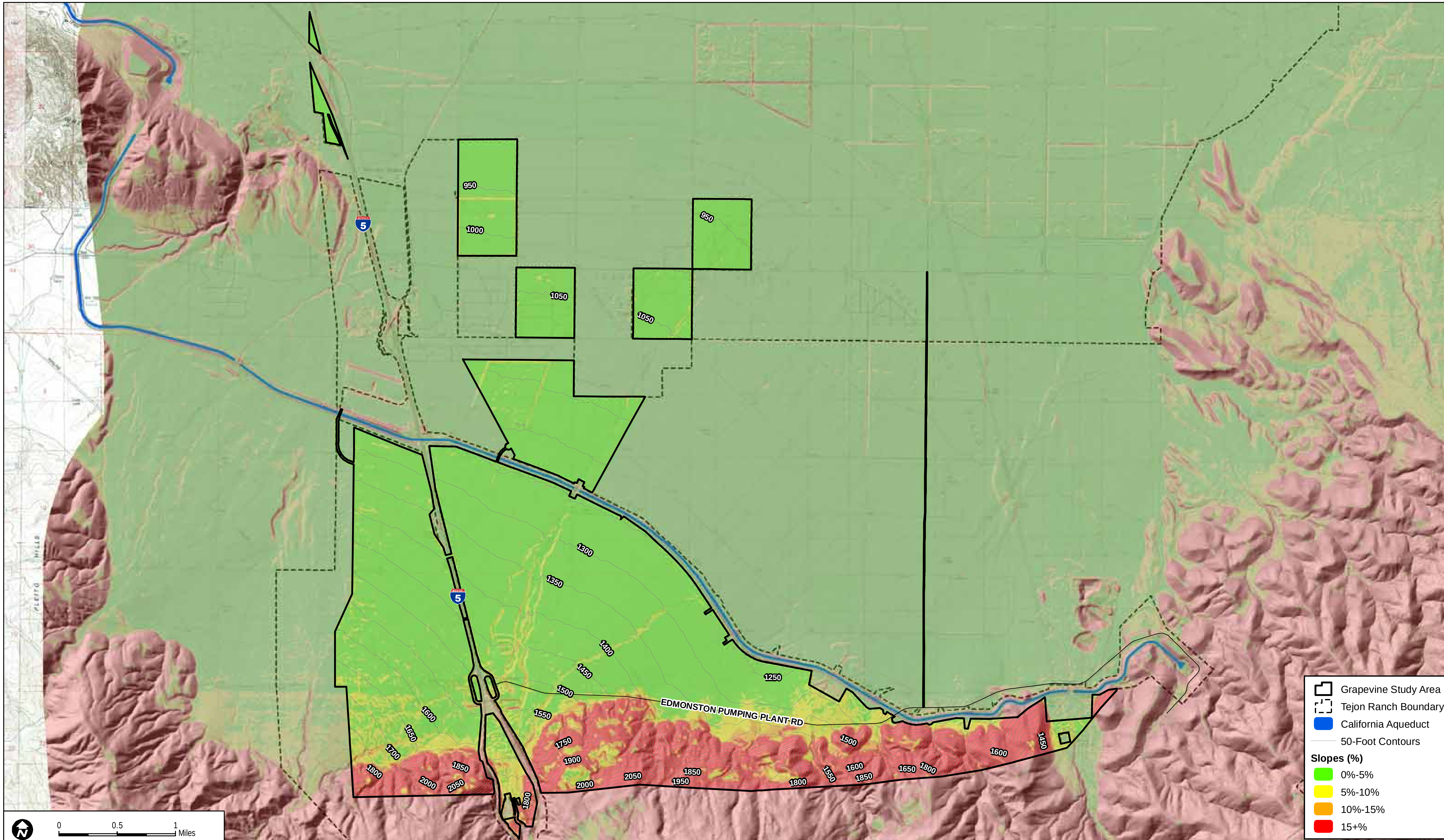
The portion of the study area located in the foothills slopes upwards to 2,186 feet amsl (Figure 2-1). The foothills are generally north-facing towards the valley floor. Grapevine Canyon is a major drainage feature on the landscape, and includes the I-5 corridor leading to the top of Tejon pass. The foothills of the Tehachapi Mountains are physically separated from the foothills of the San Emigdio Mountains by Grapevine Canyon and the I-5. The Tehachapi foothills are east of I-5 and the foothills of the San Emigdio Mountains are west of I-5.

The study area can generally be classified into two geographic areas: (1) the foothills of the Tehachapi Mountains and San Emigdio Mountains on the southern portion of the site (foothills), which is located in proposed open space, and (2) the San Joaquin Valley floor, which contains (a) riparian areas, consisting of ephemeral and intermittent streams and tributaries, and a short stretch of a perennial stream, all of which would generally be avoided and is located in proposed open space, and (b) the remainder of the valley floor, consisting of grazed and agricultural lands where the majority of development is proposed. On-site and off-site biological resources are described generally by these geographic areas (Figure 1-2).

2.1.2 Climate

The Tejon Rancho National Oceanic and Atmospheric Administration (NOAA) Cooperative Station is approximately 8 miles northeast of the study area at an elevation of 1,420 feet amsl. Given the proximity of this station to the study area and the elevation of the station, which is close to the mid-point of the study area elevation (i.e., approximately 1,403 feet amsl), the general climate of the study area is characterized herein using the data collected at this station.

The study area is located at the base of the Tehachapi Mountains at the extreme southern extent of the San Joaquin Valley floor. The majority of the study area is located in the San Joaquin Valley, which has a semi-arid climate characterized by long, hot, dry summers and damp, short winters that can have a heavy fog layer for weeks at a time. The average high temperature during the summer approaches 96 degrees Fahrenheit (°F) with an annual average of 75.9°F. Low temperatures range from approximately 37°F–68°F, with an annual average low temperature of 51.2°F. The average annual precipitation is 11.68 inches. Data collected between December 2013 and December 2014 at the monitoring station recorded an average temperature of 67°F, lows ranged from 24°F–66°F, and highs ranged from 74°F–103°F (Environ 2014). The majority of the rainfall (precipitation over 1 inch/month) during the year occurs between November and April, the typical rainy season for this region. The summer months are virtually rainless with average monthly rainfalls ranging from only 0.1–0.02 inch per month (WRCC 2013).



SOURCES: TRC 2014a

FIGURE 2-1

Elevation and Slope

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2.1.3 Soils

Soils mapping for the majority of the study area is included in the U.S. Department of Agriculture (USDA) Soil Survey Geographic Database (SSURGO; USDA 2007, 2009). The majority of the study area (85%) consists of four soil groups including very gravelly sandy loam (34%), sandy loam (25%), loam (13%), and loamy sand (11%) (see Table 2-1). There are no soils in the loamy sand soil group in the foothills. There are no very stony sandy clay loams in the valley floor, but all the other soil groups are represented in the valley floor. Absent from the riparian areas in the valley floor are cobbly clays, in addition to the very stony sandy clay loams. All of the off-site areas are located in the valley floor. A brief description of the soil groups is provided in Appendix C, and the distribution of the soils is shown on Figure 2-2, Soils within Grapevine Study Area. Table 2-1 lists each soil type by soil group and the percentage of each on site and off site. The percentage of each soil type is broken down by the foothill and valley floor regions and is provided in Table 2-1.

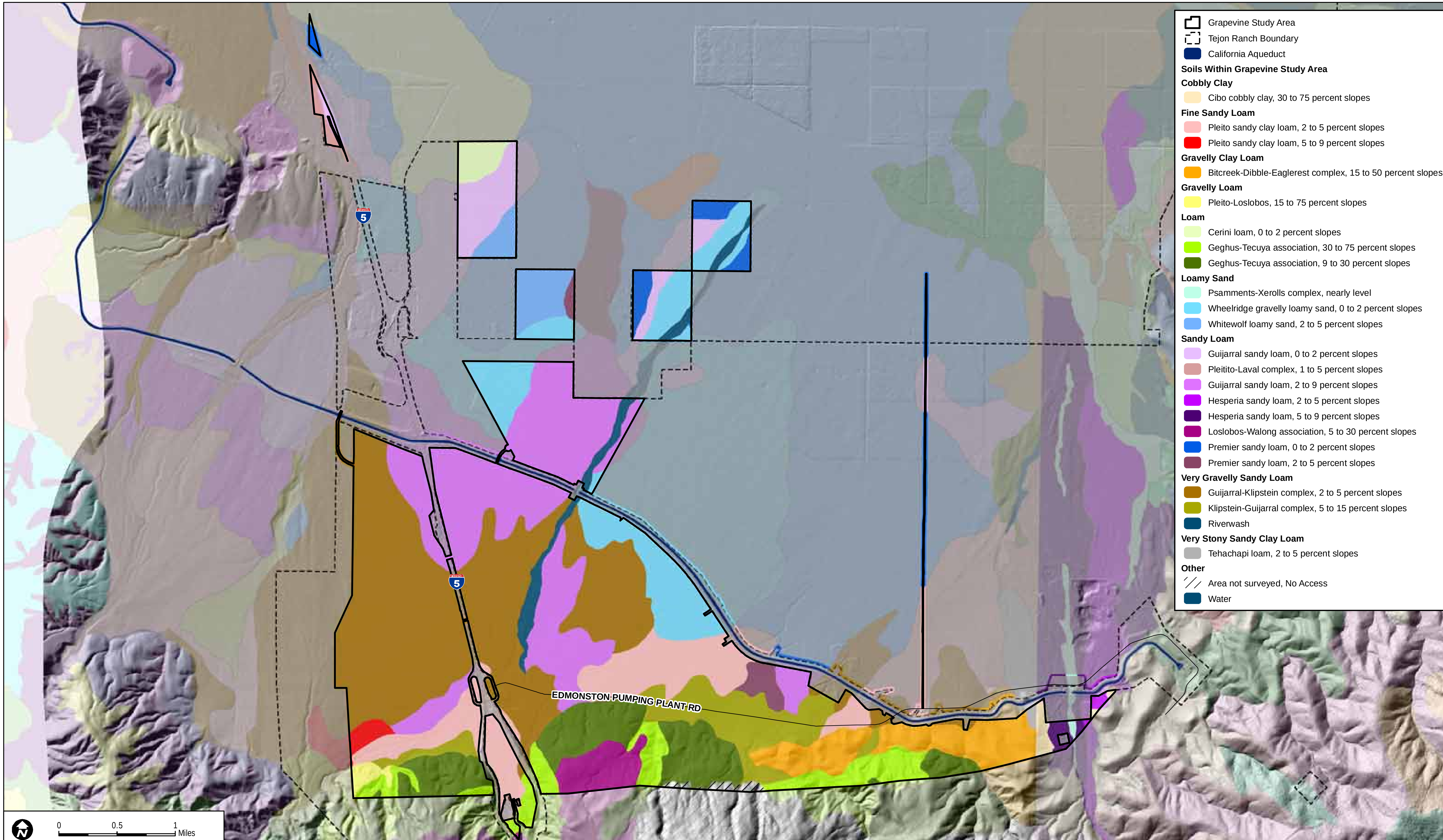
Table 2-1
USDA Mapped Soil Units in Study Area

Soil Groups	Soil Name	Acres[1]	% of Total 2	% of Soil Type in Foothills	% of Soil Type in Valley Floor
Soils on the Grapevine Specific Plan Area					
Cobbly clay	Cibo cobbly clay, 30% to 75% slopes	36	0.4%	97%	3%
	Subtotal	*36*	*0.4%*	*97%*	*3%*
Fine sandy loam	Pleito sandy clay loam, 2% to 5% slopes	669	8.3%	2%	98%
	Pleito sandy clay loam, 5% to 9% slopes	41	0.5%	0%	100%
	Subtotal	*710*	*8.8%*	2%	98%
Gravelly clay loam	Bitcreek-Dibble-Eaglerest complex, 15% to 50% slopes	411	5.1%	95%	5%
	Subtotal	*411*	*5.1%*	95%	5%
Gravelly loam	Pleito-Loslobos, 15% to 75% slopes	35	0.4%	97%	3%
	Subtotal	*35*	*0.4%*	97%	3%
Loam	Cerini loam, 0% to 2% slopes	76	0.9%	0%	100%
	Geghus-Tecuya association, 30% to 75% slopes	361	4.5%	99%	1%
	Geghus-Tecuya association, 9% to 30% slopes	636	7.9%	99%	1%
	Subtotal	*1,072*	*13.3%*	92%	8%
Loamy sand	Psamments-Xerolls complex, nearly level	5	0.1%	0%	100%
	Wheelridge gravelly loamy sand, 0% to 2% slopes	685	8.5%	0%	100%
	Whitewolf loamy sand, 2% to 5% slopes	192	2.4%	0%	100%
	Subtotal	*883*	*10.9%*	0%	100%

Table 2-1
USDA Mapped Soil Units in Study Area

Soil Groups	Soil Name	Acres[1]	% of Total 2	% of Soil Type in Foothills	% of Soil Type in Valley Floor
Sandy loam	Guijarral sandy loam, 0% to 2% slopes	251	3.1%	0%	100%
	Guijarral sandy loam, 2% to 9% slopes	1,422	17.6%	0%	100%
	Hesperia sandy loam, 2% to 5% slopes	11	0.1%	78%	22%
	Hesperia sandy loam, 5% to 9% slopes	28	0.3%	3%	97%
	Loslobos-Walong association, 5% to 30% slopes	164	2%	100%	0%
	Premier sandy loam, 0% to 2% slopes	99	1.2%	0%	100%
	Premier sandy loam, 2% to 5% slopes	77	1%	0%	100%
	Subtotal	*2,052*	*25.4%*	8%	92%
Very gravelly sandy loam	Guijarral-Klipstein complex, 2% to 5% slopes	2,146	26.5%	0%	100%
	Klipstein-Guijarral complex, 5% to 15% slopes	474	5.9%	26%	74%
	Riverwash	152	1.9%	0%	100%
	Subtotal	*2,774*	*34.3%*	4%	96%
Very stony sandy clay loam	Tehachapi loam, 2% to 5% slopes	9	0.1%	100%	0%
	Subtotal	*9*	*0.1%*	*100%*	*0%*
	Area not surveyed, access denied	29	0.4%	*100%*	*0%*
	Total On Site	**8,010**	**99%**	**22%[3]**	**78%[3]**
Soils on the Off-Site Impact Areas					
Sandy Loam	Guijarral sandy loam, 0% to 2% slopes	16	0.2%	0%	100%
	Guijarral sandy loam, 2% to 9% slopes	3	<0.5%	0%	100%
	Pleitito-Laval complex, 1% to 5% slopes	22	0.3%	0%	100%
	Premier sandy loam, 0% to 2% slopes	23	0.3%	0%	100%
	Premier sandy loam, 2% to 5% slopes	<0	<0.5%	0%	100%
	Subtotal	*64*	*0.8%*	*0%*	*100%*
Loam	Cerini loam, 0% to 2% slopes	2	<0.50%	0%	100%
	Subtotal	*2*	*<0.50%*	*0%*	*100%*
Water	Water	<0	<0.5%	0%	100%
	Subtotal	<0	*<0.5%*	*0%*	*100%*
Fine Sandy Loam	Pleito sandy clay loam, 2% to 5% slopes	5	0.1%	0%	100%
	Subtotal	*5*	*0.1%*	*0%*	*100%*
Very gravelly sandy loam	Guijarral-Klipstein complex, 2% to 5% slopes	6	0.1%	0%	100%
	Total Off Site	**77**	***1%***	**0%**	**100%**

1 Numbers may not total precisely due to rounding.
2 Zeros indicate that the percentage is less than 0.5%.
3 Percentage based off mapped soils and does not include the 29 acres of the soils not surveyed.



SOURCES: USDA 2007, 2009

FIGURE 2-2

Soils Within Grapevine Study Area

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2.1.4 Hydrologic Setting

The study area is located at the base of the Tehachapi and San Emigdio Mountains. The hydrogeological history is summarized as follows: "at the base of the granitic basement rock of the Tehachapi Mountains are deep layers of sediments that have been eroded from the mountains and deposited in the adjacent valleys. Groundwater formed via the infiltration of rain, and snowmelt travels down-slope and accumulates in these alluvial groundwater basins. The faulting prevalent in the region produces fractures through which groundwater moves to the surface rather than continuing down-gradient, expressing as springs or seeps of water" (Tejon Ranch Conservancy 2013a). Generally, the first layer of groundwater in the southern San Joaquin Valley lies between 150 and 500 feet below ground surface (Faunt 2009, as cited in Tejon Ranch Conservancy 2013a). Groundwater within the study area, including groundwater from which water is extracted for irrigation purposes, occurs at depths in excess of 800 feet. Oil and gas production has occurred in the southern San Joaquin Valley for more than 100 years. Current oil-bearing strata under production in the study area are located at depths between 2,600 to 7,200 feet (WZI Inc. 2013).

The study area is located within the Tulare Lake hydrologic basin. The majority of the study area is within the Arvin-Wheeler Ridge hydrologic area in the South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30). The southernmost portion of the site lies within two hydrologic areas—Tejon Creek (HUC 556.20) and San Emigdio (HUC 556.3)—both of which are within the Grapevine hydrologic unit (Central Valley RWQCB 2004) (Figure 2-3, Flow Direction of Primary Creeks and Points of Diversion). The study area is in the Mediterranean California subregion (ACOE 2008), and is characterized by a semi-arid climate with long, hot, dry summers and damp, short winters. Hydrology in the study area includes perennial, intermittent, and ephemeral stream channels.

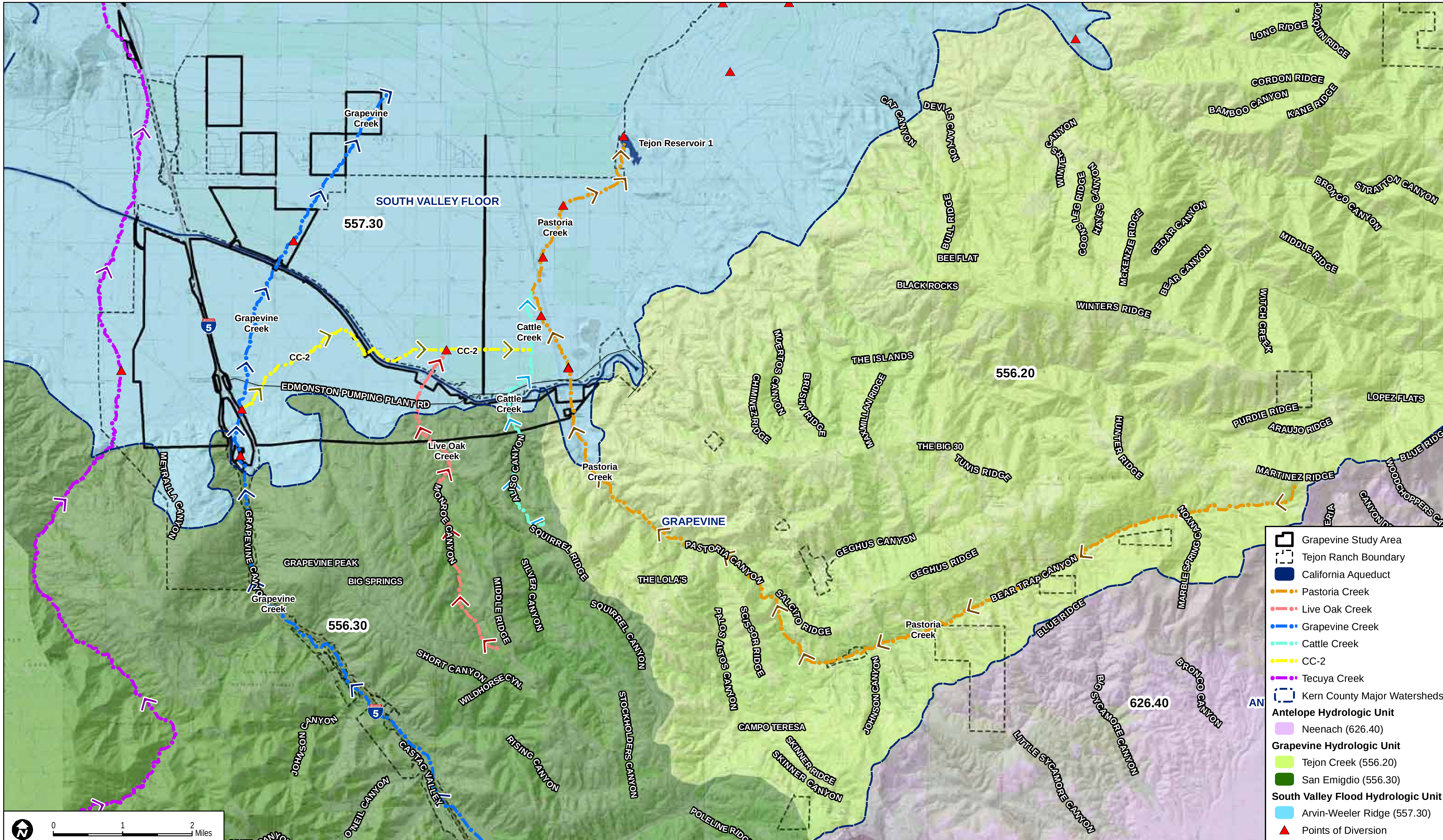
The drainages in the study area are within a depositional alluvial fan entering the valley floor just downstream of the transition from high sediment production in the steep and seismically active Tehachapi and San Emigdio Mountains. Historically, the drainages situated on this alluvial fan have filled up with deposited sediment during large-magnitude sedimentation events (i.e., wildfire and/or heavy storms) and then found new flow paths. However, the drainages in the study area have experienced past hydromodification impacts due to altered land use, such as permitted points of water diversion (as shown on Figure 2-3), the construction of the aqueduct, installation of in-stream culverts without proper energy dissipation, and grazing that has reduced the strength of the channel lining materials and made the drainages more susceptible to in-stream erosion when water flows in the streams (Geosyntec Consultants 2015). These hydromodification impacts have resulted in streams that are incised and entrenched in their current alignment and include the following: Grapevine Creek, its ephemeral tributaries; Pastoria Creek, as well as Cattle and Live Oak Creeks (tributaries to Pastoria Creek); tributaries to Cattle Creek, one of which is ephemeral

(CC-1); Tecuya Creek; and five unnamed ephemeral drainages that are isolated and wholly contained in the study area (meaning they originate and terminate within the study area) (Isolated Drainages A–E) (Figure 2-4). The general flow patterns of Pastoria Creek, as well as Cattle and Live Oak Creeks (tributaries to Pastoria Creek), Grapevine Creek, and Tecuya Creek are shown on Figure 2-3. Additionally, to show how these creeks are connected, CC-2 (tributary to Cattle Creek), an unnamed tributary (Unnamed-1) and Tejon Reservoir No. 1 are also included on Figure 2-3. As discussed in Section 2.3, all of these streams are isolated and do not connect to a traditional navigable water. Grapevine Creek dissipates into the valley floor further north outside of the study area. Cattle Creek and Live Oak Creek are tributaries to Pastoria Creek that either dissipate into agricultural lands north of the study area or flow into an unnamed drainage northeast of the study area, which in turn flows into a Ranch detention basin referred to as Tejon Reservoir No. 1. Tecuya Creek also dissipates into the valley floor. See the 2013 approved jurisdictional delineation by the U.S. Army Corps of Engineers (ACOE) (see Appendix E-2). The USGS 7.5-minute quadrangle topographical maps identify these streams (USGS n.d.) as stream features. Additionally, there are 38 creeks and unnamed streams shown on the USGS 7.5-minute quadrangle topographical maps that were visited during the jurisdictional delineation, but that lacked field indicators for a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, hydrophytic vegetation, or other watercourse features/fluvial indicators, as defined by Vyverberg (2010) and Brady and Vyverberg (2013). These features may be relics of the previous alluvial fan and may not currently convey water.

The hydrologic setting is described further by the foothills and valley floor in Sections 2.1.4.1 and 2.1.4.2, respectively.

2.1.4.1 Foothills

The foothills of the Tehachapi and San Emigdio Mountains consist of canyons, ravines, and topographical low points in between hilltops. Vegetated riparian reaches of Cattle Creek and Live Oak Creek are located only within the foothills. All channels and vegetated riparian areas in the foothills are located in proposed open space.



SOURCES: TRC 2014a; TRC 2014b; USGS NHD 2014

FIGURE 2-3

Flow Direction of Primary Creeks and Points of Diversion

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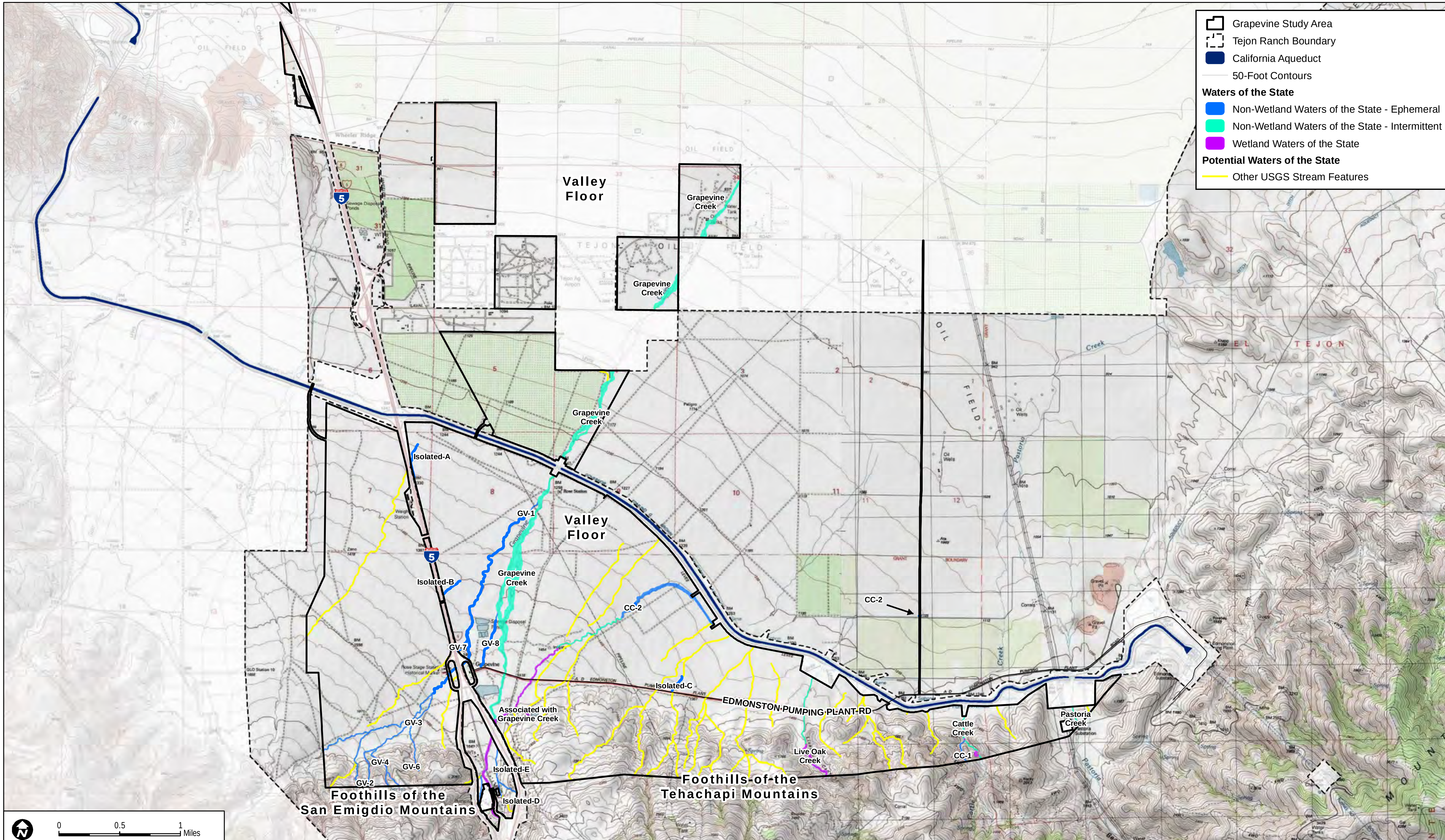

FIGURE 2-4

CDFW- and RWQCB- Jurisdictional Areas

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The USGS 7.5-minute quadrangle topographical maps identify a small portion of Grapevine Creek, approximately half of Live Oak Creek, and nearly all of Cattle Creek within the foothills, as well as one tributary to Cattle Creek, several tributaries to Grapevine Creek, and additional unnamed streams within the foothills of the study area (USGS n.d.). These creeks and associated tributaries are also on historical aerials and topographic maps, and a review of topographic maps dating back to 1903 show Grapevine Creek, Live Oak Creek, and Cattle Creek in generally the same location as present day; tributaries are shown on topographic maps starting in 1945 and are also in the same general location as present day (Google Earth 2013; Historic Aerials Online 2013), indicating that these channels are stable and do not shift over time compared to some stream systems.

The ephemeral tributaries to Grapevine and Cattle Creek, and the intermittent portions of Cattle Creek and Live Oak Creek in the foothills are relatively well-defined with incised bed and banks and evidence of surface flow, and do not appear to have the dynamic and unstable systems that can be common with ephemeral and intermittent channels in the Arid West (ACOE 2008).

Based on the results of field surveys, including the jurisdictional delineation approved by the ACOE in 2013 (see Appendix E-2), the foothills do not appear to support much surface flow. As described above, the foothills are characterized by canyons, ravines, and topographical low points in between hilltops. With the exception of Grapevine Creek, Live Oak Creek, Cattle Creek, and their associated tributaries, surface flows or water accumulation within these low points percolate into the ground and do not continue to the base of the foothills or into the valley floor. This is consistent with the soils on site, which are generally rocky and transform to a more sandy nature near the base of the mountains, and are characterized as well- to excessively-drained (see Appendix C).

2.1.4.2 Valley Floor

The valley floor consists of flat terrain with occasional swales and some stream channels. The main stream channels on the valley floor, in terms of water flow, acreages, and linear feet, are Grapevine Creek and the tributary to Cattle Creek (CC-2). Minor channels in the valley floor consist of: ephemeral and intermittent unvegetated portions of Live Oak Creek; Cattle Creek; Pastoria Creek, which, in the study area is intermittent and unvegetated; and an ephemeral and unvegetated portion of Tecuya Creek, located in the off-site impact area outside of the proposed development footprint.

Similar to the analysis of the channels in the foothills (Section 2.1.4.1), a review of the USGS 7.5-minute quadrangle topographical maps (USGS n.d.) and historical aerials and topographic maps (Google Earth 2013; Historic Aerials Online 2013), indicate that Grapevine Creek, Pastoria Creek, Live Oak Creek, Cattle Creek, and Tecuya Creek and associated tributaries, are generally stable and do not shift over long periods of time. As within the foothills, the stream channels in the valley floor are relatively well-defined with incised bed and banks and evidence of surface flow, and do not appear to have dynamic and unstable systems that can be common with ephemeral and intermittent channels in the Arid West (ACOE 2008). The perennial portion of Grapevine Creek is characterized by a well-defined riparian corridor, which is typical of perennial channels that have regular surface flow throughout the year, are stable over time, well-defined, and have distinct vegetation (ACOE 2008).

2.2 Vegetation Communities

Natural vegetation communities in the study area were mapped in the field through surveys conducted in April, May, June, and October 2013; February and October 2014; and July 2015, using the *Manual of California Vegetation*, Second Edition (Sawyer et al. 2009), and the *Natural Communities List* (CDFG 2010a). See Appendix B for details regarding methods used to map vegetation communities.

Prior to the field studies, Dudek consulted the Tejon Ranch geographic information system (GIS) vegetation map that is updated periodically after additional information on vegetation communities is collected. The Ranch-wide vegetation GIS dataset is based on several surveys conducted on the Ranch between 1980 and 2007, and includes information collected during seasons of relatively higher and lower rainfall.

Field surveys to validate and refine the Tejon GIS map were conducted in 2013–2015, and are consistent with this GIS dataset. The Ranch-wide vegetation GIS dataset primarily reflects the classification system outlined in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). The vegetation communities mapped in the Grapevine study area also are categorized into more generalized habitat types.

The acreages of the mapped vegetation alliances and other land covers in the study area are presented in Table 2-2, including those that are considered sensitive biological resources by CDFW under CEQA per the *Natural Communities List* (CDFG 2010a). The term semi-natural stands vs. alliance is used in the *Manual of California Vegetation* to distinguish between natural vegetation communities and vegetation types dominated by non-native plants (Sawyer et al. 2009). The alliances and other land covers are grouped in Table 2-2 by the generalized habitat types included on the Ranch-wide vegetation map. Additionally, the macrogroup[2] listed in the *Natural Communities List* (CDFG

[2] A macrogroup is a vegetation classification unit of intermediate rank (5th level) defined by combinations of moderate sets of diagnostic plant species and diagnostic growth forms that reflect geographic differences in composition and sub-continental to regional differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes (Federal Geographic Data Committee 2008).

2010a) associated with each generalized habitat type is included in Table 2-2. Vegetation communities considered sensitive biological resources by CDFW under CEQA (CDFG 2010a) have an asterisk (*) at the end of the community name in Table 2-2.

In brief, all of the riparian woodland and savannah, and a majority of the scrub (99%), riparian scrub/marsh (99%), and native grasslands (77%), are located in proposed project open space. Approximately 94% of the areas generally categorized as wash are located in proposed project open space and another 3% are located in proposed temporary impact area that will be re-contoured after project build-out, resulting in a total of 97% of the washes remaining in the study area, primarily in proposed project open space. The vast majority (97%) of the study area is non-native grasslands and non-natural land covers (i.e., orchards and vineyards, disturbed lands, and urban/developed lands). The locations of the vegetation community alliances and land covers within the study area are shown on Figures 2-5 and 2-5A and 2-5B, Vegetation Community Alliances and Land Covers, and are briefly described by generalized habitat type in Sections 2.2.1 through 2.2.8. Appendix D includes detailed descriptions of the vegetation community alliances and land covers in the study area.

The general distribution of vegetation between the two project-specific geographical areas (i.e., foothills and valley floor) is described in Section 2.2.1.

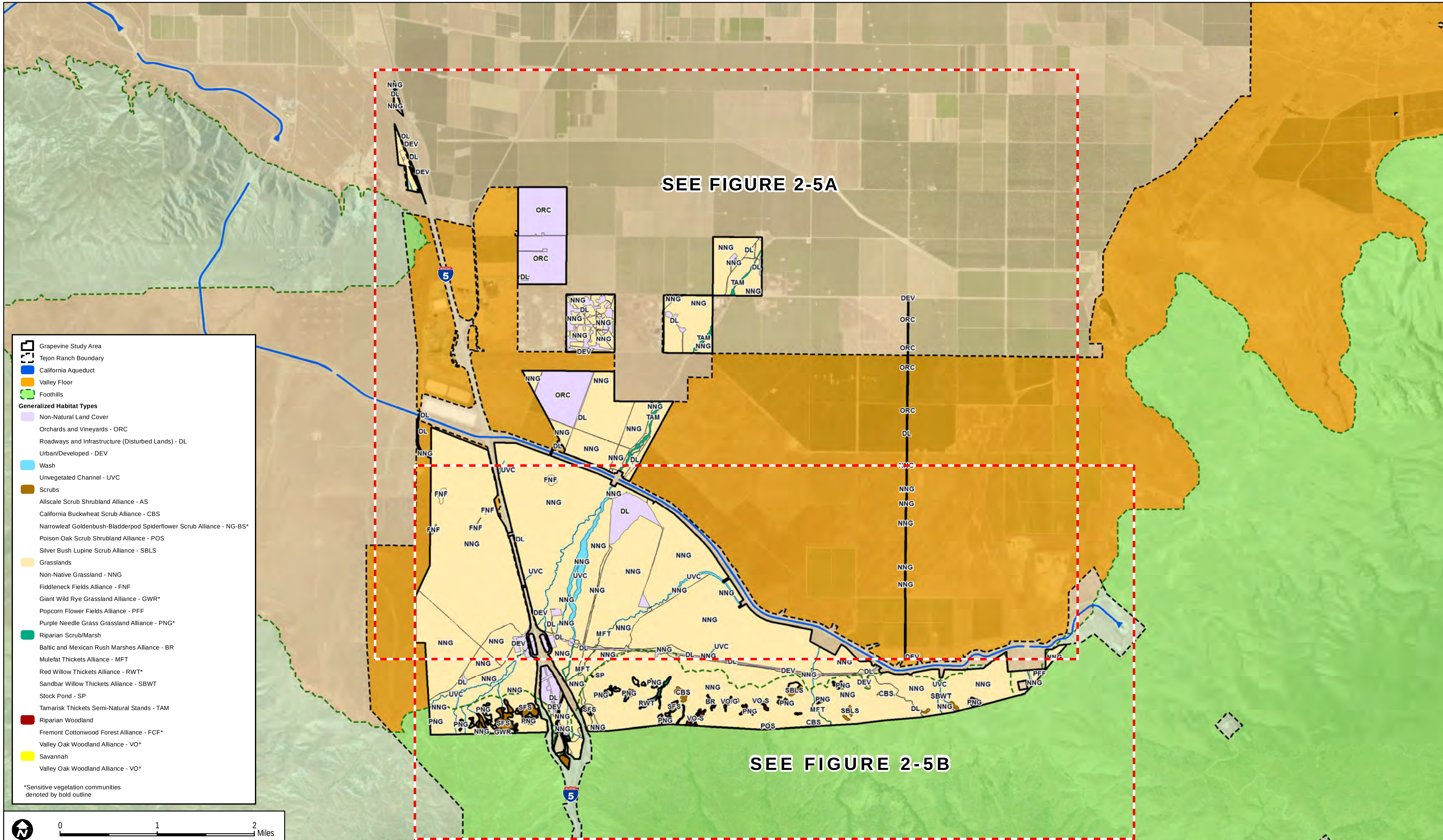
Table 2-2
Vegetation Alliances on the Grapevine Study Area

Generalized Habitat Type (Macrogroup)	Alliance or Land Cover Type	Total Acres	% of Total in Study Area
Vegetation Alliances on the Grapevine Specific Plan Area			
Scrubs (*California Coastal Scrub and Vancouverian Lowland Grassland and Shrubland*)	California Buckwheat Scrub Alliance	15	0.2%
	Narrowleaf Goldenbush-Bladderpod Spiderflower Scrub Alliance*	53	0.7%
	Poison Oak Scrub Shrubland Alliance	<0.5	<0.05%
	Silver Bush Lupine Scrub Alliance	9	0.1%
	Subtotal	*77*	*1%*
Grasslands (*California Annual and Perennial Grassland*)	Non-Native Grassland	6,869	84.6%
	Fiddleneck Fields Alliance	14	0.2%
	Giant Wild Rye Grassland Alliance*	<0.5	<0.05%
	Popcorn Flower Fields Alliance	9	0.1%
	Purple Needle Grass Grassland Alliance*	52	0.6%
	Subtotal	*6,944*	*85.5%*
Riparian Scrub/Marsh (*Southwestern North American Riparian, Flooded, and Swamp Forest and Western North*	Baltic and Mexican Rush Marshes Alliance	<0.5	<0.05%
	Mulefat Thickets Alliance	5	0.1%
	Red Willow Thickets Alliance*	8	0.1%
	Sandbar Willow Thickets Alliance	<0.5	<0.05%

Table 2-2
Vegetation Alliances on the Grapevine Study Area

Generalized Habitat Type (Macrogroup)	Alliance or Land Cover Type	Total Acres	% of Total in Study Area
American Wet Meadow and Low Shrub Carr)	Stock Pond	1	<0.05%
	Tamarisk Thickets Semi-Natural Stands[1]	30	0.4%
	Subtotal	*44*	*0.5%*
Wash	Unvegetated Channel	62	0.8%
	Subtotal	*62*	*0.8%*
Riparian Woodland (*California Forest and Woodlands and Southwestern North American Riparian, Flooded and Swamp Forest*)	Fremont Cottonwood Forest Alliance*	6	0.1%
	Valley Oak Woodland Alliance (Valley Oak–Arroyo Willow Association)*	10	0.1%
	Subtotal	*16*	*0.2%*
Savannah *(California Forest and Woodlands)*	Valley Oak Woodland Alliance (Valley Oak Woodland/Grass Association)*	5	0.1%
	Subtotal	*5*	*0.1%*
Non-Natural Land Covers	Orchards and Vineyards	492	6.1%
	Disturbed Lands	305	3.8%
	Urban/Developed	64	0.8%
	Subtotal	*862*	*10.6%*
	Total	**8,010**	**99%**
Vegetation Alliances on the Off-Site Impact Areas			
Scrubs (*Mojavean-Sonoran Desert Scrub*)	Allscale Scrub Shrubland Alliance	1	<0.05%
	Subtotal	*1*	*<0.05%*
Grasslands (*California Annual and Perennial Grassland*)	Non-Native Grassland	48	0.6%
	Subtotal	*48*	*0.6%*
Non-Natural Land Covers	Orchards and Vineyards	0	0.0%
	Roadways and Infrastructure (Disturbed Lands)	24	0.3%
	Urban/Developed	3	0.0%
	Subtotal	*27*	*0.3%*
	Total	**77**	**1.%**
	Grand Total	**8,087**	**100.0%**

1 The term semi-natural stands vs. alliance is used in the *Manual of California Vegetation* to distinguish between natural vegetation communities and vegetation types dominated by non-native plants (Sawyer et al. 2009).



SOURCES: TRC 2013a; USDA NIAP Imagery 2012

FIGURE 2-5

Vegetation Community Alliances and Land Covers - Index Map

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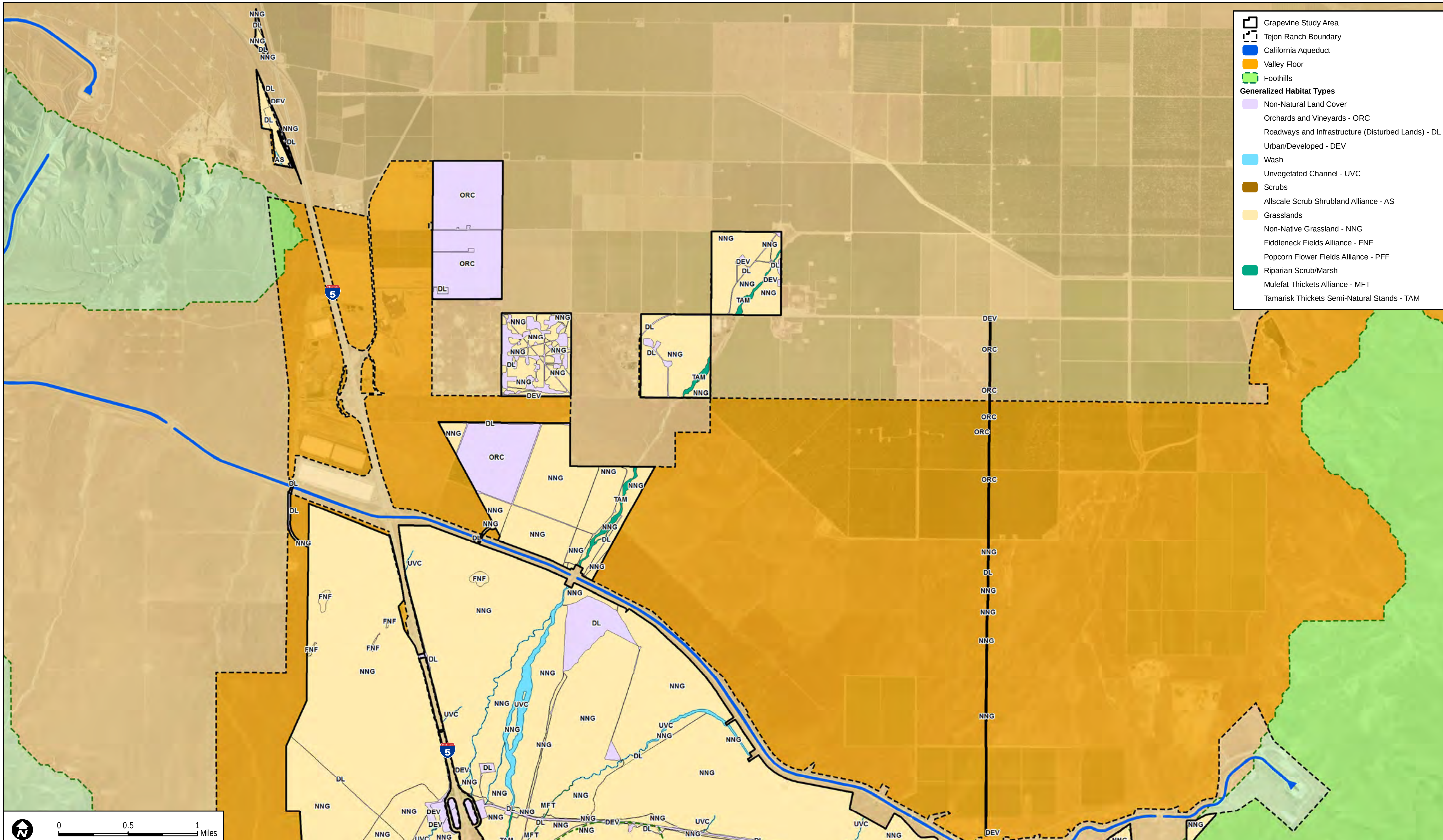

SOURCES: TRC 2013a; USDA NIAP Imagery 2012

FIGURE 2-5A

Vegetation Community Alliances and Land Covers - Valley Floor

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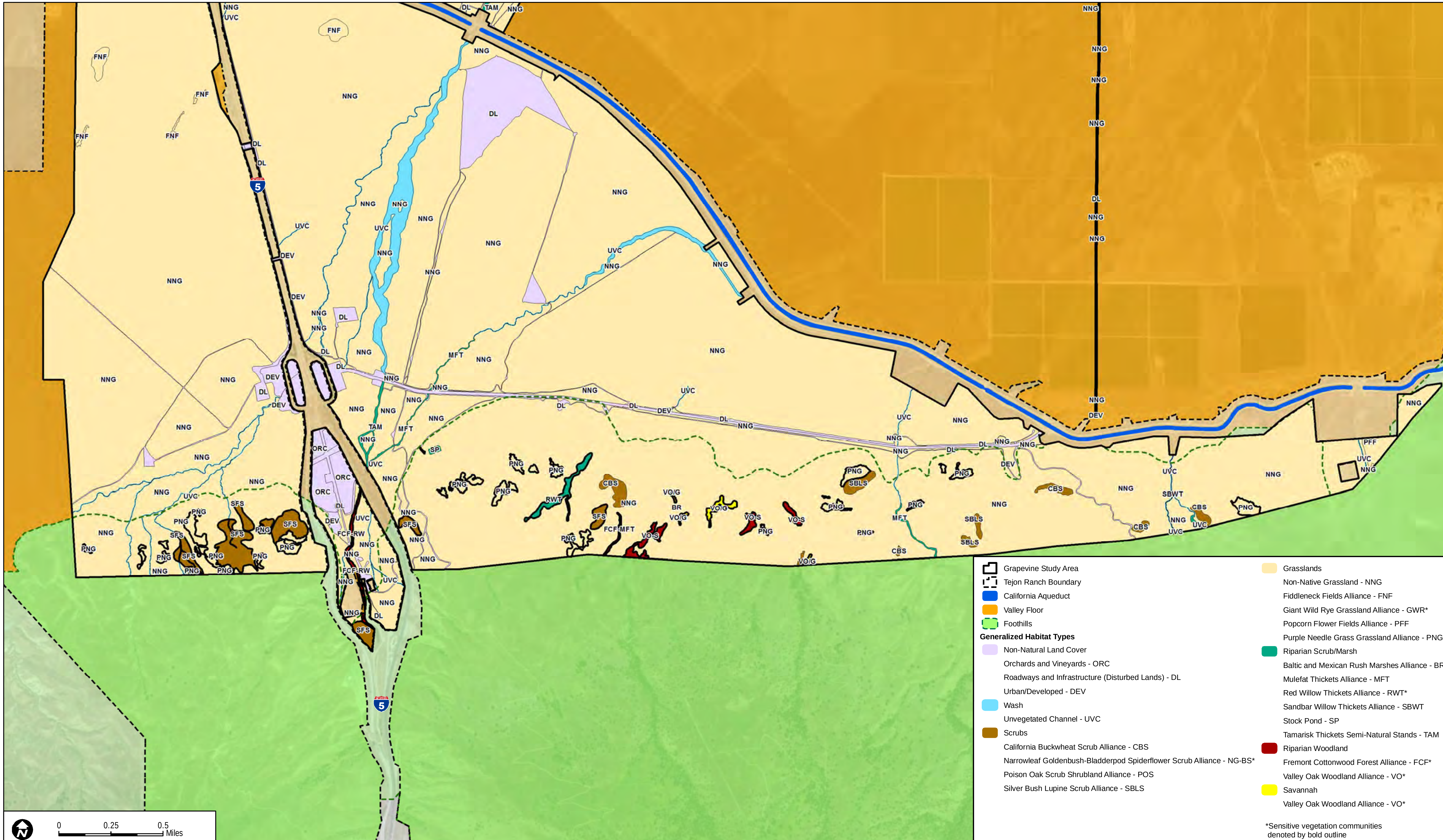

SOURCES: TRC 2013a; USDA NIAP Imagery 2012

FIGURE 2-5B

Vegetation Community Alliances and Land Covers - Foothills

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2.2.1 Distribution of Vegetation Communities

The vegetation communities in the study area are briefly described in this section by their distribution within the project-specific geographical areas described in Section 2.1.1. A brief description of each vegetation alliance or land cover type follows in Sections 2.2.2 through 2.2.8. Appendix D provides more information regarding vegetation communities on site.

2.2.1.1 Foothills

The foothills located in the Grapevine study area are dominated by non-native grasslands, which are not considered sensitive biological resources by CDFW (CDFG 2010a). Approximately 3% of the foothills area contains the purple needle grass grasslands alliance and the giant wild rye grasslands alliance, both of which include some native grasses and are considered sensitive biological resources by CDFW under CEQA (CDFG 2010a), and neither of which occurs on the valley floor. Unvegetated, non-natural areas are limited (comprising less than 1% of the foothill area), and are generally limited to existing trails, access roads, and infrastructure development areas (e.g., power line towers).

Riparian vegetation, including scrub and woodlands, are scattered throughout the foothills and many of the riparian alliances, including Baltic and Mexican rush marshes, red willow thickets (considered sensitive by CDFW), and sandbar willow thickets, are restricted to the foothill areas (i.e., do not occur on the valley floor). Approximately 1% of the unvegetated channels and washes; 32% of the Fremont cottonwood forest alliance, a sensitive natural community; and the 40% of the mulefat thickets alliance are located in the foothills. Noticeably absent is the invasive-dominated community tamarisk thickets, a semi-natural stand. Additionally, the valley oak alliance, which is considered sensitive by CDFW, is limited to the foothills. The following scrub alliances are restricted to the foothill areas of the Grapevine study area: California buckwheat scrub, narrowleaf goldenbush–bladderpod spiderflower (considered sensitive by CDFW), poison oak scrub shrubland, and silver bush lupine scrub alliances.

2.2.1.2 Valley Floor

The majority of the study area is within the San Joaquin Valley floor (78%). The valley floor is dominated by non-native grasslands (84%), but also contains the popcorn flower fields alliance and the fiddleneck fields alliance, neither of which are considered sensitive biological resources by CDFW under CEQA (CDFG 2010a).

The second highest type of land cover in the valley floor area (14%) is the non-natural land cover, which includes urban/developed lands, orchards and vineyards, access roads and infrastructure, and oil and gas equipment. Orchards and vineyards and oil and gas equipment are restricted to the valley floor.

Approximately 2% of the valley floor portion of the study area consists of riparian areas, which includes ephemeral, intermittent, and perennial streams and is described in more detail below.

Valley Floor Riparian

Approximately 1.6% of the valley floor consists of riparian areas. The majority (96%) of the valley floor riparian areas is located outside of the proposed project footprint. The vegetated riparian areas (0.6%) on the valley floor are limited to the Fremont cottonwood forest (4 acres) and mulefat thickets (3 acres)[3] alliances and tamarisk thickets semi-natural stands (29 acres). Only the Fremont cottonwood forest, all of which is located within proposed project open space and outside of the proposed project footprint, is considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a). All of the vegetated riparian areas in the valley floor[4] are within the bed and bank of either Grapevine Creek or a tributary to Cattle Creek (CC-2). A vast majority (99%) of the vegetated valley floor riparian areas, including the higher-quality native riparian communities and perennial portions of Grapevine Creek, are located in proposed project open space and outside of the proposed project footprint. The exception (1%) includes a road crossing and a trail crossing.

2.2.2 Scrubs

Within the study area, the following alliances are in the California coastal scrub macrogroup: the California buckwheat scrub, narrowleaf goldenbush–bladderpod spiderflower scrub, and silver bush lupine scrub alliances. The poison oak scrub alliance is within the Vancouverian lowland grassland and shrubland macrogroup and the allscale scrub alliance is within the Mojavean-Sonoran desert scrub macrogroup. These five alliances are described in more detail in Sections 2.2.2.1 through 2.2.2.5.

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3 Only the 3 acres of mulefat thickets and 4 acres of Fremont cottonwood forest are considered wetland waters of the state, which are areas that have hydric soils, hydrophytic vegetation, and hydrology (ACOE 1987, 2008). The 29 acres of tamarisk thickets are wholly contained within the bed and bank of stream channels and while non-native and invasive are considered to be riparian vegetation, but are not considered wetland waters because they do not contain hydric soils nor are dominated by hydrophytic vegetation.

4 There is a very small amount (0.5 acre) of tamarisk thickets semi-natural stands just downstream of where Grapevine Creek has been diverted and now flows west into a tributary to Cattle Creek (CC-2). This 0.5-acre area of tamarisk thickets is not subject to the jurisdiction of the RWQCB pursuant to the Porter-Cologne Water Quality Control Act or CDFW pursuant to Section 1602 of the California Fish and Game Code because the area does not currently have stream hydrology, including a bed and bank, or other evidence of flow, as defined by state guidelines (e.g., Fish and Game Code 1600; Vyverberg 2010; Brady and Vyverberg 2013). The relictual tamarisk thickets is not considered valley floor riparian, as defined in this BTR.

2.2.2.1 Allscale Scrub Alliance

The allscale scrub alliance is limited to an off-site area west of I-5 and the California Vehicle Enforcement Facility Weigh Station and is associated with Tecuya Creek. Approximately 1 acre of the off-site area consists of the allscale scrub alliance and 0.4 acre will be avoided by the proposed project. The allscale scrub alliance is characterized as having greater than 50% relative cover of allscale (*Atriplex polycarpa*)[5] in the shrub canopy, including 25% to 50% absolute cover. The understory of this alliance is characterized by shortpod mustard (*Hirschfeldia incana*), prickly Russian thistle (*Salsola tragus*), and non-native grasses such as ripgut brome, red brome, and oat (*Avena* spp.). Other native species noted in this association include bladderpod spiderflower (*Cleome isomeris*) and California broomsage (*Lepidospartum squamatum*).

The allscale scrub alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a).

2.2.2.2 California Buckwheat Scrub Alliance

The California buckwheat scrub alliance is limited to the southern portion of the study area, east of I-5, in the Tehachapi foothills. Less than 1%, or 15 acres, of the study area consists of the California buckwheat scrub alliance. Two associations within this alliance were mapped: the California buckwheat scrub–deerweed association and California buckwheat scrub association.

The two associations within the California buckwheat scrub alliance in the study area are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a), as described further in Section 3. The two associations of the California buckwheat scrub alliance on site are located within proposed project open space in the foothills.

2.2.2.3 Narrowleaf Goldenbush–Bladderpod Spiderflower Scrub Alliance

The narrowleaf goldenbush scrub alliance is described as a provisional alliance[6] in the *Natural Communities List* (CDFG 2010a). Since the publication of the *Natural Communities List* (CDFG 2010a), CDFW[7] has reclassified the alliance as the narrowleaf goldenbush–bladderpod spiderflower

5 The common name used in Appendix F to the BTR is cattle saltbush. However, because Sawyer et al. (2009) uses the common name allscale, this common name is used in the description of the vegetation communities.

6 An alliance is described as provisional if there are "sufficient data to propose the vegetation type," but "not enough research and regional information to be confident about its status in California's vegetation" (Sawyer et al. 2009).

7 Note that effective January 1, 2013, the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). Within this report, publications bearing the name CDFG (pre-2013) reflect the original authorship, while documents published after the name change reflect CDFW as the author.

scrub alliance and no longer considers the alliance provisional (California Native Plant Society (CNPS) and CDFW), based upon documentation presented in the *Vegetation Mapping and Accuracy Assessment Report for Carrizo Plain National Monument* (CNPS 2013) and *Carrizo Plain National Monument Vegetation Classification and Mapping Project* (CNPS 2011).

The narrowleaf goldenbush-bladderpod spiderflower scrub alliance is limited to the southern and central foothill area of the study area. Less than 1%, or 53 acres, of the study area consists of the narrowleaf goldenbush-bladderpod spiderflower scrub alliance, all of which is located within proposed project open space in the foothills. One association within the narrowleaf goldenbush-bladderpod spiderflower scrub alliance occurs in the study area, the bladderpod spiderflower scrub association.

The narrowleaf goldenbush-bladderpod spiderflower scrub alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills.

2.2.2.4 Poison Oak Scrub Alliance

The poison oak scrub alliance is limited to the southern and central portion of the study area in the Tehachapi foothills east of I-5. Less than 1 acre (more specifically, 0.5 acre), of the study area consists of the poison oak scrub alliance. One association within the poison oak scrub alliance occurs in the study area, the poison oak/herbaceous association, or *Toxicodendron diversilobum*/herbaceous association.

The poison oak scrub alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills.

2.2.2.5 Silver Bush Lupine Scrub Alliance

The silver bush lupine scrub alliance is limited to the southern and central portion of the study area in the Tehachapi foothills. Less than 1%, or 9 acres, of the study area consists of the silver bush lupine scrub alliance. One association within the silver bush lupine scrub alliance occurs in the study area, the silver bush lupine scrub association. The understory of this association is characterized by non-native grasses such as slender oat, ripgut brome, red brome, wild oat (*Avena fatua*), and soft brome (*Bromus hordeaceus*). Other native species noted in this association include nodding needlegrass (*Stipa cernua*).

The silver bush lupine scrub alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills.

2.2.3 Grasslands

All of the grasslands within the study area are in the California annual and perennial grassland macrogroup. Non-native grasslands and four native grassland alliances were mapped in the study area. The grasslands on site are described in Sections 2.2.4.1 through 2.2.4.5.

2.2.3.1 Non-Native Grassland

As noted in the description of BTR methods (Appendix B), non-native grasslands were mapped to the general habitat type because **none** of the semi-natural stands[8] are considered sensitive biological resources by CDFW under CEQA (CDFG 2010a).

Non-native grassland is by far the dominant land cover in the study area. Approximately 86%, or 6,917 acres, of the study area is mapped as non-native grassland, 77% of which is on valley floor and 23% of which is in the foothills.

Non-native grasslands are located throughout the study area and are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a).

2.2.3.2 Fiddleneck Fields Alliance

Less than 1%, or 14 acres, of the study area consists of the fiddleneck fields alliance, the majority of which is located west of I-5. All of this alliance occurs in the valley floor area of the study area.

The fiddleneck fields alliance, all located in the valley floor, is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a).

2.2.3.3 Giant Wild Rye Grassland Alliance

There is only one association in the giant wild rye grassland alliance that occurs in the study area—the giant wild rye association. The giant wild rye grassland association is limited to one stand located in the foothill area west of I-5, which is located within proposed project open space. Approximately 0.3 acre of the study area consists of the giant wild rye grassland association.

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8 Semi-natural stands are invasive naturalized plant groups where "plants are sufficiently dominant to have replaced most of the natives, and, in many situations, the associates are themselves non-native species" (Sawyer et al. 2009).

The giant wild rye alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a), and all of this alliance is located within proposed project open space in the foothills.

2.2.3.4 Popcorn Flower Fields Alliance

The popcorn flower fields alliance is limited to one stand located at the southeastern portion of the study area in the valley floor. Less than 1%, or 9 acres, of the study area consists of the popcorn flower fields alliance. There are several alliances and associations that the Natural Communities List (CDFG 2010a) relates to wildflower fields, only one of which occurs in the study area: the popcorn flower fields alliance. See Appendix D for additional information regarding the evolution of the natural communities list with respect to the term "wildflower fields" to describe vegetation communities.

The popcorn flower fields alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a), and all of this alliance is located within proposed project open space in the valley floor.

2.2.3.5 Purple Needle Grass Grassland Alliance

The purple needle grass grassland alliance is limited to the southern portion of the study area, east of I-5 in the foothill area. Less than 1%, or 52 acres, of the study area consists of the purple needle grass grassland alliance.

The purple needle grass grassland alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and 95% (49 acres) of this alliance is located within proposed project open space in the foothills.

2.2.4 Riparian Scrub/Marsh

There are two riparian scrub macrogroups that occur in the study area: (a) Southwestern North American riparian, flooded, and swamp forest and (b) Western North American wet meadow and low shrub carr. Within the Southwestern North American riparian, flooded, and swamp forest macrogroup, the study area supports three native riparian scrub alliances (mulefat thickets, red willow thickets, and sandbar willow thickets) and one non-native riparian scrub semi-natural stand (tamarisk thickets). Within the Western North American wet meadow and low shrub carr macrogroup, the study area supports one riparian scrub alliance (Baltic and Mexican rush marshes). In addition, the on-site stock pond is described in this section because it is surrounded by cattails. Each alliance is described in more detail in Sections 2.2.4.1 through 2.2.4.6.

2.2.4.1 Baltic and Mexican Rush Marshes Alliance

The Baltic and Mexican rush marshes alliance is limited to the southern portion of the study area, east of I-5, in the foothill area. Approximately 0.06 acre of the study area consists of the Baltic and Mexican rush marshes alliance. One association within the Baltic and Mexican rush marshes alliance occurs in the study area, the Baltic rush marsh association.

The Baltic and Mexican rush marshes alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills.

2.2.4.2 Mulefat Thickets Alliance

The mulefat thickets alliance occurs within Live Oak Creek and within a tributary to Cattle Creek in both the foothills and valley floor. Less than 1%, or 5 acres, of the study area consists of the mulefat thickets alliance. One association within the mulefat thickets alliance occurs in the study area, the mulefat thickets association.

The mulefat thickets alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and 97% (4.6 acres) of this alliance is located within proposed project open space in the foothills (41%) and the valley floor (59%) (see also Section 2.3).

2.2.4.3 Red Willow Thickets Alliance

The red willow thickets alliance is limited to the southern and central portion of the study area in the foothill area. Less than 1%, or 8 acres, of the study area consists of the red willow thickets alliance. One association within the red willow thickets alliance occurs in the study area, the red willow thickets association.

The red willow thickets alliance, which is also associated with streams, **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills (see also Section 2.3).

2.2.4.4 Sandbar Willow Thickets Alliance

The sandbar willow thickets alliance is limited to two small patches within the southeastern portion of the study area in the foothill area in Cattle Creek. Approximately 0.4 acre of the study area consists of the sandbar willow thickets alliance. One association within the sandbar willow thickets alliance occurs in the study area, the sandbar willow thickets association.

The sandbar willow thickets alliance, which is also associated with streams, is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills (see also Section 2.3).

2.2.4.5 Stock Pond

There is a stock pond in the southern portion of the study area, east of I-5, in the foothill area. The stock pond contains open water (0.4 acre), which lacks emergent vegetation, and supports the 0.5 acre of the southern cattail association (within the cattail marshes alliance) around the margin. There is a very small patch of willows and tamarisk growing along the northern edge of the stock pond.

The stock pond is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and it is located within proposed project open space in the foothills.

2.2.4.6 Tamarisk Thickets Semi-Natural Stands

The tamarisk thickets semi-natural stands are limited to Grapevine Creek in the valley floor. Less than 1%, or 30 acres, of the study area consists of tamarisk thickets semi-natural stands.

Tamarisk thickets semi-natural stands outside of streams are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a). A majority of the tamarisk thickets semi-natural stands occur within the bed and bank of Grapevine Creek, and Grapevine Creek is considered a sensitive biological resource under CEQA, as described in greater detail in Section 2.3. The majority of this alliance (29 acres, or 99%) is located within proposed project open space in the valley floor.

2.2.5 Wash

Unvegetated channel, described in Section 2.2.5.1, is the only land cover type in the wash general habitat type.

2.2.5.1 Unvegetated Channel

Unvegetated channels on site are associated with the downstream portions of Grapevine Creek and associated tributaries, Live Oak Creek, Cattle Creek and associated tributaries, Pastoria Creek, and isolated drainages. Unvegetated channel is also present in a portion of Tecuya Creek, located within an off-site impact area. Less than 1%, or 62 acres, of the study area consists of unvegetated channels and almost all (99%) of the unvegetated channels occur within the valley floor.

Unvegetated channels are **not** considered sensitive biological resources by CDFW under CEQA (CDFW 2010a), but see Section 2.3 for the analysis of jurisdictional resources. Of the 62.4 acres of unvegetated channel in the study area, 55.5 acres (89%) is located within proposed project open space (2% in the foothills and 98% in the valley floor), 3.1 acres is located in an avoidance area in the off-site impact areas in the valley floor (5%), and 1.6 acres (3%) is located within a proposed temporary impact area in the valley floor that would be restored after construction. Thus, a total of 97% of unvegetated channel would be conserved, avoided, or restored on site (see also Section 2.3).

2.2.6 Riparian Woodland

Within the study area, there is one alliance in the forest and woodland macrogroup: the valley oak woodland alliance. Two associations within this alliance were mapped: the valley oak–arroyo willow association and valley oak woodland/grass association. The valley oak–arroyo willow association is discussed in Section 2.2.6.1, and the valley oak woodland/grass association is described under savannahs in Section 2.2.7. The Fremont cottonwood forest alliance is within the Southwestern North American riparian, flooded, and swamp forest macrogroup and is discussed in Section 2.2.6.2.

2.2.6.1 Valley Oak Woodland Alliance (Riparian Woodland)

Two associations within the valley oak woodland alliance occur in the study area: the valley oak woodland–arroyo willow thickets association and the valley oak woodland/grass association. The valley oak woodland–arroyo willow thickets association is considered a riparian woodland and is described in this section. The valley oak woodland/grass association is described in Section 2.2.7.1 under savannahs. The valley oak woodland–arroyo willow association is located in the foothill area in the southern and central portion of the study area and consists of less than 1%, or 10 acres, of the study area.

The valley oak woodland alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills (see also Section 2.3).

2.2.6.2 Fremont Cottonwood Forest Alliance

Less than 1%, or 6 acres, of the study area consists of the Fremont cottonwood forest alliance, which is located within Grapevine Creek in the valley floor and the foothill area. Two associations within the Fremont cottonwood forest alliance occur in the study area, the Fremont cottonwood forest–red willow thickets association and the Fremont cottonwood forest–mulefat thickets association.

The Fremont cottonwood forest alliance, which is also associated with streams, **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills (32%) and the valley floor (68%) (see also Section 2.3).

2.2.7 Savannah

Within the study area, there is one alliance in the California forest and woodland macrogroup: the valley oak woodland alliance. Two associations were mapped within this alliance: the valley oak–arroyo willow association and valley oak woodland/grass association. The valley oak–arroyo willow association is described under riparian woodland in Section 2.2.6. The valley oak woodland/grass association (or savannah) is discussed in Section 2.2.7.1.

2.2.7.1 Valley Oak Woodland Alliance (Savannah)

Two associations within the valley oak woodland alliance occur in the study area, the valley oak woodland–arroyo willow thickets association and the valley oak woodland/grass association. The valley oak woodland/grass association is considered a savannah and is described in this section (Section 2.2.7.1). The valley oak woodland–arroyo willow thickets association is considered a riparian woodland and is described in Section 2.2.6.1.

The valley oak woodland alliance is limited to the southern and central portion of the study area in the foothill areas. Less than 1%, or 5 acres, of the study area consists of the valley oak woodland/grass association.

The valley oak woodland alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010a) and all of this alliance is located within proposed project open space in the foothills.

2.2.8 Non-Natural Land Covers

2.2.8.1 Orchards and Vineyards

Orchards and vineyards primarily occur on loam, sandy loam, fine sandy loam, and loamy sand. Approximately 6%, or 493 acres, of the study area is mapped as orchards and vineyards, which is the second most common land cover in the study area after the grasslands. These acreages are calculated spatially in GIS.[9]

Orchards and vineyards consist of non-native crops grown for commercial use and are **not** considered a sensitive biological resource by CDFW under CEQA (CDFW 2010a). See the Agricultural Resources Technical Report for additional information on agricultural resources within the study area.

2.2.8.2 Roadways and Infrastructure (Disturbed Lands)

Dirt roads greater than 10 feet wide and devoid of vegetation were mapped as disturbed lands. Dirt roads less than 10 feet wide were mapped where trails are proposed to show that trails are being sited on existing roads. Areas that have been disturbed or cleared were mapped as disturbed lands. Additionally, graded or cleared areas for existing infrastructure, such as oil-production related equipment, substations and subsurface oil and gas pipelines with surface equipment, were also mapped as disturbed lands. Approximately 4%, or 329 acres, of the study area is mapped as disturbed lands and this land cover occurs throughout the study area.

The study area also has infrastructure such as electric power poles and transmission towers, and subsurface communication lines. These infrastructure-related disturbance areas are limited in scale, and sparsely distributed, and were considered non-native grasslands rather than separately tabulated as disturbed lands areas.

Disturbed lands are either devoid of vegetation or dominated by a collection of non-native forbs and are **not** considered a sensitive biological resource by CDFW under CEQA (CDFW 2010a).

2.2.8.3 Urban/Developed

Areas mapped as urban/developed lands include paved roads, commercial areas, a private residence, and landscaped areas. Urban/developed land occurs in isolated locations in the study area, primarily Edmonston Pumping Plant Road and existing commercial areas near the I-5. Approximately 1%, or 68 acres, of the study area is mapped as urban/developed.

Urban/developed land typically does not support any vegetation or is a landscaped area and is **not** considered a sensitive biological resource by CDFW under CEQA (CDFW 2010a).

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9 It is important to note that for agricultural resources, acreages are calculated using bearing acreages and the Agricultural Resources Technical Report should be referenced for bearing acreage information related to the Specific Plan. However, for biological resources, the use of spatial acreages of land covers is appropriate to address impacts.

2.3 Jurisdictional Delineation and Determinations

A jurisdictional delineation of all water features in the Specific Plan Area, including streams, seeps, springs, and wetland waters was conducted in April, May, June, and July 2013 by Dudek biologists, and off-site impact areas were surveyed by Dudek biologists in October 2014 and July 2015.

2.3.1 Federal Jurisdiction

The methods for mapping federal waters under the jurisdiction of the ACOE are described in detail in a jurisdictional delineation report (Appendix E-2) and summarized in Appendix B to this BTR. Subsequent jurisdictional delineation field surveys were conducted by Dudek in October 2014 and July 2015 for the proposed off-site impact areas outside of the 2013 survey area, and the delineation methods are summarized in Appendix B to this BTR. In brief, a formal (routine) jurisdictional wetlands delineation was conducted within the study area by Dudek biologists on April 16–18, 2013; May 13 and 14, 2013; June 18, 19, 26, and 27, 2013; July 9, 16, and 18, 2013; October 28, 2014; and July 29, 2015. All areas of the study area were surveyed on foot for waters of the United States, including wetlands, under the jurisdiction of ACOE, pursuant to Section 404 of the federal Clean Water Act (CWA). Non-wetland waters of the United States are delineated based on the presence of an ordinary high-water mark (OHWM) as determined using the methodology in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (ACOE 2008a). Wetland waters of the United States are delineated based on methodology described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008b). The ACOE and U.S. Environmental Protection Agency (EPA) Rapanos Guidance states that the ACOE will regulate: (i) traditional navigable waters of the United States and (ii) their adjacent wetlands as well as (iii) non-navigable tributaries to traditional navigable waters that are relatively permanent and (iv) wetlands that directly abut such tributaries (ACOE and EPA 2008). In addition, if a significant nexus has been determined, the ACOE may also assert jurisdiction over (i) non-navigable tributaries that are not relatively permanent and (ii) their adjacent wetlands, as well as (iii) wetlands that are adjacent to but that do not directly abut a relatively permanent non-navigable tributary (ACOE and EPA 2008). The Rapanos Guidance was used to conduct the delineation.

With respect to federal waters, the study area does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the CWA. More specifically, the ACOE determined that the following are not waters of the U.S. pursuant to Section 33 of the Code of Federal Regulations (CFR), Part 325.9: Grapevine Creek, its tributaries (GV-1 through GV-9); Pastoria Creek and its tributaries; Cattle and Live Oak Creeks; tributaries to Cattle

Creek (CC-1 and CC-2); and five unnamed drainages that are isolated and wholly contained in the study area (meaning they originate and terminate within the study area) (Isolated Drainages A–E) (Appendix E-1). Tecuya Creek, located in the off-site impact area, was not addressed in the ACOE determination, but like the features listed above, it dissipates into the valley floor and therefore would not be subject to federal jurisdiction under Section 404 of the CWA.

2.3.2 State Jurisdiction

The methods for mapping state waters under the jurisdiction of the RWQCB and CDFW are described in detail in Appendix B to this BTR. RWQCB typically asserts jurisdiction over the same areas as ACOE. In brief, a jurisdictional delineation of waters of the state within the study area was conducted by Dudek biologists in 2013, 2014, and 2015 during the delineation of federal waters of the U.S, described above. Guidance from ACOE documents was used to determine the extent of resources regulated by the RWQCB under the Porter-Cologne Act, and are described as follows. Non-wetland waters subject to RWQCB jurisdiction were delineated based on the presence of an OHWM, as determined by ACOE guidance, or any other surface water regulated under the Porter-Cologne Act. Wetland waters subject to RWQCB jurisdiction were mapped based on methods described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008b). *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2008a) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2010) were reviewed to assist in determining the limits of non-wetland waters under the jurisdiction of the RWQCB.

CDFW asserts jurisdiction over rivers, streams and lakes, and riparian vegetation associated with these features. Waters of the state were delineated based on watercourse characteristics present in the field, which include surface flow, sediment transportation and sorting, physical indicators of channel forms, channel morphology, and riparian habitat associated with a streambed. These characteristics are based on the CDFW guidance document *A Review of Stream Processes and Forms in Dryland Watersheds* (Vyverberg 2010). These characteristics are further described in the *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which were not published at the time of the 2013 delineation. However, in subsequent review of this document, the 2013, 2014, and 2015 delineations were consistent with the methods described in the Brady and Vyverberg (2013) report, including mapping areas consistent with the fluvial/watercourse and upland indicators defined in the report. Drainage features were delineated either using a Trimble GeoXT handheld GPS unit with sub-meter accuracy or directly onto a 500-scale (1 inch

= 500 feet) topographic base with 5-foot contours overlaid onto an aerial photographic base (USDA 2012; Intermap 2013). All of the drainage features were surveyed on foot and the width of the feature was recorded where changes in the width occurred.

Within the study area, the USGS 7.5-minute quadrangle topographical maps identify Grapevine Creek, Pastoria Creek, Live Oak Creek, and Cattle Creek, tributaries to these creeks; Tecuya Creek; and additional unnamed streams (USGS n.d.). Within the study area, approximately 59 creeks and unnamed streams are shown on the USGS 7.5-minute quadrangle topographical maps and were visited during the jurisdictional delineation. Of these, 38 lacked field indicators for a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, hydrophytic vegetation, or other watercourse features/fluvial indicators, as defined by Vyverberg (2010) and Brady and Vyverberg (2013). The majority of the 38 non-jurisdictional areas mapped on the USGS maps as streams had some type of topographical relief, such as a swale, canyon, or low point. In some cases, there were areas that were relatively flat with no change in topography, but were mapped on USGS maps as streams.

To ensure a conservative analysis with respect to impacts to waters of the state under the jurisdiction of CDFW and RWQCB, this BTR analyzes impacts to all of the features identified on the USGS maps, including the remaining 38 unnamed USGS features that Dudek determined were not jurisdictional, as impacts to waters of the state. In order to estimate the impacts to the remaining 38 non-jurisdictional features, the approximate area of USGS streams in the proposed project footprint were manually digitized by tracing a mouse over features displayed on a computer monitor (i.e., heads-up digitizing). In brief, USGS line features that overlaid areas with the following features were digitized: (1) topographical relief, such as a swale, canyon, or low point indicating that a drainage is present; (2) a photo signature indicative of a drainage; or (3) riparian scrub/marsh or riparian woodland vegetation. Features that lacked the aforementioned features were mapped as a 1-foot-wide drainage. For areas outside of the proposed project footprint, linear feet of these USGS streams was calculated using the USGS 7.5-minute quadrangle topographical maps. Appendix E-3 describes these methods in detail.

Based on the delineation of waters of the state in the field, heads-up digitizing, and USGS stream data, the following waters of the state or potential waters of the state occur in the study area (see Figure 2-4):

- 50,473 linear feet of ephemeral non-wetland waters of the state, 20% of which is in the foothills and 80% of which is in the valley floor
- 35,879 linear feet of intermittent non-wetland waters of the state, 7% of which is in the foothills and 93% of which is in the valley floor

- 10,778 linear feet of wetland waters of the state, 16% of which is in the foothills and 84% of which is in the valley floor
- 123,352 linear feet of USGS streams that may be considered jurisdictional by the state, 44% of which is in the foothills and 56% of which is in the valley floor.

Table 2-3 summarizes the results of the delineation of waters of the state in the field, heads-up digitizing, and USGS stream data. Additionally, Appendix D includes detailed descriptions of the vegetation community alliances and land covers that are coincident with the jurisdictional features discussed in this section.

Table 2-3
Linear Feet of Waters of the State and Other USGS Stream Features in the Study Area

Jurisdiction	Linear Feet
Non-Wetland Waters of the State—Ephemeral	50,473
Non-Wetland Waters of the State—Intermittent	35,879
Wetland[1] Waters of the State	10,778
USGS Stream Features[2]	**123,352**
Total	**220,482**

Notes:
1. The term "wetlands" refers to locations that meet the criteria for wetlands established by the ACOE (i.e., have hydric soils, hydrophytic vegetation, and hydrology) (ACOE 1987, 2008b).
2. Refers to the 38 unnamed USGS features that Dudek determined were not jurisdictional waters of the state.

2.4 Plant Resources

Special-status plant surveys were conducted by Dudek in both the Specific Plan Area and the proposed off-site impact areas, as discussed in detail below. Focused plant surveys were floristic in nature and conformed to the CNPS Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special Status Native Populations and Natural Communities (CDFG 2009), and the General Rare Plant Survey Guidelines (Cypher 2002). Multiple survey passes were completed in order to maximize detection of species during their bloom periods. More details on the methods used to conduct special-status plant surveys are described in detail in Appendix B.

As discussed further below, no plant species listed as endangered or threatened under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA) were observed on site; and only two plant species with a CRPR were observed in the foothills—all occurrences of the calico monkeyflower are located in proposed project open space in the foothills and the majority of the occurrences of the Piute Mountains navarretia are located in proposed project open space in the foothills. No plant species listed as endangered or threatened under FESA or CESA or with a CRPR were observed in the off-site impact areas.

Prior to conducting surveys, Dudek identified special-status botanical resources potentially present in the study area through a thorough literature review using print and digital sources and through consultation between Dudek botanists and TRC staff. Additionally, prior to conducting surveys, Dudek conducted reference population checks because plant species bloom at slightly different times each year depending on temperature, rainfall patterns, elevation, and other environmental factors. Reference population checks involve locating known special-status plant species populations during a time frame when they are known to be blooming or exhibit other phenological characteristics that allow for species identification. Observations of reference populations during peak phenology provide assurance that these species would be identifiable if they were present in the study area.

Dudek started its plant surveys focussing on the Specific Plan Area, which has a variety of vegetative covers as discussed in Section 2.2. In early April 2013,, Dudek conducted a reference population check for Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*) that was documented in the study area (TRC 2013c), but no Tejon poppies were observed in or around the mapped location. In mid-April, Dudek staff conducted reference population checks for many of the other special-status plants that could occur in the study area. Data gathered from the reference population checks were used to confirm the appropriate time to begin field surveys. Table 2-4 includes a list of the special-status plants that were observed at the reference sites, as well as the observation date; all the species included in Table 2-4 were observed on the Ranch.

Table 2-4
Summary of Special-Status Reference Site Checks Conducted in 2013

Common Name	Scientific Name	Status (Federal/State/CRPR)	Date Observed at Reference Site
round-leaved filaree	*California macrophylla*	None/None/1B.1	April 20, 2013
alkali mariposa lily	*Calochortus striatus*	None/None/1B.2	April 21, 2013
Vasek's clarkia	*Clarkia tembloriensis* ssp. *calientensis*	None/None/1B.1	March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
Tehachapi buckwheat	*Eriogonum callistum*	None/None/1B.1	April 21, 2013
Tejon poppy	*Eschscholzia lemmonii* ssp. *kernensis*	None/None/1B.1	April 20, 2013 March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
striped adobe-lily	*Fritillaria striata*	None/ST/1B.1	April 20, 2013

Table 2-4
Summary of Special-Status Reference Site Checks Conducted in 2013

Common Name	Scientific Name	Status (Federal/State/CRPR)	Date Observed at Reference Site
sylvan microseris	*Microseris sylvatica*	None/None/4.2	March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
calico monkeyflower	*Mimulus pictus*	None/None/1B.2	April 19, 2013
Piute Mountains navarretia	*Navarretia setiloba*	None/None/1B.1	April 21, 2013 March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE/SE/1B.1	April 21, 2013
San Bernardino aster	*Symphyotrichum defoliatum*	None/None/1B.2	June 20, 2013

Notes:
FE = federally endangered; SE = state endangered; CRPR = California Rare Plant Rank

In 2013, the botanical team conducted two passes of field surveys within the 8,010-acre Grapevine Specific Plan Area and adjacent lands on the Ranch. Prior to gathering field survey data, the special-status plant species with some potential to occur on site were grouped according to their blooming period to determine which groups of plants could be observed at the same time. Pass 1 was conducted in April 2013 and Pass 2 was conducted in July 2013. Though the rainfall was slightly below average for the 2012–2013 year, the special-status plant surveys were conducted at the peak phenology for all the special-status plant species expected to occur on the site and were comprehensive and site-wide.

An additional site visit was conducted in October 2013 to review mapping of an occurrence of Piute Mountains navarretia.

The off-site impact areas are generally highly disturbed, as they are located directly adjacent to roads, agriculture, or other development areas and dominated by non-native grasslands (63%) and are non-natural land covers (e.g., orchards and vineyards, roadways and infrastructure, and urban/developed lands) (35%). Nonetheless, comprehensive surveys were conducted in 2015. During the survey, the following disturbance was noted in the off-site impact areas: (1) evidence of disking and historic agriculture (i.e., irrigation system); (2) presence of debris (e.g., asphalt rubble); (3) bioturbation of soils (e.g., ground squirrel burrows); and (4) invasion of non-native forbs. Additionally, these areas are located directly adjacent to roads or development areas and the biological function has been degraded overtime.

In preparation for the 2015 special-status plant surveys conducted in the off-site impact areas, known occurrences of Tejon Poppy and calico monkeyflower were visited on March 30, 2015, but were not observed. Calico monkeyflower is not expected to occur in the off-site impact areas because these areas lack suitable habitat for the species, including broadleafed upland forest, cismontane woodland and granitic soils. Additionally, based upon California Natural Diversity Database (CNDDB) records, calico monkeyflower is known to occur in the foothills and mountain areas adjacent to the valley, but not in the valley floor proper. Additionally, Tejon poppy has a low potential to occur in the off-site impact areas because this species is typically found on clay soils (ESRP 2015), which are not present in the off-site impact areas, and the area is disturbed, as described above. Thus, while Tejon Poppy and calico monkeyflower were not visible (based upon reference site checks), these species are not expected to occur in the off-site impact areas. Known occurrences of Piute Mountains navarretia were visited on March 30, 2015, and were observable, and known occurrences of San Bernardino aster were visited on July 21, 2015, and were observable.

In 2015, rare plant surveys were conducted within the off-site impact areas of the study area. Pass 1 was conducted in April 2015 and included the majority of the off-site impact areas; and Pass 2 was conducted in July 2015 for all of the off-site impact areas. Rainfall for the 2015 year was below average. The special-status plant surveys were conducted during the typical blooming periods for all the special-status plant species expected to occur in the off-site impact area.

In total, the botanical survey team spent a total of 206 person-days (approximately 2,000 hours) conducting focused surveys for special-status plants. Table B-1 in Appendix B lists all field survey dates, personnel, times, and weather conditions.

The results of these surveys are summarized in Sections 2.4.1, 2.4.2, and 2.4.3, and overall results of the flora observed on site are described in Appendix F, Plant Compendium.

2.4.1 Protected Plant Species under the Federal Endangered Species Act

No plant species listed as endangered or threatened under FESA were observed in the study area, nor were any candidate species for federal listing found in the study area.

2.4.2 Protected Plant Species under the California Endangered Species Act

No plant species that are listed under CESA were found in the study area.

2.4.3 Non-Listed Special-Status Plant Species under the California Environmental Quality Act

CDFW has developed a list of "special plants"—"a broad term used to refer to all the plant taxa inventoried by the Department of Fish and Wildlife's California Natural Diversity Database (CNDDB), regardless of their legal or protection status" (CDFW 2015a). This is a broader list than those species that are protected under FESA, CESA, and other Fish and Game Code provisions. Plants with a CRPR of 4 are not considered rare from a statewide perspective. As described below, only plants with a CRPR of 1 were detected on site, and are therefore analyzed in this BTR.

There were two plants that CDFW considers having special status observed within the study area, Piute Mountains navarretia (CRPR 1B.1) and calico monkeyflower (*Mimulus pictus*; CRPR 1B.2). Calico monkeyflower and Piute Mountains navarretia occurs in the foothill area. No special-status plants were observed in the valley floor portion of the study area. The on-site observations of special-status plants are summarized in Table 2-5 and shown on Figure 2-6, Special-Status Plants.

Table 2-5
Special-Status Plants Observed in the Study Area

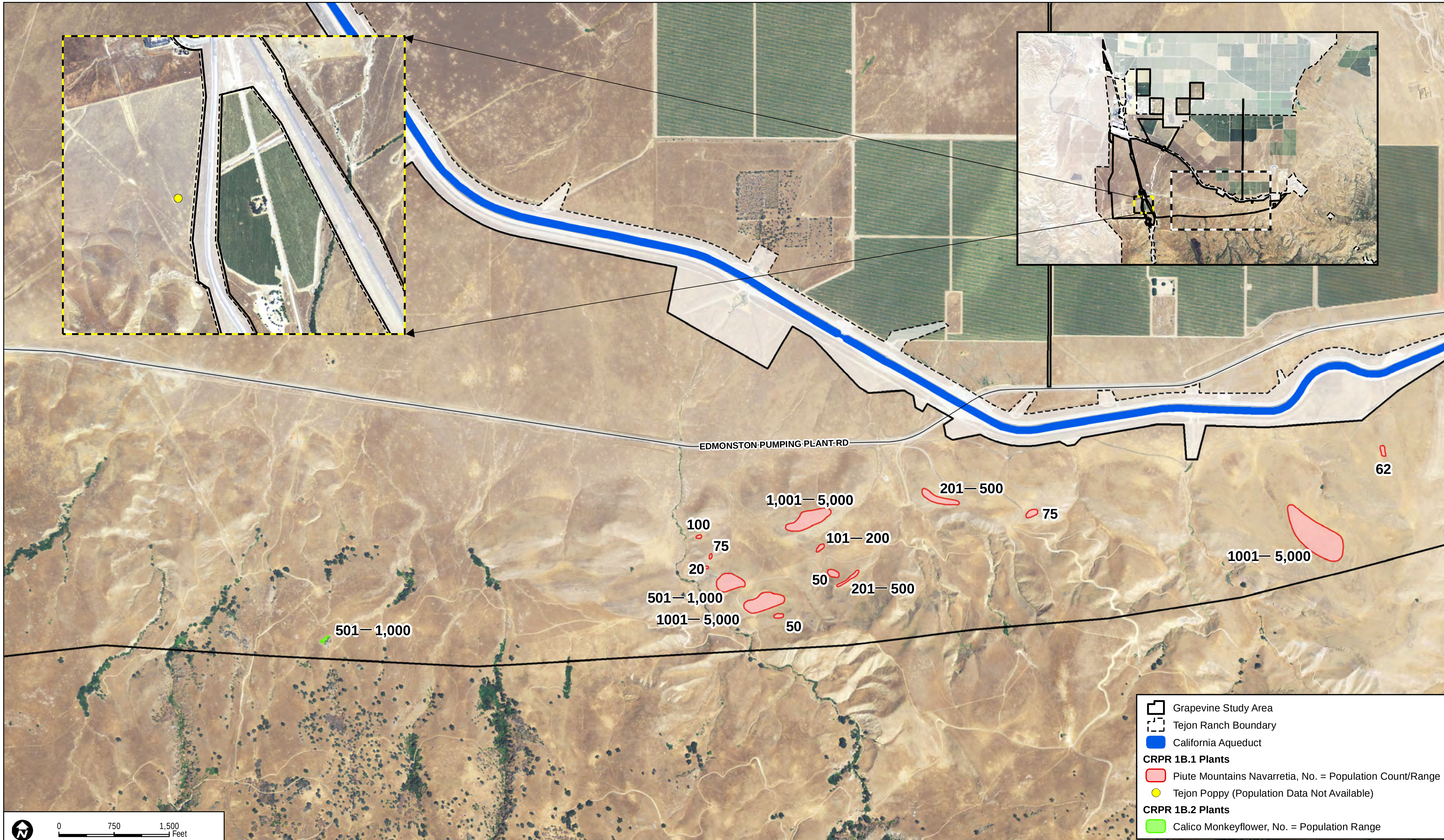
Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Location On Site
calico monkeyflower	*Mimulus pictus*	None/None/1B.2	Broadleafed upland forest, cismontane woodland, granitic, disturbed areas/annual herb/Mar–May/328–4,692	Calico monkeyflower was observed in the southern portion of the study area in the foothills. There is one occurrence in the study area that supports 501 to 1,000 individuals; all occurrences are located in proposed project open space in the foothills.
Piute Mountains navarretia	*Navarretia setiloba*	None/None/1B.1	Cismontane woodland, pinyon and juniper woodland, valley and foothill grassland, clay or gravelly loam/annual herb/Apr–Jul/935–6,890	Piute Mountains navarretia was observed in the southern portion of the study area in the foothills. There are 14 occurrences in the study area that support 4,940 to 18,587 individuals and 71% to 76% (3,373 to 12,484 individuals) of the Piute Mountains navarretia on site are located in proposed project open space in the foothills.

As summarized in Appendix G, Evaluation of Special-Status Plants, Tejon poppy (CRPR 1B.1) was identified in the study area in open space in 1999 west of I-5 (TRC 2013b) at the southern edge of the valley floor adjacent to the foothills; this is the only special-status plant species that was identified in the study area prior to the project-specific surveys in 2013.[10] However, this species was not observed in this location or elsewhere in the study area during the 2013 special-status plant surveys (see Appendix B for additional information regarding reference population verification surveys). The dichotomous keys for poppies (*Eschscholzia* spp.) that have been published since 1999 have made it easier to distinguish poppies, and it is possible that the 1999 observation was mistakenly identified as Tejon poppy. While there is suitable grassland habitat within the study area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015b), because focused surveys were negative and the species was detectable during these surveys on the Ranch, this species is not considered to be present in the study area. Additionally, as described previously, Tejon poppy is not expected to occur in the off-site impact areas nor was it observed.

2.5 Wildlife Resources

Wildlife habitat assessments and surveys were conducted in the study area during 2013, 2014, and 2015. Habitat assessments were conducted for all special-status species with ranges that include the study area, including blunt-nosed leopard lizard. U.S. Fish and Wildlife Service (USFWS) protocol-level surveys were conducted for California red-legged frog (*Rana draytonii*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Focused wildlife surveys were conducted for golden eagle (*Aquila chrysaetos*) and other nesting and/or wintering raptors. Camera surveys were conducted for ringtail (*Bassariscus astutus*), San Joaquin kit fox, and to document general wildlife use and movement. Small mammal trapping studies were conducted for presence of kangaroo rat (*Dipodomys* spp.) and for Tulare grasshopper mouse (*Onychomys torridus tularensis*). Additional wildlife surveys include a burrow/den survey addressing various wildlife species that use burrows and dens for reproductive activities and/or refuge, passive acoustic bat surveys at fixed monitoring locations, and bat roost surveys. See Appendix B for details regarding methods used to conduct the habitat assessments and wildlife surveys. The results of these surveys and literature review are summarized in Sections 2.5.1 through 2.5.6, and overall results of the wildlife observed on site is described in Appendix I, Wildlife Compendium.

[10] The 2013 data was compared to the longer-term biological dataset maintained by TRC, and there were no inconsistent results from the more intensive 2013 surveys of the valley floor. The intensive 2013 surveys detected calico monkeyflower and Piute Mountains navarretia in the foothills and TRC's long-term biological surveys did not detect this species.



SOURCES: TRC 2013d; McIntosh & Associates 2014

FIGURE 2-6

Special-Status Plants

GRAPEVINE PROJECT

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Focused technical reports were completed for California condor (Appendix K) and bald eagle and golden eagle (Appendix L) (see also Section 2.5.3).

2.5.1 Overview and Results of Literature Review

The literature review resulted in a comprehensive list of special-status wildlife species that are known to occur within Kern County. The special-status wildlife species were evaluated based on suitable habitat, known range, elevation ranges (if applicable), and available occurrence data. Based on habitat assessments for these species, additional focused surveys were conducted for certain species. These efforts resulted in two lists of special-status species and their potential to occur on site, described herein.

Appendix H, Special-Status Wildlife Species Not Expected to Occur in the Grapevine Study Area or be Impacted by the Proposed Project, lists 58 special-status wildlife species that (1) are not expected to occur in the study area; (2) have potential to occur or were observed only in the foothills region, but would not be directly or indirectly impacted by the proposed project; (3) are species that have been documented in Kern County based on the literature search but are not analyzed further in this BTR due to one of the following reasons:

- The species may occur in the study area during some phase of its life history (and may even have been observed), but its special-status designation is for a life history phase or requirement that does not occur in the study area. This is generally limited to bird species that may fly over the study area but do not nest, where avoidance of bird nests is the only applicable criteria for that species. For example, rufous hummingbird (*Selasphorus rufus*) may stop in the study area during migration, but it only nests in Northern California and the central and northern Sierra Nevada. Because its special-status designation is only for nesting sites, a species-specific analysis of impacts to its migration habitat is not required by CEQA (although CEQA does require a general assessment of impacts to wildlife movement, which are addressed in this BTR; see Section 4.3, Thresholds of Significance).
- The Grapevine study area is well outside of the species' known range, but it is a federal or state-listed species known to occur in the Central Valley (e.g., giant gartersnake (*Thamnophis gigas*)), or their common name includes "Kern" (i.e., Kern primrose sphinx moth (*Euproserpinus euterpe*) and Kern brook lamprey (*Lampetra hubbsi*)), implying they occur somewhere in Kern County. Therefore, while these species may be identified in the literature search, or because they may raise public interest because of their common name, the proposed project is well outside the range of these species and they were not observed on the site, and thus would not be affected by the proposed project.

The following special-status species are in Appendix H but are discussed further in this BTR because a species-specific survey or habitat assessment was conducted to determine presence/absence status or likelihood to occur on site: least Bell's vireo, southwestern willow flycatcher, little willow flycatcher, valley elderberry longhorn beetle, and Tehachapi slender salamander (*Batrachoseps stebbinsi*). While these species were determined to be absent or have low potential to occur, they are described briefly in the BTR. However, these species are not discussed further in the impacts analysis (Section 4) because no direct, indirect, or cumulative impacts are expected to result from the proposed project.

Table 2-6A includes special-status wildlife species that were observed or have potential to occur in the valley floor. Table 2-6B includes special-status wildlife species that occur or have the potential to occur in the vegetated riparian areas of the valley floor, which largely occur within proposed project open space. Similarly, Table 2-6C includes special-status wildlife species that occur or have the potential to occur in the foothill region, which also is largely located within proposed project open space. Some special-status wildlife species included in Table 2-6B are also listed in Table 2-6C because the species occur or have the potential to occur in both the valley floor riparian and foothill areas of the study area and include the following species: Buena Vista Lake shrew (*Sorex ornatus relictus)*, Lawrence's goldfinch (*Spinus lawrencei)*, northern harrier (*Circus cyaneus)*, Nuttall's woodpecker (*Picoides nuttallii)*, yellow warbler (*Setophaga petechia brewsteri*), and two-striped garter snake (*Thamnophis hammondii*).

Tables 2-6A, 2-6B, 2-6C include the species' federal, state, and other status designations and a description of their habitat preferences and geographic and elevational ranges (if applicable).

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status			
Common	*Species*	*Federal*[1]	*State*[2]	**Habitat**	**Potential to Occur**
				Amphibians and Reptiles	
Blainville's horned lizard	*Phrynosoma blainvillii*	None	SSC	Open areas of sandy soil in valleys, foothills and semi-arid mountains, including coastal scrub, chaparral, valley/foothill hardwood, conifer, riparian, pine/cypress, juniper, and annual grassland	No individuals have been observed on site. Moderate potential to occur in some habitats in the study area; however, no horned lizards or their scat have been observed during surveys. Species has been recorded in the surrounding 15 USGS quadrangles (CDFW 2015b, 2015c).
blunt-nosed leopard lizard (BNLL)	*Gambelia sila*	FE	SE; FP	Sparsely vegetated[3] alkali and desert scrubs, including semi-arid grasslands, alkali flats, and washes	No individuals have been observed on site. Low potential to occur at high densities on site in areas with small mammal burrows. The study area was surveyed and a general lack of kangaroo rat burrows was noted (Germano, pers. comm. 2014b). The species occurs in the San Joaquin Valley floor and edges of foothills, west to the Carrizo Plain (USFWS 2010b). The species has been recorded in suitable habitat in the Wind Wolves Preserve and within the 15 USGS quadrangles surrounding the study area, including 16 records dating between 1863 and 2011 within a 3-mile radius of the study area (Cypher et al. 2011; CDFW 2015b, 2015c). Pre-construction focused protocol-level surveys for blunt-nosed leopard lizard would be conducted prior to construction in accordance with the CDFW's Approved Survey Methodology for the Blunt-Nosed Leopard Lizard (CDFG 2004).
San Joaquin coachwhip	*Coluber flagellum ruddocki*	None	SSC	Open, dry treeless areas, including grassland and saltbush scrub	No individuals have been confirmed on site. During the April/May 2014 wildlife camera study, one camera captured a possible San Joaquin coachwhip and based on the photo it is likely this species. One individual was observed adjacent to the study area in the eucalyptus grove on July 17, 2013 located on the valley floor north of the study area; this species was also mapped within the study area in 1999 (TRC 2013b) in the valley floor in the northwest portion of the study area. This species was also observed at Wind Wolves Preserve, located west of the study area (Cypher et al. 2011). The study area is near the southern range of known habitat (Nafis 2013).

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
silvery legless lizard	*Anniella pulchra pulchra*[4]	None	SSC	Stabilized dunes, beaches, large dry washes with some vegetation, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose loamy soils	No individuals have been observed on site. Moderate potential to occur along the southern edge of the foothills within oak savannah habitats, and within vegetated and unvegetated drainages in the foothill and valley floor areas, including tamarisk scrub in Grapevine Creek.
western spadefoot	*Spea hammondii*	None	SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley/foothill woodlands, pastures, and other agriculture	No individuals have been observed on site, including during focused surveys for red-legged frog in habitat types where they have moderate potential to occur. Limited suitable habitat exists within drainages, seeps, and adjacent areas in the study area.
Birds					
bald eagle	*Haliaeetus leucocephal us* (nesting and wintering)	Delisted; BCC; MBTA	SE; FP	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, and large lakes; generally forages over and along water bodies, but will also scavenge within nearby terrestrial areas. Winters at large bodies of water in lowlands and mountains	Two adult bald eagles were observed in the valley floor portion of the study area during the February and March 2013 site visits, during winter raptor surveys in 2013–2014, and anecdotally observed during prior years. Several subadult bald eagles, including three separate individuals in January 2014, were observed in the study area, in the foothills and valley floor, during 2013-2014 winter raptor surveys. This species is expected to occur as a normal winter visitor. Routinely used wintering congregation locations or communal roosts were not observed. As a result, bald eagles appear to be limited to foraging by a few individuals. Nesting occurs at several locations in Central and Southern California, but not on site. This species is not expected to occur as a nesting bird in the study area due to a lack of large bodies of water and nesting habitat. This species was not observed on site during breeding raptor surveys or during any surveys or site visits from April to October 2013. See Appendix L for separate technical report.

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
burrowing owl	*Athene cunicularia* (burrow sites and some wintering sites)	BCC; MBTA	SSC	Nests and forages in grassland, open scrub, and agriculture, particularly in association with ground squirrel and other mammalian burrows.	Burrowing owls and potential nest burrows were observed in the valley floor during field surveys. The study area is on the southern boundary of its breeding range in the Central Valley (Gervais et al. 2008). Suitable ground squirrel burrow complexes throughout the study area could be used as nest or roost burrows. Burrowing owls were also observed during winter raptor bird surveys conducted in winter 2013/2014.
ferruginous hawk	*Buteo regalis* (wintering)	BCC; MBTA	None	In California, winters and forages in open, dry country including grasslands, open fields, and agricultural fields	Observed on site in the valley floor in February 2013 and 2013/2014 winter raptor surveys, as well as during fall 2013 site visits. This species is expected as a migrant and/or winter bird, but it does not breed or nest in California.
golden eagle	*Aquila chrysaetos* (nesting and wintering)	BCC; MBTA	FP	Nests, forages, and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, and open desert rimrock terrain; nests constructed in large trees and on cliff ledges	Observed foraging throughout the site. No golden eagle nests were detected during on-site nesting raptor surveys or aerial surveys (Bloom Biological Inc. 2014). See Appendix L for separate technical report.
loggerhead shrike	*Lanius ludovicianus* (nesting)	BCC; MBTA	SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Observed at various times during surveys in the valley floor and foothills. Based on observations and current breeding range (Humple 2008), it is presumed to be a breeding resident in the study area.
Oregon vesper sparrow	*Pooecetes gramineus affinis* (wintering)	BCC; MBTA	SSC	Winters in open grassland habitat, including stubble fields, meadows, and road edges (Erickson 2008). Breeds in western Washington and Oregon south to Del Norte County, California (Jones and Cornely 2002).	Vesper sparrow (*Pooecetes gramineus*) was observed during winter raptor surveys. As the subspecies Oregon vesper sparrow (*P. g. affinis*) and the more common Great Basin vesper sparrow (*P. g. confinis*) both potentially occur in the study area, and as these subspecies cannot be distinguished in the field, it is not known which subspecies was observed. Oregon vesper sparrow has moderate potential to winter in the valley floor and foothills on site.

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
Swainson's hawk	*Buteo swainsoni* (nesting)	BCC; MBTA	ST	Nests in open woodland, savanna, and woodland riparian habitats, and in isolated large trees; forages in nearby grasslands, savanna, and pasture lands, as well as in low-height agricultural fields, such as those planted in wheat, alfalfa, and low-growing row crops	No individuals have been observed on site. Nesting raptor surveys were conducted during spring and summer 2013; no nests or individuals of this species were observed. However, a large kettle (group of raptors circling in the air) of migrating Swainson's hawks was observed moving south over the northern flank of Grapevine Peak and the southern portion of the study area in the fall of 2009 (K. Babcock, pers. comm. 2015). Winter raptor bird surveys were conducted in winter 2013/2014; this species was not observed. However, the species is known to migrate through the study area. Low potential to nest on site and in adjacent habitats due to low availability of nest habitat, low population numbers in the southern San Joaquin Valley, and lack of historical nests in the immediate region. There is a pair nesting in the White Wolf area on the Ranch 20 miles northeast of the study area. The next nearest and current (observed nesting in 2012) known nesting population occurs approximately 22 miles from the site near the junction of Highway 223 and Highway 58 (CDFW 2015b, 2015c).
Mammals					
American badger	*Taxidea taxus*	None	SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Several badgers were observed on site, and several were captured on camera during camera surveys. The majority of the observations were in the valley floor. Additionally, multiple potential badger burrows were mapped in the valley floor areas during the burrow habitat assessment. Due to its large home range, the species would be expected to occur on site in relatively low numbers.

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
Nelson's antelope squirrel (NAS)	*Ammosper mophilus nelsoni*	None	ST	Arid annual grassland and shrubland with saltbushes, California ephedra, bladderpod, goldenbushes, matchweed	Not observed on site, including during focused surveys for burrows/dens; low potential to occur. This species has been recorded in the Wind Wolves Preserve and the 15 USGS quadrangles surrounding the site, including two records within the study area dated 1903; the closest recent (since 2000) records are located at least 23 miles west of the study area (Cypher et al. 2011; CDFW 2015b, 2015c). This species would be surveyed for during the pre-construction focused protocol-level surveys for blunt-nosed leopard lizard to determine if they are present in the study area.
pallid bat	*Antrozous pallidus*	None	SSC	Grasslands, shrublands, woodlands, and forests; most common in open dry habitats with rocky outcrops for roosting, but also roosts in manmade structures and trees	Pallid bat was detected at 7 of the 18 bat stations during July and August 2013 surveys. No bat roosts were detected within the study area during the summer and fall 2014 roost surveys; pallid bats were not observed roosting off site in the I-5 underpass at Grapevine Creek, but were detected during acoustic monitoring regularly during these surveys. This species likely forages over most areas in the study area.
San Diego black-tailed jackrabbit	*Lepus californicus bennettii*	None	SSC	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed area, and rangelands	Observed in the valley floor and foothill areas. This subspecies' range includes the southern coastal range north to about Lompoc and includes the southern portion of the San Joaquin Valley (Hall 1981).
San Joaquin kit fox	*Vulpes macrotis mutica*	FE	ST	Grasslands and scrublands, including those that have been modified, oak woodland, alkali sink scrubland, vernal pool, and alkali meadow	No individuals observed or detected on site during wildlife surveys between 2013 and 2015. Kit fox populations are positively correlated with kangaroo rats, which are their primary prey, but are also known to feed on ground squirrels. The study area was surveyed, and a general lack of kangaroo rat burrows was noted (Germano, pers. comm. 2014b). Kit fox has been recorded in the surrounding 15 USGS quadrangles, including several records within and adjacent to the study area (CDFW 2015b, 2015c). No kit fox have been verified on site. Six potential kit fox dens were mapped during burrow/den surveys, but camera surveys in 2014 found them to be unoccupied. High potential to use the study area during movement events, including juvenile and adult dispersal in search of territories. During these events, individual kit foxes are expected to forage on the site and seek temporary shelter. Low potential for long-term occupation due to negative surveys and other site factors (see Section 2.5.3).

Table 2-6A
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
Townsend's big-eared bat	*Corynorhinus townsendii*	None	SC, SSC	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, as well as man-made structures and tunnels	Potential roosting areas include abandoned buildings in the Grapevine study area, or under freeway and aqueduct bridges near the site. The species may forage on site. One minute of detection (0.01% total abundance) was recorded on the north side of the California Aqueduct in the valley floor area just outside of the eastern portion of the study area. A habitat assessment for roosting areas identified potential roosting for this species in the I-5 underpass; however, based on the results of the summer and fall 2014 roost surveys, this species is not roosting on site or in the off-site I-5 underpass at Grapevine Creek, nor was it detected during the acoustic monitoring between May and September 2014 at this location. This species has some potential to forage in the study area.
western mastiff bat	*Eumops perotis californicus*	None	SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, as well as in trees and tunnels	Western mastiff bat was detected at 5 of the 18 bat stations in July and August 2013. No potential roosting sites were identified during the summer and fall 2014 roost surveys, and this species was not observed roosting in the off-site I-5 underpass at Grapevine Creek, nor was it detected during the acoustic monitoring between May and September 2014 at this location. This species could forage over most areas in the Grapevine study area.
western red bat	*Lasiurus blossevillii*	None	SSC	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	Western red bat was detected at 3 of the 18 bat stations in July and August 2013. Suitable deciduous trees for roosting include oak woodlands, tamarisk thickets, and almond orchards within the Grapevine study area. This species was not observed roosting in the off-site I-5 underpass at Grapevine Creek, nor was it detected during the acoustic monitoring between May and September 2014 at this location. This species could forage over most areas in the study area.

[1] **Federal Designations:**
BCC USFWS Birds of Conservation Concern
Delisted Federally delisted
FE Federally listed as endangered
MBTA Migratory Bird Treaty Act

[2] **State Designations:**
FP CDFW protected and fully protected species

SE State listed as endangered
SC State candidate
SSC California Species of Special Concern
ST State listed as threatened

3 Vegetated refers to denser riparian vegetated areas, such as Fremont cottonwood forest and mulefat scrub, that occurs in the valley floor.

4 A taxonomic revision has been published for *Anniella pulchra* that names four new species of California legless lizards and which would make the *Anniella* species in the study area uncertain because it occurs in a potential contact zone between *A. pulchra* and one of the new species *A. stebbinsi* (Papenfuss and Parham 2013). Because this revision was just published in September 2013 and because it may take some time for the wildlife agencies to respond to this new information, for the purposes of this BTR the current species name *Anniella pulchra* is retained.

Table 2-6B
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor Vegetated Riparian Areas of the Study Area

Name		**Status**		**Habitat**	**Potential to Occur**
Common	*Species*	*Federal*[1]	*State*[2]		
Amphibians and Reptiles					
two-striped garter snake	*Thamnophis hammondii*	None	SSC	Streams, including streams with rocky beds; creeks; pools; ponds; lakes; and vernal pools	Moderate potential to occur in the study area in the riparian areas where water is present (i.e., upstream portions of Grapevine Creek) in the valley floor or foothill's stock pond and drainages, which are located in proposed project open space. While the study area is on the edge of the species' range, this species was observed at TMV (Dudek 2009).
Birds					
Lawrence's goldfinch	*Spinus lawrencei* (nesting)	BCC; MBTA	None	Nests and forages in open oak, native arid woodlands, and chaparral near water	Observed during 2013 southwestern willow flycatcher and least Bell's vireo surveys. The species is a presumed summer breeder in riparian habitat within the study area. Suitable habitat for this species is located in proposed project open space.

Table 2-6B
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor Vegetated Riparian Areas of the Study Area

Name		Status			
Common	*Species*	*Federal*[1]	*State*[2]	**Habitat**	**Potential to Occur**
northern harrier	*Circus cyaneus* (nesting)	MBTA	SSC	Nests in open wetlands, including marshy meadows, wet lightly-grazed pastures, old fields, and freshwater and brackish marshes, but also in drier habitats, such as grassland and grain fields; forages in a variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Observed foraging within the study area during the surveys. Moderate potential to nest in marsh habitat around the stock pond, which is located in proposed project open space; but appears to forage over site from nest sites outside of the study area. Nesting raptor surveys were conducted during spring and summer 2013; no active nests or individuals of this species were observed during these surveys. Northern harrier was observed in January 2014 during winter raptor bird surveys.
Nuttall's woodpecker	*Picoides nuttallii* (nesting)	BCC; MBTA	None	Nests and forages in low-elevation native riparian and oaks	Observed in the woodland habitat on site. It is presumed to be a breeding resident in the study area. Suitable habitat for this species is located in proposed project open space
yellow warbler	*Setophaga petechia brewsteri* (nesting)	BCC; MBTA	SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine and mixed conifer habitats	Observed in riparian woodland during 2013 southwestern willow flycatcher and least Bell's vireo surveys and in October 2013 during a site visit. The study area is on northern edge of current breeding range in the Tehachapi Mountains (Heath 2008). The species is presumed to be nesting on site and migrates through the study area. Suitable habitat for this species is located in proposed project open space

Table 2-6B
Special-Status Wildlife Observed or with the Potential to Occur in the Valley Floor Vegetated Riparian Areas of the Study Area

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
Mammals					
Buena Vista Lake shrew	*Sorex ornatus relictus*	FE	SSC	Marshes, wetlands, streams, and sloughs along lake basins in southern San Joaquin Valley, historical Buena Vista, and Tulare and Kern Lakes	A habitat assessment conducted by Brian Cypher of Endangered Species Recovery Program (ESRP) determined that *S. ornatus* has potential to occur in select areas on site where riparian or wetland vegetation is present (Cypher and Westall 2014). The site supports limited riparian or wetland vegetation and is well south of the species' documented range (USFWS 2011a). Without conducting trapping surveys, the subspecies is unknown. Shrews potentially are present in the areas with suitable habitat conditions. There is a high likelihood that any such shrews could be the ornate shrew subspecies *S. o. ornatus,* which is fairly common in the Sierra Nevada, Transverse, and Coast Ranges and is not a listed taxon, and a moderate potential that it could be *S. o. relictus* (Cypher and Westall 2014). However, a shrew tentatively identified as Buena Vista Lake shrew was captured along two sites in San Emigdio Creek in the Wind Wolves Preserve approximately 15 miles west of the study area (Cypher et al. 2011). Material from these specimens was submitted to the Smithsonian Conservation Genetics Laboratory for analysis to determine whether it is a distinct taxon or evolutionary unit from the common subspecies *S. o. ornatus*. The results showed that the sample from Wind Wolves shrews shared alleles with other shrews in the San Joaquin Valley, but no conclusions on subspecies was provided (Maldonado and Dutta 2014). Potentially suitable habitat for this species is located in proposed project open space.

1 **Federal Designations:**
BCC USFWS Birds of Conservation Concern
FE Federally listed as endangered
MBTA Migratory Bird Treaty Act

[2] **State Designations:**
FP CDFW protected and fully protected species
SSC California Species of Special Concern

Table 2-6C
Special-Status Wildlife Observed or with the Potential to Occur in the Foothills of the Study Area

Name		Status			
Common	*Species*	*Federal[1]*	*State[2]*	**Habitat**	**Potential to Occur**
Amphibians and Reptiles					
two-striped garter snake	*Thamnophis hammondii*	None	SSC	Streams, including streams with rocky beds; creeks; pools; ponds; lakes; and vernal pools	Moderate potential to occur in the study area in the riparian areas where water is present (i.e., upstream portions of Grapevine Creek) in the valley floor or foothill's stock pond and drainages, which are located in proposed project open space. While the study area is on the edge of the species' range, this species was observed at TMV (Dudek 2009).
Birds					
black-chinned sparrow	*Spizella atrogularis* (nesting)	BCC; MBTA	None	Nests and forages in mixed chaparral, chamise/redshank chaparral, sagebrush and other brushy habitats	Moderate potential to nest in shrubland habitat in the foothills of the study area. In California, it mostly breeds in the inner North Coast Ranges, South Coast Ranges, and on the western slopes of the Sierra Nevada from Kern County north to Mariposa County. In Los Angeles County, it breeds in the San Gabriel Mountains and occasionally in the Santa Monica Mountains (Winter 2002). Potentially suitable habitat for this species is located in proposed project open space.
California condor	*Gymnogyps californianus*	FE; MBTA	SE, FP	Nest in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (*Sequoiadendron giganteum*); forages in relatively open grassland and savanna where large animal carcasses can be detected	Observed on site. One condor was observed flying overhead approximately 500 feet south of the study area in July 2013 and another along the southern boundary of the study area in October 2013. Could forage within those portions of the site adjacent to and within the foothill edge if large animal carrion available. No nesting habitat or traditional roost sites are present within the study area. Based on the USFWS satellite data (USFWS 2014), condors fly over the study area, primarily in the lower foothill regions in the southern portion of the site, on a limited basis. See Appendix K for separate technical report.
Lawrence's goldfinch	*Spinus lawrencei* (nesting)	BCC; MBTA	None	Nests and forages in open oak, native arid woodlands, and chaparral near water	Observed during 2013 southwestern willow flycatcher and least Bell's vireo surveys. The species is a presumed summer breeder in riparian habitat within the study area. Suitable habitat for this species is located in proposed project open space.

Table 2-6C
Special-Status Wildlife Observed or with the Potential to Occur in the Foothills of the Study Area

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
northern harrier	*Circus cyaneus* (nesting)	MBTA	SSC	Nests in open wetlands, including marshy meadows, wet lightly-grazed pastures, old fields, and freshwater and brackish marshes, but also in drier habitats, such as grassland and grain fields; forages in a variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Observed foraging within the study area during the surveys. Moderate potential to nest in marsh habitat around the stock pond, which is located in proposed project open space; but appears to forage over site from nest sites outside of the study area. Nesting raptor surveys were conducted during spring and summer 2013; no active nests or individuals of this species were observed during these surveys. Northern harrier was observed in January 2014 during winter raptor bird surveys.
Nuttall's woodpecker	*Picoides nuttallii* (nesting)	BCC; MBTA	None	Nests and forages in low-elevation native riparian and oaks	Observed in the woodland habitat on site. It is presumed to be a breeding resident in the study area. Suitable habitat for this species is located in proposed project open space.
oak titmouse	*Baeolophus inornatus* (nesting)	BCC; MBTA	None	Nests and forages in oak woodlands; also in open pine forest, pinyon woodland, and native riparian and chaparral with oak	High potential to occur in the oak woodland habitat within the study area; however, none were detected during other surveys. This species is absent from the San Joaquin Valley (Cicero 2000). Potentially suitable habitat for this species is located in proposed project open space.
purple martin	*Progne subis* (nesting)	MBTA	SSC	Nest and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands	Moderate potential to nest in valley oak woodland on site. Three purple martins were observed foraging only once during 2013 surveys adjacent to the site in eucalyptus trees. The majority of the study area lacks suitable nesting habitat. The species is known to nest in the Tehachapi Mountains south of the study area on TMV (Dudek 2009). White et al. (2011) mapped potentially suitable purple martin habitat on Tejon Ranch Conserved Lands adjacent to the southern Grapevine specific plan boundary and reported a nest approximately 0.8 mile south of the study area. Suitable habitat for this species is located in proposed project open space.

Table 2-6C
Special-Status Wildlife Observed or with the Potential to Occur in the Foothills of the Study Area

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
tricolored blackbird	*Agelaius tricolor* (nesting colony)	BCC; MBTA	SE[11]	Nests near freshwater, emergent wetland with cattails or tules and in Himalayan blackberry; forages in grasslands, woodland, and agriculture	Moderate potential to nest on site in marsh habitat associated with the stock pond. One male tricolored blackbird was observed in April 2014 in the red-winged colony. Tricolored blackbirds were detected at the I-5 and California Aqueduct undercrossing in 2009 during wildlife camera surveys (TRC 2013d). The stock pond supports a very small area of freshwater marsh that currently supports nesting red-winged blackbirds. The species has been recorded in the surrounding 15 USGS quadrangles (CDFW 2015b, 2015c). Nesting bird surveys were conducted within freshwater marsh habitat in the study area in 2013; results were negative, but this species does not use the same nesting sites every year. Suitable habitat for this species is located in proposed project open space.
yellow warbler	*Setophaga petechia brewsteri* (nesting)	BCC; MBTA	SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine and mixed conifer habitats	Observed in riparian woodland during 2013 southwestern willow flycatcher and least Bell's vireo surveys and in October 2013 during a site visit. The study area is on northern edge of current breeding range in the Tehachapi Mountains (Heath 2008). The species is presumed to be nesting on site and migrates through the study area. Suitable habitat for this species is located in proposed project open space.
Mammals					
Buena Vista Lake shrew	*Sorex ornatus relictus*	FE	SSC	Marshes, wetlands, streams, and sloughs along lake basins in southern San Joaquin Valley, historical Buena Vista, and Tulare and Kern Lakes	A habitat assessment conducted by Brian Cypher of Endangered Species Recovery Program (ESRP) determined that *S. ornatus* has potential to occur in select areas on site (Cypher and Westall 2014). The site supports limited riparian or wetland vegetation and is well south of the species' documented range (USFWS 2011a). Without conducting trapping surveys, the subspecies is unknown. Shrews potentially are present in the areas with suitable habitat conditions. However, there is a high likelihood that any such shrews could be the ornate shrew

[11] On December 3, 2014, California Fish and Game Commission approved an emergency listing of the tricolored blackbird (Audubon Society 2014).

Table 2-6C
Special-Status Wildlife Observed or with the Potential to Occur in the Foothills of the Study Area

Name		Status		Habitat	Potential to Occur
Common	*Species*	*Federal*[1]	*State*[2]		
					subspecies *S. o. ornatus,* which is fairly common in the Sierra Nevada, Transverse, and Coast Ranges and is not a listed taxon (Cypher and Westall 2014). However, a shrew tentatively identified as Buena Vista Lake shrew was captured along two sites in San Emigdio Creek in the Wind Wolves Preserve approximately 15 miles west of the Grapevine study area (Cypher et al. 2011). Material from these specimens was submitted to the Smithsonian Conservation Genetics Laboratory for analysis to determine whether it is a distinct taxon or evolutionary unit from the common subspecies *S. o. ornatus.* The results showed that the sample from Wind Wolves shrews shared alleles with other shrews in the San Joaquin Valley, but no conclusions on subspecies was provided (Maldonado and Dutta 2014). Potentially suitable habitat for this species is located in proposed project open space.

1 **Federal Designations:**
BCC USFWS Birds of Conservation Concern
FE Federally listed as endangered
MBTA Migratory Bird Treaty Act

2 **State Designations**:
FP CDFW protected and fully protected species
SE State listed as endangered
SSC California Species of Special Concern

2.5.2 Distribution of Wildlife Resources

The wildlife resources in the study area are described by their general distribution within the foothills and valley floor in Sections 2.5.2.1 and 2.5.2.2, respectively.

2.5.2.1 Foothills

This area includes the foothills of the Tehachapi Mountains east of I-5 and the San Emigdio Mountains west of I-5 along the southern flank of the study area. Most of the foothills in the study area are south of Edmonston Pumping Plant Road. While the foothills are dominated by grasslands like the valley floor areas of the study area, they are more biologically diverse than the valley floor in terms of the number and types of habitats present, including upland and riparian scrub, riparian woodlands and wetlands scattered in canyons, drainages, and slopes. In addition, the broader elevation range (generally 1,600 to 2,100 feet amsl), varied slopes, and contiguity with the more densely vegetated hilltops of the Tehachapi and San Emigdio Mountains south of the study area support a variety of habitats and microhabitats for wildlife species that may not occur in the valley portions of the study area.

Because of this, there is more diversity of wildlife species in the foothills. For example, species that are typically associated with densely vegetated mountain ridges and canyons south of the study area, including the off-site Tehachapi and San Emigdio Mountains, may use the foothills on site during foraging or dispersal. These include tree-nesting, roosting or perching raptors, songbirds associated with woodland or scrub habitat, reptiles that prefer more shrub and/or boulder or rock cover, and amphibians that are associated with wetter habitat types in canyons and drainages. In addition, the only marsh habitat within the study area is located in the foothills and, thus, marsh-associated species, such as red-winged blackbird, mallard (*Anas platyrhynchos*), and herons, as well as insects such as dragonflies and damselflies, would only be expected in the foothills. Mule deer (*Odocoileus hemionus*) that stay near vegetative cover were commonly observed in the foothills. The majority of stick nests that could be used by raptors and cavities used by cavity-nesting birds were observed in the woodland habitat in the foothills. Also, as described in Appendix M, many of the bats use the habitats available in the foothills more frequently than in the valley floor. Because some wildlife species prefer to nest or den away from human activity, the more remote wooded canyons and steeper terrain of the foothills support a large variety of raptors, mammals, and other potentially disturbance-sensitive species.

Appendix H includes species that are not expected to occur on site as well as special-status species that have been observed or have a moderate potential to occur on site, and are restricted to habitat types, elevations, or topography associated with the foothills, which is located in proposed project open space. Table 2-6A includes some special-status species that can occur in both the foothills and valley floor areas on site, including silvery legless lizard (*Anniella pulchra pulchra*), San Joaquin coachwhip (*Coluber flagellum ruddocki*), Blainville's horned lizard (*Phrynosoma blainvillii*), western spadefoot, golden eagle, ferruginous hawk (*Buteo regalis*), Swainson's hawk, bald eagle, loggerhead shrike (*Lanius ludovicianus*), Oregon vesper sparrow (*Pooecetes gramineus affinis*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), San Diego black-tailed jackrabbit, and American badger. Tables 2-6B and 2-6C include species that are restricted to habitat types, elevations, or topography associated with the riparian vegetated valley floor areas and/or the foothills, which are located in proposed project open space.

2.5.2.2 Valley Floor

The valley floor is dominated by non-native grasslands and non-natural land cover (i.e., roadways and infrastructure (disturbed lands), urban/developed lands, and orchards and vineyards). The California Aqueduct is not owned by the Ranch, but it bisects the eastern portion of the study area. Wildlife species that use open habitat types may occur in the grasslands, while species that are more urban adapted or forage in orchards and vineyards may occur in the developed, disturbed, and agricultural areas on site. The subsurface oil and gas pipelines and other oil-production-related equipment, substations, and infrastructure such as electric power poles, transmission towers, and subsurface communication lines are located in the valley floor. The riparian areas of the valley floor are discussed separately below.

The valley floor supports a variety of species that prefer the flatter, open habitat types of the southern San Joaquin valley. Birds that do not have special-status designations that were commonly observed in these areas include horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), and American crow (*Corvus brachyrhynchos*). Other non-special-status species observed on the valley floor include California ground squirrels (*Spermophilus (Otospermophilus) beecheyi*), common side-blotched lizards, Botta's pocket gopher (*Thomomys bottae*), and cottontail rabbits. Non-special-status raptors observed foraging and/or nesting in the valley floor include red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*).

Special-status raptors that nest and/or roost in the foothills or farther south in the Tehachapi and San Emigdio Mountains were observed foraging in the valley floor, including golden eagle and prairie falcon; and raptors observed on the valley floor during the winter months include ferruginous hawk and bald eagle.

Additional special-status species observed in the valley floor include burrowing owl, loggerhead shrike, American badger, and San Joaquin coachwhip. While American badger can occur in the grasslands in the foothills, it was observed more often in the valley floor. Table 2-6A includes three additional special-status species that were not observed but have some potential to occur in the valley floor—blunt-nosed leopard lizard, Nelson's antelope squirrel, and San Joaquin kit fox.

Valley Floor Riparian

The riparian areas in the valley floor portion of the study area include unvegetated channels, Fremont cottonwood forest, mulefat thickets, and tamarisk thickets semi-natural stands. These areas are limited to Grapevine Creek and its tributaries, Cattle Creek and its tributaries, a portion of Live Oak Creek, Pastoria Creek, Tecuya Creek, and several isolated channels. The riparian communities are dominated by trees or large shrubs and, like the foothills, provide habitat for a variety of species. For example, many riparian bird species prefer dense vegetative cover for nesting and foraging (i.e., yellow warbler, Lawrence's warbler, Nuttall's woodpecker, purple martin (*Progne subis*)), and many raptors nest in woodland habitat where they can build nests located high above the ground and protected by canopy cover (e.g., Cooper's hawk (*Accipiter cooperii)* and red-shouldered hawk (*Buteo lineatus*)). Birds commonly found in the valley floor riparian habitat may also be found in the riparian woodland or scrub in the foothills. Special-status species observed in the valley floor riparian areas include yellow warbler and Lawrence's goldfinch. Non-special-status birds observed frequently in the valley floor riparian areas include Bullock's oriole, white-crowned sparrow (*Zonotrichia leucophrys*), goldfinch (*Spinus* spp.), and western kingbird (*Tyrannus verticalis*).

The upstream portion of Grapevine Creek, the majority of which is located in the valley floor, has perennial flow and more dense canopy cover that also provides habitat for a variety of snakes, lizards, small mammals, and amphibians that occur in moist leaf litter, downed logs, and similar microhabitats not commonly found in other portions of the study area.

The tamarisk thickets occur in downstream dry wash portions of Grapevine Creek and are scattered, sparse, and open compared to the native riparian areas upstream. These tamarisk thickets may be used by riparian birds migrating or dispersing between riparian habitats (e.g., yellow warbler). However, most of the riparian birds occurring in the study area are not expected to nest in the tamarisk thickets on site because of their lack of suitable cover and poor physical structure, particularly since there is native riparian habitat just upstream of these areas where special-status species were observed during the nesting season. Nonetheless, both the unvegetated channels and the tamarisk thickets can be used by wildlife species typically associated with the valley floor, such as coyote (*Canis latrans*), loggerhead shrike, cottontail rabbit (*Sylvilagus* spp.), and common side-blotched lizard (*Uta stansburiana*), including as travel corridors for mobile species (e.g., fox and coyote) and resident habitat for sedentary species (e.g., common side-blotched lizard).

Table 2-6B includes special-status wildlife species that occur or have the potential to occur in the vegetated riparian areas of the valley floor. Table 2-6A includes three additional special-status species that have some potential to occur in the unvegetated channels and tamarisk thickets of the valley floor riparian subarea: blunt-nosed leopard lizard, Nelson's antelope squirrel, and San Joaquin kit fox.

2.5.3 Federally Protected Wildlife Species

As discussed in Section 3, Regulatory Setting, this BTR assesses species protected under three federal wildlife species laws: FESA, the Bald and Golden Eagle Protection Act (BAGEPA), and the Migratory Bird Treaty Act (MBTA). Relevant species information primarily related to presence or absence in the study area is discussed below by each of these federal laws. San Joaquin kit fox and blunt-nosed leopard lizard are focal species[12] that were selected to analyze wildlife movement in the study area. Additional natural history information related to movement of these focal species is provided in this section and wildlife movement is described in Section 2.6.

2.5.3.1 Federal Endangered Species Act

Only one federally listed endangered species, California condor, has been observed in the study area. No other wildlife species listed as endangered or threatened under FESA were observed in the study area during 2013, 2014 or 2015 surveys, nor were any candidate species for federal listing found in the study area.

Two federally listed species known to occur in the San Joaquin Valley floor with a low or moderate likelihood of occurrence are described below: San Joaquin kit fox and blunt-nosed leopard lizard. Four additional federally listed species with potential to occur in riparian/marsh habitat located in proposed project open space areas are also described below: southwestern willow flycatcher, least Bell's vireo, Buena Vista Lake shrew, and valley elderberry longhorn beetle.

[12] Focal wildlife species were selected because, although not all were found to be present on site, they are special status, representative of the San Joaquin Valley floor, represent a range of movement mobility, from highly mobile, fast-moving species (e.g., San Joaquin kit fox and American badger) to relatively sedentary or slow-moving species (e.g., the blunt-nosed leopard lizard), and are likely to be sensitive to habitat loss and fragmentation).

Observed

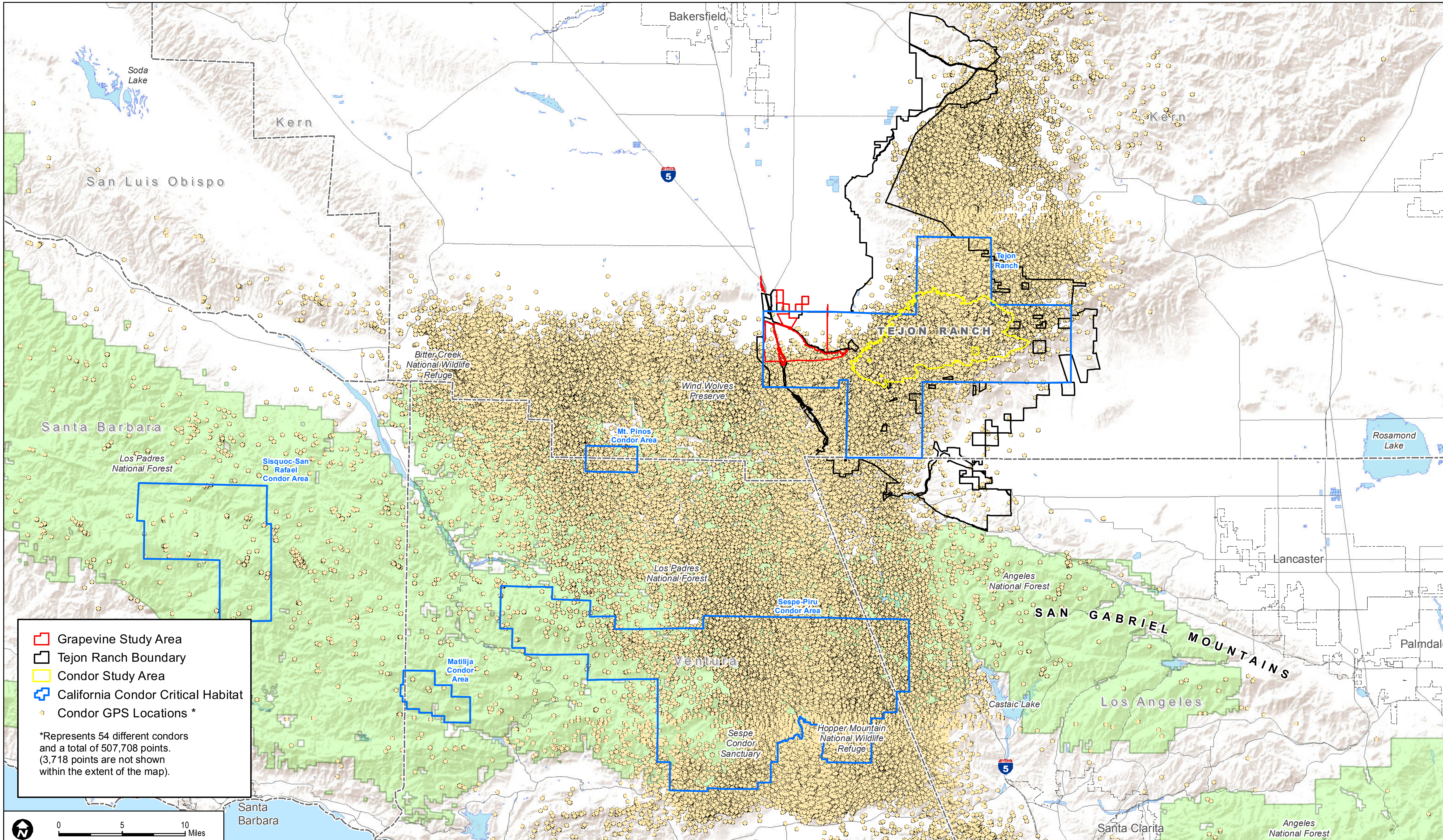
California Condor (FE, MBTA/SE, FP)

One individual was observed flying over the southern boundary of the study area in the Tehachapi Mountain foothills on October 30, 2013, and an individual was also observed flying south of the study area in July 2013. Other condor occurrences have been mapped as having flown over the study area in a GIS dataset maintained by USFWS (2013b). Based on a review of this dataset, while condors infrequently forage over the study area, no historical or actively used roost sites occur within or adjacent to the study area due to the lack of adequate roost trees, the generally flat topography, and the inconsistent availability of carcasses as food sources.[13] California condors have not historically nested, nor do they currently nest, on the Ranch, including the Grapevine study area. The species is also listed as state fully protected by the CDFW.

Critical habitat for the California condor was designated on September 24, 1976 (41 FR 41914–41916). The designated critical habitat consists of nine critical habitat units scattered in the Counties of Tulare, San Luis Obispo, Ventura, Kern, Santa Barbara, and Los Angeles, and encompasses approximately 570,400 acres (USFWS 2013a) (see Figure 2-7, California Condor Critical Habitat and GPS Locations in Southern California (2005–2013)). The critical habitat designations generally follow square townships or quadrangles of land that were intended to encompass areas of intensive condor use known at the time of the designation in 1976. The designation predated the identification of "primary constituent elements"[14] essential for the conservation of the listed species that is currently used by USFWS to make critical habitat designations. There are approximately 7,146 acres of the designated Ranch critical habitat unit in the study area, 24 acres of which are within the proposed off-site impact areas. The Ranch critical habitat unit (habitat unit #7), along with the Kern County Rangelands and Tulare County

13 See Appendix K (Condor Technical Report) for detailed information on roost sites. Based on an analysis of the time stamps associated with the GPS data from 2005–2013 (USFWS 2013b), only three condors likely have roosted overnight (and for one night only) on the Grapevine study area—two birds (bird ID 180 and 509) with overnight matched records on September 10 and 11, 2010, and one bird (bird ID 370) with overnight matched records on February 12 and 13, 2011. These overnight roost events are likely associated with feeding on an animal carcass (assumed to be livestock given the general lack of hunting in this area); the locations do not represent regularly-used, traditional roost sites, where condors spend most of their time.

14 A primary constituent element is a "A physical or biological feature essential to the conservation of a species for which its designated or proposed critical habitat is based on, such as space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species' historic geographic and ecological distribution." (http://www.fws.gov/nc-es/es/glossary.pdf)



SOURCES: USFWS 2014

FIGURE 2-7

California Condor Critical Habitat and GPS Locations in Southern California (2005-2013)

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Rangelands units, are considered important as foraging areas for California condors; these units have not historically supported, nor do they currently support, nesting condors.

The USFWS has adopted a recovery plan under FESA for the California condor. The most recent revision was completed in 1996 (USFWS 1996). The Recovery Plan focuses on: (1) increasing California condor reproduction in captivity for eventual release; (2) releasing California condors into the wild, (3) minimizing California condor mortality factors, (4) maintaining habitat for recovery of populations of the California condor, and (5) implementing California condor information and education programs. It states that nesting, roosting, and foraging (feeding) functions are the most crucial functions required to maintain and achieve the recovery of the California condor. No nesting occurs at all within the Ranch due to the lack of suitable nest habitat, and known historical roost sites occur much further to the south of the study area within the upland areas of the Ranch.

The Recovery Plan states that the completion of an agreement with the Ranch to maintain uses, such as hunting, that benefit the condor is a conservation goal for the species. The TU MSHCP, which was approved by the USFWS in 2013, is a habitat conservation plan (HCP) intended to meet this recovery goal. Because of the grazing and limited hunting that occurs within the study area (more hunting occurs within the foothill regions of the site that are located in proposed project open space) and due to the flat topography of the study area (condors generally prefer to forage in more hilly/mountainous terrain where they can take advantage of updrafts), the valley floor is considered of low foraging value to condors. This is verified by the extremely low use of the site (only 0.6% of the condor flight records for the Ranch occurred over the study area, and only 0.1% of the stationary records) by California condors as determined from review of USFWS data points (USFWS 2013b) (Figure 2-7). Of the records collected for the entire southern California subpopulation of condors, the stationary (i.e., roosting, perching, feeding) records in the study area represent 0.01% of the total and cumulative stationary records from 2005–2013 (i.e., 374,055 stationary records) (Figure 2-8A, California Condor GPS Stationary Locations on Tejon Ranch within Grapevine Project Footprint (2005–2013); the flight records in the study area represent 0.11% of the total and cumulative flight records from 2005–2013 (i.e., 133,653 flight records) for the southern California subpopulation (Figure 2-8B, California Condor GPS Flight Locations on Tejon Ranch within Grapevine Project Footprint (2005–2013)). Of particular note, the majority of the stationary points (11 out of 12 in the development area) occurred within a 24-hour period and most were on the same day, likely representative of a number of birds feeding on a single carcass.

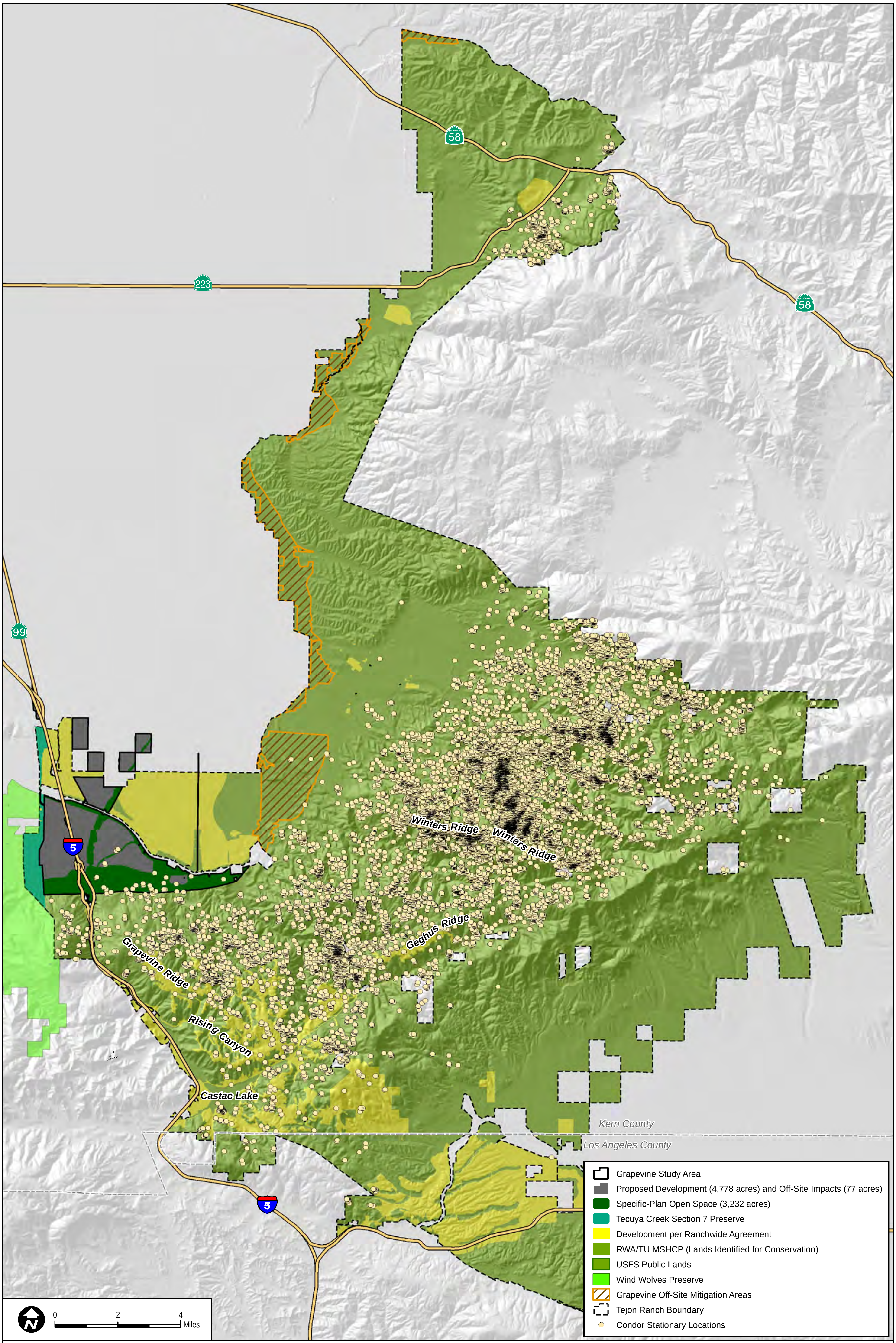
The Recovery Plan also describes eliminating or reducing contaminants on California condor. While the Recovery Plan does not specifically mention lead ammunition, lead is a heavy metal contaminant known to sicken or kill California condors and is the “most severe impediment to

California condor recovery" (USFWS 2013c). Effective January 1, 2008, the Ranch voluntarily established and continues to strictly enforce a ban on lead ammunition. In addition, the Ridley-Tree Condor Conservation Act banned the use of lead ammunition within the state range of California condor, effective July 1, 2008. This ban, together with the Ranch-specific program, is expected to contribute to reduced condor mortality rates resulting from lead poisoning.

Another habitat requirement, which is not explicitly discussed in the 1976 critical habitat designation (41 FR 41914–41916) or the Recovery Plan (USFWS 1996), is the preservation of sufficient airspace for condor movement within the species' historical range. Large, high structures that intrude into condor flyways can cause collisions that could harm or disrupt the normal foraging behaviors of the condor. Existing power lines on the Ranch have not been shown to be a source of collision injury or mortality to condors, likely because most of the existing lines and towers are situated in areas of the Ranch generally not used by condors for foraging or feeding.

Condors use the study area (primarily in the lower foothill regions in the southern portion of the study area that is located in proposed project open space) on a very limited basis as foraging habitat; the preponderance of condor activity within the boundaries of the Ranch are within the upland areas of the Ranch, including the Condor Study Area preserved as part of the TU MSHCP (Figure 2-7). Therefore, the study area is not considered to contain valuable nesting, roosting, or foraging habitat essential to the recovery of the California condor and is not considered habitat needed to meet the recovery standards as stated in the Recovery Plan.

No nesting, roosting, or important foraging habitat for California condor is located in the proposed project footprint. For a further discussion, see the Condor Technical Report, which is included as Appendix K to this BTR.



SOURCES: TRC 2008; USFWS 2014; McIntosh & Associates 2014

FIGURE 2-8A

California Condor GPS Stationary Locations onTejon Ranch (2005-2013) with Grapevine Project Footprint (45 individual birds recorded within Tejon Ranch)

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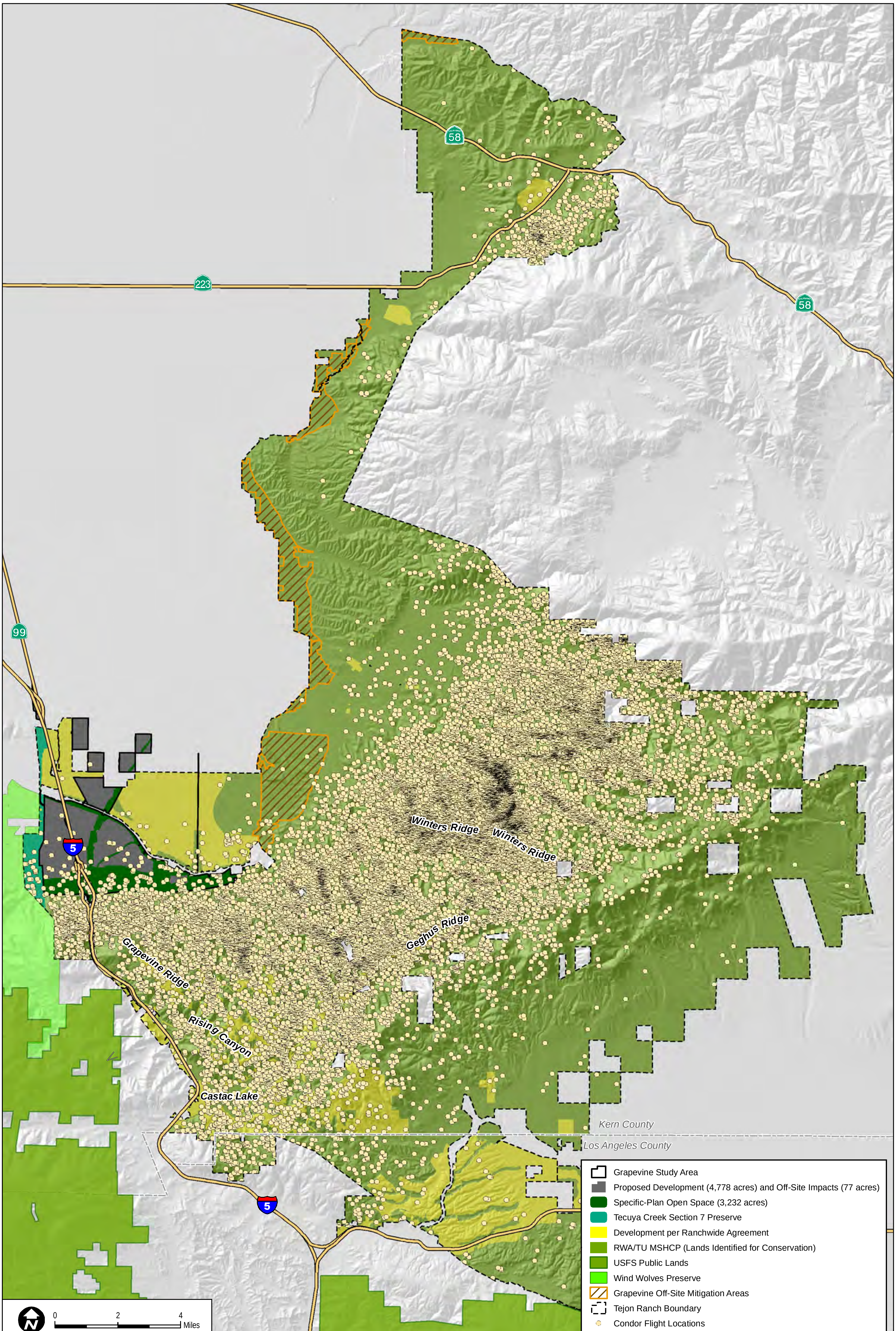

SOURCES: TRC 2008; USFWS 2014; McIntosh & Associates 2014

FIGURE 2-8B
California Condor GPS Flight Locations on Tejon Ranch (2005-2013) with Grapevine Project Footprint (47 individual birds recorded within Tejon Ranch)

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Foothill/Valley Floor Riparian

Buena Vista Lake Shrew (FE/SSC)

A habitat assessment was conducted for Buena Vista Lake shrew (federally listed as endangered and a California Species of Special Concern (SSC)) in 2013 by Dudek biologists and Cypher and Westall of the California State University Stanislaus Endangered Species Recovery Program (ESRP). Based on this assessment, there is potential for ornate shrew (*Sorex ornatus*) to occur along the perennial sections of Grapevine Creek and the nearby stock pond, both of which are in conserved areas of the site. Buena Vista Lake shrew, *S. o. relictus*, is the federally listed subspecies of the ornate shrew found in the portions of the San Joaquin Valley (USFWS 2011a). The range of the much more common and non-special-status subspecies, *S. o. ornatus*, includes the foothills bordering the study area. While no Buena Vista Lake shrews have been recorded or observed on the Ranch, including the study area, Grapevine Creek connects to the valley floor where Buena Vista Lake shrews historically occurred (Cypher and Westall 2014). All areas identified as having potential for ornate shrew, and which are considered to have at least moderate potential for Buena Vista Lake shrew, are located in proposed project open space.

Southwestern Willow Flycatcher (FE, MBTA/SE) and Least Bell's Vireo (FE, MBTA/SE)

Potential habitat for southwestern willow flycatcher and least Bell's vireo is limited to the native riparian habitats in the foothills and valley floor, which are located in proposed project open space. Southwestern willow flycatcher and least Bell's vireo were not detected during focused USFWS protocol surveys for the two species (see Appendices H and J to this BTR).

Valley Elderberry Longhorn Beetle (FT)

Focused surveys for valley elderberry longhorn beetle (federally listed as threatened) resulted in mapping of only four elderberry shrubs in the study area. None of the shrubs had any "exit holes" that would indicate presence of this species (Appendix H to this BTR). Based upon the negative survey results, the limited number of host plants, and the fact that the study area is on the extreme edge of the species' range, valley elderberry longhorn beetle is not expected to occur in the study area. While the species is not expected to occur, the species' host plant, elderberry, is located in the foothills in proposed project open space.

Valley Floor Non-Riparian

Blunt-Nosed Leopard Lizard (FE/ST, FP)

The general distribution, habitat associations, known occurrences, and results of site-specific surveys for blunt-nosed leopard lizard are described first. Following this information, additional natural history information related to mobility, home range, and dispersal are provided.

Blunt-nosed leopard lizard (federally listed endangered, state-listed threatened, and CDFW fully protected species) is known to occur in the San Joaquin Valley floor and edges of foothills, east to the Carrizo Plain (USFWS 2010b). The blunt-nosed leopard lizard inhabits open habitats with sparse vegetation in the San Joaquin Valley and nearby valleys and foothills (Stebbins 1985; USFWS 2010b). They are commonly found within alkali flats, canyon floors, non-native grassland, valley sink scrub, valley needlegrass grassland, alkali playa, and saltbush (*Atriplex* spp.) grassland where small mammal burrows are available (Stebbins 1985; Holland 1986; Hammerson 2007; Tollestrup 1976, as cited in USFWS 2010b). They generally occupy sand, gravelly, and loamy substrates, and occasionally hardpan (Stebbins 1985). Suitable ground cover for blunt-nosed leopard lizard is 15% to 30%, and ground cover greater than 50% is unsuitable (USFWS 1998). Blunt-nosed leopard lizards also prefer flat or gently rolling hills with low relief (Williams et al. 1993; as cited in USFWS 2010b), and are absent from steep slopes, areas with dense vegetation, or areas that are seasonally inundated (USFWS 1998; CDFG 2004). They usually occupy small rodent burrows for shelter, such as abandoned ground squirrel burrows or kangaroo rat tunnels (USFWS 2010b).

The CNDDB (CDFW 2015b, 2015c) includes five records that occur in proximity to the study area; the records are from 1955, 1981, 1991, and 1994. The record from 1955 reported 2 specimens collected near Wheeler Ridge, west of Tecuya Creek near the northern proposed off-site impact area; the 1981 reported 8 lizards along the California Aqueduct, approximately 2 miles northeast of Grapevine; 1 1991 record reported lizards in Tecuya Creek, approximately 0.8 mile east of the aqueduct and I-5 near one of the off-site impact areas; the other 1991 record reported 9 individuals in Tecuya Creek, approximately 2 miles southwest of the aqueduct and I-5; and the 1994 record reported 2 lizards in the vicinity of Grapevine Creek approximately 0.6 mile northeast of the aqueduct and 2 miles southeast of the intersection of I-5 and Wheeler Ridge Road. Based upon the description of the 1994 CNDDB occurrence (CDFW 2015c), it is possible that the lizards were observed within portions of Grapevine Creek that are in the study area within proposed project open space in the valley floor riparian areas. There are some more records located west of the study area, with more recent records from 1999 and 2010 mapped between 2 and 2.3 miles west of the intersection of the I-5 and the California Aqueduct, which is approximately 0.3 to 1.6 mile west of the western boundary of the proposed project (CDFW 2015b).

Between 1997 and 1999, focused protocol-level surveys for blunt-nosed leopard lizard were conducted by Impact Sciences, Inc. in suitable habitat areas within the Tecuya Creek Preserve and initial phases of the industrial complex west of I-5, which is adjacent to the western boundary of the proposed project (Impact Sciences Inc. 2000). In 2000, focused protocol-level surveys for blunt-nosed leopard lizard were conducted by Impact Sciences Inc. in association with environmental compliance for TRCC projects west of I-5 (Impact Sciences Inc. 2001). In 2001, protocol-level surveys were conducted by Impact Sciences, Inc. for this species in association with environmental compliance for projects east of I-5 (Kern County 2002). No blunt-nosed leopard lizards were observed during any of these surveys. Further, and in compliance with mitigation measures in the EIR and Section 7 Biological Opinion (BO) associated with each of the development projects, pre-construction surveys for the species were also conducted prior to individual lots being graded for commercial development. These individual lot surveys began in 2002 and continue to occur as lots are developed. To date, no blunt-nosed leopard lizards have been observed during any of these surveys.

CDFW approved a new protocol-level survey for blunt-nosed leopard lizards in 2004 (CDFG 2004), which limits the validity of any survey results to the 12 months following completion of the survey. A protocol-level survey is recommended as a pre-construction measure for the proposed project, as discussed in Section 4. Project-level EIR fieldwork included surveys for small- to medium-sized mammals that occupy burrows and dens (described in Appendix B). The burrow/den surveys were conducted within the proposed project footprint, which is almost entirely located in the valley floor, and included walking 30-meter transects over 134 person days, mapping small mammal burrows, badger dens, and canine dens. These surveys consisted of scanning the ground for burrows and wildlife species and provided 100% visual surveys of the valley floor. Additionally, the plant surveys, which included walking transects over the study area, for a total of 206 person days, were conducted in April and July 2013 and 2015 when blunt-nosed leopard lizard is active (i.e., April through September) and the majority of the surveys were done during optimal temperatures for the lizard (i.e., 77°F–95°F) (CDFG 2004). No blunt-nosed leopard lizards were observed during 2013-2015 plant and wildlife surveys, which provided essentially 100% visual surveys of the study area during three separate periods, and over 4,000 person hours within the study area.

Dr. Germano, a recognized expert on blunt-nosed leopard lizard, conducted a habitat assessment in the study area (see Appendix B for methods). Based upon this assessment, Dr. Germano stated that the potential for blunt-nosed leopard lizard to occur in the study area was low. There is a general lack of kangaroo rat burrows in the study area, and Dr. Germano hypothesized that the lack of kangaroo rat burrows might be in part due to the soil characteristic, as well as other factors such as soil type and greater density and cover of vegetation (Germano pers. obs. 2013).

In his opinion, the blunt-nosed leopard lizard would be highly unlikely to occur where these types of burrows are absent. If the soils are too compacted for kangaroo rats to burrow, then they would be too compacted for blunt-nosed leopard lizards to burrow. Dr. Germano has stated that small mammal burrows are not needed for blunt-nosed leopard lizard and that the lizard can create their own burrows, Dr. Germano reasons that if there are no kangaroo rat burrows, then the soils are likely not suitable burrowing habitat for blunt-nosed leopard lizard. In April 2014, Dr. Germano used the results of the burrow/den survey to determine the appropriate small mammal (including kangaroo rat) trapping locations and trapped in May 2014 over the course of 7 days. Based upon the information Dr. Germano collected during these surveys, the most suitable area for blunt-nosed leopard lizard includes an area where some small mammal burrows were observed and that had soils suitable for blunt-nosed leopard lizard, which is located in the southwest quadrant of Planning Area 6c in the valley floor near the existing oil fields. None of the other areas assessed by Dr. Germano were suitable habitat for blunt-nosed leopard lizard (Germano 2014b), and steep areas within the foothills are not considered suitable for blunt-nosed leopard lizard.

This lizard is relatively large and has a long regenerative tail, powerful hind legs, and a short, blunt snout; adults range in size from 3.4 to 4.7 inches (USFWS 2010b). Because blunt-nosed leopard lizards are larger and more conspicuous lizards, the lack of any observations of this species during three separate transect surveys (i.e., two plant passes and the burrow/den surveys), as well as other surveys and resource mapping on site; Dr. Germano's assessment of the study area; and the lack of recent records (i.e., in the last 20 years) of blunt-nosed leopard lizard overlapping the study area or immediately adjacent to the study area (CDFW 2014), indicates that this species has low to moderate potential to occur. Generally, the species has a low potential to occur at high densities on the valley floor, but could have moderate potential to occur in suitable habitat areas of the study area if site conditions improved from the ongoing drought. Pre-construction focused protocol-level surveys for blunt-nosed leopard lizard would be conducted prior to construction in accordance with the CDFW's *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard* (CDFG 2004).

Observed spatial patterns of blunt-nosed leopard lizard are somewhat variable, which may reflect the different periods over which data were collected. Multiple studies also indicated that home ranges for males and females often overlap and that males outnumbered females by ratios of 2:1 to 3:1 (CDFG 2010b; USFWS 1998, 2010b). The 1998 USFWS Recovery Plan for Upland Species of the San Joaquin Valley reported estimated home ranges between 0.52 acre and 4.2 acres for males and 0.25 acre to 2.7 acres for females (USFWS 1998). However, a radiotelemetry study estimated male home ranges between 3.9 to 21.7 acres (average: 10.5 acres), and female home ranges between 1.2 and 11.0 acres (average: 5.0 acres) (Warrick et al. 1998, as cited in

USFWS 2010b; CDFG 2010b). Blunt-nosed leopard lizard surface activity levels are strongly influenced by environmental factors (e.g., temperature, precipitation and vegetation characteristics), which in turn affect thermoregulation, metabolism, prey densities, and predatory success or mobility (Warrick et al. 1998; cited in USFWS 2010b). These factors may also account for some of the differences in estimated home ranges in the different studies.

Although the largest published home ranges are just over 20 acres and the smallest is approximately 0.25 acre (for females), individuals are capable of relatively long-distance (e.g., more than 1,500 feet) movements over short time periods (e.g., within 1 month). Tollenstrup (1983, as cited in CDFG 2010b) reported one individual traveling 1,509 feet between successive capture points based on mark and recapture methods during a one-month period study. Such movements may not reflect a home range, but rather a dispersal event where an individual shifts its home range or makes a "sortie" [15] to an area not within its core home range.

As described above, the potential for blunt-nosed leopard lizard to occur at high densities in the study area is low, but could have moderate potential to occur in suitable habitat areas of the site if site conditions improved from the ongoing drought.

San Joaquin Kit Fox (FE/ST)

The general distribution, habitat associations, known occurrences, results of site-specific surveys, and habitat modeling for San Joaquin kit fox is described first. Following this information, additional natural history information related to mobility, home range, dispersal, and den selection are provided.

San Joaquin kit fox (federally listed as endangered and state-listed threatened) historically has been documented in the study area. The kit fox's range includes the San Joaquin Valley floor, surrounding foothills and ranges, and smaller adjacent valleys (USFWS 2010a). In general, the kit fox inhabits large tracts of relatively level terrain in the San Joaquin Valley and vicinity, particularly in well-drained habitats with scattered shrubs and grass and forb-dominated habitats. The study area is located in the southern portion of its range, where kit foxes are associated with valley sink scrub, valley saltbush scrub, upper Sonoran subshrub scrub, and annual grassland (USFWS 1998). Kit foxes in this region also inhabit grazed grasslands, petroleum fields, and urban areas (USFWS 1998).

15 Animals sometimes make unusual, long-distance movements, or "sorties," into new areas for various reasons, including mate seeking, investigating new habitat areas prior to a permanent shift in range, or just general exploratory behavior, especially by juveniles and sub-adults.

No San Joaquin kit fox have been detected during the 2013-2015 surveys within the study area. There are several CNDDB records within or immediately adjacent to the study area, dated between 1975 and 2000 (CDFW 2015b-c). More recent records on the Ranch but not in the study area, include 2012 CNDDB records of possible San Joaquin kit fox based upon camera data—one record west of the Old Headquarters easement, detected by the Tejon Ranch Conservancy, and one record northeast of Comanche Point, north of the Arvin Edison Canal adjacent to Sycamore Road (CDFW 2015b; Tejon Ranch Conservancy 2014). Surveys conducted at White Wolf in 2009 and 2010 by Dr. Brian Cypher recorded several foxes and concluded that "there appears to be a small but stable population of two to five individuals" (Cypher et al. 2010, as cited in Tejon Ranch Conservancy 2011). Additionally, there was a more recent detection of San Joaquin kit fox near Tejon Reservoir No. 1 in 2007 (White, pers. comm. 2013), which is consistent with a siting of San Joaquin kit fox made between 1972 and 1975 (CDFW 2015b) (Figure A2-5 in Attachment A-2 of Appendix A).

During the burrow and den habitat assessment, six dens were recorded as potential kit fox dens based on size and structure, and additional dens were recorded for other canid species, such as coyote or red fox, as well as American badger. Wildlife camera surveys were conducted between January and February 2014 along the California Aqueduct and I-5; additional wildlife camera surveys were conducted throughout the study, area including at these six dens and a variety of other canid dens in April and May 2014 (see Appendix B). No San Joaquin kit fox were detected during these species-specific camera studies. However, one of the images for the I-5 overpass near the California Aqueduct at camera station GV-RC1 recorded an unidentified fox, which species could not be confirmed.

To provide a regional perspective, Cypher et al. (2013) modeled suitable habitat for the kit fox using a "GIS-based mapped-algebra model" that includes several habitat variables, including land use/land cover, vegetation density, and terrain ruggedness. Within the regional model, areas were determined to be "high" suitability (>90), "medium" suitability (75-90), or not kit fox habitat. In May 2010, potential kit fox habitat on the valley floor of the Ranch, including the study area, was mapped at a "coarse scale" by kit fox expert Brian Cypher, PhD (Cypher 2010). Dr. Cypher states that "most of the kit fox habitat identified on the Ranch was of medium suitability. Resident kit foxes might occasionally occur in these areas, although such occupancy generally is not persistent" (Cypher 2010). The 2010 field habitat assessment yielded similar results to Cypher et al. (2013), with most of the central portion of the site mapped as "low to moderate" suitability and "moderate to high" suitability mapped along Grapevine Creek. An east–west connectivity corridor is mapped along the southern foothills and along the California Aqueduct (TRC 2013b).

San Joaquin kit foxes are quite mobile and have relatively large home ranges. Cypher et al. (2001) determined a mean adult home-range size of approximately 1,072 acres and a mean pup home-range size of 325 acres on the Naval Petroleum Reserves in western Kern County. Briden et al. (1992, as cited in USFWS 2010a) found that denning ranges (the area encompassing all known dens for an individual) for San Joaquin kit fox averaged approximately 1,169 acres in western Merced County. White and Ralls (1993) estimated a mean home range for San Joaquin kit fox of approximately 2,866 acres at the Carrizo Plain in 1990 and 1991, but noted these home ranges were large and likely reflected drought conditions and prey scarcity. Home ranges during this study were also relatively exclusive, with little overlap between individuals of the same sex (White and Ralls 1993). At the Camp Roberts Army National Guard Training Site in northern San Luis Obispo County, radiotelemetry documented mean home ranges for San Joaquin kit fox of approximately 5,782 acres (Root and Eliason 2001, as cited in USFWS 2010a). White and Ralls (1993) suggested that large, exclusive home ranges during periods of drought may be an adaptation to episodic prey scarcity and a means to maintain their own body mass and condition.

With regard to dispersal, San Joaquin kit fox pups remain under the care of adults for 4 to 5 months before beginning to disperse from their natal area as early as July and continuing through August and September (USFWS 2010a). Mortality during dispersal is a significant source of kit fox mortality. In a study of dispersal by San Joaquin kit fox, Koopman et al. (2000, as cited in USFWS 2010a) found that more than 65% of dispersing juveniles died within 10 days of leaving their natal range. The primary cause of mortality of dispersing and philopatric juveniles (juveniles that remain in their natal area) was predation. Some offspring remain with their parents (Ralls et al. 2001). In one study spanning 16 years, 33% of tracked juveniles dispersed from their natal territory, with significantly more males dispersing than females, and the average dispersal distance was 4.8 miles (range of 1.1 to 20 miles) (Koopman et al. 2000, as cited in USFWS 2010a). Most dispersal occurred in the first year of the animal's life. Briden et al. (1992, as cited in USFWS 2010a) documented dispersals of 1.2 to 12 miles. Four long-distance dispersals of between 25 and 50 miles were documented between Camp Roberts and Fort Hunter Liggett Military Reserve in Monterey County and the Carrizo Plain (California Air National Guard 2008, as cited in USFWS 2010a). Provision of refuges for dispersing kit foxes, in particular, is important to minimize predation. Coyotes, for example, are a common natural predator of kit foxes (e.g., Ralls and White 1995; White et al. 1995; White and Garrott 1997; Kozlowski et al. 2008) and a direct competitor for resources (White et al. 1995; Arjo et al. 2003, 2007; Kozlowski et al. 2008), and providing refuges could decrease the risk of predation of kit foxes.

Selection of den sites does not appear to be strongly related to nearby human activities, nor do kit foxes appear to actively avoid man-made features, such as roads and structures. Bjurlin et al. (2005), for example, found that almost 10% of San Joaquin kit fox dens in the Bakersfield area were within 100 feet of road centerlines and that some dens used features of major roads, including culverts, embankments and underpasses, and drainage basins or canals immediately adjacent to roads. In fact, the presence of industrial developments may encourage proximate kit fox denning in part due to increased foraging opportunities and protections against predators such as coyotes (Cypher, pers. comm. 2014).

As described above, the potential for San Joaquin kit fox to occur in the study area is considered to be high potential for movement events, including juvenile and adult dispersal in search of territories. During these events, individual kit foxes are expected to forage on the site and seek temporary shelter. The study area is considered to have low potential for long-term occupation due to negative surveys and an apparent lack of kangaroo rat resources (their preferred prey). Absence of detections of kit fox in the study area is consistent with habitat suitability modeling conducted by Cypher et al. (2013). Most of the study area is classified as medium quality or unsuitable habitat (Cypher et al. 2013; Cypher, pers. comm. 2015). Medium-quality habitat primarily functions as movement or dispersal habitat and rarely seems to support resident foxes (Cypher, pers. comm. 2015). The areas modeled as highly suitable habitat are found in the disjunct parcels at the north end of the study area while the rest of the high suitability are relatively small fragments, mostly along the aqueduct or Grapevine Creek. The fragmented nature of this high-quality habitat further reduces the probability of occupancy by kit fox (Cypher, pers. comm. 2015). The sum total of the high-quality habitat is probably insufficient to support a single pair or family group of foxes (Cypher, pers. comm. 2015; Cypher et al. 2013). Furthermore, little suitable habitat occurs adjacent to the study area. However, to ensure a conservative analysis and based upon Dr. Cypher’s recommendation, the Cypher et al. (2013) habitat model was used to determine habitat in the study area.

2.5.3.2 Bald and Golden Eagle Protection Act

The BAGEPA species observed on site include the bald eagle and golden eagle. A Golden and Bald Eagle Technical Report is included as Appendix L to this BTR.

Bald Eagle (Delisted, BCC, MBTA/ST, FP)

The bald eagle is currently federally delisted from FESA, and is a state threatened-, and fully protected species. The bald eagle is also protected by BAGEPA (16 U.S.C. 668 et seq.) and the MBTA, and is a USFWS BCC. Bald eagles typically nest in large trees in forested areas, often in conifers, but also in hardwoods, such as sycamores and oaks, or on cliff faces (Anthony et al. 1982; USFWS 1986; CDFG 2012). They usually nest within 2 kilometers (approximately 1.24 miles) of water, often much closer, and are generally isolated from human activity and disturbance; they also often nest in one of the largest trees in a stand and in a prominent location providing vistas over the surrounding area (Buehler 2000; USFWS 1986). In winter, bald eagles typically inhabit areas less than 500 meters (1,625 feet) in elevation, but may be found up to 2,500 meters (8,125 feet) in some western states (Buehler 2000). They typically roost communally in stands of both hardwoods and conifers that provide access to foraging habitat and protection from the weather (Anthony et al. 1982).

The quality of foraging habitat associated with large bodies of water depends on such factors as abundance of the fish that bald eagles prey upon; the presence of shallow water such as tidal flats, which may increase the availability of prey; and the level of human disturbance (Buehler 2000; Stalmaster and Kaiser 1998; Watson et al. 1991; Garrett et al. 1993). The presence of suitable perch sites is also an important factor. The bald eagle prefers to feed on fish in most parts of its range, although food preferences vary according to region and season, and may reflect locally available resources. In some areas, birds such as American coots (*Fulica americana*) and mallards (*Anas platyrhynchos*) may sometimes provide a more important food source than fish (Jackman et al. 1999), but prey items collected at California nests also include a variety of other water-dependent birds, as well as ring-necked pheasants (*Phasianus colchicus*), American crows (*Corvus brachyrhynchos*), muskrats (*Ondatra zibethicus*), jackrabbits (*Lepus* spp.), and ground squirrels (*Spermophilus* spp.) (USFWS 1986).

Currently, degradation of breeding and wintering habitat is considered an important threat to the bald eagle, particularly through loss of nesting, roosting, and perching habitat near shorelines and of aquatic foraging habitat (Buehler 2000). A variety of studies also demonstrate how human activities can disrupt bald eagle foraging, roosting, nesting, and perching (USFWS 2007). Recreational activities that can negatively affect eagles include hiking, boating, tubing, and off-road vehicle operation (Brown and Stevens 1997; Grubb and King 1991; Stalmaster and Kaiser 1998). In addition, USFWS (2013d) has identified renewable development as a new and important threat to bald eagles, especially as a result of collisions with wind turbines. Electrocution through contact with power lines has long been, and still remains, a threat to bald eagles (USFWS 1986; Buehler 2000). Other threats to bald eagles include ingestion of microtrash, collisions with motor vehicles, and entanglement in fishing nets (Buehler 2000).

On site, bald eagles were observed during the winter of 2013 and 2014, including at least two adults and three subadults. Two adult bald eagles were observed regularly in the study area in the winter perched in a snag adjacent to a few eucalyptus trees located 400 feet north of Edmonston Pumping Plant Road on the southern portion of the valley floor. The snag is approximately 40 to 50 feet in height, and appears to be used by this pair as a roost and foraging perch during the winter. These two individuals were observed in February 2013, and again during the winter raptor surveys in December 2013 through February 2014. The pair was also observed foraging in the lower foothills on occasion. While it is assumed to be the same pair each year, this could not be confirmed by visual observations alone. One single adult was observed along Edmonston Pumping Plant Road near the center portion of the study area and one juvenile was perched in a tree near the southern boundary of the study area during the winter raptor surveys in January 2014; two subadults were perched on a power pole adjacent to the California Aqueduct in January 2014; and one subadult was observed again near the California Aqueduct in February 2014 (Figure 2-9A, Special-Status Wildlife Species (Birds)).

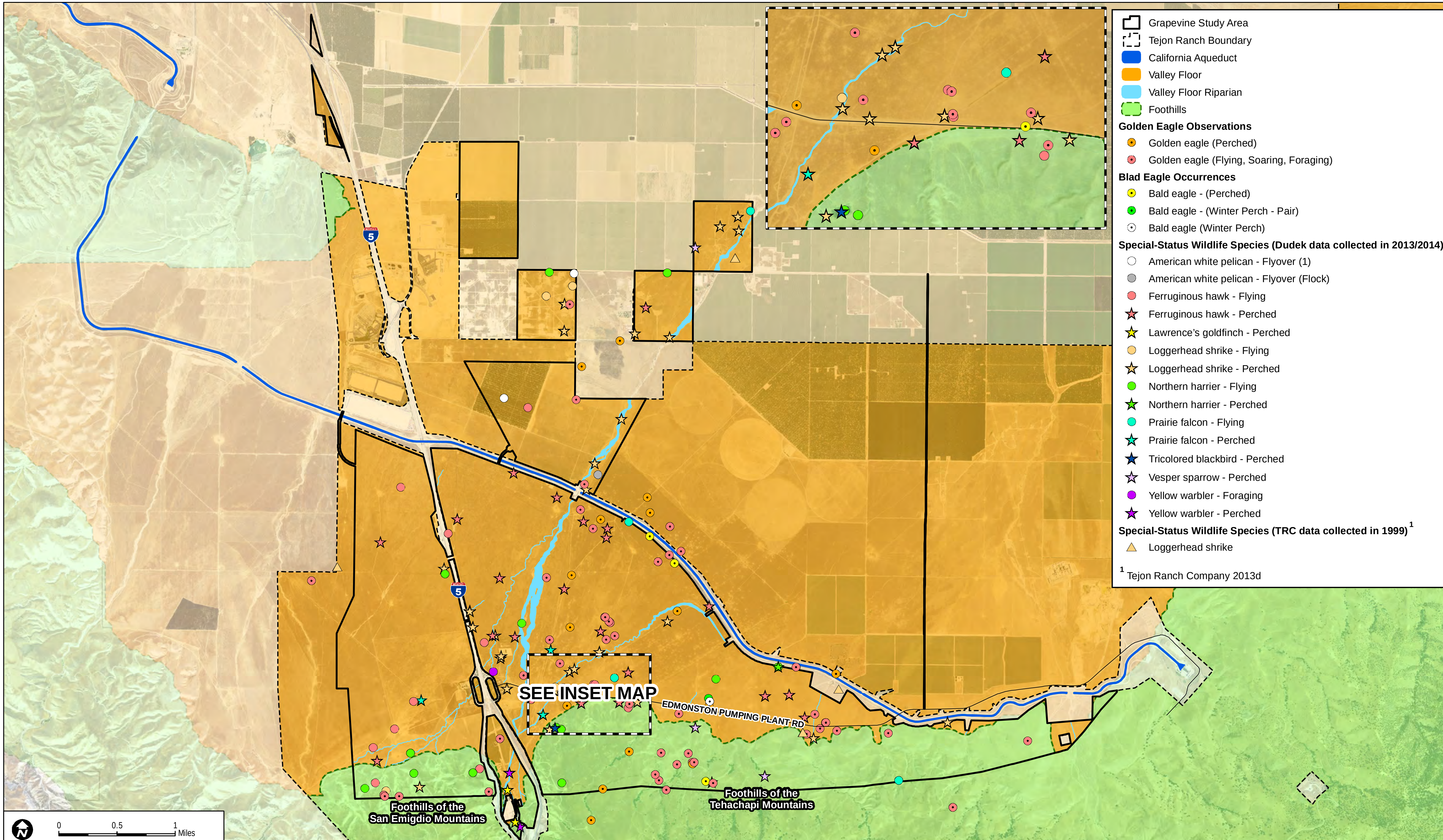
In the past, bald eagles have been observed regularly in low numbers in the study area during the winter season (Babcock 2013), and the Tejon Ranch Conservancy has observed bald eagles perched on a snag along Edmonston Pumping Plant Road on a regular basis since 2009 (Tejon Ranch Conservancy 2013b). The CNDDB has two records of bald eagle use along Edmonston Pumping Plant Road from 2000 and 2001 (CDFW 2015b, 2015c) (see Appendix L, Eagle Technical Report). No nesting bald eagles have been recorded in the study area. Based on the past use and the recent survey results, bald eagles appear to be limited to a few, but regularly occurring, winter visitors in this area. While successful nesting appears to be occurring at some locations in Southern California (e.g., Ramona in 2013 and 2014 (WRI 2014), Lake Hemet since 2004 and Big Bear Lake in 2012 (USFS 2013)), this species is not expected to nest on and in the immediate vicinity of the proposed project due to a lack of large water bodies with nesting habitat.

Golden Eagle (BCC, MBTA/FP)

Golden eagles are fully protected by the State of California. Similar to bald eagles, golden eagles are also protected by the BAGEPA (16 U.S.C. 668 et seq.), the MBTA, and are a USFWS BCC.

The golden eagle is a partial migrant, with the northern nesting birds migrating south in winter and those in more temperate climates remaining within nesting territories year round (Brown and Amadon 1968). Most golden eagles in California are year-round residents, generally inhabiting mountainous and hilly terrain throughout the open areas of the state and can occur at elevations ranging from sea level up to 3,833 meters (11,500 feet) amsl (Grinnell and Miller 1944). However, migrants also occur in California, which can complicate the understanding of golden eagle populations in California.

The golden eagle inhabits open country from barren areas to open coniferous forests. They occur primarily in hilly and mountainous regions, but also in rugged deserts, on the plains, and in tundra. Golden eagles prefer cliffs and large trees with large horizontal branches and for roosting and perching (DeGraaf et al. 1991). Golden eagles are an upper-trophic aerial predator and eat small to mid-sized reptiles, birds, and mammals up to the size of mule deer (*Odocoileus hemionus*) fawns and coyote pups (Bloom and Hawks 1982). They are also known to scavenge and feed on carrion (Kochert et al. 2002).



SOURCES: TRC 2013d

FIGURE 2-9A

Special-Status Wildlife Species (Birds)

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Golden eagles avoid nesting near urban habitat (e.g., Scott 1985), and do not generally nest in densely forested habitat. Golden eagles nest on cliffs, in the upper one-third of deciduous and coniferous trees, or on artificial structures such as windmills, transmission towers, and artificial nesting platforms, etc. (Phillips et al. 1990; Kochert et al. 2002).

Golden eagle declines, where they have occurred, are attributed primarily to habitat degradation and human-induced disturbances and mortality (Kochert et al. 2002). Shooting, poisoning, trapping, and pesticide contamination have all been identified as causes of the decline of golden eagle populations. Golden eagles are also highly vulnerable to electrocution and collisions with utility lines associated with expansion of suburban development, as well as energy development (Franson et al. 1995; Lehman et al. 2007, 2010).

On site, golden eagles were detected during nesting raptor surveys conducted in May and July 2013, and during winter raptor surveys conducted November 2013 through February 2014.

Focused golden eagle nesting surveys were conducted by helicopter in February 2014. The survey area was determined by Dudek and Bloom Biological through delineating an approximate 2-mile buffer around the proposed development where it intersected with potential nest habitat areas (i.e., foothills and mountains as opposed to the valley floor) and within the potential viewshed of the proposed development. Bloom Biological Inc. surveyed this area via helicopter surveys over a 3-day period in February; the survey methods followed the protocols described by the USFWS (Pagel et al. 2010). (See Appendix L to this BTR for more details.)

Golden eagles were observed foraging in the valley floor and the foothills of the study area in all seasons (Figure 2-9A). Golden eagle is known to nest in woodlands in the region, but suitable nesting habitat on site is very limited, present primarily in the woodlands in the foothills along the southern flank of the study area. The nesting surveys did not document golden eagle nesting in these woodlands or elsewhere in the study area. Although individual golden eagles were detected twice during nesting raptor surveys, neither individual was confirmed to be of breeding age, and no golden eagle nests were detected on site during the nesting raptor surveys in 2013 or the aerial nest survey in 2014. Golden eagles were more abundant during the winter raptor surveys, with a total of 12 eagle observations made during the November 13–14, 2013, survey. Of these, an average of 2 adults and a maximum of 3 adults were seen over the 3-day survey. Observations of the eagles were concentrated in the southern part of the study area in the foothills and near the California Aqueduct east of I-5 (Figure 2-9A).

In addition to the foraging eagles observed as noted above, during the 2013 and 2014 field surveys for all resources a total of six golden eagle carcasses were observed by Dudek biologists: two were found directly beneath existing Pacific Gas & Electric (PG&E) power lines, two[16] were found under a Southern California Edison (SCE) tower within Grapevine, and one was found underneath a telephone pole. A sixth golden eagle carcass was found hanging from a PG&E pole and it was clear that the individual had been electrocuted. Because the carcasses were observed within the study area, it is assumed that these eagles had utilized the site for foraging purposes. While the cause of death of the other golden eagle carcasses was not conclusively determined, the wounds on some of the carcasses were indicative of electrocution. In addition, the carcasses were located beneath power lines, towers, or telephone poles. Upon receiving this information, TRC contacted both PG&E and CDFW regarding the golden eagle deaths. As a result of this coordination, PG&E is taking steps to resolve the issue, including retrofitting the existing power lines consistent with the *Avian Protection Plan Guidelines* prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC and USFWS 2005) in conjunction with *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (APLIC 2012).

2.5.3.3 Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703 et seq.) provides protection for birds by prohibiting the destruction of active nests for most native birds. A variety of native birds were observed and likely nest on site. Species such as Bullock's oriole (*Icterus bullockii*), spotted towhee (*Pipilo maculatus*), California quail (*Callipepla californica*), ash-throated flycatcher (*Myiarchus cinerascens*), yellow warbler, and phainopepla (*Phainopepla nitens*) likely nest in the foothills; and species such as horned lark, western meadowlark, house finch (*Carpodacus mexicanus*), Anna's hummingbird (*Calypte anna*), and loggerhead shrike likely nest in the valley floor. Raptors, including the bald eagle and golden eagle discussed above, are also protected under MBTA but their nesting status is afforded additional protection under California Fish and Game Code Section 3503.5, described in Section 3, below.

Some raptors were observed nesting on site, including American kestrel, barn owl (*Tyto alba*), and red-tailed hawk, identified in Figure 2-10, Non-Special-Status Raptors. A full list of bird species observed on site is included in Appendix I.

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[16] A golden eagle carcass was observed under the same SCE tower in November 2013 and in January 2014; it is possible that it was the same carcass rather than two separate individuals.

2.5.4 Protected Wildlife Species under the California Endangered Species Act and California's "Fully Protected" Species Laws

2.5.4.1 California Endangered Species Act (CESA)

The following CESA wildlife species are also federally protected and have already been described in Section 2.5.3: California condor, blunt-nosed leopard lizard, San Joaquin kit fox, southwestern willow flycatcher, least Bell's vireo, and bald eagle.

Additional state-listed species that have potential to occur in the San Joaquin Valley are listed in Tables 2-6A, 2-6B, or 2-6C (moderate to high potential to occur); Appendix H describes species with low potential or not expected to be impacted based on habitat conservation in open space. Species that were the focus of a protocol survey or habitat assessment or have been observed on site are described in more detail below.

Wildlife movement is described in Section 2.6.

Foothill/Valley Floor Riparian

Little Willow Flycatcher (BCC, MBTA/SE)

Potential habitat for little willow flycatcher (BCC and state-listed endangered) is limited to the native riparian habitat in the foothills and valley floor, which are located in proposed project open space. Little willow flycatcher was not detected during the wildlife surveys, including focused USFWS protocol surveys for southwestern willow flycatcher and least Bell's vireo (Appendices H and J), but has moderate potential to use the native riparian habitat on site as stopover habitat during migration. The potential stop-over riparian habitat that could be used during winter migration is located in the proposed project open space in the foothills and the vegetated riparian habitat in the valley floor.

Tehachapi Slender Salamander (—/ST)

Tehachapi slender salamander (state-listed threatened) has a moderate potential to occur along the southern boundary of the study area where there are some steep slopes with significant rock outcrops and California buckeye present (see Appendix H). Some portions of the perennial reach of Grapevine Creek have a low to moderate suitability to support Tehachapi slender salamander based on the presence of some riparian habitat and the creek's potential connectivity to a documented salamander occurrence location approximately 3 miles upstream (CDFW 2015b). One additional area near the southern portion of the study area has some potential to support this species based on the presence of several suitable habitat features, such as rock outcrops, soil moisture, and elevation range. However, due to a lack of tree species typically found at occupied sites (e.g., California buckeye, California sycamore, and Canyon live oak), the potential for Tehachapi salamander in this area is low to moderate (Evelyn 2014). Potentially suitable habitat is located in the proposed project open space in the foothills.

Tricolored Blackbird (BCC, MBTA/SE)

A focused survey for special-status aquatic and marsh-dwelling bird species, including tricolored blackbird (*Agelaius tricolor*), was conducted in 2013 during the nesting season. The special-status designation for this species focuses on nesting activity and no tricolored blackbirds were observed nesting in the study area.

No tricolored blackbirds were observed during the 2013 nesting bird surveys; one male tricolored blackbird was observed in April 2014 in the marsh habitat surrounding the stock pond (Figure 2-9A) where red-winged blackbirds were nesting, but no nesting pairs of tricolored blackbirds were detected. Non-nesting tricolored blackbirds were also detected off site at the I-5 and California Aqueduct undercrossing in 2009 during wildlife camera surveys (TRC 2013d). Tricolored blackbird has moderate potential to nest on site in marsh habitat surrounding the stock pond. The stock pond supports a very small area of cattails that currently supports nesting red-winged blackbirds. Tricolored blackbirds are noted for their itinerant nesting patterns and highly variable use of nesting sites over time, commonly moving to different breeding sites each season (Hamilton 1998). Therefore, potential nesting in suitable habitat in the study area in the future cannot be ruled out (Table 2-6C).

Tricolored blackbird suitable habitat is located in proposed project open space.

Valley Floor Non-Riparian

Nelson's Antelope Squirrel (—/ST)

The general distribution, habitat associations, known occurrences, and results of site-specific surveys for Nelson's Antelope squirrel are described first. Following this information, additional natural history information related to mobility, home range, and dispersal is provided.

Nelson's antelope squirrel (state-listed threatened) inhabits arid grassland, shrubland, and alkali sink habitats within the San Joaquin Valley. They prefer dry flat or rolling terrain with slopes less than 10 to 14 degrees (18% to 25%) (Whitaker and NatureServe 2008). For this reason, the antelope squirrel is primarily considered to be a non-riparian valley floor species. They seldom dig their own burrows, mainly occupying burrows of other small fossorial mammals, primarily kangaroo rats (Whitaker and Nature Serve 2008; Ahlborn 2005). They occur in greatest densities within sparse-to-moderate cover of shrubs, including saltbush, California ephedra, bladderpod, goldenbush, and matchweed (USFWS 1998). They are uncommonly found in shrubless areas (USFWS 1998). Additionally, they are rarely found within areas of alkaline soils supporting halophytes, most likely because highly alkaline soils within the valley floor are typically indicative of high water tables (within a few centimeters to a meter from the surface) (USFWS 1998).

Nelson's antelope squirrel was recorded at the Wind Wolves Preserve located west of the study area (Cypher et al. 2011) (Table 2-6A). This species has been recorded in the surrounding USGS quadrangles, including two records within the study area dated 1903; the closest recent (since 2000) records are located approximately 23 miles west of the project site (CDFW 2015b). Although there are no approved survey protocols for Nelson's antelope squirrel, this diurnal species is readily detectable when present. It was not observed during any of the 2013 or 2014 plant and wildlife surveys, which provided essentially 100% visual surveys of the study area. Pre-construction surveys for Nelson's antelope squirrel would be conducted prior to construction to determine if species are present in the study area.

Nelson's antelope squirrels are considered to be a moderately mobile species. Home range studies have yielded varying results depending on methods used to calculate home ranges. Hawbecker (1947) reported a mean home range from a field site 65 miles west of Fresno of 10.9 acres (4.4 hectares) based on trapping data, varying between 6.4 to 17.8 acres (2.6 to 7.2 hectares). Harris and Stearns (1991) reported larger home ranges for antelope squirrels using both radiotracking and trapping mark-recapture data on the Elkhorn Plain. Their home range estimates depended on the analytic method applied, with a mean 10.8 hectares (26.7 acres) using a minimum convex polygon method and mean of 14.4 hectares (35.6 acres) using a 95% ellipse estimation method. Both estimates reported by Harris and Stearns (1991) are larger than those reported by Hawbecker (1947), which may reflect different ecological conditions at the sites and/or different field methods. Hawbecker (1958) reported observations of daily movements, including movement along a circuit of 1,250 feet in a single 3.5-hour period. While many individuals were captured by Hawbecker in the same general area within an approximately 11-acre range over several years, some individuals were captured more than 2,000 feet from previous locations, including one immature male that was captured 4,200 feet from its original capture in 6-month period. Because the Hawbecker data are limited by where trap stations were established, it is expected that some movements may well exceed 4,200 feet. The substantially larger home range estimates by Harris and Stearns (1991) are consistent with these observations of longer movements.

As described above, the potential for Nelson's antelope squirrel to occur in the study area is low.

Swainson's Hawk (BCC, MBTA/ST)

Swainson's hawk (BCC and state-listed threatened) may occur in the proposed project region during migration, but is not expected to nest in the study area (Table 2-6A). The nearest known nest site relative to the study area is in the White Wolf area of the Ranch, approximately 20 miles northeast of the study area. The next nearest and currently known nesting population occurs approximately 30 miles east of the study area in the Antelope Valley of the Mojave Desert, where extensive alfalfa fields provide adequate prey for nesting pairs (CDFW 2015b-c). Further, limited suitable nesting habitat is present in the vicinity of the study area. No Swainson's hawks were detected during 2013 nesting raptor surveys or during any other wildlife surveys of the site; however, a large kettle (group of birds circling in the air) of Swainson's hawks was observed moving south over the northern flank of Grapevine Peak and the southern portion of the study area in the fall of 2009 (K. Babcock, personal communication). Because populations have steadily increased in Kern County, there is some potential this species could nest or forage on site from nearby nest territories in the future. Consequently, pre-construction surveys will include focused nest searches for this raptor in accordance with the Swainson's Hawk Technical Advisory Committee.

Townsend's Big-Eared Bat (—/SC, SSC)

Townsend's big-eared bat (state candidate and SSC) was detected during acoustic monitoring surveys, with only one minute of detection (0.01% total abundance) recorded on the north side of the California Aqueduct in the valley floor area just outside of the eastern portion of the study area. An initial habitat assessment for roosting areas identified two potential roost areas that had characteristics suitable for special-status bats such as Townsend's big-eared bat: the abandoned buildings south of Edmonston Pumping Station Road (on site) and the large concrete underpass for Grapevine Creek at I-5 (off site) (see Appendix M). However, no bats were observed at the abandoned buildings and no Townsend's big-eared bat were observed roosting or were detected with subsequent visual or acoustic monitoring during the summer and fall 2014 roost surveys. The overall very low activity detected on site (0.01% total abundance) indicates this species has some potential to forage in the study area but is not expected to roost on site.

2.5.4.2 California's Fully Protected Species Laws

California wildlife statutes also include species for which incidental take permits may not be issued, which are generally referred to as "fully protected" species. Fully protected species known or that have potential to occur in the study area, as identified in Table 2-6A, include the blunt-nosed leopard lizard, California condor, golden eagle, and bald eagle and are described in Section 2.5.2.

2.5.5 Other Special-Status Wildlife Species

As described in Section 3, Regulatory Setting, CEQA Guideline 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c). These wildlife species are commonly called "special-status" species. Statuses of special-status wildlife species are provided by CDFW (2015d).

2.5.5.1 Special-Status Invertebrates

No special-status invertebrate species were observed during surveys or are expected to occur in the study area (see Tables 2-6A and 2-6B and Appendix H).

2.5.5.2 Special-Status Fish

No fish were observed in the study area; therefore, no special-status fish species were observed during surveys or are expected to occur within the study area due to the lack of connectivity to creeks known to support special-status fish in Kern County, as well as limited suitable perennial aquatic habitat for fish on the site (Appendix H).

2.5.5.3 Special-Status Amphibians and Reptiles

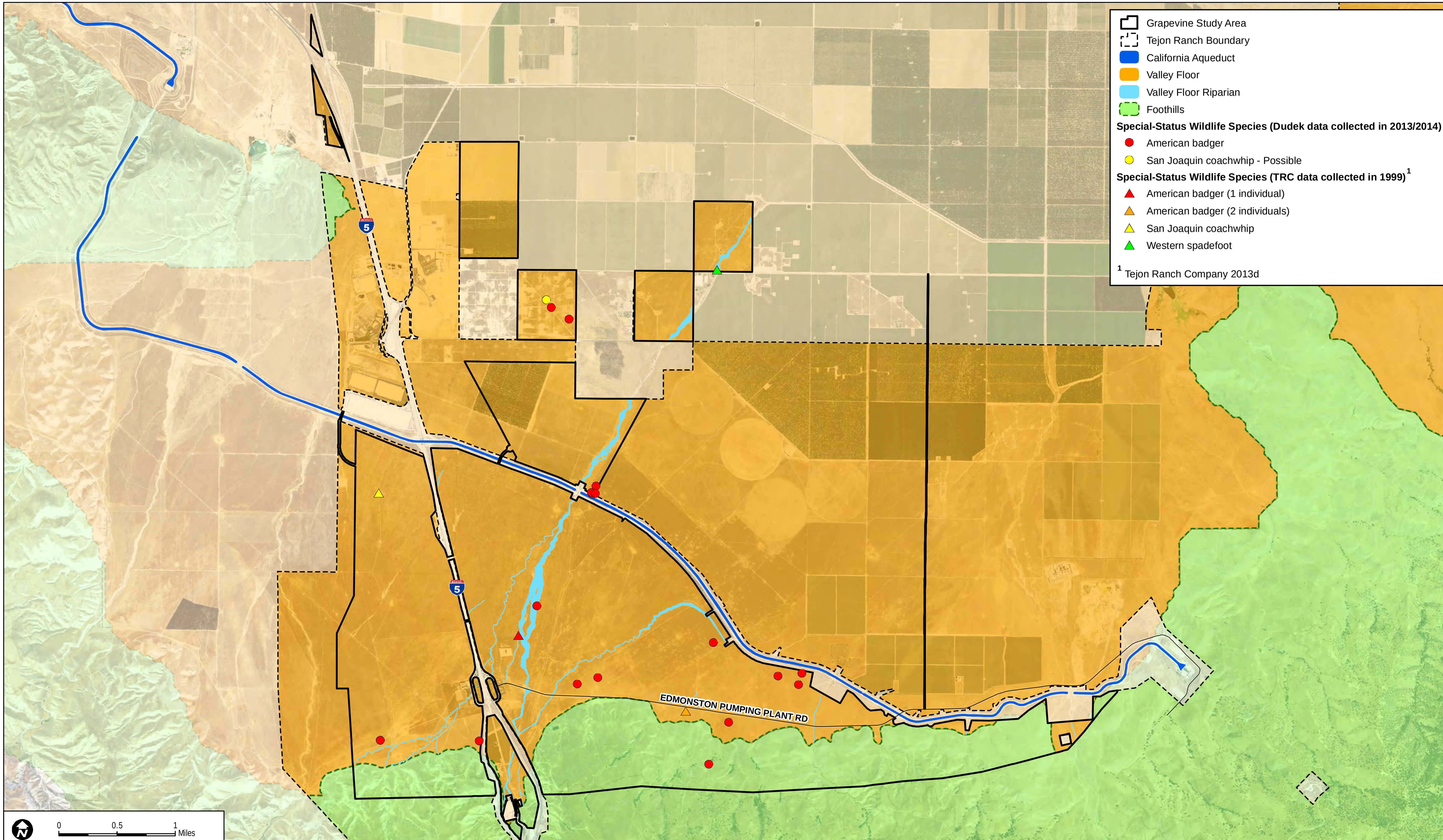
No special-status amphibians or reptiles were detected within the study area during 2013 and 2014 surveys.

Blainville's Horned Lizard (SSC)

Blainville's horned lizard is known to occur in the San Joaquin Valley and has moderate potential to occur in the valley floor portions of the study area. While somewhat cryptic due to its camouflage coloring and markings and stationary behavior, horned lizards are fairly detectable where they are common, especially when basking or stationed near harvester ant mounts. Visual belt transects, for example, that provide 100% visual survey coverage are an effective survey method for horned lizards when conducted under moderate temperature conditions (e.g., about 65°F to 90°F). The study area has essentially been 100% visually surveyed in three different periods, including two separate special-status plant surveys in April and July and during the burrow/den surveys in October and November of 2013. On all but about 4 days during the April and July special-status plant surveys, air temperatures were in ranges suitable for horned lizard activity. During the burrow/den surveys, temperatures were generally suitable during many days in October, but probably too cold in most of November. If the species was common on site, it mostly like would have been incidentally observed during the special-status plant and burrow/den surveys because both surveys involved intensive visual inspections of the ground (versus bird surveys that generally focus on vegetation and aerial observations). No Blainville's horned lizard, nor its scat, has been observed on site, indicating that if the species is present on site, it is likely present in low numbers (Table 2-6A).

San Joaquin Coachwhip (Snake) (SSC)

San Joaquin coachwhip is a snake that was mapped in 1999 within the study area on the west side of the I-5 approximately 0.5 mile south of the California Aqueduct (TRC 2013b) (Figure 2-9B, Special-Status Wildlife Species (Mammals, Amphibians, and Reptiles)). San Joaquin coachwhip also was observed in 2013 in adjacent off-site lands within the Ranch. During the April/May 2014 wildlife camera study, one camera captured a possible San Joaquin coachwhip and based on the photo it is likely this species (Figure 2-9B). The species has a high potential to occasionally occur within the study area in open, dry treeless areas, including grassland and saltbush scrub in the valley floor and the foothills (Table 2-6A).



SOURCES: TRC 2013d

FIGURE 2-9B

Special-Status Wildlife Species (Mammals, Amphibians, and Reptiles)

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Silvery Legless Lizard (SSC)

Silvery legless lizard is known to occur in the San Joaquin Valley but has not been observed on site. However, it generally is not detectable during walkover surveys[17] because it is usually subterranean. While silvery legless lizard is not expected to occur in unvegetated washes in the valley floor, which are likely too dry for the species, it has a moderate potential to occur in friable soils in the valley floor riparian, including tamarisk thickets. Silvery legless lizard also has a moderate potential to occur along the southern edge of the study area within oak savannah habitats and vegetated drainages in the foothills (Table 2-6A).

Two-Striped Garter Snake (SSC)

Two-striped garter snake is known to occur in the San Joaquin Valley and has moderate potential to occur in the foothill's stock pond and moist drainages (Tables 2-6B and 2-6C). The most suitable habitat includes perennial waters in Grapevine Creek, primarily in the valley floor riparian areas, and the stock pond in the foothills. This species' range is generally limited to coastal central and Southern California; however, it was observed at TMV (Dudek 2009) and the proposed project is at the eastern edge of its range (Nafis 2014).

Western Spadefoot (Toad) (SSC)

Western spadefoot is a small toad that was mapped in 1999 within the study area in Grapevine Creek (TRC 2013b) (Figure 2-9B). Western spadefoot was not observed during wildlife surveys, including focused surveys for California red-legged frog. However, conditions in the study area during surveys for California red-legged frog were not ideal for detecting western spadefoot, which typically occurs in ephemeral aquatic sites during the wet season, such as seeps, depressions, and stock ponds. Rainfall on the site was below average during the survey period, so potential ephemeral wetland sites may not have been available to western spadefoot during surveys, potentially preventing it from being detected. Some suitable habitat exists within drainages in the study area and the species has a moderate potential to occur on site within these limited suitable habitat areas (Table 2-6A).

2.5.5.4 Special-Status Birds

The non-listed special-status birds described in this section were observed on site, have the potential to occur in the study area during the portion of their life history that is considered

[17] Focused surveys for silvery legless lizard typically include placing cardboard or plywood or raking sandy soils in drainages with some tree or shrub cover, leaf litter, and other debris and other suitable areas (e.g., stabilized dunes) where moisture is retained in the soil.)

sensitive (e.g., nesting or wintering), or were the focus of surveys or habitat assessments. This discussion is divided into three categories of special-status birds: (1) riparian birds; (2) other birds; and (3) special-status raptors. (See Section 2.5.3, which includes a discussion on species protected under FESA, BAGEPA, MBTA, and Fish and Game Code 3503.)

Special-Status Riparian Birds

Three special-status birds associated with native riparian habitats were observed during 2013 surveys within the riparian areas of the foothills and the upstream portions of Grapevine Creek in valley floor riparian areas: yellow warbler, Lawrence's goldfinch, and Nuttall's woodpecker (Figure 2-9A). Suitable habitat for these species is located in proposed project open space.

Lawrence's Goldfinch (MBTA, BCC)

Lawrence's goldfinch was observed foraging within riparian habitats around Grapevine Creek. No nest sites were identified, thus, nesting on site was not confirmed. However, the species is presumed to nest on site because the study area is within the species' summer nesting range, the observations occurred during the species' nesting season, and the observations were within suitable nesting habitat. Lawrence's goldfinch nests and forages in native riparian habitat that is located in proposed project open space (Tables 2-6B and 2-6C). Suitable habitat for Lawrence's goldfinch is located within proposed project open space.

Nuttall's Woodpecker (MBTA, BCC)

Nuttall's woodpecker was observed during riparian bird surveys and during the burrow and den surveys near riparian and woodland areas. No nest sites were identified, thus, nesting on site was not confirmed. However, the species is presumed to nest on site because the study area is within the species' summer nesting range, the observations occurred during the species' nesting season, and the observations were within suitable nesting habitat. Nuttall's woodpecker nests and forages in native riparian, as well as oak woodlands habitat (Tables 2-6B and 2-6C). Suitable habitat for Nuttall's woodpecker is located within proposed project open space.

Yellow Warbler (MBTA, BCC/SSC)

Yellow warbler was observed foraging in riparian habitats around Grapevine Creek. No nest sites were identified, thus nesting on site was not confirmed. However, the species is presumed to nest on site because the study area is within the species' summer nesting range, the observations occurred during the species' nesting season, and the observations were within suitable nesting habitat. Yellow warbler nests and forages in native riparian habitat (Tables 2-6B and 2-6C). Suitable habitat for yellow warbler is located in proposed project open space.

Other Special-Status Birds (MBTA)

Loggerhead shrike was observed on site, and three other species have a moderate or high potential to occur in the study area: oak titmouse (*Baeolophus inornatus)*, black-chinned sparrow (*Spizella atrogularis*), and Oregon vesper sparrow. Suitable habitat for oak titmouse and black-chinned sparrow is located in proposed project open space (Tables 2-6A and 2-6C).

Black-Chinned Sparrow (MBTA, BCC)

Black-chinned sparrow was not observed on site during surveys. Based on its nesting range and the vegetation communities on site, this species has moderate potential to nest in the denser shrubland habitats on slopes in the foothills region of the study area (Table 2-6C). In California, it mostly breeds in the inner North Coast Ranges, South Coast Ranges, and on the western slopes of the Sierra Nevada from Kern County north to Mariposa County. In Los Angeles County, it breeds in the San Gabriel Mountains and occasionally in the Santa Monica Mountains (Winter 2002). Suitable habitat for black-chinned sparrow is located in proposed project open space.

Loggerhead Shrike (MBTA, BCC/SSC)

Loggerhead shrike was observed foraging in the valley floor in summer, fall, and winter, and is expected to forage on site during all seasons. The study area contains suitable habitat for nesting and is within the year-round range of the species. As a result, there is a high likelihood that loggerhead shrike is a resident and nests in open habitats in the study area (Table 2-6A).

Oak Titmouse (MBTA, BCC)

Oak titmouse was not observed on site during surveys. However, it has high potential to occur in oak woodland areas in the foothills. It is considered to be absent from the San Joaquin Valley floor (Cicero 2000), and, therefore, is not expected to occur in the valley floor or valley floor riparian areas on site (Table 2-6C). Suitable habitat for oak titmouse is located in proposed project open space.

Oregon Vesper Sparrow (MBTA, BCC/SSC)

Vesper sparrow (*Pooecetes gramineus*) was observed during winter raptor surveys. The subspecies Oregon vesper sparrow and the more common Great Basin vesper sparrow (*P. g. confinis*) both potentially occur in the study area, and as these subspecies cannot be distinguished in the field, it is not known which subspecies was observed. Oregon vesper sparrow winters in open grassland habitat, including stubble fields, meadows, and road edges (Erickson 2008), and nests in western Washington and Oregon south to Del Norte County, California (Jones and

Cornely 2002). Oregon vesper sparrow is an SSC and BCC for wintering and has a moderate potential to winter on the site in the grasslands in the valley floor and foothills (Table 2-6A).

Special-Status Raptors

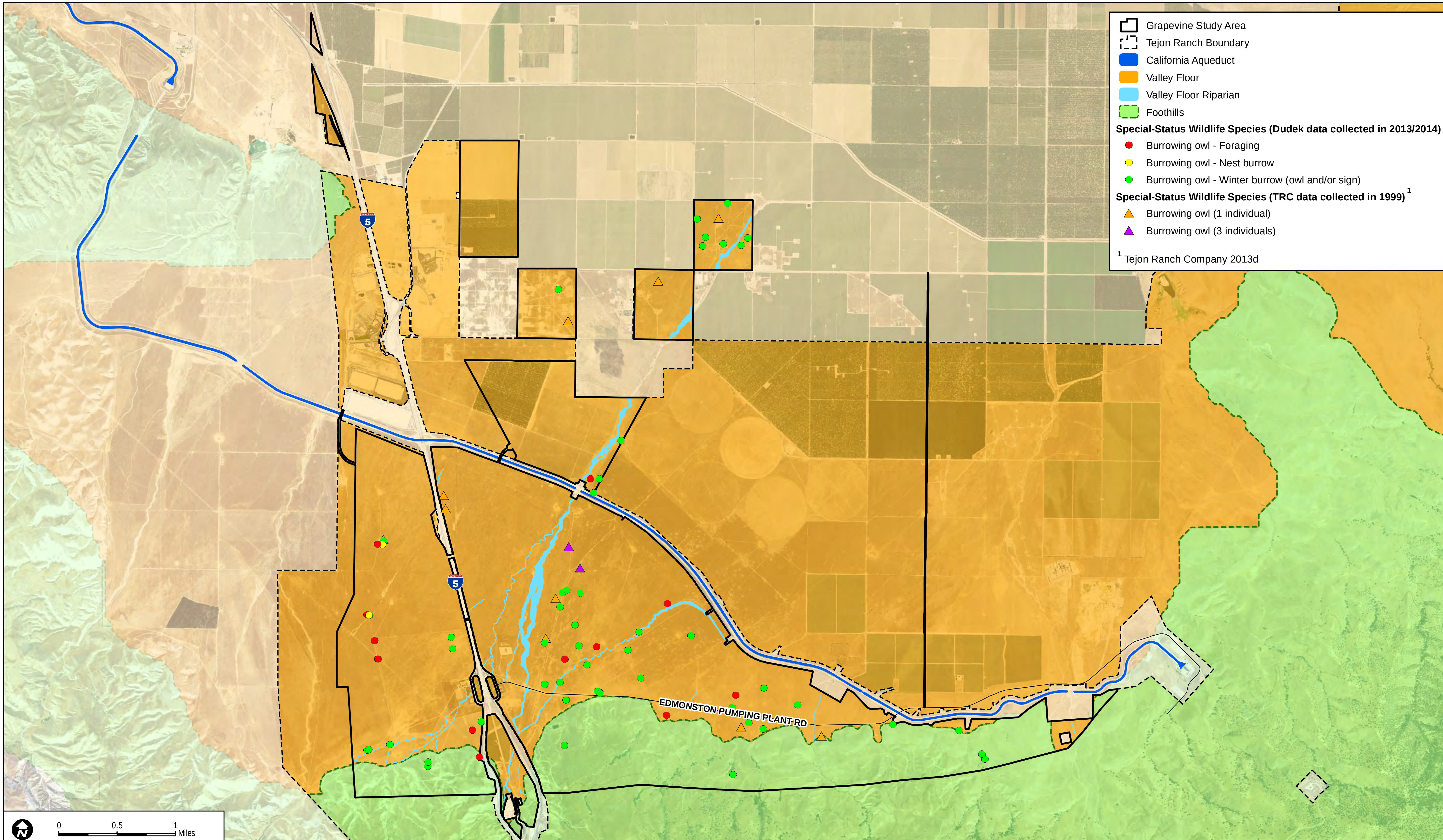
Four special-status raptors that are not federally protected or protected under CESA or California's "Fully Protected" species laws were observed in the study area: northern harrier, burrowing owl, ferruginous hawk, and prairie falcon. Potentially suitable nesting habitat for northern harrier is located in proposed project open space (Table 2-6A). Prairie falcon is not expected to nest on site due to lack of suitable nesting habitat in the study area. Prairie falcon is discussed in Appendix H and is not described further below.

Burrowing Owl (MBTA, BCC/SSC)

Burrowing owl was widely observed in the valley floor, especially south of the California Aqueduct, during 2013 and 2014 surveys (Table 2-6A). Many potential burrowing owl burrows were mapped during the burrow/den survey, indicating this species may use a variety of burrows on site. Nesting has not been confirmed on site, but various observations in the valley floor from April to July 2013 indicate that multiple pairs may nest on the site. These observations include two reports of juveniles west of I-5 on July 11, 2013, and burrowing owls at burrows during the nesting season (Figure 2-9C, Special-Status Wildlife Species (Burrowing Owl)). Burrowing owls were observed in the study area regularly during winter raptor surveys.

Ferruginous Hawk (MBTA, BCC/−)

Ferruginous hawk was observed relatively frequently in the study area in late fall and winter of 2013 and 2014 (Table 2-6A; Figure 2-9A). Ferruginous hawk does not nest in the region, but is considered a special-status species for the wintering period in California. This species is considered a regular wintering raptor in the study area.



SOURCES: TRC 2013d

FIGURE 2-9C

Special-Status Wildlife Species (Burrowing Owl)

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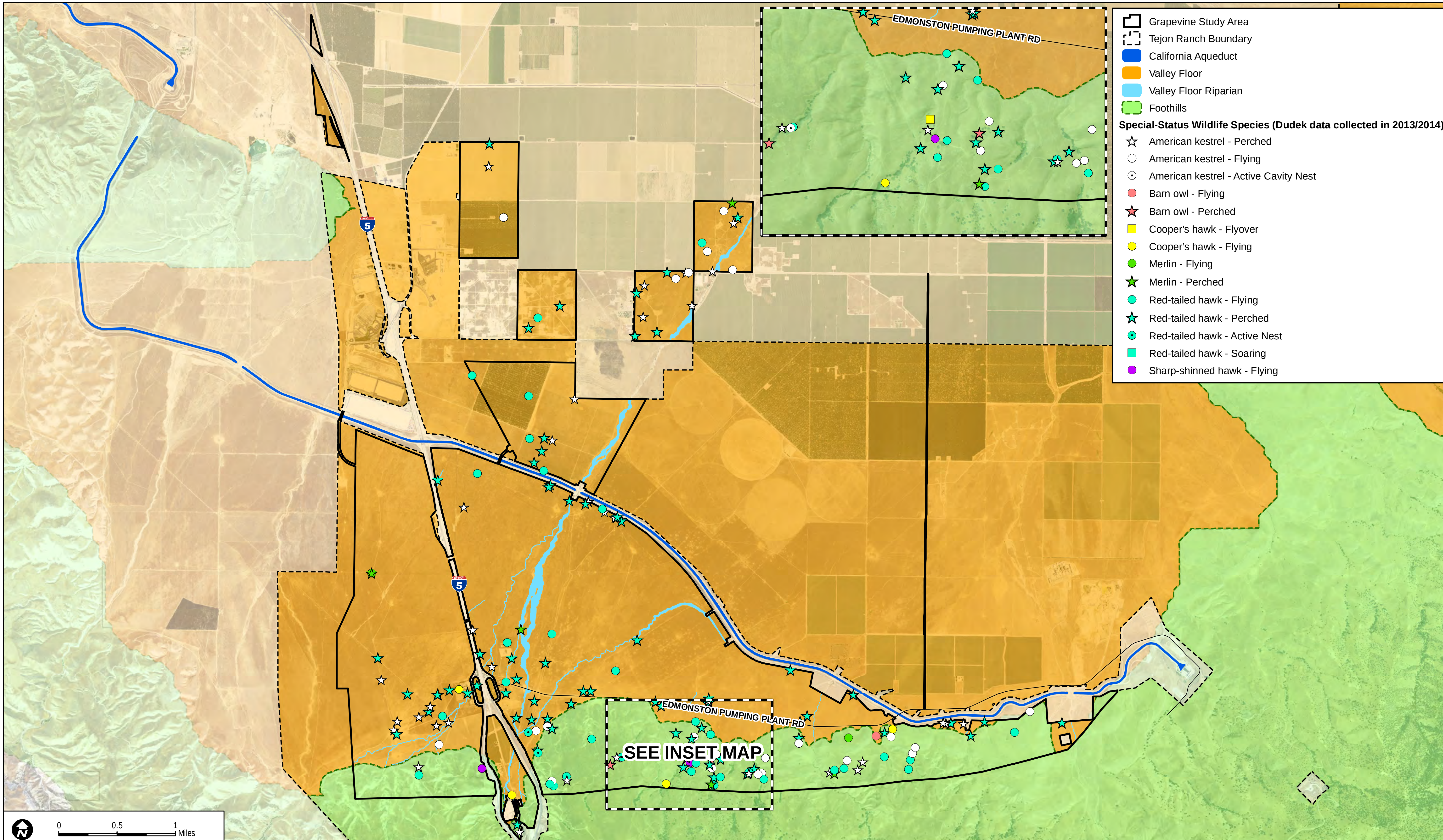

FIGURE 2-10

Non-Special-Status Raptors

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Northern Harrier (MBTA/SSC)

Northern harrier was observed on site on several occasions during the fall and winter of 2013 and 2014. In addition, an individual was observed on April 8, 2013, which extends into the breeding season for this species. However, none were detected during nesting raptor surveys, and only two adult males, both recorded on January 9, 2014, were observed during winter raptor surveys (Figure 2-9A). This species nests on the ground in dense, undisturbed vegetation throughout the San Joaquin Valley and surrounding foothills (Davis and Niemela 2008). Although the site is within the species' breeding range, it currently has a moderate potential to nest on site because in many areas grazing has maintained very low vegetation cover that is unsuitable for nesting and marsh habitat is limited on site (Tables 2-6B and 2-6C). Suitable nesting habitat for northern harrier is located in the proposed project open space.

2.5.5.5 Special-Status Mammals

Special-Status Bats

Three non-listed special-status bat species were identified during Anabat passive surveys completed between July 15 and August 4, 2013. The special-status bats detected were pallid bat (SSC), western mastiff bat (SSC), and western red bat (SSC). Townsend's big-eared bat[18] (state candidate) is described in Section 2.5.4. Appendix M provides a detailed description of the bat surveys, analyses, and results. The study area was also evaluated for potential bat roosting habitat in November 2013, and a maternity roost survey was conducted between May and September 2014, which consisted of visual searches at abandoned buildings, and visual surveys and Anabat passive surveys at the I-5 underpass, located just outside the boundary of the proposed project.

Based on the literature review, the passive acoustic bat survey results, and the reconnaissance-level field observations in November 2013 (see Appendix B for survey methods), two special-status bat species—pallid bat and western red bat—have moderate potential to use roosts for day and/or night roosting within the study area during the summer season and during spring and fall migration. Although western red bats have a moderate potential to use roosts on site, numbers are expected to be small due to its relatively low activity levels and detection at only 3 of the 18 stations and no detection during the roost surveys (see Appendix M). Suitable roosting habitat for bats varies and can include crevices in rocky outcrops; caves and rock crevices on cliff faces; natural caves; tree hollows; tree or shrub foliage; riparian foliage;

[18] Townsend's big-eared bat was detected off site just north of the California Aqueduct at station 16 (see figures in Appendix M).

beneath exfoliating tree bark; beneath rock ledges or rocks on the ground; sinkholes; erosion cavities; rocky canyons; and various human structures, including bridges, barns, porches, buildings (human-occupied or vacant), mines, tunnels, and culverts. Most of the different bat species use some subset of these roost types (see Appendix M). For example, Pallid bat is one of the most opportunistic species, using a variety of roost types, including caves and crevices, trees, buildings, and even holes in the ground.

The detection of bat species is discussed below by the project-specific geographical areas, foothills and valley floor.

Foothills

Eight of the 18 bat stations within or adjacent to the study area were located in the foothills area in valley oak woodland and non-native grassland (stations 1 through 7 and 10) (Appendix M). Bat stations in the foothills were placed near the stock pond that is a potential high-value resource for insect prey and drinking site for bats, oak woodland areas that provide potential roosting areas for several bat species (e.g., western red bat, pallid bat), and in non-native grassland to detect use throughout those habitat types. The special-status pallid bat and western mastiff bat were detected in the foothills. Pallid bat was detected at the stock pond (station 7) and in valley oak woodland (station 1); and western mastiff bat was detected at the stock pond.

Special-status bat activity recorded in the foothills was approximately three times greater than that of activity in the valley floor. For example, the relative magnitude of special-status bat use in the foothills, calculated as the activity index (AI), was 2,529 AI[19] compared to 1,900 AI[20] in the valley floor (see Appendix M for more detailed information on the analysis methods and results). Pallid bat was the most active of the special-status bats in the foothills, accounting for 97% of this activity. These results are consistent with the variety of habitat types in the foothills compared to the valley floor. Compared to the non-special-status bats (discussed in Appendix M), the special-status bats generally had far lower AIs.

Suitable roosting habitat for special-status bats in the foothills includes the larger trees within valley oak woodland and Fremont cottonwood forest (Figure 2-5B), large rocks in non-native grassland, and the I-5 undercrossing tunnel (see Appendix M). Additionally, although not mapped, the steep sides of canyons in the foothills may provide rock crevices or cliff faces suitable for bats, particularly on the western side of I-5.

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[19] This calculation includes station 10, which is located outside of the study area.
[20] This calculation includes stations 12, 16 and 17, which are located outside of the study area.

Many of the bats use the habitats available in the foothills more frequently than in the valley floor. Most of the suitable roosting habitats, such as trees and larger boulders are located in the foothills, which is located within proposed project open space.

Valley Floor

Ten of the 18 bat stations within or adjacent to the study area were located in the valley floor areas in Fremont cottonwood forest, non-native grassland, and disturbed lands (i.e., on existing roadways and infrastructure). Stations 8, 9, 11, 12, 13, 14, 15 and 18 are located within the study area and three additional bat stations are located outside of the study area, but just west of the off-site agriculture haul road (stations 12, 16 and 17) (Appendix M). Bat station 11 was placed near two abandoned buildings, station 14 was placed in the Fremont cottonwood forest, and station 8 was placed near the Grapevine Creek undercrossing at I-5 (Appendix M). The special-status pallid bat, western mastiff bat, and western red bat were detected in the valley floor. Pallid bat was detected at station 11 (the abandoned buildings), stations 16 and 17 in agricultural areas, and stations 12 and station 18 in non-native grassland (Appendix M). Western mastiff bat was detected at stations 9, 13, 17, and 18 located in non-native grassland and agriculture areas. Western red bat was detected at station 13 located in non-native grassland and station 17 located in an agriculture area. Pallid bat was detected frequently during the roost surveys between May and September 2014, and is likely using the I-5 underpass at Grapevine Creek as a night roost.

As described above, the total relative magnitude of use by special-status species (i.e., AI) were approximately three-quarters in the valley floor compared to the foothills, indicating that many of the special-status bats use the habitats available in the foothills more frequently (see Appendix M for more detailed information on the analysis methods and results). In the valley floor, pallid bat accounted for 83% of the special-status bat activity.

In addition, available suitable roosting habitat in the valley floor is more limited than in the foothills due to the lack of valley oak woodland, steep cliffs faces, and boulders that occur in the foothills. However, there is some suitable roosting habitat in the Fremont cottonwood forest along Grapevine Creek, the abandoned buildings south of Edmonston Pumping Plant Road, some developed areas near Grapevine Road, culverts underneath Edmonston Pumping Plant Road, crossings at the California Aqueduct, and occasional boulders in the non-native grassland (see Appendix M). During the visual surveys of the abandoned buildings, no bats were seen roosting in or exiting the abandoned building eves, roof shingles, or interior. Visual surveys at the I-5 underpass for Grapevine Creek concluded that no special-status bats were using the underpass for roosting (see Appendix M). Pallid bat was detected regularly during the acoustic surveys, although they were not detected during visual inspections. Because they are known to use human-made structures for roosting and their activity level was relatively high at the underpass entrances, they could use the underpass as a night roost (see Appendix M). No other special-status bats were detected during the roost surveys.

While the suitable roosting habitat such as trees and boulders are largely conserved in proposed project open space, as described above, there is some suitable roosting habitat within the agricultural crops, and boulders in the valley floor, or nearby bridge crossings and overpasses.

Other Special-Status Mammals

Other special-status mammals addressed in this BTR include American badger and San Diego black-tailed jackrabbit. Species that were evaluated but determined not to have potential to occur on site or be impacted by the proposed project are described in Appendix H and are not discussed further. American badger is a focal species that was selected to analyze wildlife movement in the area of the proposed project. Additional natural history information related to movement of this focal species is provided in this section, in addition to the general distribution, habitat associations, known occurrences, and results of site-specific surveys. Wildlife movement is described in Section 2.6.

American Badger (SSC)

American badgers typically occur in open, sparsely vegetated habitats, but also use modified habitats such as agriculture. They are found in dry, open areas with friable soils, and can occur throughout the study area. Several American badgers were observed in the valley floor and foothills of the study area during surveys by biologists, and there were 28 detections[21] on camera at 14 different camera stations during the ringtail and kit fox surveys, including GV-AQ27 (2 records) along the California Aqueduct, GV-SP12 in the south-central portion of the study area, GV-SP28 north of the aqueduct, GV-SP33, GV-SP34, GV-SP37, GV-SP38, GV-SP40, GV-SP44, GV-SP46, GV-SP49, GV-SP50, GV-SP51, and GV-SP52 (Figures 2-9B and 2-11). Additionally, approximately 21 burrows were mapped as potential badger burrows during the burrow and den surveys of the valley floor because they showed evidence of badger activity (e.g., claw marks along entrances) or a badger itself. Virtually the entire site is considered to be suitable for badgers, and since they are relatively mobile, no particular part of the study area is critically important for this species. For example, on multiple occasions during the camera studies what appeared to be a single badger visited several widespread stations within the same evening.

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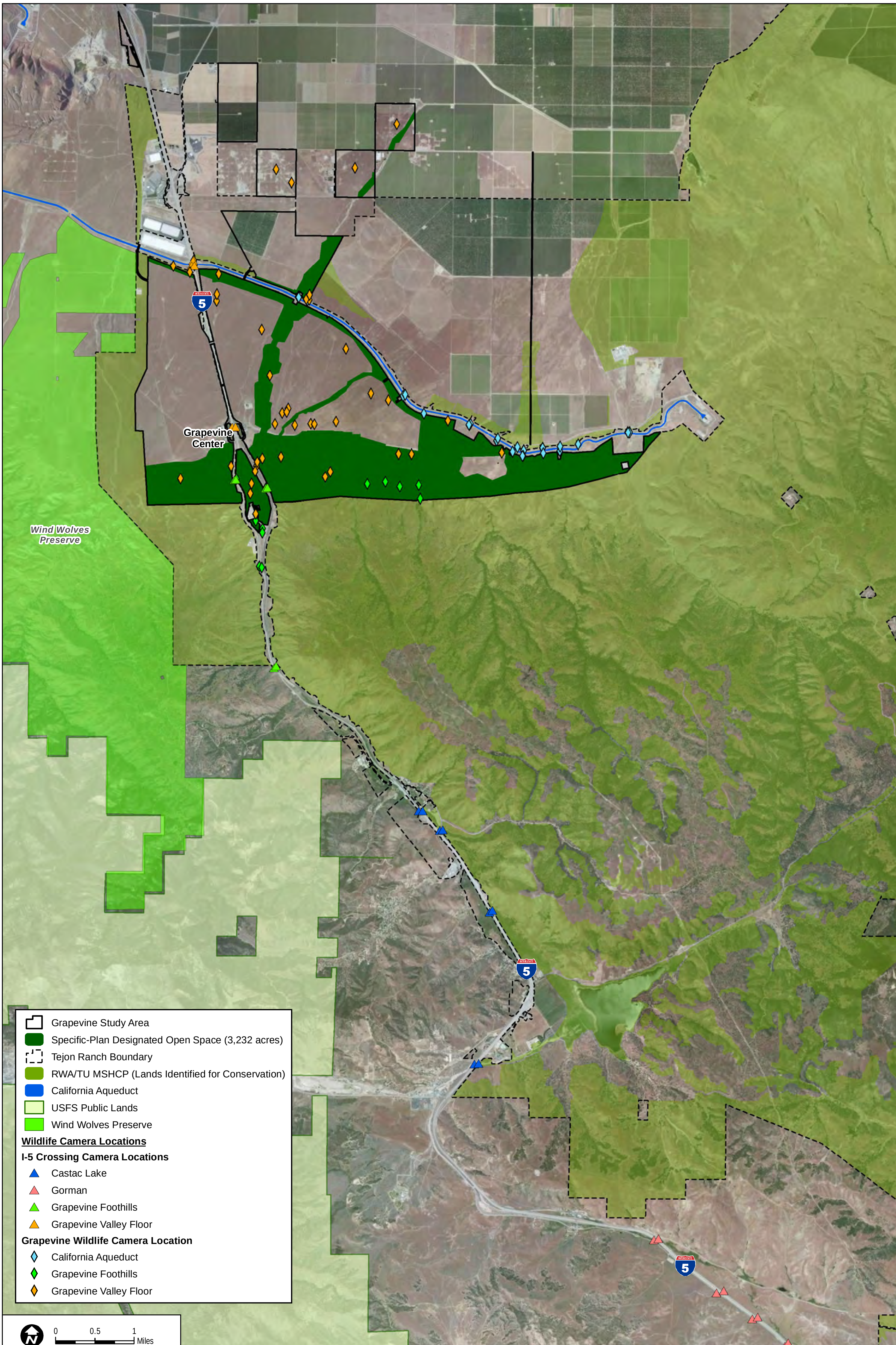
[21] Some of these detections may be the same individual.



SOURCES: TRC 2007, 2013a; TRC 2013e; McIntosh & Associates 2014

FIGURE 2-11

Wildlife Camera Study (Tejon Ranch Company; Dudek)

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American badgers have large home ranges that range from approximately 240 hectares (593 acres) to 850 hectares (2,100 acres) (Lindzey 1978; Long 1973; Messick and Hornocker 1981; Minta 1993; Sargeant and Warner 1972), and which are probably a function of food resource availability, social structure, and season. Assuming occupation throughout the approximately 8,010-acre Grapevine Specific Plan Area and considering the diversity of home range sizes, the site could support a maximum of approximately 6 to 13 badgers at any given time. The proposed off-site areas are scattered in different areas, ranging from 4 to 34 acres; occupation of these areas depend on the number of badgers present in adjacent habitats.

Badgers may be considered intermediate between highly mobile and moderately mobile species. While they are capable of long-distance dispersal (Messick and Hornocker (1981) reported a juvenile dispersal event of 68 miles), they may be relatively sedentary within home ranges where resources are plentiful. American badger home ranges are large and range from 240 hectares (593 acres) to 850 hectares (2,100 acres) (Lindzey 1978; Long 1973; Messick and Hornocker 1981; Minta 1993; Sargeant and Warner 1972). Their distribution in a landscape coincides with the availability of prey, burrowing sites, and mates; with males' distribution ranging wider than females' during the breeding and summer months (Minta 1993). In general, badger activity within a home range tends to concentrate in areas with suitable soils for burrowing or with colonies of ground squirrels.

San Diego Black-Tailed Jackrabbit (SSC)

Black-tailed jackrabbit (*Lepus californicus*) was observed occasionally in the valley floor and foothill areas of the study area and was captured during the April/May 2014 wildlife camera study in the valley floor area (Table 2-6A), but its locations were not mapped (it is highly mobile and may move extensively in relation to food sources, so mapping specific locations is not particularly informative for the purpose of existing conditions). The study area is on the edge of the range for the San Diego subspecies (Hall 1981), a SSC species. Therefore, the San Diego black-tailed jackrabbit subspecies is presumed on site. Black-tailed jackrabbits probably prefer more open, level terrain areas that allow them to move freely, but can occur throughout the study area. On-site population numbers likely vary substantially with resource conditions, and home ranges are quite variable, typically ranging from 16 to 300 hectares (49 to 346 acres) (Best et al. 1996; French et al. 1965; Smith 1990).

2.6 Wildlife Movement

The environmental setting with respect to wildlife movement provided in this BTR is based upon information gathered during literature review, camera studies, and data collected during surveys conducted on or near the study area. The discussion below presents an overview of wildlife movement with respect to the Ranch and the region, and a summary of the methods, results, and conclusions of analysis conducted with respect to wildlife movement in the study area. See Appendix N for more detailed information on the methods and results of the literature review and field studies that were analyzed and conducted.

2.6.1 Overview and Ranchwide Context

Wildlife species generally inhabit suitable habitat patches distributed across a landscape. These habitat blocks, which may make up the species' home range or breeding territory, support most, if not all, of the species' life history needs (e.g., food resource, mates, refuge). Critical to the survival of most wide-ranging species is the ability to access or move between various habitat blocks to allow for juvenile dispersal, to access food and/or shelter during the winter months, to escape catastrophic events (e.g., flood, fire, etc.), and to ward against genetic in-breeding (Rosenberg et al. 1997). In undisturbed or unfragmented landscapes, such movements by some species may occur throughout the landscape without a defined movement route (e.g., between mosaics of suitable habitat patches). However, where landscapes have movement constraints related to either natural conditions, such as vegetation types or topography (e.g., steep slopes) or man-made obstacles (e.g., urban areas, roads), wildlife may have to move along defined landscape linkages or "movement corridors." The phrase "wildlife movement corridors," as used in the BTR, are generally linear landscape features that permit species to disperse between favorable habitats. Wildlife crossings are not habitats per se, but are identifiable locations within a constrained landscape through which wildlife must pass to negotiate physical constraints, such as roads and development. These crossings may occur within a landscape habitat linkage or a wildlife corridor, but, in either case, represent potential bottlenecks in the movement landscape. The various crossings under I-5 and over and under the California Aqueduct represent examples of wildlife crossings within and adjacent to the study area (Figure 2-11, Wildlife Camera Study (Tejon Ranch Company; Dudek).

The Tehachapi Mountains Range is considered a regionally significant linkage between the Coast and Transverse Ranges to the west and the Sierra Nevada to the east. This linkage provides connectivity functions through three major life zones: (1) the San Joaquin Valley floor and northern Tehachapi Mountain foothills; (2) the Tehachapi Mountains providing connectivity for chaparral, oak woodland, and conifer species; and (3) the Southern Tehachapi Mountains foothills and Antelope Valley floor providing connectivity to the Mojave Desert (Tejon Ranch Conservancy 2013a). In addition, the *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (Spencer et al. 2010) prepared for the CDFW and Caltrans identifies the foothills of the Tehachapi and San Emigdio Mountains as a "natural landscape block," which is described as relatively natural habitat blocks that support native biodiversity. These natural habitat blocks connect the Tehachapi Mountains to the Sierra Madre Mountains.

The proposed project is located within the San Joaquin Valley floor and northern Tehachapi Mountain foothills life zones (Tejon Ranch Conservancy 2013a). The preservation of large blocks of grassland and scrubland habitat within these life zones, and the provision for landscape connectivity between these lands, specifically along the valley floor/foothill transition zone (generally those remaining natural habitat areas extending from the lower foothill regions along the northern flank of the Tehachapi Mountains into the adjacent valley floor), is noted in the Recovery Plan for Upland Species of the San Joaquin Valley (Recovery Plan) as being critical to the ultimate recovery of 34 special-status plants and animals that occur in the San Joaquin Valley (USFWS 1998). The gently sloping foothills along the southern flank of the study area and the portion of the valley floor generally south of Edmonston Pumping Plant Road is within this valley floor/foothill transition zone and is likely used by a number of species. Specifically, this zone could be used by all four focal species—San Joaquin kit fox, American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard—as part of this regional east–west landscape linkage (Penrod et al. 2003; USFWS 2010a; Cypher et al. 2013).

Much of the San Joaquin Valley floor has been converted to agricultural, urban, or industrial uses. Movement between wildlife populations, particularly those associated with grassland and scrubland habitats, is largely confined to those non-agricultural and non-developed areas along the valley floor/foothill edge in a general east–west orientation, some of which is encapsulated along the northern and western boundaries of the Ranch.

2.6.2 Summary of Wildlife Movement Analysis

Methods

As previously noted, more detailed information on the methods and results of the literature review and field studies related to wildlife movement is provided in Appendix N. The overall evaluation of wildlife movement with respect to the study area focused on four focal species—San Joaquin kit fox, American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard. Although not all these species have been identified on site, these terrestrial species were selected as focal species because:

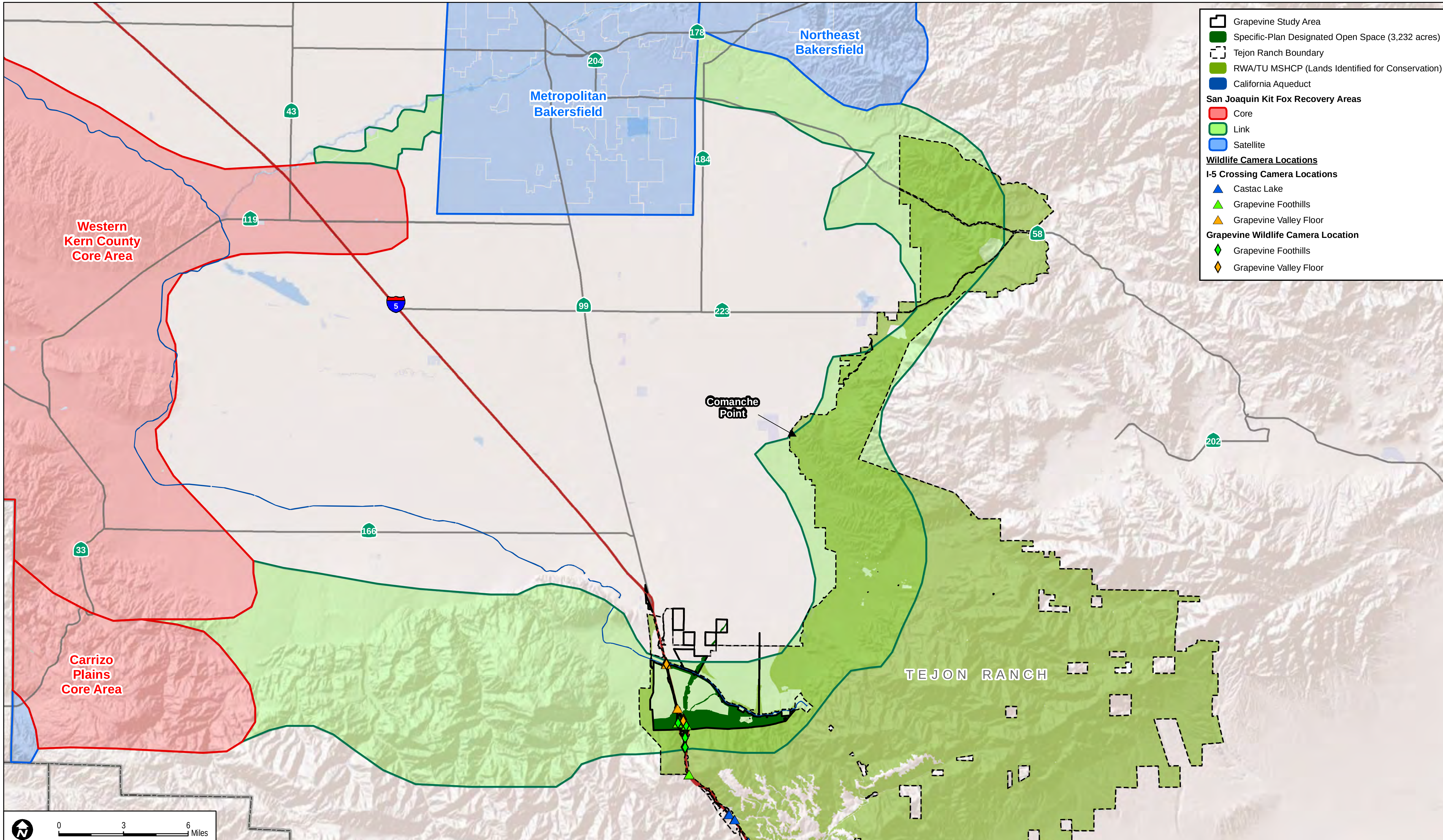
1. They are federally listed, state listed, and/or of special status and are representative of the San Joaquin Valley floor;
2. Range from relatively low to high mobility;

3. Are known to move across landscapes either in rapid movement events (e.g., kit fox, badger), or over generations (e.g., squirrel, lizard); and
4. Are likely to be sensitive to habitat loss and fragmentation.

Natural history information related to spatial movement patterns (e.g., home range or territory use and dispersal) for all four of the focal species was reviewed and incorporated into the evaluation. The literature review also included studies and documentation, such as the Penrod et al. (2003) study that modeled travel routes for San Joaquin kit fox, American badger, and blunt-nosed leopard lizard; the USFWS (2010a) regional habitat linkage for San Joaquin kit fox; and Cypher et al. (2013) that modeled habitat for kit fox in the San Joaquin Valley, including the study area and surrounding lands (Figure 2-12B), that provided information addressing general habitat use and connectivity for the four focal species.

Because I-5 is the most significant existing constraint to landscape-level wildlife movement in the region, a focus of the analysis of wildlife movement associated with the study area was on I-5 wildlife movement permeability, i.e., the ability of terrestrial wildlife species, particularly the four focal species noted above, to successfully cross the interstate. This included a review and evaluation of existing wildlife camera data that was collected by TRC between 2008 and 2009 (TRC 2013d). That camera study involved placement of paired motion-sensitive cameras at both entrances to culverts and overpasses at 14 sites in 2008 and 2009 (Figure 2-11) that included five crossing points of the I-5 adjacent to the study area and off-site impact areas. Camera stations further to the south along I-5 and adjacent to the Ranch were also reviewed for comparison with respect to species, type of undercrossing, and vegetation (Figure 2-11).

In addition, Dudek conducted a separate wildlife corridor camera study throughout the study area from August to October 2013 (Figure 2-13, Grapevine Camera Study and Wildlife Movement Map). The purpose of this study was to assess the degree to which the study area functions as a regional wildlife movement corridor and to evaluate wildlife movement within the study area and off-site lands adjacent to the proposed project, as well as along the California Aqueduct and I-5, both of which are significant existing constraints on landscape-level wildlife movement in the region. Camera stations were located at undercrossings along portions of I-5 that are located within or adjacent to the study area, drainages, dirt roads, California Aqueduct undercrossings, and water sources (Figure 2-13). Appendix N provides more information on methods used to set up and evaluate the cameras at each of these locations.



SOURCES: TRC 2008; McIntosh & Associates 2014; USFWS 2010

FIGURE 2-12A

San Joaquin Kit Fox and Satellite Populations Identified in USFWS 5-Year Review

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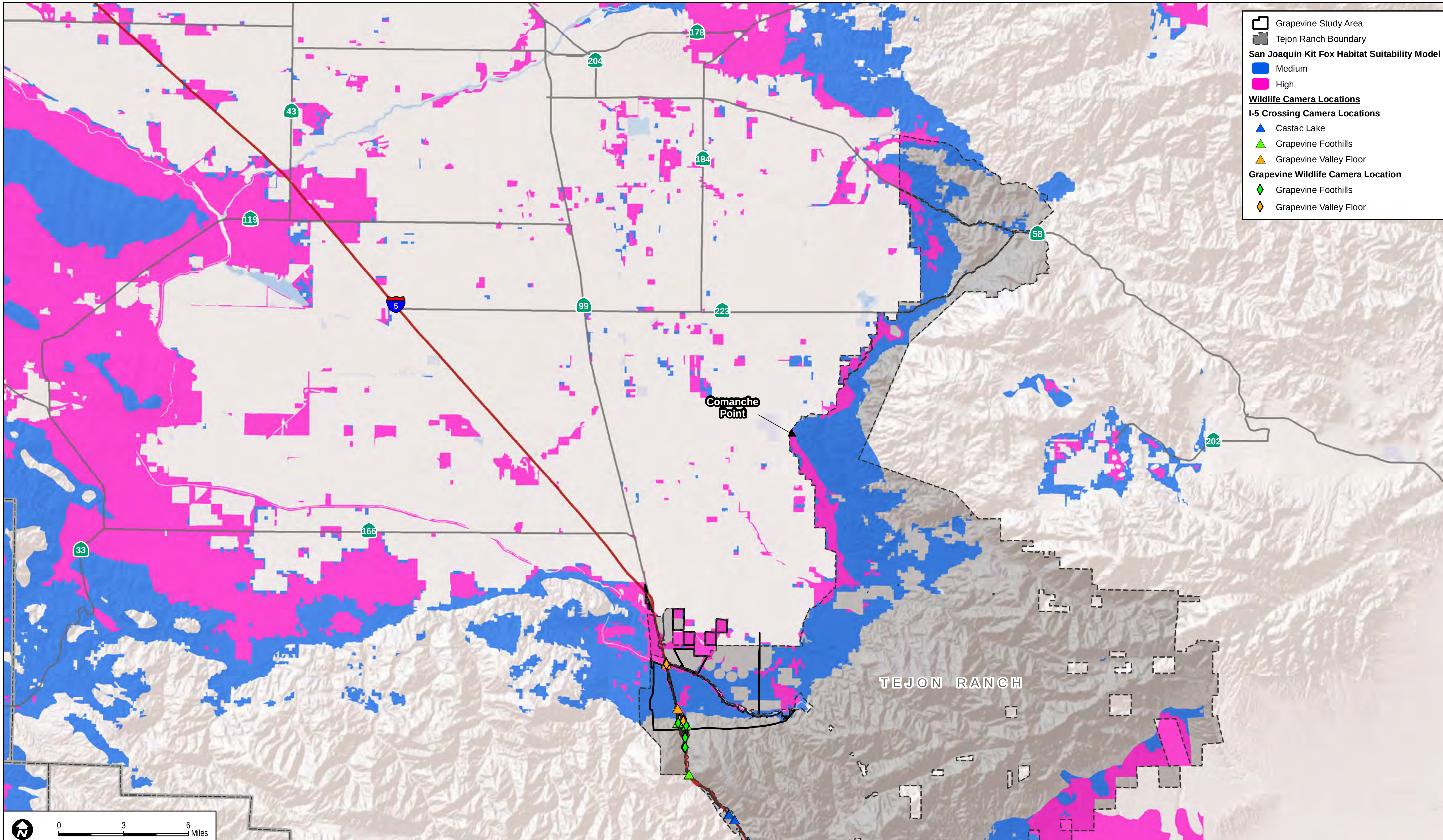

SOURCES: Cypher et al. 2013; TRC 2008

FIGURE 2-12B

Suitable Habitat for San Joaquin Foxes in Central California (Cypher et al. 2013)

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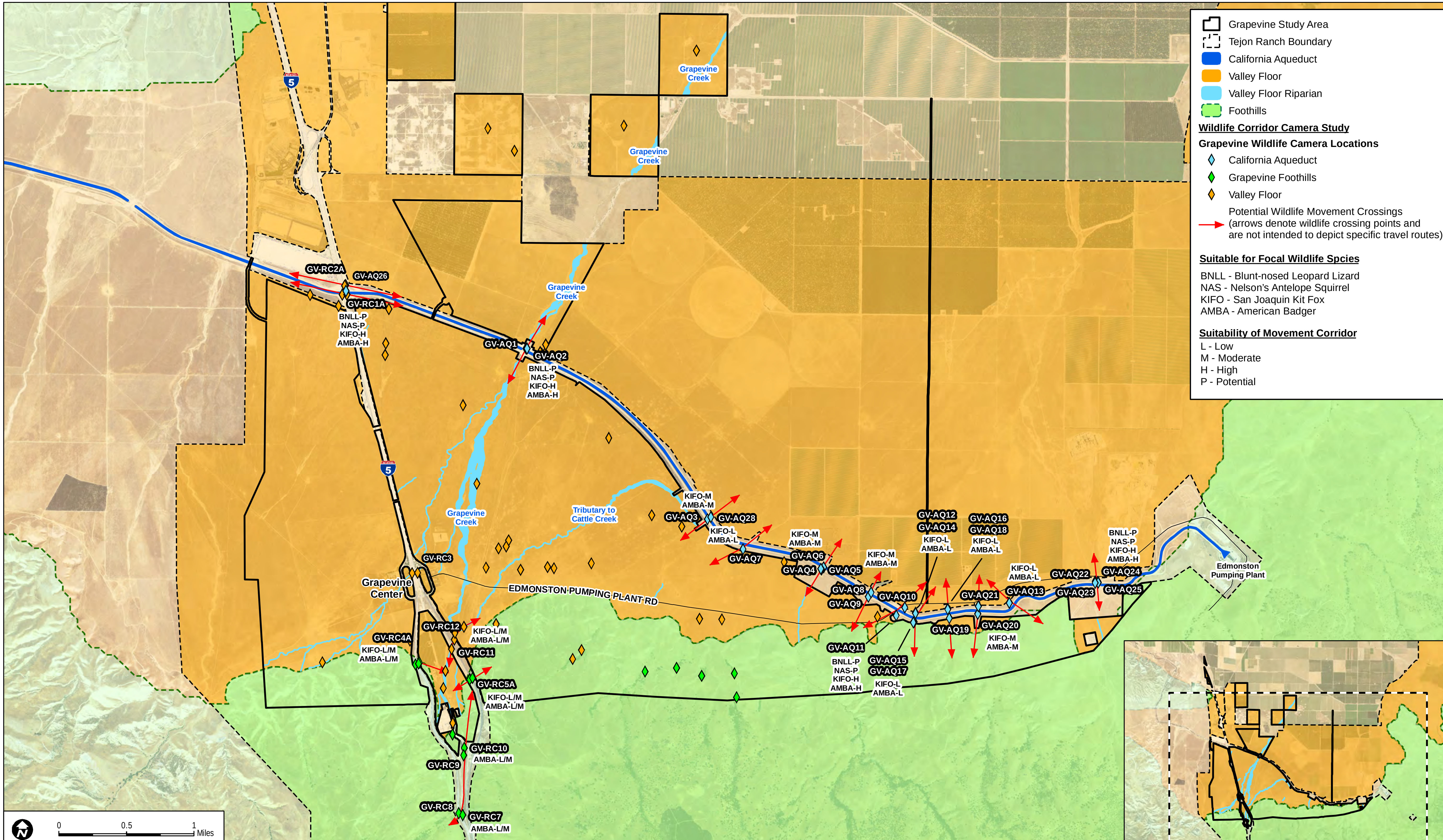

SOURCES: TRC 2013d

FIGURE 2-13

Grapevine Camera Study and Wildlife Movement Map

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Results

I-5 Crossings

Overall, the TRC 2008/2009 and Dudek 2013 I-5 undercrossing camera studies showed several general patterns. First, it is evident that wildlife are able to cross I-5 at several locations on or adjacent to the Ranch based on recorded wildlife activity at each of the camera stations. Near the study area, the group of cameras at the I-5 undercrossing where the interstate splits into two separate travel directions (Figures 2-11 and 2-13) showed the most wildlife activity. Second, the suites of species and numbers of individuals at the crossings differ substantially by location, terrain, adjacent habitat types and land uses, with only small and mid-sized species using the crossings adjacent to the valley floor portions of the site. More specifically, wildlife using I-5 crossings at the Grapevine Center commerce area and at the California Aqueduct was dominated by small species such as California ground squirrel and cottontail rabbit, but also included larger animals such as raccoons and non-native red foxes. No mule deer or bobcats, nor wild pigs, were recorded at these crossings. In contrast, the higher elevation crossings adjacent to the foothills were dominated by mule deer and coyotes, and included numerous bobcat records.

Habitat conditions adjacent to and at the crossings themselves largely explain these use patterns. Species associated with denser vegetation cover, primarily mule deer and bobcat, tended to be more common at crossings with shrubs and riparian habitats near the crossings. However, the Cuddy Creek underpass, further to the south of Grapevine (Figure 2-11), also was heavily used by mule deer and included three bobcat records, even though the creek is generally unvegetated, indicating that these types of species may use crossings that are more sparsely vegetated. However, it is expected that their use of this crossing would mostly be during the nighttime when perceived threats to their security would be lower or would occur in quick bursts to limit their exposure.

Wildlife activity at the northernmost crossings in the valley floor (Figure 2-13) included smaller species associated with open, sparsely vegetated habitats such as non-native grassland and agriculture, and included red fox, coyote, California ground squirrel, other small rodents, and rabbits. The underpass at Grapevine Center is the least suitable wildlife crossing area of all the crossings along I-5 in the study area due to the large number of domestic cat records (199 records), and development adjacent to the crossing. This under crossing in particular is quite small (Figure 2-11).

The valley floor portion of the study area generally supports movement by a variety of animal species, including the two larger focal species—American badger and possibly (but unconfirmed) San Joaquin kit fox at the I-5/California Aqueduct crossing—and bobcat. Mule deer also use and move across the foothills region of the study area, as do bobcat. Animals of similar size and movement capabilities (e.g., daily movements or dispersal events) such as California ground squirrel, cottontail rabbit, and unidentified kangaroo rats, mice, and lizards were recorded at the California Aqueduct underpass at I-5 during the TRC 2008/2009 camera studies and during the 2013 study indicating that Nelson's antelope squirrel and blunt-nosed leopard lizard, while not observed, would also be expected to use this underpass should they occur.

However, the portion of I-5 is within the lower reaches of the Tehachapi Mountain foothills is in steeper topography that would not be considered suitable for blunt-nosed leopard lizard or Nelson's antelope squirrel; I-5 underpasses in this area would, therefore, not directly connect to suitable habitat on either side of this portion of the interstate for these species. Blunt-nosed leopard lizard and Nelson's antelope squirrel, as well as the two other focal species (San Joaquin kit fox and American badger), would, however, be expected to use the California Aqueduct underpass at I-5 where suitable habitat for each of these species currently connects to both sides of this underpass crossing (Figure 2-13).

California Aqueduct Crossings

A total of 26 camera stations were placed along 11 potential wildlife crossing points along the California Aqueduct (Figure 2-13). While the California Aqueduct serves as somewhat of a barrier to north–south and northeast–southwest movement within the valley floor portion of the site, a number of animal species are currently able to access the numerous culverts and overpass points along the aqueduct. A total of 8 different terrestrial wildlife taxa were detected at the 11 aqueduct crossing points: coyote, raccoon, striped skunk, cottontail rabbit, red fox, California ground squirrel, bobcat, and feral pig (wild boar). The number of different species detected at any given crossing point ranged from two species (the small pipe culvert at GV-AQ13) to seven species (at the four stations at the Pastoria Creek crossing), with five species the modal number of different species at the crossings. Overall, the camera study at various crossings along the aqueduct shows that wildlife use all of the crossings, but that use of the smaller pipe culverts is dominated by raccoons, which makes them much less suitable for the focal species. The two largest and mobile species—coyote and bobcat—were recorded much more frequently at the larger overpasses and box culvert underpasses. These large overpasses and box culverts are also more likely to be used by the focal species. Appendix N provides more detailed information as to actual species use at the various aqueduct crossings.

Wildlife Movement Summary

Under existing conditions, virtually all of the valley floor grasslands, especially south of the aqueduct, provide potential movement habitat for the four focal species and a number of other more common species. With respect to east-west connectivity to large open space areas, existing conditions are somewhat constrained by I-5. The I-5 aqueduct crossings are suitable for all of the focal species; however, the central I-5 crossings at Grapevine Center are not particularly suitable in their existing condition for the focal species due to the highly disturbed nature of, and high human presence within, the Grapevine Center area. In addition, the large records of domestic cat use of these crossings would likely inhibit use by the smaller focal species (e.g., blunt-nosed leopard lizard and Nelson's antelope squirrel). Furthermore, the I-5 foothill crossings are only suitable for American badger, and marginally so for San Joaquin kit fox, as the two other focal species tend to avoid the steeper terrain characteristic of these crossings. With respect to north-south connectivity, some animal species, including the four focal species, are currently able to access the numerous culverts and overpass points along the aqueduct; but because active agricultural occurs north of the study area, the site does not serve as a habitat linkage connecting large, preserved open space habitat blocks north and south of the study area.

As noted by the results of the camera data analysis, a number of wildlife species, including at least one and possibly two of the focal species—American badger and possibly (but unconfirmed) San Joaquin kit fox—are able to access and use some of the I-5 crossings to reach natural habitat areas (Figure 2-13). Animals moving westward through these underpasses can currently access large open habitat blocks immediately adjacent to I-5 as well as further to the west. Animals moving eastward would access the open valley floor and lower foothill habitats of the study area immediately east of I-5 but would ultimately encounter the aqueduct further to the east as it curves southward. Animals would then either cross the aqueduct through various underpasses and overpasses and then ultimately encounter active agricultural areas, or move along the southern flank of the aqueduct until reaching the Edmonston Pumping Plant where additional natural open lands occur to the east and southeast within the lower foothill regions (Figure 2-13). Areas along the northern and southern sides of the aqueduct would be located in proposed project open space.

As previously noted, the valley floor/foothill transition zone in the southern San Joaquin Valley has been identified in the Recovery Plan for Upland Species of the San Joaquin Valley as a landscape linkage that is critical to the ultimate recovery of 34 special-status plants and animals that are known to occur in valley floor and lower foothill habitats (USFWS 1998). The gently sloping foothills along the southern flank of the study area and the portion of the valley floor generally south of Edmonston Pumping Plant Road is within this valley floor/foothill transition zone and is likely used by a number of species, and could be used by all four focal species, as part of this regional east–west landscape linkage. However, while the Penrod et al. (2003) study indicates that blunt-nosed leopard lizards could potentially move through a least-cost corridor along the valley/foothill transition zone in the study area on either side of I-5, portions of this corridor, particularly as it nears I-5, are within steep topographic areas that would not be suitable for blunt-nosed leopard lizard, nor for Nelson's antelope squirrel. This model was developed at a coarse scale and was not able to consider more site-specific factors that can only be identified during project-specific analysis. In addition to the non-suitable habitat near I-5, several portions of the Penrod et al. (2003) modeled corridor for blunt-nosed leopard lizard occur within currently active agricultural fields, a habitat that is not suitable for this species. Therefore, the I-5 undercrossings at the Grapevine Road area (where the interstate splits into two distinct travel directions) would, for the same habitat reasons, not facilitate movement of these two focal species under the interstate. However, suitable habitat exists on either side of the I-5/California Aqueduct crossing and all four focal species, should they occur, can currently access and use this crossing (Figure 2-13).

While the California Aqueduct serves as somewhat of a barrier to north–south and northeast–southwest movement within the valley floor portion of the site, animal species, including the four focal species, are currently able to access the numerous culverts and overpass points along the aqueduct. However, because active agricultural areas occur immediately north of the study area (north of the aqueduct) east of I-5, the site does not serve as a habitat linkage connecting large, preserved open space habitat blocks north and south of the site. Consequently, landscape features such as Grapevine Creek and a tributary to Cattle Creek likely serve as localized north–south movement pathways for animals in search of food, shelter, and mates as both Grapevine Creek and a tributary to Cattle Creek eventually lead to active agricultural areas to the north. Both Grapevine Creek and a tributary to Cattle Creek are located in proposed project open space.

See Appendix N for a more detailed discussion by species.

3 REGULATORY SETTING

3.1 Federal

3.1.1 Federal Endangered Species Act

The FESA of 1973 (16 U.S.C. 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species, and by the NOAA National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. FESA defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range.” A threatened species is defined as “any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Under FESA, it is unlawful to take any listed species, and take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of HCPs on private property without any other federal agency involvement.

The FESA (16 U.S.C. Sections 1531 to 1599) is implemented by the USFWS through a program that identifies and provides for protection of various species of fish, wildlife, and plants deemed to be in danger of or threatened with extinction. As part of this regulatory scheme, the FESA provides for designation of critical habitat, defined in FESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features “essential to the conservation of the species” are found and “which may require special management considerations or protection.” Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless “essential for the conservation of the species.”

Under Section 4(f)(1) of FESA, the USFWS is required to prepare recovery plans for newly listed species unless the USFWS determines that such a plan would not promote the conservation of the species.

3.1.1.1 Habitat Conservation Plans

Kern County published a draft of the Valley Floor Habitat Conservation Plan (VFHCP) in 2006 (Kern County 2006b); however, this plan has not been adopted, is currently being revised from its draft form, and is not discussed further in this report.

Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP)

On April 29, 2013, the USFWS issued Incidental Take Permit (ITP) No. TE198636 pursuant to the FESA for incidental take of covered species described in the TU MSHCP. The covered lands include a combination of foothill grasslands and montane woodlands that make up the Tehachapi Uplands component of the Ranch. The proposed covered lands include 141,866 acres and are generally above 2,000 feet amsl near the San Joaquin Valley floor, and to the south by the Antelope Valley floor, where the elevation ranges from about 3,200 to 4,700 feet amsl, following the Los Angeles County line, with an average elevation of 4,100 feet amsl. The proposed project open space generally abuts the TU MSHCP covered lands boundary. The covered lands in this location are designated "Mitigation Lands" and are being managed as open space in accordance with the Tehachapi Uplands Covered Lands Management Plan (Dudek 2013).

3.1.1.2 Recovery Plans

Two federal recovery plans apply to the proposed project: the San Joaquin Valley Upland Species Recovery Plan (USFWS 1998) and the California Condor Recovery Plan (USFWS 1996). The California condor is discussed fully in Appendix K. The San Joaquin Valley Upland Species Recovery Plan is discussed below.

San Joaquin Valley Upland Species Recovery Plan

The San Joaquin Valley Upland Species Recovery Plan covers 34 species of plants and animals that occur in the San Joaquin Valley. None of the federally listed or other special-status plants addressed in the Recovery Plan are expected to occur in the study area. Surveys for these species have been negative and/or the species' ranges are outside the Grapevine study area. Tejon poppy (CRPR 1B.1), a species covered in the Recovery Plan, was mapped in the study area in open space in 1999 west of I-5 (TRC 2013b). As described in Section 2.4.3, it is possible that the 1999 observation was mistakenly identified. Regardless, this location is located in proposed project open space.

Additionally, of the animals addressed in the Recovery Plan, some have potential to occur in the study area in the valley floor, as identified in Table 2-6A, including two federally listed species—blunt-nosed leopard lizard and San Joaquin kit fox—and one other special-status species, Nelson's (San Joaquin) antelope squirrel (state-listed threatened). The recovery strategy for these species is set forth below.

The ultimate goal of this recovery plan is to delist the 11 endangered and threatened species and ensure the long-term conservation of the 23 candidates and species of concern. An interim goal is to reclassify the endangered species to threatened status. USFWS is responsible for the implementation of the recovery plan.

Blunt-Nosed Leopard Lizard

The recovery strategy for blunt-nosed leopard lizard focuses on three factors:

1. Determining appropriate habitat management activities and compatible lands uses for blunt-nosed leopard lizards;
2. Protecting additional habitat for them in key portions of their range;
3. Gathering additional data on population responses to environmental variation at representative sites in their extant geographic range (USFWS 1998, p. 121)

The recovery actions identified for the blunt-nosed leopard lizard follow from the recovery strategy, and generally include: (1) determining habitat management and compatible land uses, (2) conducting range-wide surveys, (3) protecting additional habitat in key targeted areas with the highest priority, (4) collecting data on population responses to environmental variation, (5) implementing population monitoring, and (6) protecting additional habitat in other target areas (of lower priority than recovery action three) (USFWS 1998).

The study area is not identified as a "key targeted area with the highest priority" (recovery action three above) or as a "lower priority targeted area" (recovery action six above) for the blunt-nosed leopard lizard. Blunt-nosed leopard lizards have not been identified in the study area, but the site does include areas of suitable habitat for blunt-nosed leopard lizard.

San Joaquin Kit Fox

The recovery strategy for San Joaquin kit fox operates on two distinct but equally important levels, which include: (1) the continued expansion of recovery actions initiated subsequent to the original recovery plan using existing information (Level A Strategy); and (2) development of new information in concert with expanding existing information, which is currently inadequate for some aspects of recovery management (Level B Strategy). The goal of the Level A Strategy "is to work towards the establishment of a viable complex of kit fox populations (i.e., a viable metapopulation) on private and public lands throughout its geographic range" (USFWS 1998, p.

132). The goal of the Level B Strategy is collection of new and better information that "will permit refinement of the viability models and land-use optimization models that are under development for the kit fox" (USFWS 1998, p. 134). The recovery actions for the Level B Strategy are under the heading "Population Ecology and Management" (USFWS 1998, p. 136).

Even though the study area does not appear to support a persistent on-site kit fox population, it has some suitable habitat and provides an east–west habitat linkage in the southern portion of the species' range (see discussion of wildlife movement in Section 2.6).

Nelson's (San Joaquin) Antelope Squirrel

Nelson's antelope squirrel is addressed in the Recovery Plan under Section M. State Listed, Federal Candidates, and Other Animal Species of Concern. The Recovery Plan described both a conservation strategy and conservation actions for the antelope squirrel.

The conservation strategy for the Nelson's antelope squirrel includes: (1) protection of the two largest populations on the Carrizo Natural Area and in western Kern County; (2) protection of additional populations, especially in western Fresno and eastern San Benito County, along the fringe of the San Joaquin Valley between Fresno and Kern Counties, and on the San Joaquin Valley floor; (3) protection and enhancement of habitats in the Pixley National Wildlife Refuge and Allensworth Natural Area; and (4) reintroducing antelope squirrels to Pixley National Wildlife Refuge.

No Nelson's (San Joaquin) antelope squirrels have been identified in the study area (see Section 2.5.5.5) but there is some suitable habitat.

3.1.2 Migratory Bird Treaty Act

The MBTA was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The MBTA protects over 800 species of birds, including species such as yellow warbler, Lawrence's goldfinch, red-shouldered hawk, Cooper's hawk, American kestrel, and barn owl, which likely nest in the foothills, and species such as burrowing owl and loggerhead shrike, which likely nest in the valley floor.

3.1.3 Bald and Golden Eagle Protection Act

The BAGEPA (16 U.S.C. 668–668(d)) provides for protection of bald and golden eagles by prohibiting, except under certain specified conditions, the taking and possession of or commerce in such birds (or the parts, eggs, or nests of the birds). The USFWS is responsible for implementing BAGEPA. BAGEPA identifies certain conditions under which permits may be issued for incidental take of bald or golden eagles. A Golden and Bald Eagle Technical Report is included as Appendix L to this BTR.

3.1.4 Clean Water Act

The ACOE regulates the discharge of dredged and/or fill material into waters of the United States under Section 404 of the federal CWA. Certain portions of the CWA are implemented by the State Water Resources Control Board (State Water Board) and applicable RWQCBs in California. The phrase "waters of the United States" is generally defined to include navigable waters as well as other waters (such as streams) and wetland waters that meet applicable regulatory criteria. The jurisdictional determination approved by the ACOE is included as Appendices E-1 and E-2 to this BTR.

3.2 State

3.2.1 California Endangered Species Act

The CDFW administers CESA, which prohibits the take of plant and animal species designated by the Fish and Game Commission as endangered or threatened in the State of California. CDFW regulations are set forth in the Fish and Game Code. Under CESA, take is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

CESA defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." CESA defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter." A candidate species is defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list." CESA does not list insect species.

CESA authorizes the take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met.

3.2.2 California Fish and Game Code

Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the Fish and Game Code provide that designated fully protected species may not be taken or possessed without a permit. Incidental takes of these species are not authorized by law.

Pursuant to Section 3503.5 of the Fish and Game Code, it is unlawful to take, possess, or destroy any birds of prey; or to take, possess, or destroy any nest or eggs of such birds. Birds of prey refer to species in the orders Falconiformes and Strigiformes.

Nests of all other birds (except English sparrow and European starling) are protected under Sections 3503 and 3513 of the Fish and Game Code.

Pursuant to Section 1602 of the Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. Diversion, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by means of entering into an agreement pursuant to Section 1602 of the Fish and Game Code.

The Fish and Game Commission and the CDFW regulate hunting and fishing activities, including the managed hunting program at the Ranch, pursuant to Fish and Game Code 3000 et seq. The commission establishes policies, such as encouraging the recreational hunting and managed depredation of feral pigs (wild boars) that threaten or harm natural habitat areas. CDFW administers the implementation of these policies through the adoption of regulations, management of licensing activities, and enforcement.

3.2.3 Porter-Cologne Water Quality Control Act

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Board and RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the federal CWA. The Porter-Cologne Act grants the State Water Board and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges of waste to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The Basin Plan must conform to the policies set forth in the Porter-Cologne Act and established by the State Water Board in its state water policy. To implement state and federal law, the Basin Plan establishes beneficial uses for surface and groundwater in the region, and sets forth narrative and numeric water quality standards to protect those beneficial uses. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste. The relevant Central Valley RWQCB publication for the study area is the Tulare Lake Basin Plan.

3.2.4 Oak Woodlands

California Public Resources Code Section 21083.4 requires a county, as part of the CEQA process, to consider whether a project would impact oak woodlands, including oak trees (meaning a native tree species in the genus *Quercus*) that are 5 inches or more in diameter at breast height. If a project may have a significant effect on oak woodlands (defined in Fish and Game Code Section 1361(h) as “an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover”), the code requires implementation of specific mitigation measures to reduce impacts to oak woodlands, but also provides for mitigation through county-designed measures. Mitigation options include conservation of existing oak woodlands, planting of new trees, contribution of funds to the Oak Woodlands Conservation Fund, or any other measures developed by the county.

The Oak Woodlands Conservation Act (Fish and Game Code Sections 1360 to 1372) was enacted to support and encourage voluntary, long-term private stewardship and conservation of oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands. It provides incentives to farming and ranching operations that are operated in a manner that protect and promote healthy oak woodlands, promotes the protection of oak trees, and encourages planning that is consistent with oak woodland preservation. The Oak Woodlands Conservation Act is implemented by the Wildlife Conservation Board.

3.2.5 California Environmental Quality Act

CEQA requires identification of a project’s potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts.

The CEQA Environmental Checklist (Appendix G to the CEQA Guidelines) (14 CCR 15000 et seq.) is used to analyze the potential significance of the project impacts. Candidate, sensitive or special-status species are analyzed through Section IV(a) of Appendix G to the CEQA Guidelines. 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c). This report considers the following special-status species: (1) California SSC designated by CDFW, (2) mammals and birds that are California fully protected (FP) species, and (3) BCC designated by the USFWS as a general equivalent to SSCs.

Section IV(b) of Appendix G to the CEQA Guidelines also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

3.3 Local

Kern County General Plan

The Kern County General Plan (General Plan) includes policies related to biological resources in Chapter 1, "Land Use, Open Space, and Conservation Element" (Kern County Planning Department 2009). The policies and implementation measures in the General Plan related to biological resources applicable to the proposed project are outlined below.

Threatened and Endangered Species (Section 1.10.5 of the General Plan)

- **Policy 27.** Threatened or endangered plant and wildlife species should be protected in accordance with State and federal laws.
- **Policy 28.** Kern County should work closely with State and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.
- **Policy 29.** Kern County will seek cooperative efforts with local, State, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

- **Policy 30.** Kern County will promote public awareness of endangered species laws to help educate property owners and the development community of local, State, and federal programs concerning endangered species conservation issues.
- **Policy 31.** Under the provisions of CEQA, Kern County, as Lead Agency, will solicit comments from the CDFW and the USFWS when an environmental document (Negative Declaration, Mitigated Negative Declaration, or EIR) is prepared.
- **Policy 32.** Riparian areas will be managed in accordance with the ACOE, and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.
- **Implementation Measure Q.** Discretionary projects shall consider effects to biological resources as required by CEQA.
- **Implementation Measure R.** Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to CEQA.
- **Implementation Measure S.** Pursue the development and implementation of conservation programs with state and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Smart Growth (Section 1.10.8 of the General Plan)

- **Policy 49(e).** Kern County will encourage compact development that "conserves open space, agricultural land, flood-prone areas, creeks, hillsides, ridge tops, wetlands, and other natural features."

Oak Tree Conservation (Section 1.10.10 of the General Plan)

- **Policy 65.** Oak woodlands and large oak trees shall be protected where possible and incorporated into project developments.
- **Policy 66.** Promote the conservation of oak tree woodlands for their environmental value and scenic beauty.
- **Implementation Measure KK.** The following applies to discretionary development projects (General Plan Amendment, zone change, conditional use permit, tract maps, parcel maps, precise development plan) that contains oak woodlands, which are defined as development parcels having canopy cover by oak trees of at least ten percent (10%), as determined from base line aerial photography or by site survey performed by a licensed or certified arborist or botanist. If this study is used in an EIR, then a Registered Professional Forester (RPF) shall perform the necessary analysis.

    a. Development parcels containing oak woodlands are subject to a minimum canopy coverage retention standard of thirty percent (30%). The consultant shall include recommendations regarding thinning and diseased tree removal in conjunction with the discretionary project.

b. Use of aerial photography and a dot grid system shall be considered adequate in determining the required canopy coverage standard.

c. Adjustments below thirty percent (30%) minimum canopy standard may be made based on a report to assess the management of oak woodlands.

d. Discretionary development, within areas designated as meeting the minimum canopy standard, shall avoid the area beneath and within the trees unaltered drip line unless approved by a licensed or certified arborist or botanist.

4 IMPACTS ANALYSIS

4.1 Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist state that a project could potentially have a significant effect if it would:

1. 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 CDFW or USFWS (**Threshold Bio-1**).
2. 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 CDFW or USFWS (**Threshold Bio-2**).
3. 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 (**Threshold Bio-3**).
4. 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 (**Threshold Bio-4**).
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (**Threshold Bio-5**).
6. Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP (**Threshold Bio-6**).

The following criteria provide further explanation regarding the analysis methods for the above thresholds.

***Threshold Bio-1, Effects on Species*:** A substantial adverse effect to special-status plant species would occur if the proposed project would: (1) reduce the population size or reduce the area of occupied habitat of a rare, threatened, or endangered species; or (2) reduce the population size or reduce the area of occupied habitat of a locally uncommon species.

A substantial adverse effect on a special-status wildlife species would occur if the proposed project would: (1) reduce the known distribution of a species; (2) reduce the local or regional population of a species; (3) increase predation of a species, leading to population reduction; (4) reduce habitat availability sufficiently to affect potential reproduction; or (5) reduce habitat availability sufficiently to constrain the distribution of a species and not allow for natural changes in distributional patterns over time.

Threshold Bio-2, Effects on Riparian Habitat and Other Sensitive Vegetation Communities: A substantial adverse effect on riparian habitat would occur if the proposed project would result in a net loss of riparian habitat on the site. Under this threshold, the following resources are analyzed: (1) vegetation communities considered sensitive by CDFW under CEQA; (2) waters of the state, including wetlands, delineated in 2013 and 2014 (referred to as "jurisdictional areas" or "previously delineated areas"); and (3) additional USGS stream features that were not previously delineated (referred to as "other USGS stream features"), but are conservatively analyzed as ephemeral waters of the state in Sections 4.5.2 and 4.6.4[22]

Threshold Bio-3, Federally Protected Wetlands: A substantial adverse effect to federally protected wetlands would occur if the proposed project would result in a net loss of federally protected wetlands on the site.

Threshold Bio-4, Effects on Wildlife Movement and Wildlife Nursery Sites: Substantial interference with the movement of any native resident or migratory wildlife species or with resident or migratory wildlife corridors would occur if the proposed project would prevent or hinder wildlife movement through established native resident or migratory wildlife corridors or habitat linkages. A substantial effect on wildlife nursery sites would occur if the proposed project would prevent or hinder a wildlife species from using important sites that support reproductive activities (e.g., breeding, nesting, rearing of young). The criteria for nursery sites used in this BTR include unique resource areas typically used by more than one individual or reproductive pair, such as tricolored blackbird nesting colonies, rookeries uses by herons and egrets, maternal roosts used by bats, or aquatic habitats used by fish for spawning. Therefore, impacts to wildlife nursery sites could affect reproduction by several or many pairs or individuals. For the purposes of this BTR, nursery sites do not include individual burrows, nests, or dens used by individuals or a single pair of a species. Impacts to these kinds of resources, if used by special-status species, are addressed under Threshold Bio-1.

Threshold Bio-5, Effects on Oak Resources: Impacts to oak resources were analyzed under the criteria set forth in Section 1.10.10 of the General Plan.

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22 Dudek biologists conducted a jurisdictional delineation of waters in the field (see Appendices E-1 and E-2 for more information). That delineation identified 21 features (out of a total of 59 features on the U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic maps) as subject to CDFW and RWQCB jurisdiction, and thus consisting of riparian areas. The remaining 38 unnamed USGS stream features lacked field indicators for a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, hydrophytic vegetation, or other watercourse features/fluvial indicators, as defined by Vyverberg (2010) and Brady and Vyverberg (2013). These features may be relics of the previous alluvial fan and may not currently convey waters.

Threshold Bio-6, HCP or Natural Community Conservation Plan: A substantial adverse effect would occur if the proposed project impacted an adopted HCP; Natural Community Conservation Plan (NCCP); or other approved local, regional, or state HCP.

4.2 Biological Resource Protection Measures

Recommended measures that reduce potentially significant proposed project or cumulative impacts to biological resources are listed in Appendix A. A short description of each measure is provided in Table 1-1 in Section 1.2.4. These measures have been accepted by the applicant and could serve as mitigation measures and conditions of proposed project approval. Each measure included in this BTR is identified by an abbreviated code, such as MM-BTR-OS.

4.3 Study Assumptions

The impacts assessment is categorized into construction-related (short-term temporary) impacts and operations-related (long-term permanent) impacts.

For the proposed project, the construction-related (short-term temporary) impacts would primarily be indirect and include temporary effects that are immediately related to construction, such as the generation of construction-related dust or noise. Construction-related (short-term temporary) direct impacts could include unintentional clearing, trampling, or grading outside of the proposed project footprint during construction. Additionally, there would be temporary impacts to 1.6 acres (215 linear feet) of intermittent non-wetland waters of the state that would be restored following construction of the proposed bridge crossings. All of the construction-related impacts, direct and indirect, are considered temporary impacts.

Implementation of MM-BTR-WM would result in temporary impacts to approximately 0.3 acre of non-native grassland during implementation of the restoration and enhancement activities. The temporary impacts would result from minor contouring and grading to repair damaged channel banks and restore floodplain functionality and enhance buffer conditions as part of the mitigation plan for impacts to waters of the state (discussed below). The biological resource protection measures in Appendix A would apply to the restoration and enhancement activities and impacts, including the temporary loss of 0.3 acre of non-native grassland; short-term and long-term impacts associated with this impact would be less than significant with implementation of these measures. Potential impacts associated with restoration and enhancement activities are addressed in Attachment A-3 of Appendix A, Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project.

Operations-related (long-term) direct impacts would be permanent impacts that result in the direct loss of biological resources due to development (i.e., the permanent loss of wildlife habitat or the permanent loss of or harm to individual special-status plant and wildlife species). Operations-related (long-term permanent) direct impacts were quantified by overlaying the proposed project footprint on GIS-mapped biological resources (Figure 1-4). Operations-related (long-term permanent) indirect impacts could result from the proximity of development to biological resources after construction. Long-term indirect impacts to biological resources as a result of development (primarily residential and commercial) adjacent to open space (i.e., exclusive agriculture) could include various impacts, such as increased lighting and glare or noise that may affect wildlife species if directed into adjacent open space areas.

Additional information used to analyze impacts included project-specific information and data collected for vegetation communities, jurisdictional resources, plant resources, and wildlife resources. Known threats to these biological resources were used to assess potential indirect effects.

4.4 Impacts Assessment

As described in Section 1.4 of this BTR, the Ranchwide Agreement lays the groundwork for conservation of approximately 240,000 acres (90%) of the Ranch and identifies approximately 74,094 acres (85%) of the Ranch in the San Joaquin Valley floor, including the adjacent foothills, for conservation.

The Ranchwide Agreement also designated three development areas for new projects, which were located adjacent to major infrastructure such as I-5 and the California Aqueduct, and sited to avoid significant adverse impacts to protected biological resources and wildlife corridors. These development areas include the proposed project on the San Joaquin Valley floor, TMV in the Tehachapi Uplands, and Centennial in Antelope Valley (TRC et al. 2008). In this regard, development of the proposed project is consistent with the Ranchwide Agreement. In accordance with the Ranchwide Agreement, as a master planned community, the proposed project has been designed with a variety of measures, including those related to conserving biological resources, as described in Exhibit Q-1 of the Ranchwide Agreement, and the proposed project includes proposals to comply with these measures, as described in the Grapevine Specific Plan.

Within the study area, the foothills of the Tehachapi Mountains and San Emigdio Mountains on the southern portion of the site (foothills) are largely located in proposed project open space. On the San Joaquin Valley floor, the riparian areas and the open space habitat along the southern edge of the California Aqueduct, which can be used as a movement corridor by various wildlife species, is located in proposed project open space. The remainder of the valley floor is where the proposed project is located. While the proposed project would result in impacts to the valley floor, the proposed project site was largely selected based on the absence of significant biological resources as well as prior disturbance and proximity to major existing infrastructure, such as I-5 and the California Aqueduct. Remaining biological impacts would be avoided, minimized, and mitigated to less-than-significant levels through recommended biological resource protection measures, including the conservation of the 7,233-acre Grapevine Off-Site Mitigation Area (Mitigation Area) located in the San Joaquin Valley floor.

A brief overview of the potential proposed project impacts in the foothills and valley floor are described in Sections 4.4.1 and 4.4.2. In order to simplify the analysis of impacts to the valley floor, the proposed project impacts are not separated into valley floor riparian and valley floor non-riparian as presented in Sections 1 and 2.

A detailed description of the proposed project impacts is provided in Sections 4.5 and 4.6.

4.4.1 Foothills

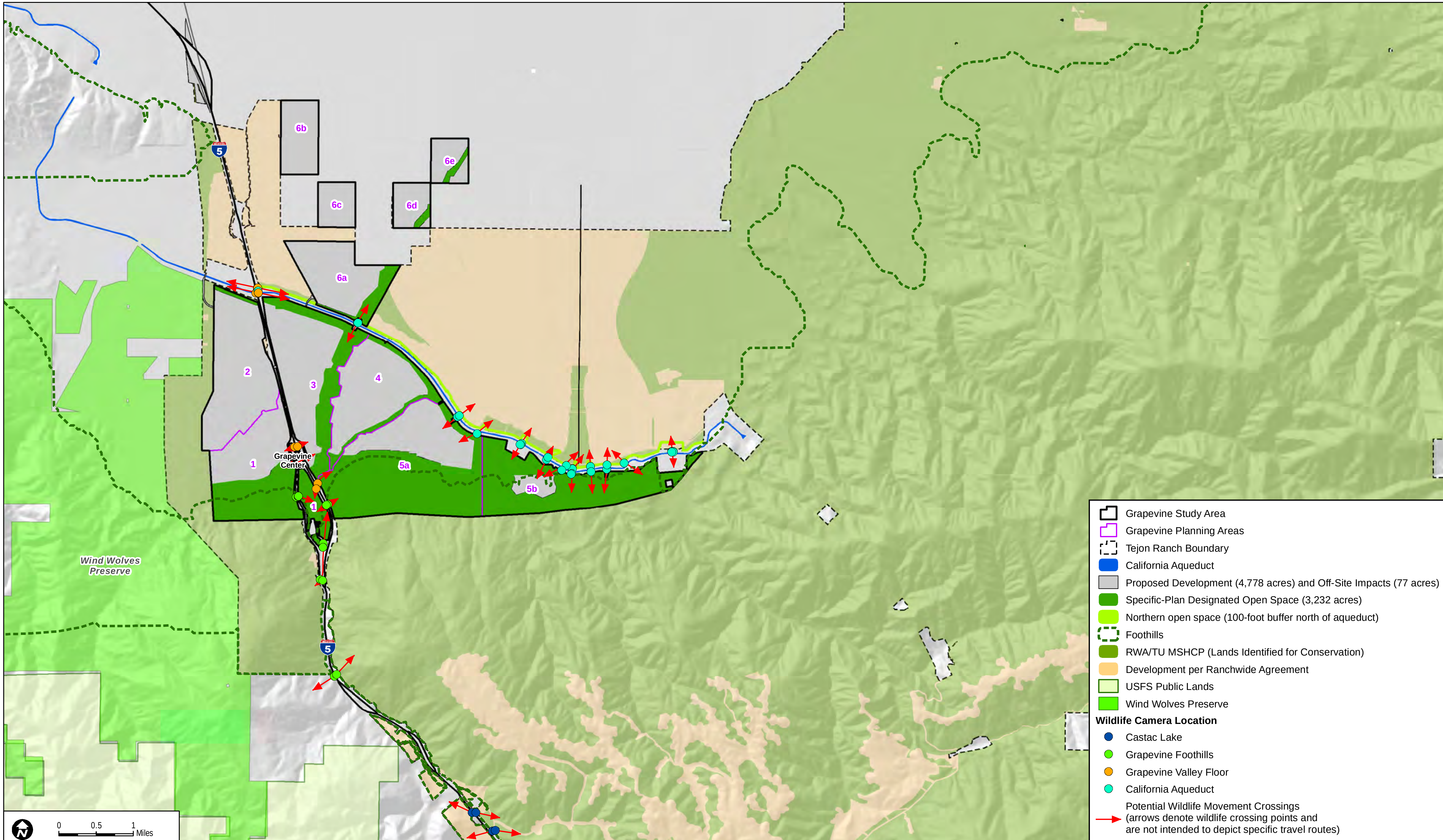
The foothills are more biologically diverse than the valley floor in terms of the number and types of habitats scattered in canyons, drainages, and slopes. All of the oak riparian woodland, oak savannah, and marsh communities are located in the foothills in proposed project open space, as well as much of the scrub, riparian scrub, and other riparian woodland. In addition, the broader elevation range (generally 1,600 to 2,100 feet amsl), varied slopes, and contiguity with the more densely vegetated hilltops of the Tehachapi and San Emigdio Mountains south of the study area support a variety of habitats and microhabitats for wildlife species that may not occur in the valley floor portions of the study area. Because of this, there is more diversity of wildlife species in the foothills. For example, species that are typically associated with densely vegetated mountain ridges and canyons south of the study area, including the off-site Tehachapi and San Emigdio Mountains, may use the foothills on site during foraging or dispersal. These include tree-nesting, roosting, or perching raptors, songbirds associated with woodland or scrub habitat, reptiles that prefer more shrub and/or boulder or rock cover, and amphibians that are associated with wetter habitat types in canyons and drainages. In addition, the only marsh habitat within the study area is located in the foothills and would be conserved on site in proposed project open space, thus, marsh-associated species would only be expected in the foothills. Mule deer that stay near vegetative cover were commonly observed in the foothills. The majority of stick nests that could be used by raptors, and cavities used by cavity-nesting birds were observed in the woodland habitat in the foothills. Also, many of the bats use the habitats available in the foothills more frequently than in the valley floor (see Appendix M). Because some wildlife species prefer to nest or den away from human activity, the more remote wooded canyons and steeper terrain of the foothills support a large variety of raptors, mammals, and other potentially disturbance-sensitive species.

The majority of the foothills of the Tehachapi Mountains and San Emigdio Mountains in the southern portion of the study area, where there are higher biological functions would be conserved in proposed project open space. This is consistent with the Ranchwide Agreement, and the proposed project open space in the foothills would maintain and expand the substantial, unconstrained northern foothills habitat linkage that is important for regional east–west wildlife movement. The proposed project would conserve approximately 40% (3,232 acres) of the study area in proposed project open space, the majority of which is located in the foothills.

4.4.2 Valley Floor

Within the study area, approximately 4,349 acres of natural lands (i.e., not non-natural land covers) would be impacted in the valley floor. While the proposed project would result in impacts to valley floor resources, these impacts would be avoided, minimized, and mitigated through recommended biological resource protection measures, open space preservation areas, and the conservation of the 7,233-acre Mitigation Area located in the San Joaquin Valley floor. While there will be a loss of suitable valley floor habitat for some special-status species, the proposed project open space configuration also conserves important biological resources and values in the valley floor.

The proposed project open space configuration allows for continued wildlife movement by providing habitat linkages and corridors that would allow wildlife to move east–west across I-5 and across the valley floor south of the proposed project footprint in the areas adjacent to the foothills, as they do under existing (pre-project) conditions. As mentioned, the foothills would be conserved in proposed project open space and portions of the study area where development is designated as allowable under the Ranchwide Agreement would instead be preserved as open space as part of the proposed project, thereby increasing the size of the northern foothills habitat linkage and providing a more substantial unconstrained habitat linkage south of the study area to convey east–west, Ranch-wide wildlife movement (Figure 4-1, Habitat Linkage). North–south movement across the valley floor would be accommodated by Grapevine Creek, the vast majority of which would be preserved along with a 50-foot buffer and thereby allow for continued wildlife movement within and along the creek. The tributary to Cattle Creek is narrower than Grapevine Creek and would be more constrained by adjacent development for wildlife movement, but may be used by urban-tolerant wildlife such as coyote and raccoon. The preserved wildlife corridor between the proposed project footprint and the south side of the aqueduct right-of-way and the 100-foot-wide band of land north of the aqueduct right-of-way would continue to provide east–west movement opportunities for wildlife along both sides of the aqueduct and ensues access to the existing I-5 wildlife crossing. Up to 100 acres of land zoned as Exclusive Agriculture in the central open space west of Planning Area 5b, north of Edmonston Pumping Plant Road, and east of Planning Area 5a and could be converted to agricultural uses and irrigated. The lands that may be converted to agricultural land uses would be sited and designed to allow wildlife movement through and/or around the agricultural area such that east–west movement along the valley floor/foothill transition area would be maintained.



SOURCES: TRC 2007, 2008; McIntosh & Associates 2014

FIGURE 4-1
Habitat Linkage

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In addition to conserving wildlife movement corridors, the proposed project open space configuration also conserves many of the higher-quality riparian resources in the valley floor. With respect to wetland waters, 10.0 acres (99%) and 10,609 linear feet (98%) will be avoided and conserved in proposed project open space, and 78.0 acre (99%) and 34,923 (97%) linear feet of intermittent channels will be avoided and conserved in open space. Ephemeral channels were also avoided and conserved during the land planning process and 11.3 acres (86%) and 33,922 linear feet (67%) of previously delineated ephemeral channels would be avoided and/or conserved.

Construction- and operations-related impacts to valley floor biological resources are described in detail by each threshold of significance in Sections 4.5 and 4.6, but for purposes of CEQA, these avoidance, minimization, and mitigation measures mitigate proposed project impacts to biological resources to a less-than-significant level.

4.4.3 Organization of Impacts Assessment

The remainder of the impacts assessment is organized by construction-related (short-term temporary) impacts (Section 4.5) and operations-related (long-term permanent) impacts (Section 4.6). Under each impact type (construction- and operations-related), proposed project effects are described by significance threshold (Thresholds Bio-1 through Bio-6).

4.5 Construction-Related (Short-Term Temporary) Impacts

For the proposed project, the construction-related impacts are primarily indirect and include temporary effects that are immediately related to construction, such as, but not limited to, the generation of fugitive dust; construction-related noise; increased vehicle and/or fence collisions; nighttime lighting, etc. Direct construction-related impacts could also result from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction. Potential construction-related direct and indirect impacts to special-status biological resources would be less than significant with implementation of biological resource protection measures. Construction-related, short-term temporary direct and indirect impacts are analyzed by significance threshold in Sections 4.5.1.2, 4.5.2.2, 4.5.4.2, and 4.5.5.2. Direct impacts to special-status biological resources within the proposed project footprint, which are considered permanent in this BTR, are addressed in Section 4.6 (Operations-Related (Long-Term Permanent) Impacts). The Mitigation Area includes restoration and enhancement activities that could result in short-term direct and indirect impacts to biological resources. The biological resources potential measures in Appendix A would apply to the restoration and enhancement activities and impacts would be less than significant with implementation of the measures. Appendix A-3 describes the restoration and enhancement activities and the potential effect on special-status species.

4.5.1 Threshold Bio-1

Would the project 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 CDFW or USFWS?

Special-status plant and wildlife species described in Sections 2.4 and 2.5 are analyzed in this section by potential short-term temporary direct (Section 4.5.1.1) and short-term temporary indirect impacts (Section 4.5.1.2); recommended biological resource protection measures that reduce impacts to less-than-significant levels are provided for each species.

4.5.1.1 Construction-Related (Short-Temporary) Direct Impacts

Absent the recommended biological resource protection measures, potential construction-related direct impacts to special-status species could result from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction. Accidental clearing, trampling, or grading outside designated construction zones may occur during construction activities for various reasons, including incorrect construction grading plans, human error in interpreting grading plans, human error or accidents in operating construction equipment, and misunderstandings or disregard by construction personnel in adhering to construction plan requirements, including avoidance of natural resources. (Note: direct impacts to special-status species within the proposed project footprint, which are considered permanent in this BTR, are addressed in Section 4.6, Operations-Related (Long-Term Permanent) Impacts).

Potential construction-related short-term temporary direct impacts to special-status species would be avoided through implementation of MM-BTR-C (general construction-related avoidance and minimization measures), MM-BTR-T (environmental awareness training, biological monitoring, and compliance), and for some wildlife species MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures). Additionally, areas that are directly but temporarily impacted outside of the proposed project footprint shall be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R (restoration of temporary impacts to uplands with non-invasive species). The application of a native seed mix would promote passive restoration of accidental impact areas. All biological resource protection measures are described in full in Appendix A of the BTR.

Potential construction-related direct impacts to special-status plants are described in Section 4.5.1.1.1 and construction-related direct impacts to special-status wildlife are described in Section 4.5.1.1.2.

4.5.1.1.1 Special-Status Plants

The construction-related direct impacts to special-status plants are separated by region (foothills and valley floor).

Foothills

Calico monkeyflower (*Mimulus pictus*) and Piute Mountains navarretia were observed in the foothills. There are minor ground-disturbing impacts within the foothills associated with trail construction and a limited amount of development associated with Planning Area 5b and road widening along Edmonston Pumping Plant Road (see also Section 4.6.3.1.1) (Figure 4-2, Proposed Project Footprint and Special-Status Plants). Accidental clearing, trampling, or grading outside designated construction zones could result in significant construction-related direct impacts to special-status plants, including calico monkeyflower, Piute Mountains navarretia, and Tejon poppy, if this species occurs on site.

Construction mitigation measures MM-BTR-C and MM-BTR-T would apply and these measures would avoid and minimize potential short-term temporary direct impacts to special-status plants because they require the project biologist to conduct a Worker Environmental Awareness Program (WEAP) for all construction/contractor personnel to ensure compliance with the biological resource protection measures and they require ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to special-status plants and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and special-status plants outside the designated proposed project footprint would be avoided.

Construction-related direct impacts to special-status plant species in the foothills would be less than significant with incorporation of MM-BTR-C and MM-BTR-T.

Valley Floor

There are no special-status plants in the valley floor in the study area, and therefore, no direct construction-related impacts to special-status plants would occur in the valley floor riparian areas of the study area.

4.5.1.1.2 Special-Status Wildlife

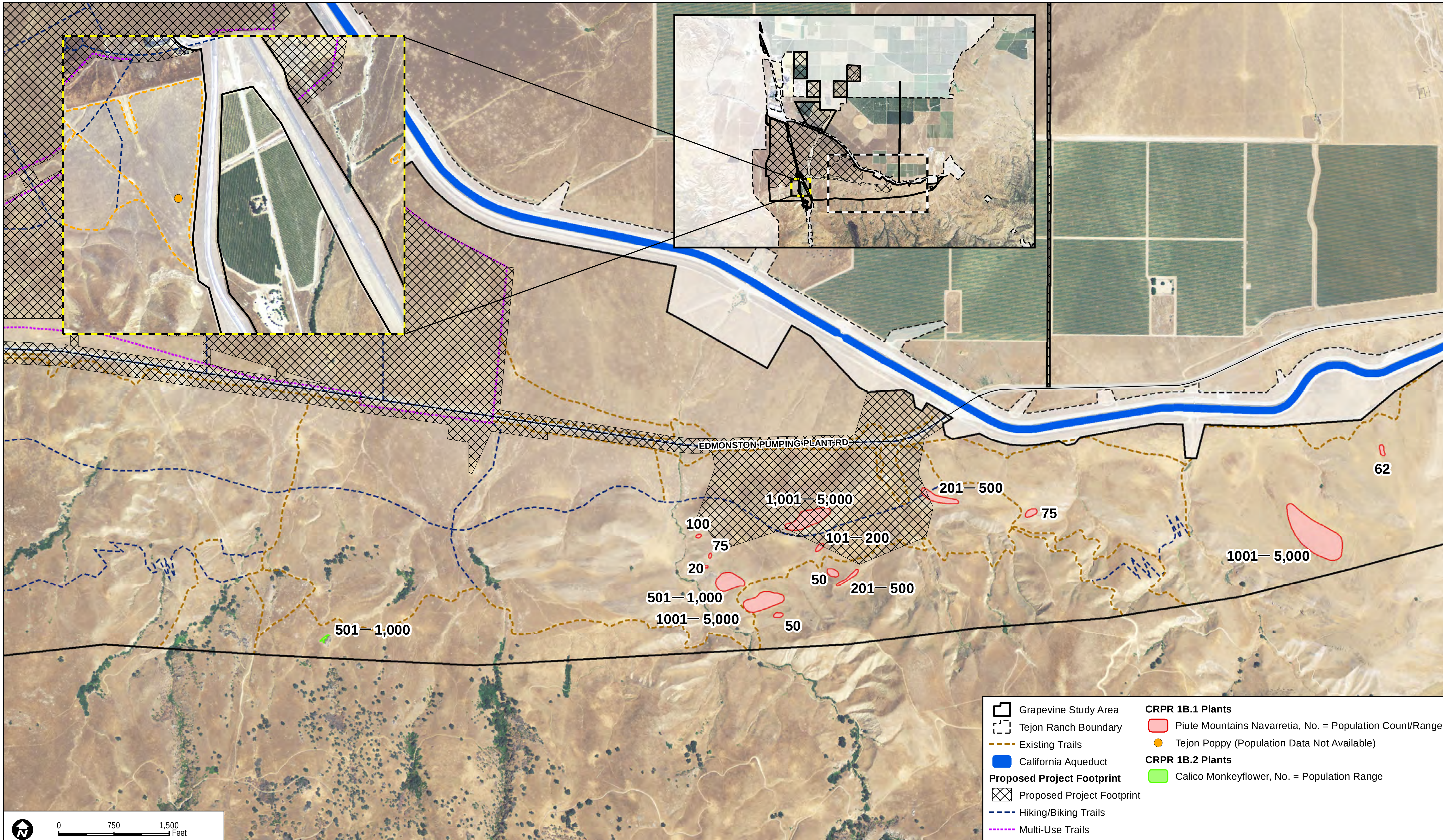
Accidental clearing, trampling, or grading of outside designated construction zones could result in significant construction-related direct impacts to special-status wildlife species and nesting birds through direct impacts to individuals and/or habitat for the species. Figures 4-1 through 4-5 show the known occurrences of special-status wildlife in relationship to the proposed project footprint where construction would occur. The construction-related direct impacts to special-status wildlife are first discussed by geographic region (foothills and valley floor), then by individual species.

Foothill

Short-term temporary direct impacts resulting from accidental clearing, trampling, or grading of outside designated construction zone to the following species or their habitat are unlikely because their habitat is limited to the foothills region of the study area, which is being conserved in proposed project open space: two-striped garter snake, tricolored blackbird (potential nesting habitat), oak titmouse (nesting habitat), northern harrier (potential nesting habitat), Nuttall's woodpecker (nesting habitat), purple martin (nesting habitat), yellow warbler (nesting habitat), Lawrence's goldfinch (nesting habitat), black-chinned sparrow (nesting habitat), and Buena Vista Lake shrew. Suitable habitat for these species is generally located at least 900 to 1,000 feet from development or roads, and the trails would be sited to avoid impacts to suitable habitat in accordance with MM-BTR-RMP. Because trail construction is less intensive than development and is subject to avoidance and minimization measures, the chance of construction-related direct impacts is considerably less.

No California condor nesting or roosting habitat is located in the proposed project footprint (or study area more generally). Due to the lower levels of grazing and hunting in the study area (and, thus, the low number of animal carcasses), California condor occurrence on Grapevine is very uncommon compared to occurrences in the upland areas on the Ranch; therefore, the loss of rangeland habitat as a result of the proposed project is not considered a significant impact to this species. Additionally, higher-value foraging habitat in the foothills, where extensive grazing and hunting occurs, would be conserved. Accidental clearing, trampling, or grading outside designated construction zones is unlikely in the foothills region of the study area, because those areas are mostly being conserved in open space. Therefore, short-term temporary direct impacts to potential foraging habitat from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction are less than significant (see Appendix K, Condor Technical Report).

Therefore, no significant short-term temporary direct impacts to special-status wildlife species in the foothills would occur as a result of the proposed project.



SOURCES: TRC 2013d; McIntosh & Associates 2014

FIGURE 4-2

Proposed Project Footprint and Special-Status Plants

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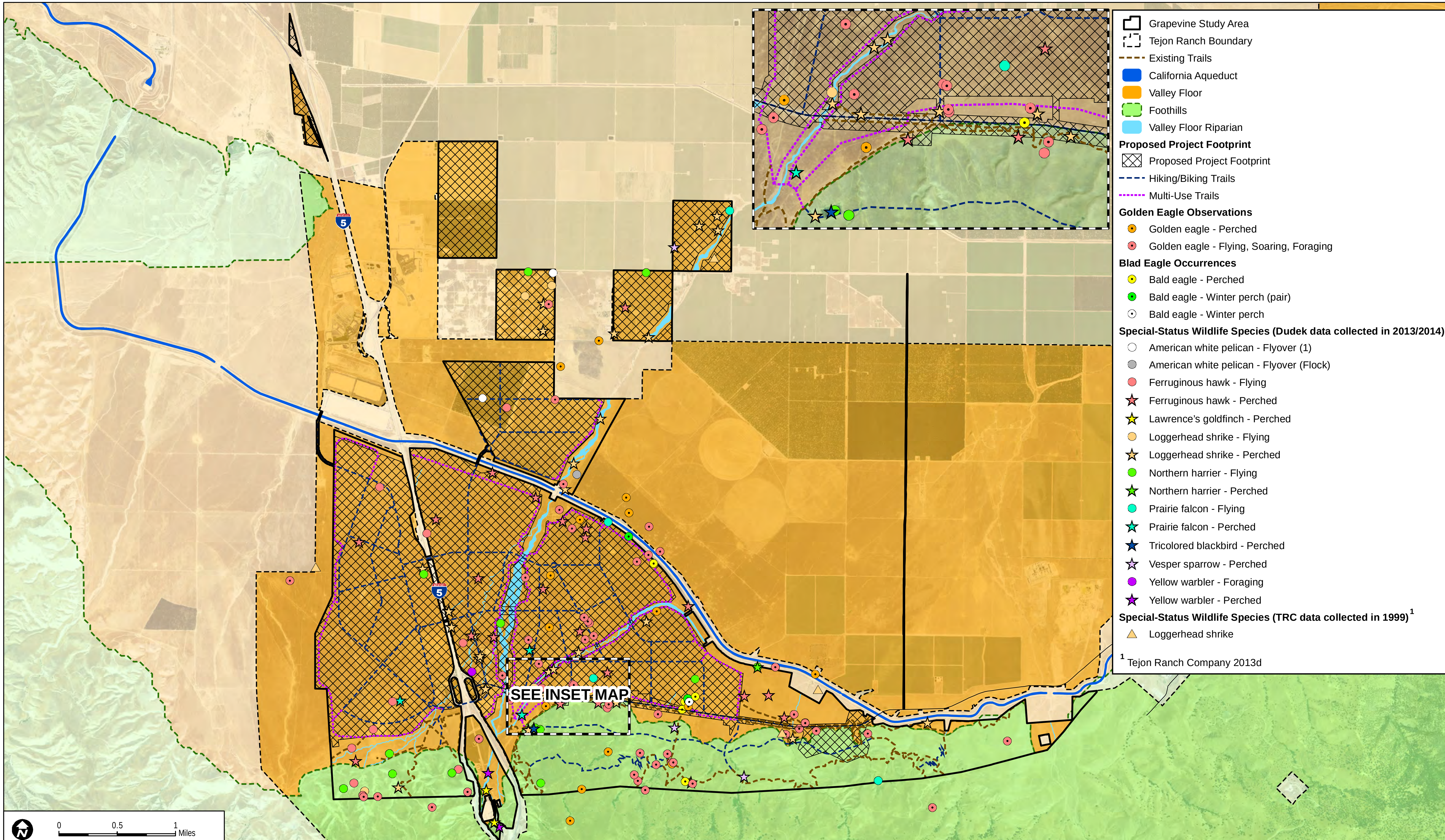

SOURCES: McIntosh & Associates 2014; TRC 2013d

FIGURE 4-3A

Proposed Project Footprint and Special-Status Wildlife Species (Birds)

GRAPEVINE PROJECT

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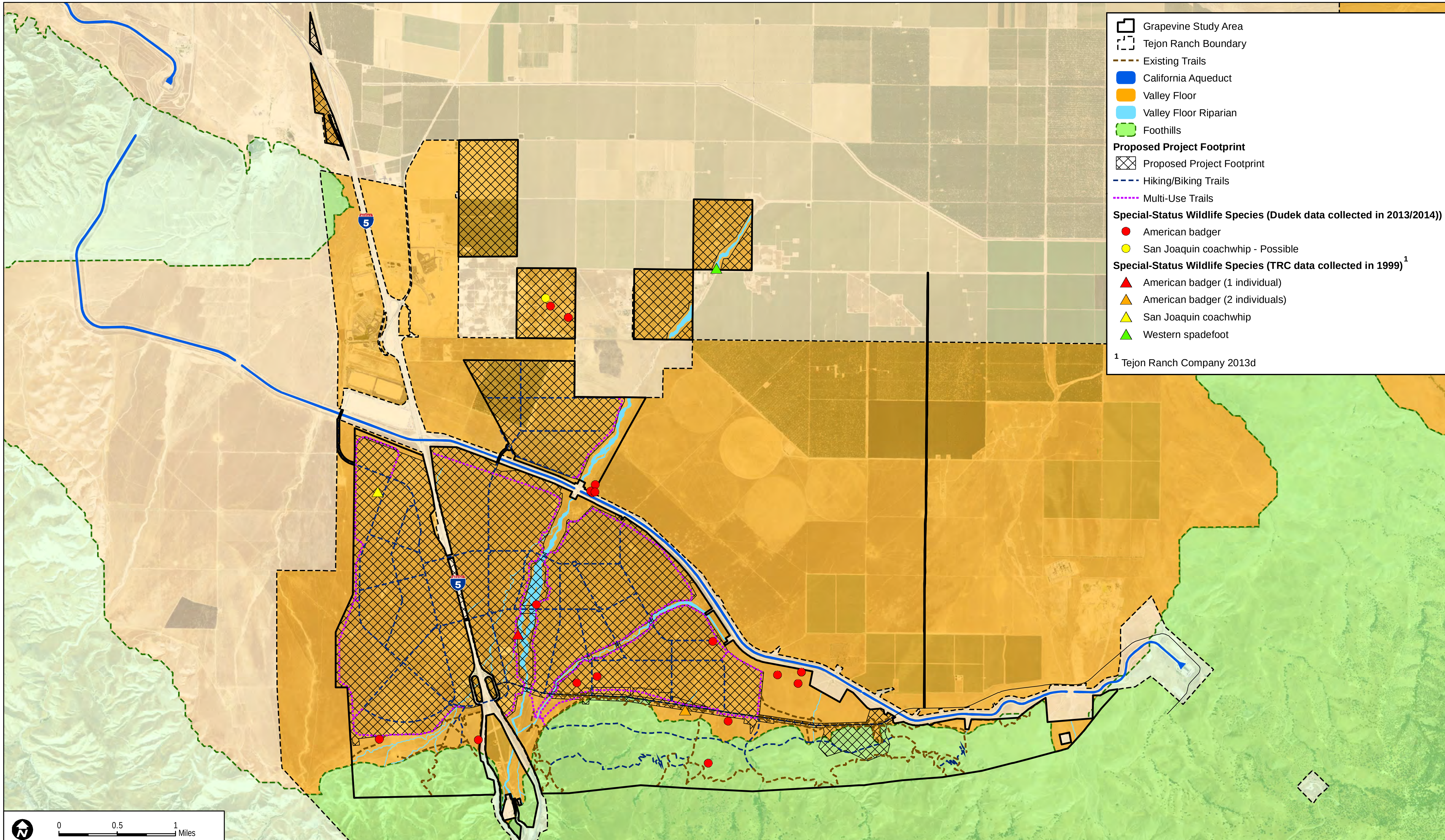

SOURCES: TRC 2013d; McIntosh & Associates 2014

FIGURE 4-3B

Proposed Project Footprint and Special-Status Wildlife Species (Mammals, Amphibians, and Reptiles)

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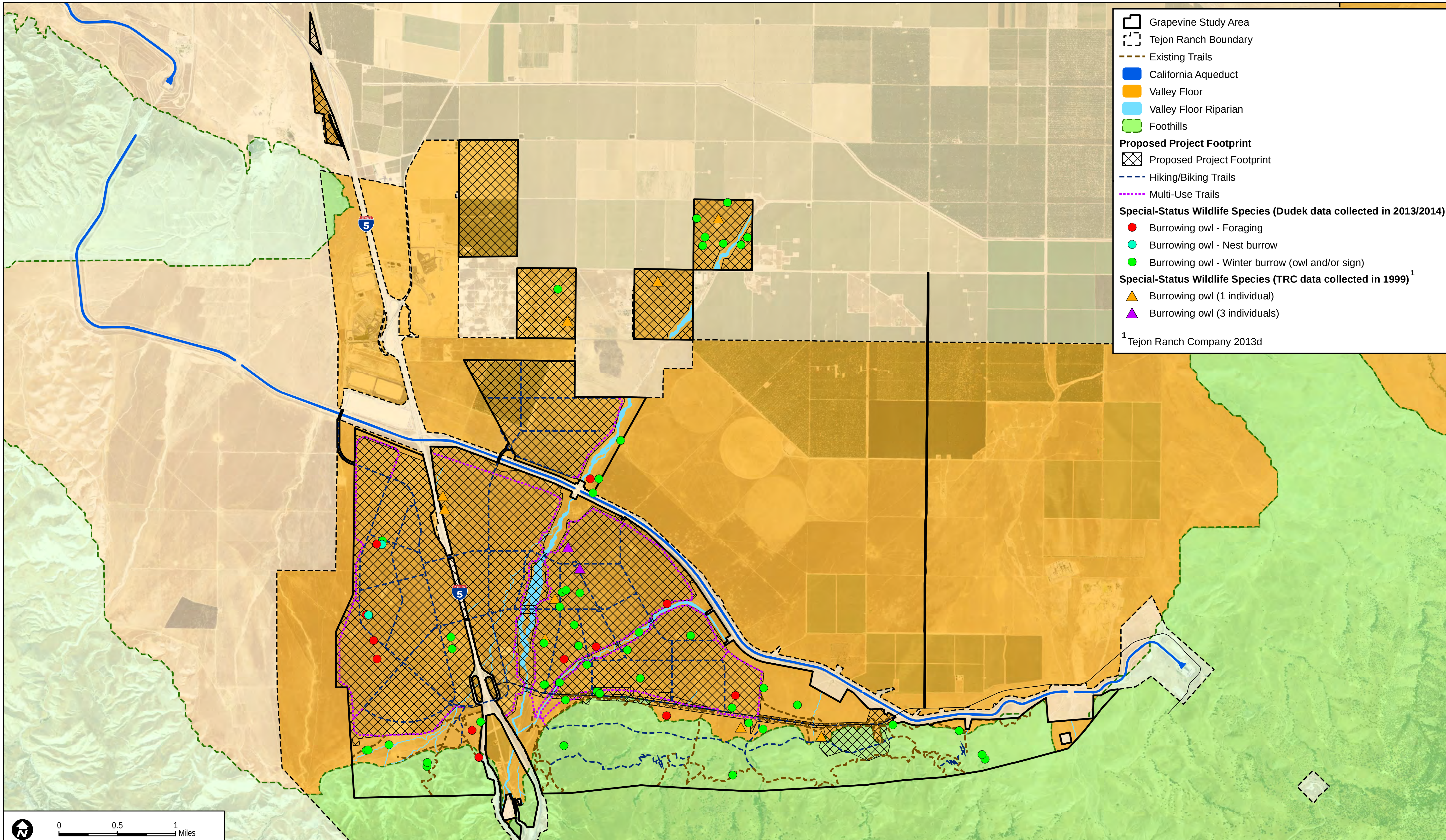

SOURCES: TRC 2013d; McIntosh & Associates 2014

FIGURE 4-4

Proposed Project Footprint and Special-Status Wildlife Species (Burrowing Owl)

GRAPEVINE PROJECT

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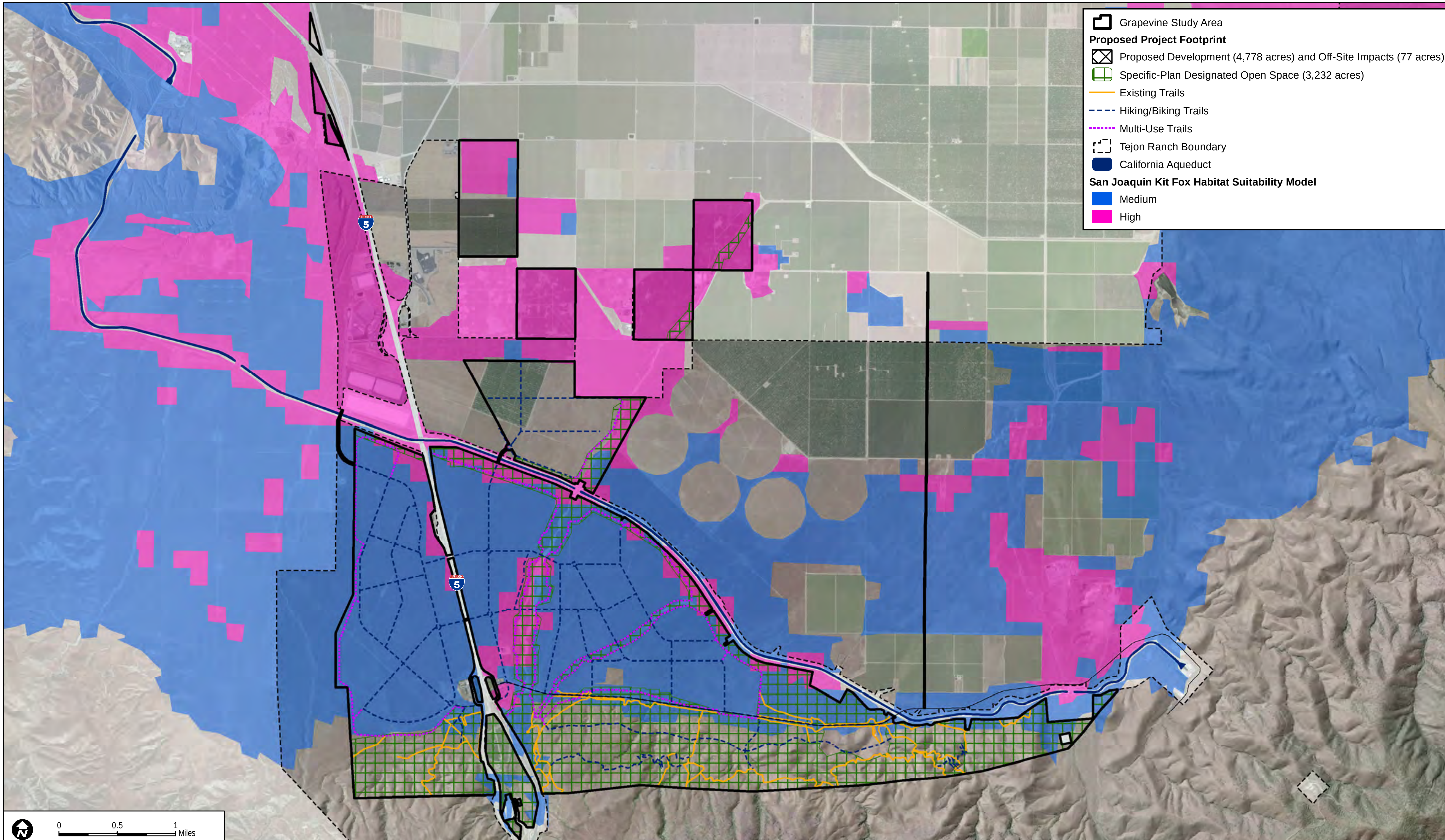

SOURCES: McIntosh & Associates 2014; TRC 2014a; Cypher et al. 2013

FIGURE 4-5

Proposed Project Footprint and Suitable Habitat for San Joaquin Kit Fox (Cypher et al. 2013)

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Valley Floor

Short-term temporary direct impacts resulting from accidental clearing, trampling, or grading outside designated construction zones to the following species or their habitat are unlikely because their habitat is limited to the riparian vegetation in the valley floor of the study area, which is being conserved in proposed project open space: two-striped garter snake, northern harrier (nesting habitat), Nuttall's woodpecker (nesting habitat), yellow warbler (nesting habitat), Lawrence's goldfinch (nesting habitat), and Buena Vista Lake shrew. Suitable habitat for these species is generally located at least 900 to 1,000 feet from development or roads, and the trails are situated outside of suitable habitat. Because trail construction is less intensive than development, the chance of construction-related direct impacts is considerably less. Therefore, no significant short-term temporary direct impacts to these special-status wildlife species would occur as a result of the proposed project.

Special-status species that could be affected by short-term temporary direct impacts in the valley floor include bald eagle, silvery legless lizard, San Joaquin coachwhip, Blainville's horned lizard, golden eagle, ferruginous hawk, Oregon vesper sparrow, blunt-nosed leopard lizard, western spadefoot, burrowing owl, loggerhead shrike, San Joaquin kit fox, Nelson's antelope squirrel, American badger, pallid bat, western mastiff bat, western red bat, Townsend's big-eared bat, and San Diego black-tailed jackrabbit. Additionally, native nesting birds, protected under the MBTA, could be directly impacted as a result of construction activities.

Because the site supports only a few wintering bald eagle individuals at any given time, foraging is generally limited to potential prey areas near a few preferred perching trees rather than spread across the landscape. In addition, because bald eagles do not nest on the Ranch, no direct loss of bald eagle individuals or nests, or reduction in eagle productivity, as a result of potential short-term temporary direct impacts would occur. Therefore, potential short-term temporary direct impacts to potential bald eagle foraging habitat from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction are less than significant.

Construction-related direct impacts to special-status wildlife and nesting birds would be avoided and minimized through implementation of MM-BTR-C, MM-BTR-R, and MM-BTR-T. These measures would avoid and minimize potential short-term temporary direct impacts to special-status wildlife and their habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and would require ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to special-status wildlife and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and special-status wildlife and their habitat outside of those areas must be avoided. Additionally, areas that are directly but temporarily impacted would be recontoured to natural grade and revegetated with application of a native seed mix. The application of a native seed mix would promote passive restoration of accidental impact areas. Because a majority of the site is non-native grasslands, application of a native seed mix would promote the passive restoration of the on-site habitat. In addition, MM-BTR-PCA requires focused surveys to assess the presence or absence of the species in a potential impact area and the location of the species or habitat area in order to apply species-specific avoidance and minimization measures.

Potential construction-related direct impacts to silvery legless lizard, San Joaquin coachwhip, Blainville's horned lizard, golden eagle, ferruginous hawk, and Oregon vesper sparrow would be less than significant with incorporation of MM-BTR-C, MM-BTR-R, and MM-BTR-T.

Potential construction-related direct impacts to blunt-nosed leopard lizard, western spadefoot, burrowing owl, loggerhead shrike, San Joaquin kit fox, Nelson's antelope squirrel, American badger, pallid bat, western mastiff bat, western red bat, Townsend's big-eared bat, and San Diego black-tailed jackrabbit would be less than significant with incorporation of MM-BTR-C, MM-BTR-R, MM-BTR-T, and MM-BTR-PCA.

The species that require the application of MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) to avoid and minimize impacts to the species are described below by taxonomic group. Within each taxonomic group, the species are organized alphabetically by their sensitivity status, with federally and/or state-listed species addressed first and the remainder of the species addressed second.

Amphibians and Reptiles

<u>Blunt-Nosed Leopard Lizard (FE/SE; FP)</u>

Blunt-nosed leopard lizard has not been observed on site, but is analyzed as having low to moderate potential to occur. Generally, the species has a low potential to occur at high densities on the valley floor, but could have moderate potential to occur in suitable habitat areas in the study area if site conditions improved from the ongoing drought. If present, individual blunt-nosed leopard lizards could be directly impacted as a result of construction activities in the absence of avoidance and minimization measures, which would be a potentially significant impact. MM-BTR-PCA requires focused protocol surveys in accordance with the CDFW's *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard* (CDFG 2004) within suitable habitat for blunt-nosed leopard lizard in the survey season immediately prior to grading or construction, and 3 to 5 clearance surveys within 30 days of initiation of construction activities between March and November within 50 feet of proposed disturbance. If any blunt-nosed leopard lizards are observed during the surveys, all locations as well as available burrows within 50 feet of the observation shall be marked in the field and on appropriate maps. Any blunt-nosed leopard lizard observation within 50 feet of proposed disturbance areas shall be fenced with exclusion fencing and the project biologist shall be on site during the fencing installation to ensure that no blunt-nosed leopard lizards are inadvertently harmed/harassed during installation. Daily surveys within the fenced construction zone shall be conducted for five consecutive days to ensure blunt-nosed leopard lizards have left the construction area via escape routes in the fencing. MM-BTR-PCA also requires the project biologist to monitor exclusion areas during construction activities, inspect the condition of the exclusion fencing, and have the authority to stop work if necessary. If a blunt-nosed leopard lizard is observed during disturbance activities, work would only be allowed to resume at the discretion of the project biologist and only when any threat to blunt-nosed leopard lizards has passed. Relocation and/or take of a blunt-nosed leopard lizard may only occur if authorized pursuant to an NCCP.

Potential short-term temporary, construction-related direct impacts to blunt-nosed leopard lizard would be avoided and would be considered less than significant with incorporation of MM-BTR-PCA. In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to blunt-nosed leopard lizard because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species outside those areas must be avoided. MM-BTR-R would re-seed temporarily disturbed areas and prevent these areas from becoming established with invasive, non-native species that can spread into suitable blunt-nosed leopard lizard habitat. Such invasions may alter the plant species composition and structure, making it too dense or otherwise unsuitable for this species.

Implementation of MM-BTR-C, MM-BTR-PCA, MM-BTR-R, and MM-BTR-T would reduce potential short-term temporary, construction-related direct impacts to blunt-nosed leopard lizard to less than significant.

<u>Western Spadefoot (Toad)(—/SSC)</u>

While western spadefoot has not been observed, if present, western spadefoot could be directly impacted as a result of construction activities in the absence of avoidance and minimization measures, which would be a potentially significant impact. MM-BTR-PCA requires avoidance of occupied breeding habitat (if feasible), habitat creation at a 2:1 ratio if occupied habitat is impacted, and/or setbacks and exclusion fencing around occupied habitat within 300 feet of the proposed project footprint.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to western spadefoot because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and special-status wildlife and their habitat outside those areas must be avoided.

Implementation of MM-BTR-C, MM-BTR-PCA, and MM-BTR-T would reduce any potential short-term temporary, construction-related direct impacts to western spadefoot to less-than-significant levels.

Birds

<u>Burrowing Owl (BCC, MBTA/SSC)</u>

Construction activities could result in direct impacts to nests or winter burrows in the absence of MM-BTR-PCA (pre-construction surveys, avoidance buffers, passive relocation activities, and measures to prevent owls from recolonizing the development areas), which would be a potentially significant impact. MM-BTR-PCA requires that pre-construction "take avoidance" surveys for burrowing owl be conducted 14 days prior to initiating ground-disturbance activities, and, if present, avoidance measures would be implemented. If present, minimum avoidance buffers (75 meters (246 feet)) shall be required for occupied nests or burrows during the breeding season (February 1–August 31) so that nesting activities are not disturbed and nesting pairs have the opportunity to rear and successfully fledge young. From September 1–January 31 (the non-nesting period), passive relocation would be implemented for individuals in occupied roost burrows within the proposed project disturbance footprint that cannot feasibly be avoided. Passive relocation would include monitoring, management, and reporting to confirm that the relocation efforts are successful. Additionally, to prevent burrowing owl from recolonizing areas within the proposed project footprint, the development area under immediate construction would be made and maintained as unsuitable for burrowing owls through heavy disking or immediate and periodic grading of the development area until development is complete.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to burrowing owl or their habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and special-status wildlife and their habitat outside those areas must be avoided.

Implementation of MM-BTR-C, MM-BTR-PCA, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to individual burrowing owls to less-than-significant levels.

<u>Loggerhead Shrike (BCC, MBTA/SSC)</u>

Active loggerhead shrike nests could be directly impacted during construction activities in the absence of MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), which would be a potentially significant impact. MM-BTR-PCA requires pre-construction surveys for active loggerhead shrike nests and, if present, avoidance measures would be implemented. If present, minimum avoidance buffers shall be required during the nesting season (between March and September) so that nesting activities are not disturbed and nesting pairs have the opportunity to rear and successfully fledge young. Setbacks and avoidance buffers for active nests are typically 250 feet for passerines.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to loggerhead shrike or their habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species and their habitat outside those areas must be avoided. Additionally, areas that are directly but temporarily impacted would be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R. The application of a native seed mix would promote passive restoration of accidental impact areas. Because a majority of the site is non-native grasslands, application of a native seed mix would promote the passive restoration of the on-site habitat.

Implementation of MM-BTR-C, MM-BTR-PCA, MM-BTR-R, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to loggerhead shrikes to less-than-significant levels.

Non-Special-Status Birds (MBTA)

Most native nesting birds are protected under the MBTA and California Fish and Game Code Section 3503, and nesting raptors are afforded additional protection under California Fish and Game Code Section 3503.5, described in Section 3. In the absence of MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), active bird nests could be directly impacted as a result of construction activities, which would be a potentially significant impact.

MM-BTR-PCA requires pre-construction surveys for nesting birds, and, if present, avoidance measures would be implemented. If present, minimum avoidance buffers shall be required during the nesting season (between March and September) so that nesting activities are not disturbed and nesting pairs have the opportunity to rear and successfully fledge young. Setbacks from active nests are typically 500 feet for raptors and tricolored blackbird and 250 feet for passerines, and include restrictions on disturbance activities within the setbacks.

Potential short-term temporary, construction-related direct impacts to active nests would be less than significant with incorporation of MM-BTR-PCA.

Mammals

San Joaquin Kit Fox (FE/ST)

As described above, the potential for San Joaquin kit fox to occur in the study area is considered to be high for movement events, including juvenile and adult dispersal in search of territories, but low potential for long-term occupation. If present on site, San Joaquin kit fox individuals could be directly impacted during construction activities in the absence of MM-BTR-PCA, which would be a potentially significant impact. As required by MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), pre-construction take avoidance surveys for San Joaquin kit fox would be conducted no less than 14 days and no more than 30 days prior to the beginning of each phase of ground-disturbing activity in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011b). If kit fox dens are found, minimum avoidance buffers shall be required based on the den type: atypical den (50-foot exclusion buffer from den entrance(s)), known den (100-foot exclusion buffer and fencing), and natal/pupping den (200-foot exclusion buffer and fencing). These buffers, determined by the USFWS, would avoid impacts to individual kit foxes that are denning during various phases of their life cycle.

If avoidance of dens is not a reasonable alternative, limited destruction of known or potential/atypical kit fox dens may be allowed in accordance with guidelines in the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011b), which requires take authorization for destruction of any known or natal/pupping kit fox den. The USFWS (2011b) recommendations require that dens be fully excavated, filled with dirt, and compacted, so that kit fox cannot re-enter the den during construction and become inadvertently entombed. The guidelines also require that excavation activity stop if kit fox is discovered and excavation can only proceed after the project biologist has monitored the den and determined that the kit fox has escaped. Additionally, natal/pupping dens that are occupied would not be destroyed until the pups and adults have vacated. Known dens within the study area would be monitored for 3 days/nights to determine the current use and if no kit fox activity is observed, the den shall be excavated immediately to prevent future use. Potential dens may be excavated without monitoring if a take permit has been issued by USFWS; if no take permit has been issued, then the potential dens would be monitored as if they were known dens. These den excavation procedures, which are described more fully in Appendix A, would ensure that kit fox is not directly impacted during construction.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to San Joaquin kit fox and their suitable habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. Specifically, MM-BTR-C requires the demarcation of the construction area using highly visible materials in the field, which would minimize unintentional impacts to the kit fox and their suitable habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and, thus, impacts to species and their habitat outside those areas must be avoided. Additionally, areas that are directly but temporarily impacted would be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R. The application of a native seed mix would promote passive restoration of accidental impact areas. Because a majority of the site is non-native grasslands, application of a native seed mix would promote the passive restoration of the on-site habitat.

Implementation of MM-BTR-C, MM-BTR-PCA, MM-BTR-R, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to San Joaquin kit fox to less-than-significant levels.

Nelson's Antelope Squirrel (—/ST)

Nelson's antelope squirrel have not been observed on site and has low potential to occur, but if present, active burrows of Nelson's antelope squirrel could be directly impacted as a result of construction activities in the absence of MM-BTR-PCA, which would be a potentially significant impact. As required by MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), pre-construction take avoidance surveys for Nelson's antelope squirrel would be conducted at least 30 days prior to construction activities within the disturbance area and a 50-foot buffer, and, if present, 50-foot avoidance buffers shall be established around the burrows and temporary fencing shall be erected. If burrows suspected or known to be occupied cannot be avoided, then Nelson's antelope squirrel shall be trapped and relocated to an approved release site on the Ranch pursuant to appropriate CDFW authorizations. Trapping and relocation would avoid direct impacts to Nelson's antelope squirrel if on-site avoidance is not feasible.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to Nelson's antelope squirrel or their suitable habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species and their habitat outside those areas must be avoided. Additionally, areas that are directly but temporarily impacted would be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R. Because a majority of the site is non-native grasslands, application of a native seed mix would promote the passive restoration of accidental impact areas and improve the overall on-site habitat.

Implementation of MM-BTR-C, MM-BTR-PCA, MM-BTR-R, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to Nelson's antelope squirrel to less-than-significant levels.

American Badger (—/SSC)

American badger is known to be present on site, and active badger dens could be directly impacted during construction activities in the absence of MM-BTR-PCA, which would be a potentially significant impact. MM-BTR-PCA requires pre-construction surveys for winter and natal badger dens, and, if present, avoidance measures would be implemented to minimize impacts to badgers. If natal dens are found, a 200-foot buffer shall be flagged or fenced to avoid inadvertent impacts to the den. Construction would be postponed or halted until the project biologist determines that the young are no longer dependent on the natal den. With respect to natal den avoidance, MM-BTR-PCA ensures that badgers would be allowed to complete pupping and disperse to on-site open space or off-site habitat when the natal den is vacated. If winter dens are found, a 50-foot avoidance buffer shall be flagged or fenced to avoid inadvertent impacts to the den. If it is not practicable to avoid the wintering den during construction activities, an attempt would be made to trap or flush the individual and relocate it to suitable open space habitat. Additionally, badgers can be relocated by slowly excavating the burrow, either by hand or mechanized equipment under the direct supervision of the project biologist, removing no more than 4 inches at a time. Therefore, MM-BTR-PCA would avoid and minimize direct impacts to individual American badgers during winter construction when they may have entered torpor in their dens.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to American badger or their suitable habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species and their habitat outside those areas must be avoided.

Implementation of MM-BTR-C, MM-BTR-PCA, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to American badger to less-than-significant levels.

<u>Pallid Bat, Western Mastiff Bat, and Western Red Bat (—/SSCs) and Townsend's Big-Eared Bat (—/SSC; SC)</u>

Active bat roosts could be directly impacted as a result of construction activities in the absence of MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), which would be a potentially significant impact. MM-BTR-PCA requires pre-construction surveys for active bat roosts in the proposed project disturbance area or within 300 feet of the disturbance boundary, and, if present, avoidance measures would be implemented. If an active maternity roost is identified in these areas, a 300-foot buffer may be established that limits certain construction activities within that buffer until the maternity roost is vacated and juveniles have fledged, as determined by the project biologist. If non-breeding bat roosts (hibernacula or non-maternity roosts) are found, individuals shall be safely evicted or flushed from roosts. Once the bats escape, the roost site shall be removed or the construction disturbance shall occur the next day (i.e., there shall be no less or more than 1 night between initial disturbance and the roost removal). MM-BTR-PCA ensures that reproduction is not inhibited during construction by avoiding maternity roosts until juveniles have fledged. MM-BTR-PCA ensures that individuals are not directly impacted while roosting (non-maternity) or hibernating by evicting or flushing the roost prior to disturbance.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to bats or their suitable habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species outside those areas must be avoided.

Implementation of MM-BTR-C, MM-BTR-PCA, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to pallid bat, western mastiff bat, western red bat, and Townsend's big-eared bat to less-than-significant levels.

San Diego Black-Tailed Jackrabbit (—/SSC)

Individual San Diego black-tailed jackrabbit could be directly impacted as a result of construction activities in the absence of MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures), which would be a potentially significant impact. MM-BTR-PCA requires pre-construction surveys for San Diego black-tailed jackrabbit, and, if present, avoidance and minimization measures shall be implemented. If present, rabbits shall be flushed from the disturbance area towards non-disturbance areas. Because San Diego black-tailed jackrabbit are relatively mature and mobile from the moment of birth and flush easily, MM-BTR-PCA would avoid and minimize direct impacts to individuals during construction.

In addition, MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to San Diego black-tailed jackrabbit or their suitable habitat because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to species and their habitat outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and species and their habitat outside those areas must be avoided. Additionally, areas that are directly but temporarily impacted would be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R. The application of a native seed mix would promote passive restoration of accidental impact areas. Because a majority of the site is non-native grasslands, application of a native seed mix would promote the passive restoration of the on-site habitat.

Implementation of MM-BTR-C, MM-BTR-PCA, MM-BTR-R, and MM-BTR-T would reduce any potential direct, short-term temporary impacts to San Diego black-tailed jackrabbit to less-than-significant levels.

4.5.1.2 Construction-Related (Short-Term Temporary) Indirect Impacts

Construction-related indirect impacts could affect special-status wildlife in the valley floor along the urban-open space edge where construction would occur, including areas along Grapevine Creek and the tributary to Cattle Creek. Additionally, construction-related indirect impacts could affect special-status plants and wildlife in the foothills at the interface of the proposed project footprint and open space.

Potential short-term temporary indirect impacts to special-status species are summarized in Table 4-1. In general, potential short-term temporary indirect impacts to special-status species, which varies by species (as indicated in Table 4-1), include (1) the generation of fugitive dust (including effects associated with leaving bare ground after temporary removal of vegetation); (2) construction-related noise and vibration; (3) an increase in urban-related species, including urban-related mesopredators[23] (e.g., red fox (*Vulpes vulpes*), raccoons, skunks (*Mephitis mephitis*), opossums (*Didelphimorphia*)) and pets; (4) nighttime lighting; (5) increased human activity, including harassment from construction workers and increased vehicle and/or fence collisions; (6) the release of chemical pollutants such as oils and grease from vehicles and pesticides, including herbicides, that can harm individuals or reduce their prey; 7) the degradation of water quality; and (8) introduction of invasive plant species that may alter the composition of the community if introduced during restoration or allowed to passively colonize the area post-construction. Each of these short-term temporary indirect impacts are described further below. In the absence of biological resource protection measures, potential short-term temporary indirect impacts to special-status species would be significant. These potential short-term temporary indirect impacts would be less than significant with incorporation of biological resource protection measures.

Table 4-1 explains how the construction-related indirect impacts would be avoided, minimized, and mitigated to less-than-significant levels with incorporation of the biological resource

[23] Mesopredators occupy trophic positions (i.e., positions on the food chain) below apex predators (i.e., species that occupy the top trophic position in a community), which are often large-bodied and specialized hunters.

protection measures. Table 4-1 organizes species by taxonomic group, and within each taxonomic group, the species are listed alphabetically by their sensitivity status, with federally and/or state-listed species addressed first and the remainder of the species addressed second.

(1) Generation of Fugitive Dust

Excessive dust can decrease the vigor and productivity of habitat through effects on light and penetration, as well as photosynthesis, respiration, transpiration; increased penetration of phytotoxic gaseous pollutants; and increased incidence of pests and diseases.

MM-BTR-DCP would minimize the effects of dust during construction by requiring the implementation of a dust control plan that would require construction-related dust to be suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. Therefore, MM-BTR-DCP would reduce excessive dust through dust suppression during construction. Additionally, if areas that are temporarily impacted during construction remain bare and disturbed, dust may be generated. Therefore, restoration of temporary impacts (MM-BTR-R) would help prevent future adverse effects of dust generation through re-seeding the disturbed area.

(2) Construction-Related Noise and Vibration

Construction noise may affect essential behavioral activities of wildlife in several ways. Excessive noise may affect birds, for example, in at least four ways: (1) Noise may be annoying and cause birds to abandon nests that are otherwise suitable; (2) noise can be stressful and may raise the level of stress hormones, interfering with sleep and other activities; (3) intense noise can cause permanent injury to the auditory system; and (4) noise can interfere with acoustic communication by masking important sounds or sound components (Dooling 2006). Similar effects may occur in other taxa. Noise may interfere with communication in toads and frogs that use calls to advertise their location and attract mates (e.g., Barrass and Cohn 1984). Loud noise, such as off-road vehicles, may damage the hearing of some terrestrial species (Berry 1980; Brattstrom and Bondello 1983).

Vibration caused by construction equipment may affect essential behavioral activities and the habitat of wildlife in several ways. Vibration from equipment operating in creeks may affect semi-aquatic species, causing them to abandon areas. Vibration may also directly disturb terrestrial species that occupy burrows, dens, and depressions, such as rodents, coyotes, badgers (*Taxidea taxus*), and lagomorphs (rabbits and hares), causing them to abandon these areas. Excessive vibration might cause the collapse of burrow systems and dens in areas with highly friable soils.

General construction-related avoidance and minimization measures (MM-BTR-C) would minimize the potential effects of noise and vibration on wildlife by limiting work to designated construction areas and limiting vehicle speeds to 15 miles per hour (mph). Limiting construction work to designated construction areas provides areas for wildlife to relocate away from construction areas and lower speeds reduces the noise emitted and vibrations from construction-related vehicles and equipment.

(3) Increased Abundance of Urban-Related Species

Urban-related species, including mesopredators, urban-related predators, and stray and feral cats (*Felis catus*) and dogs (*Canis lupus familiaris*) can outcompete smaller native species for available resources, and increase predation rates, thus reducing the distribution and populations of vulnerable native species (Crooks and Soulé 1999).

Urban-related species, such as crows (*Corvus brachyrhynchos*) and ravens (*Corvus corax*), seagulls (Laridae), skunks, and raccoons, may be attracted to food waste and their populations may artificially increase in areas where this food is available. Thus, general construction-related avoidance and minimization measures (MM-BTR-C), which requires that animal-resistant trash receptacles be used on constructions sites and prohibits littering, would reduce the likelihood that food discarded by construction personnel would attract and increase the number of urban-related species because it would be thrown way in animal-resistant trash receptacles. MM-BTR-C also prohibits construction/contractor personnel from bringing pets onto construction sites that could either escape or be left behind on site.

(4) Nighttime Lighting

Lighting may affect essential behavioral activities, physiology, population ecology, and ecosystems of both diurnal and nocturnal wildlife. Longcore and Rich (2004) call these effects "ecological light pollution" and identify three types of effects: (1) chronic or periodically increased illumination, (2) unexpected changes in lighting, and (3) direct glare. Ecological light pollution directly associated with construction would ultimately be temporary, but it may be considered chronic to some extent in terms of effects on wildlife. For example, lighting for security and public safety in some construction areas may extend for several months or more, thus potentially disrupting critical phases of species' life cycles, such as reproduction, or causing animals to abandon lighted areas. Other lighting impacts may be short-term or unexpected. Lighting for nighttime construction or maintenance of construction equipment typically involves high-intensity lighting systems that may have very wide light sheds and high glare values. Vehicle ingress and egress at construction sites may occur during twilight or nighttime hours (especially during winter months), resulting in unexpected changes in lighting.

Examples of the effects of nighttime lighting on wildlife include: (1) artificially expanding behavioral repertoires, such as foraging, of normally diurnal or crepuscular species into nighttime periods; (2) disorienting nocturnal species; (3) attraction to lights resulting in collisions with structures or increased predation of species attracted to lights; and (4) repulsion of nocturnal wildlife by lights causing them to avoid lighted areas in their normal home ranges. Additionally, wildlife reproduction may be affected by lighting in various ways, such as annoying individuals and causing them to abandon nests that are otherwise perfectly suitable. At the level of community ecology, ecological light pollution may affect competition and predation (Longcore and Rich 2004). For example, species groups that normally partition foraging periods in relation to ambient light levels may be in direct competition under artificial light conditions. Likewise, species that are adapted to higher light levels (e.g., crepuscular species) may outcompete strictly nocturnal species that normally forage in the darkest part of the night.

MM-BTR-C (general construction-related avoidance and minimization measures) requires construction activities within 50 feet of the outside edge of the proposed project footprint containing habitat for special-status wildlife would be prohibited between sunset and sunrise, and all construction-related lighting would be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the proposed project footprint containing habitat for special-status wildlife would be directed away from natural areas. Limiting construction activities to daytime hours within 50 feet of habitat for special-status wildlife would minimize the effects that light pollution has on nocturnal and diurnal species. Additionally, if lighting is necessary during nighttime hours for maintenance, security patrols, and emergencies, the lighting would be directed away from natural areas, which would also minimize the effects that light pollution has on species.

(5) Increased Human Activity and Vehicle/Fence Collisions

Increased human activity in construction areas from construction personnel could affect essential behavioral activities and physiology of wildlife. Similar to noise and lighting effects, increased human activity could disturb nocturnal animals during their rest or sleep periods, annoying them and causing them to abandon nests or den sites, as well as disrupting their normal biological rhythms and raising the level of stress hormones. Abandonment (even temporary) of active nests or dens increases the risk to eggs, nestlings, fledglings, and other dependent young. Flushing animals from nests, dens, and other refuges also increases their risk of injury or mortality from collisions with construction equipment and other vehicles, as well as predation. Human presence may also alter the spatial behavior of animals, causing them to avoid certain parts of their home range, which may prevent them from using critical resources, such as water.

Temporary fencing may provide some protection for wildlife by keeping them out of construction zones, but also may inhibit the movement of some species and many be a collision hazard. Disrupting the ability of these species to move freely throughout their ranges may alter their foraging and social behavior, and may expose them to greater risks in other areas they may normally avoid or use less frequently due to lower habitat suitability, greater risks of predation, or greater risks of vehicle collisions.

General construction-related avoidance and minimization measures (MM-BTR-C) would minimize the potential effects of increased human activity and vehicle/fence collisions on species by limiting work to designated construction areas. Limiting construction work to designated construction areas provides areas for wildlife to relocate away from construction areas and clearly demarcates where workers must not enter to minimize the effects of human activities, such as trampling habitat or species. Additionally, MM-BTR-C limits vehicle speeds to 15 mph, which allows drivers adequate braking time to avoid collisions with wildlife.

(6) Release of Chemical Pollutants

The release of chemical pollution (fuel, oil, lubricants, paints, release agents, and other construction materials) and use of herbicides, including pesticides, may also affect habitat for species and the species directly.

The release of chemical pollutants would be avoided and minimized by MM-BTR-C because this measure requires staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents be located outside the state-jurisdictional channels and within the designated proposed project footprint. This measure reduces the likelihood of chemical releases into stream channels, which could have deleterious effects on semi-aquatic species and ensure that staging and storage areas do not encroach on open spaces, thus increasing the potential for chemicals to be released into avoided areas. Additionally, MM-BTR-C requires stationary equipment, such as motors, pumps, generators, compressors, and welders, located within or adjacent to state-jurisdictional waters be positioned over drip-pans or other containment solution in order to contain chemical releases. Prior to refueling and lubrication, vehicles and other equipment shall be moved away from the state-jurisdictional channels to avoid accidental spills into stream channels, which could have harmful effects on semi-aquatic species. Compliance with weed and pest control regulations (MM-BTR-PCR) would minimize the effects of pesticides on special-status species by following restrictions mandated by the U.S. Environmental Protection Agency (EPA) and California Department of Pesticide Regulation. Compliance with these regulations avoids and minimizes potential misuse of pesticides, such as requiring that pesticides be applied by a certified licensed pest control applicator trained in the type, amount, and schedule of application.

(7) Degradation of Water Quality

Short-term temporary, construction-related hydrologic alterations may affect adjacent and downstream riparian vegetation and nesting birds, and semi-aquatic species (e.g., frogs, toads, and some reptiles). Short-term temporary water quality impacts potentially occurring as a result of the proposed project include chemical and toxic compound pollution (fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation.

MM-BTR-WQ requires implementation of a Water Quality Technical Report (WQTR), which includes measures that require erosion and sediment control BMPs to be implemented during construction. More specifically, the proposed project would comply with the requirements of the statewide Construction General Permit for discharges from construction sites, including determination of the proposed project risk level and development of a Stormwater Pollution Prevention Plan (SWPPP) tailored to address the specified risk level. The SWPPP would describe BMPs to be implemented to address each phase of construction, including erosion controls (e.g., physical stabilization through hydraulic mulch, dust control, stockpile protection, etc.), sediment controls (e.g., perimeter protection, storm drain inlet protection, etc.), waste and materials management (storage and secondary containment for solid and liquid wastes, spoil response program and materials, etc.), non-stormwater management (e.g., water conservation practices, vehicle and equipment cleaning and fueling practices, etc.), and training and education (e.g., inclusion of "Qualified SWPPP Developers" (QSDs) and "Qualified SWPPP Practitioners" (QSPs), contractor training, proper signage, etc.). The SWPPP would also detail planned inspections, maintenance, monitoring, and sampling practices to be implemented before and after storm events, as well as routine site inspections, BMP maintenance, and monitoring of non-visible pollutants in the case of a spill or leak.

Compliance with the Construction General Permit, including the development and implementation of a SWPPP, would ensure that water quality is not degraded during construction and, thus, the biological resources indirectly impacted by degradation of water quality would be avoided and minimized through implementation of measures included in the WQTR.

Table 4-1
**Summary of Potential Construction-Related Indirect Impacts to
Special-Status Species, Recommended Biological Protection Measures, and Significance**

Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
Plants			
Special-status plants, including calico monkeyflower, Piute Mountains navarretia, and Tejon poppy	• Changes in hydrology resulting from construction, including sedimentation and erosion • Generation of fugitive dust • Introduction of invasive species that could alter habitat • Release of chemical pollutants (including herbicides) • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, MM-BTR-T, and MM-BTR-WQ	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related impacts through requiring any excess materials containing invasive plant species to be removed from the site and not included in mulch, which would help prevent future adverse effects of introduced invasive plants that can alter the composition of the habitat; and requiring vehicle maintenance restrictions to avoid chemical spills and erosion control measures, which would reduce potential impacts to water quality. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementing a dust control plan, which would require that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status plants by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conducting biological monitoring during construction activities, providing maps showing locations of special-status plant populations and exclusion areas, and requiring compliance with all environmental documents and permits. • MM-BTR-WQ (implement measures included in the WQTR) would require the implementation of BMPs to protect surface water quality (i.e., from pollutants, erosion, sedimentation) that could indirectly affect special-status plants.
Amphibians and Reptiles			
silvery legless lizard, San Joaquin coachwhip (snake), and Blainville's horned lizard (None/SSC); blunt-nosed leopard lizard (BNLL; FE/SE; FP)	• Construction vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators, urban-related predators, and pets. Examples of potential mesopredators include: (1) skunks and raccoons (all), (2) red foxes (BNLL), and (3) crows and ravens (horned and legless lizard and coachwhip) • Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration, by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.

Table 4-1
Summary of Potential Construction-Related Indirect Impacts to Special-Status Species, Recommended Biological Protection Measures, and Significance

Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
two-striped garter snake (None/SSC)	• Construction vibration • Generation of fugitive dust • Hydrological alterations • Increased abundance of urban-related species, including mesopredators (e.g., skunks and raccoons), non-native predators (e.g., bullfrogs and African clawed frogs) and pets • Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation • Water quality degradation from erosion and sedimentation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, MM-BTR-T, and MM-BTR-WQ	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration, by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; vehicle maintenance restrictions to avoid chemical spills; and requiring erosion control measures. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the EPA and California Department of Pesticide Regulation that could indirectly affect two-striped garter snake. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits. • MM-BTR-WQ (implement measures included in WQTR) would require the implementation of BMPs to protect surface water quality (i.e., from pollutants, erosion, sedimentation) that could indirectly affect two-striped garter snake.
western spadefoot (toad) (None/SSC)	• Construction vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., skunks and raccoons) and pets. • Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Nighttime work • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation • Water quality degradation from erosion and sedimentation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, MM-BTR-T, and MM-BTR-WQ	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration, by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; vehicle maintenance restrictions to avoid chemical spills; and requiring erosion control measures. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the EPA and California Department of Pesticide Regulation that could indirectly affect western spadefoot. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits. • MM-BTR-WQ (implement measures included in WQTR) would require the implementation of BMPs to protect surface water quality (i.e., from pollutants, erosion, sedimentation) that could indirectly affect western spadefoot.

Table 4-1
Summary of Potential Construction-Related Indirect Impacts to Special-Status Species, Recommended Biological Protection Measures, and Significance

Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
Birds			
bald eagle (Delisted, BCC, MBTA/SE, FP) and golden eagle (BCC, MBTA/FP)	• Increased human activity • Pesticides that can harm individuals or reduce their prey	MM-BTR-C, MM-BTR-T, and MM-BTR-PCR	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts by limiting work to designated construction areas, requiring animal-proof trash receptacles to avoid attracting non-native species, prohibiting litter and pets on construction sites, restricting work near open space areas to daytime (primarily benefits bald eagle), limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife, vehicle maintenance restrictions to avoid chemical spills, and requiring erosion control measures. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts, including vehicle and fence collisions, by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation.
burrowing owl (BCC, MBTA/SSC)	• Construction-related noise and vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., raccoons, skunks, red foxes), and pets (dogs and cats) • Increased human activity • Increased vehicle and fence collisions • Introduction of invasive species that could alter habitat • Nighttime lighting • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, and fence collisions by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts, including vehicle and fence collisions, by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.
California condor (FE, MBTA/SE, FP)	• Construction-related microtrash • Human disturbances	MM-BTR-C and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, and fence collisions by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts, including microtrash buildup, vehicle and fence collisions, by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.

Table 4-1
Summary of Potential Construction-Related Indirect Impacts to Special-Status Species, Recommended Biological Protection Measures, and Significance

Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
ferruginous hawk (BCC, MBTA/None) and Swainson's hawk (BCC, MBTA/ST)	• Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Nighttime light • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.
loggerhead shrike, Oregon vesper sparrow, and yellow warbler (BCC, MBTA/SSC); purple martin (MBTA/SSC), Nuttall's woodpecker, Lawrence's goldfinch, oak titmouse, and black-chinned sparrow (BCC, MBTA/None)	• Generation of fugitive dust and noise • Increased abundance of urban-related species, including mesopredators (e.g., raccoons and, opossums, striped skunks), urban-related predators (e.g., crows and ravens), and pets (primarily cats). • Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Nighttime lighting • Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or contaminate or reduce their prey and other food sources • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including noise, through limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.
northern harrier (MBTA/SSC), tricolored blackbird (BCC, MBTA/SE)	• Changes in hydrology resulting from construction, including sedimentation and erosion • Construction-related noise and vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., red foxes), and pets (dogs and cats) • Increased human activity • Increased vehicle • Increased fence collisions (northern harrier) • Introduction of invasive species that could alter habitat • Nighttime lighting	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, MM-BTR-T, and MM-BTR-WQ	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker, vehicle impacts, including vibration and noise, and fence collisions by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; vehicle maintenance restrictions to avoid chemical spills; and requiring erosion control measures. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the

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Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
	• Release of chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation • Water quality degradation from erosion and sedimentation.		habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts, including vehicle and fence collisions (i.e., northern harrier), by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits. • MM-BTR-WQ (implement measures included in WQTR) would require the implementation of BMPs to protect surface water quality (i.e., from pollutants, erosion, sedimentation) that could indirectly affect northern harrier and tricolored blackbird.
Mammals			
Buena Vista Lake shrew (FE/SSC)	• Construction-related noise and vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., red foxes), and pets (dogs and cats). • Increased human activity • Introduction of invasive species that could alter habitat • Nighttime lighting • Release chemical pollutants such as oils and grease from vehicles and pesticides that can harm individuals or reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conducting biological monitoring during construction activities, and requiring compliance with all environmental documents and permits.
San Joaquin kit fox (FE/ST)	• Construction-related noise and vibration • Generation of fugitive dust • Entrapment • Increased abundance of urban-related species, including mesopredators (e.g., red foxes and raccoons) and pets • Increased human activity and potential harassment from construction workers • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Nighttime work • Release of chemical pollutants and rodenticides that can reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, through limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; covering all excavated, steep-walled holes or trenches more than 2 feet deep or providing escape routes, and inspecting all pipes, culverts, or similar structures with a diameter of 4 inches or more that are stored at a construction site for one or more overnight periods for special-status wildlife species to avoid entrapment; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations), would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conducting biological monitoring during construction activities, and requiring compliance with all environmental documents and permits.

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Nelson's antelope squirrel (None/ST) and San Diego black-tailed jackrabbit (None/SSC)	• Construction-related noise and vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., red foxes) and pets • Construction-related nighttime lighting that could affect nocturnal behavior (jackrabbit only) • Increased human activity • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Release of chemical pollutants, herbicides, and rodenticides that can harm individuals or reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	• MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, through limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species, prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conducting biological monitoring during construction activities, and requiring compliance with all environmental documents and permits.
American badger (None/SSC)	• Construction vibration • Construction-related noise and vibration • Generation of fugitive dust • Increased abundance of urban-related species, including mesopredators (e.g., red foxes, and raccoons) and pets • Increased human activity and potential harassment from construction workers • Increased vehicle collisions • Introduction of invasive species that could alter habitat • Nighttime work • Release of chemical pollutants and rodenticides that can reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	**Less than Significant** • MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker and vehicle impacts, including vibration and noise, through limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; limiting vehicle speeds to 15 mph or less to avoid collisions with wildlife; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations), would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.

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Species (Federal/State Status)[1]	Summary of Potential Construction-Related Indirect Impacts	Applicable Recommended Biological Protection Measures	Explanation of Mitigation Value of Recommended Measures, and Significance Following Mitigation
pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat (None/SSC)	• Construction-related noise • Increased abundance of urban-related species (including mesopredators (e.g., raccoons)) and pets • Increased human activity • Introduction of invasive species that could alter habitat • Nighttime work • Release of chemical pollutants and pesticides that can reduce their prey • Temporary removal of vegetation.	MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-T	• MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related worker impacts, including noise, through limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; restricting work near open space areas to daytime; and vehicle maintenance restrictions to avoid chemical spills. • MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII. • MM-BTR-PCR (compliance with weed and pest control regulations) would minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation. • MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of the habitat if introduced during restoration or allowed to passively colonize the area post-construction. • MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, conducting biological monitoring during construction activities, and requiring compliance with all environmental documents and permits.

Note:
[1] **Federal Designations:**

BCC USFWS Birds of Conservation Concern
Delisted Federally delisted
FE Federally listed as endangered
FT Federally listed as threatened
MBTA Migratory Bird Treaty Act

State Designations:

FP CDFW protected and fully protected species
SE State listed as endangered
SC State candidate
SSC California Species of Special Concern
ST State listed as threatened

INTENTIONALLY LEFT BLANK

(8) Introduction of Invasive Plant Species

Non-native invasive plant species can alter ecosystem processes, such as nutrient cycling, hydrologic cycles, and frequencies of wildfires, erosion, and sediment deposition. Invasive plants interfere in ecosystem functions by outcompeting and displacing native plants and animals, by providing refuge for non-native animals, and by hybridizing with native species (Bossard et al. 2000). Invasive species can colonize virtually any natural area that is subject to some kind of disturbance. Riparian systems are also extremely vulnerable to invasive plants such as giant reed, tamarisk, and pampas grass (*Cortaderia* sp.) because of the highly effective transport of these species along streams. These species can dominate the biomass of riparian communities where they become established and choke out the native vegetation.

If during construction, areas that are temporarily impacted remain bare and disturbed, invasive species can more readily colonize in these area as described above. Therefore, restoration of temporary impacts with non-invasive species (MM-BTR-R) would help prevent future adverse effects associated with leaving bare ground in temporarily disturbed areas, including the colonization of invasive plants in non-developed areas.

4.5.2 Threshold Bio-2

Would the project 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 CDFW or USFWS?

This analysis considers the previously delineated CDFW- and RWQCB jurisdictional areas delineated in Appendices E-1 and E-2, additional USGS stream features as discussed in Section 2.3 and Appendix E-3, and other vegetation communities considered sensitive by CDFW under CEQA (CDFG 2010a) that occur in the study area. Sensitive natural communities include the following vegetation alliances: narrowleaf goldenbush-bladderpod spiderflower scrub, giant wild rye grassland, purple needle grass grassland, red willow thickets, Fremont cottonwood forest, and valley oak woodland.

4.5.2.1 Construction-Related (Short-Term Temporary) Direct Impacts

Absent the recommended biological resource protection measures, potential construction-related direct impacts to CDFW- and RWQCB-jurisdictional areas, other USGS stream features and sensitive natural communities could result from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction.

Accidental clearing, trampling, or grading outside designated construction zones may occur during construction activities for various reasons, including incorrect construction grading plans, human error in interpreting grading plans, human error or accidents in operating construction equipment, and misunderstandings or disregard by construction personnel in adhering to construction plan requirements, including avoidance of natural resources. (Note: direct impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive natural communities within the proposed project footprint are addressed in Section 4.6, Operations-Related (Long-Term Permanent) Impacts).

Accidental clearing, trampling, or grading of outside designated construction zones would be a significant impact to riparian and sensitive natural communities. A brief description of these potential construction-related direct impacts separated by region (foothills and valley floor) is provided below.

Foothill

Minor ground-disturbing impacts within the foothills associated with trail construction and a limited amount of development associated with Planning Area 5b and road widening along Edmonston Pumping Plant Road could result in short-term temporary direct impacts resulting to nearby CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive vegetation communities resulting from accidental clearing, trampling, or grading of areas outside designated construction zones.

Valley Floor

Construction activities in the valley floor adjacent to streams, including Grapevine Creek and its tributaries and, the tributary to Cattle Creek, and Tecuya Creek, could result in short-term temporary direct impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and Fremont cottonwood forest alliance, the only sensitive vegetation communities that occurs in the valley floor, from accidental clearing, trampling, or grading outside designated construction zones. There are also temporary impacts to 1.6 acres (215 linear feet) of intermittent non-wetland waters of the state that will be restored following construction of the proposed bridge crossings. Following construction of the proposed bridges, temporarily impacted areas would be recontoured to pre-disturbance topography. Construction activities in the valley floor adjacent to streams, including Grapevine Creek and its tributaries and, the tributary to Cattle Creek, and Tecuya Creek, could result in short-term temporary direct impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and Fremont cottonwood forest alliance, the only sensitive vegetation communities that occurs in the valley floor, from accidental clearing, trampling, or grading outside designated construction zones.

MM-BTR-C and MM-BTR-T would avoid and minimize potential short-term temporary direct impacts to CDFW- and RWQCB-jurisdictional areas because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to jurisdictional resources outside the designated construction area. Specifically, state-jurisdictional channels within 50 feet of the construction area would be demarcated in the field and avoided. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and areas outside the designated proposed project footprint would be avoided.

Potential construction-related direct impacts to CDFW- and RWQCB-jurisdictional areas would be less than significant with incorporation of MM-BTR-C and MM-BTR-T.

4.5.2.2 Construction-Related (Short-Term Temporary) Indirect Impacts

Construction-related indirect impacts could affect the areas along Grapevine Creek, the tributary to Cattle Creek, and Tecuya Creek and could affect CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive vegetation communities in the foothills at the interface of the proposed project footprint and open space where these jurisdictional areas are present.

Potential short-term or temporary indirect impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive vegetation communities would primarily result from construction activities and include impacts related to, or resulting from, the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants (including herbicides); introduction of invasive plant species that may alter the composition of the community if introduced during restoration or allowed to passively colonize the area post-construction; and future adverse effects associated with leaving bare ground after the temporary removal of vegetation, such as increased dust and erosion. These potential short-term or temporary indirect impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive vegetation communities would be significant in the absence of the following biological resource protection measures:

- MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related impacts through requiring any excess materials containing invasive plant species to be removed from the site and not included in mulch, which would help prevent future adverse effects of introduced invasive plants that can alter the composition of jurisdictional streams, and requiring vehicle maintenance restrictions to avoid chemical spills and erosion control measures, which would reduce potential impacts to water quality.

- MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction, such as impacts to riparian vegetation or water resources, by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII.
- MM-BTR-PCR (compliance with weed and pest control regulations), which limits weed and pest control compounds that could indirectly affect jurisdictional resources through inadvertent removal of vegetation or contamination of water resources.
- MM-BTR-R (restoration of temporary impacts with non-invasive species) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of streams if introduced during restoration or allowed to passively colonize the area post-construction.
- MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential indirect construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, which would explain each of the construction-related requirements, and by conducting monitoring during construction activities to ensure construction/contractor personnel are complying with these requirements. The WEAP training, in addition to reinforcing the requirements of the construction-related measures through monitoring and compliance reporting, aids in avoiding and minimizing indirect impacts.
- MM-BTR-WQ (implement measures included in the WQTR) would require erosion and sediment control BMPs to be implemented during construction that would avoid and minimize the potential indirect effects that changes in hydrology and water quality may have on jurisdictional streams. More specifically, the proposed project would comply with the requirements of the statewide Construction General Permit for discharges from construction sites, including determination of the proposed project risk level and development of a SWPPP tailored to address the specified risk level. The SWPPP would describe BMPs to be implemented to address each phase of construction, including erosion controls, sediment controls, waste and materials management, non-stormwater management, and training and education. The SWPPP would also detail planned inspections, maintenance, monitoring, and sampling practices to be implemented before and after storm events, as well as routine site inspections, BMP maintenance, and monitoring of non-visible pollutants in the case of a spill or leak.

Potential short-term temporary, construction-related indirect impacts to CDFW- and RWQCB-jurisdictional areas and other USGS stream features and sensitive vegetation communities would be less than significant with incorporation of MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, MM-BTR-T, and MM-BTR-WQ.

4.5.3 Threshold Bio-3

Would the project 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?

The proposed project site and off-site impact areas do not contain waters, including wetland waters, subject to federal jurisdiction under Section 404 of the Clean Water Act (see Appendix E-1) and, therefore, the proposed project would not impact or have a substantial adverse effect on federally protected wetland waters, as defined by Section 404 of the Clean Water Act.

4.5.4 Threshold Bio-4

Would the project 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?

4.5.4.1 Construction-Related (Short-Term Temporary) Direct Impacts

Absent the recommended biological resource protection measures, potential construction-related direct impacts to habitat uses for wildlife movement could result from unintentional clearing, trampling, or grading outside of the proposed project footprint during construction. Accidental clearing, trampling, or grading outside designated construction zones may occur during construction activities for various reasons, including incorrect construction grading plans, human error in interpreting grading plans, human error or accidents in operating construction equipment, and misunderstandings or disregard by construction personnel in adhering to construction plan requirements, including avoidance of natural resources. (Note: direct impacts to wildlife movement resulting from permanent impacts within the proposed project footprint are addressed in Section 4.6, Operations-Related (Long-Term Permanent) Impacts).

Potential construction-related direct impacts to habitat for wildlife that could affect their movement would be a significant impact. These impacts would be avoided and minimized through implementation of MM-BTR-C (general construction-related avoidance and minimization measures) and MM-BTR-T (environmental awareness training, biological monitoring, and compliance), which would avoid and minimize potential short-term temporary direct impacts to wildlife movement because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated construction areas and sensitive biological resources be avoided. Additionally, areas that are directly but temporarily impacted shall be recontoured to natural grade and revegetated with application of a native seed mix in accordance with MM-BTR-R (restoration of temporary impacts to uplands with non-invasive species). The application of a native seed mix would promote passive restoration of accidental impact areas.

Potential construction-related direct impacts to wildlife movement would be less than significant with incorporation of MM-BTR-C, MM-BTR-R, and MM-BTR-T.

4.5.4.2 Construction-Related (Short-Term Temporary) Indirect Impacts

Construction-related indirect impacts could affect wildlife movement on the valley floor and in the valley floor riparian areas along Grapevine Creek and the tributary to Cattle Creek. Additionally, construction-related indirect impacts could affect wildlife movement in the foothills at the interface of the proposed project footprint and open space.

Short-term temporary indirect impacts to wildlife movement by terrestrial species that are primarily diurnal may be inhibited from moving through areas adjacent to construction activities due to construction-related noise, ground vibration, an increase in non-native animal species (including mesopredators and urban-related predators (e.g., crows, ravens, skunks, raccoons, and red foxes)) and pets, increased vehicle collisions, and increased human activity. Movement by species that are either primarily nocturnal or active both diurnally and nocturnally may be less affected by construction-related indirect impacts than species that are primarily diurnal. Short-term temporary indirect impacts to movement of species that are active during nighttime could include an increase in urban-related species (including mesopredators (e.g., red foxes)), increased human activity, and nighttime lighting. Species with more flexible daily activity patterns could shift their movement to off-hours to avoid construction activities. These potential short-term temporary, construction-related indirect impacts to wildlife movement would be avoided and minimized through implementation of MM-BTR-C (general construction-related avoidance and minimization measures) and MM-BTR-T (environmental awareness training, biological monitoring, and compliance).

MM-BTR-C would avoid and minimize constructing-related indirect impacts to wildlife movement because the measure:

- Minimizes the potential effects of construction-related workers, vehicle impacts, including collisions, noise and vibration, through limiting work to designated construction areas. Limiting construction work to designated construction areas provides areas for wildlife to relocate away from construction areas and lower speeds reduce the noise emitted and vibrations from construction-related vehicles and equipment.
- Requires animal-resistant trash receptacles to avoid attracting urban-related predators. Requiring that animal-resistant trash receptacles be used on constructions sites would reduce the likelihood that food discarded by construction personnel would attract and increase the number of urban-related species because it would be thrown away in animal-resistant trash receptacles.
- Prohibits litter and pets on construction sites. This would reduce the likelihood that food discarded by construction personnel would attract and increase the number of urban-related species because it would be thrown away in animal-resistant trash receptacles. Prohibiting litter also reduces the likelihood of microtrash being present on site, which could adversely affect California condors.
- Restricts construction activities within 50 feet of the outside edge of the development between sunset and sunrise (with the exception of lighting for maintenance, security patrols, and emergency activities (an emergency is defined as an imminent threat to life or significant property)). Limiting construction activities to daytime hours within 50 feet of habitat would minimize the effects that light pollution has on nocturnal and diurnal species. Additionally, if lighting is necessary during nighttime hours for maintenance, security patrols, and emergencies, the lighting would be directed away from natural areas, which would also minimize the effects that light pollution has on wildlife movement.
- Limits vehicle speeds to 15 mph or less, which allows drivers adequate braking time to avoid collisions with wildlife.

MM-BTR-T (environmental awareness training, biological monitoring, and compliance) minimizes the potential effects of construction-related impacts to wildlife movement by requiring all personnel to attend WEAP training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits.

Potential short-term temporary, construction-related indirect impacts to wildlife movement would be less than significant with incorporation of MM-BTR-C and MM-BTR-T.

4.5.5 Threshold Bio-5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

4.5.5.1 Construction-Related (Short-Term Temporary) Direct Impacts

Foothills

All of the oak trees on site are within the foothills. None of the vegetation communities with oak trees (i.e., the Fremont cottonwood forest alliance and valley oak woodland alliance) are located in the proposed project footprint. Impacts to oak trees during construction are typically associated with ground disturbance that occurs within 5 to 15 feet of an oak tree's dripline. The proposed grading near oak trees is limited to grading for new trails that are located 15 feet or more from the dripline of the oak trees; therefore, the proposed project's grading activities would not impact oak trees.

Accidental clearing, trampling, or grading of outside designated construction zones could result in significant construction-related direct impacts to oak trees. However, potential construction-related direct impacts to oak trees would be avoided through implementation of MM-BTR-C (general construction-related avoidance and minimization measures) and MM-BTR-T (environmental awareness training, biological monitoring, and compliance). These measures would avoid and minimize potential short-term temporary direct impacts to oaks because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to oak resources outside the designated construction area. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and all oak trees must be avoided.

Potential construction-related direct impacts to oak trees would be less than significant with incorporation of MM-BTR-C and MM-BTR-T.

Valley Floor

There are no oak trees in the valley floor in the study area, and therefore, no direct construction-related impacts to oak trees would occur in the valley floor of the study area.

4.5.5.2 Construction-Related (Short-Term Temporary) Indirect Impacts

Foothills

All of the oak trees on site are within the foothills. The proposed grading near oak trees is limited to grading for new trails that are located 15 feet or more from the dripline of the oak trees; therefore, the proposed project grading activities would not indirectly impact oak trees. Construction-related indirect impacts could affect oak trees in the foothills, where they occur, at the interface of the proposed project footprint and open space, and these indirect impacts would be significant in the absence of biological resource protection measures.

Potential short-term or temporary indirect impacts to oak trees would primarily result from construction activities and include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; the release of chemical pollutants (including herbicides); introduction of invasive plant species that may alter the composition of oak communities if introduced during restoration or allowed to passively colonize the area post-construction; and future adverse effects associated with leaving bare ground after the temporary removal of vegetation, such as increased dust and erosion.

These potential short-term or temporary indirect impacts to oak trees would be avoided and minimized through implementation of the following measures:

- MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related impacts to oak trees through requiring any excess materials containing invasive plant species to be removed from the site and not included in mulch, which would help prevent future adverse effects of introduced invasive plants that can alter the composition of oak communities; and requiring vehicle maintenance restrictions to avoid chemical spills and erosion control measures, which would reduce potential impacts to water quality.
- MM-BTR-DCP (preparation and implementation of a dust control plan), which would minimize the effects of dust during construction by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII.
- MM-BTR-PCR (compliance with weed and pest control regulations), which limits weed and pest control compounds that could indirectly affect oak resources.
- MM-BTR-R (restoration of temporary impacts with non-invasive species), which would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that

may alter the composition of oak communities if introduced during restoration or allowed to passively colonize the area post-construction.

- MM-BTR-WQ (implement measures included in the WQTR) would require erosion and sediment control BMPs to be implemented during construction that would avoid and minimize the potential indirect effects that changes in hydrology and water quality may have on oak resources. More specifically, the proposed project would comply with the requirements of the statewide Construction General Permit for discharges from construction sites, including determination of the proposed project risk level and development of a SWPPP tailored to address the specified risk level. The SWPPP would describe BMPs to be implemented to address each phase of construction, including erosion controls, sediment controls, waste and materials management, non-stormwater management, and training and education. The SWPPP would also detail planned inspections, maintenance, monitoring, and sampling practices to be implemented before and after storm events, as well as routine site inspections, BMP maintenance, and monitoring of non-visible pollutants in the case of a spill or leak.

Potential short-term temporary, construction-related indirect impacts to oak trees would be less than significant with incorporation of MM-BTR-C, MM-BTR-DCP, MM-BTR-PCR, MM-BTR-R, and MM-BTR-WQ.

Valley Floor

There are no oak trees in the valley floor in the study area, and therefore, no indirect construction-related impacts to oak trees would occur in the valley floor of the study area.

4.5.6 Threshold Bio-6

Would the project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP?

Foothills

Tehachapi Uplands Multiple Species Habitat Conservation Plan

As described in Section 3.1.1.1, the proposed project open space generally abuts the TU MSHCP covered lands in the foothills. The adjacent TU MSHCP lands are designated as "Mitigation Lands" under the TU MSHCP, and include a variety of use limitations, including the preclusion of urban development activities and active recreation. The TU MSHCP open space lands that are adjacent to the proposed project open space are over 1 mile from the proposed Grapevine development area where construction would occur. Therefore, potential short-term temporary effects (e.g., construction-related noise, dust) associated within the proposed project would not affect these lands. Therefore, the proposed project would not conflict with the provisions of this HCP.

Valley Floor

There are no adopted HCPs, NCCPs, or other approved local, regional, or state HCPs in the valley floor areas of the study area.

4.6 Operations-Related (Long-Term Permanent) Impacts

Operations-related, long-term permanent impacts include permanent direct impacts that result in the direct loss of biological resources due to development (i.e., the permanent loss of wildlife habitat or the permanent loss of or harm to individual special-status plant and wildlife species from grading and buildout). Operations-related (long-term permanent) direct impacts were quantified by overlaying the proposed project footprint on GIS-mapped biological resources. Operations-related (long-term permanent) indirect impacts are those that result from the proximity of development to biological resources after construction. For example, increased development-related noise and lighting is a potential operations-related (long-term permanent) indirect impact. All the operations-related (long-term permanent) impacts are considered permanent. The Mitigation Area includes restoration and enhancement activities that could result in long-term indirect impacts to special-status species (i.e., potential introduction of Argentine ants (*Linepithema humile*)). The biological resources potential measures in Appendix A would apply to the restoration and enhancement activities and impacts would be less than significant with implementation of the measures. Appendix A-3 describes the restoration and enhancement activities and the potential effect on special-status species.

With the incorporation of recommended biological resource protection measures, long-term permanent direct and indirect impacts to biological resources would be reduced to less than significant. For example, MM-BTR-PCA requires species-specific pre-activity surveys, and, if present, there are specific avoidance and minimization measures to avoid direct impacts or take of species during operations and maintenance, which are described in more detail in Section 4.6.3 (Threshold Bio-1). MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve all of the calico monkeyflower, Tejon poppy, and 3,373 to 12,484 individuals (71% to 76%) of Piute Mountains navarretia and protect against edge and other urban-related effects, such as invasive species, urban runoff, and habitat fragmentation by providing substantial open space where the plants are located away from the urban-open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. MM-BTR-OOS (conservation of Off-Site Mitigation Area) requires the conservation of approximately 7,233 acres of Ranch lands, which would conserve a variety of biological resources in the San Joaquin Valley floor and adjacent foothills, including habitat for special-status species, jurisdictional resources, and habitat for wildlife movement (see Section 4.6.3). All recommended biological resource protection measures are described in full in Appendix A.

Potential long-term permanent indirect impacts to special-status biological resources would be less than significant with implementation of recommended biological resource protection measures, as discussed in Sections 4.6.3 through 4.6.8. A summary of the operations-related impacts in the foothills and valley floor are first summarized in Sections 4.6.1 and 4.6.2.

4.6.1 Foothills

There would be minor ground-disturbing direct impacts associated with trail construction (10 acres) and a limited amount of development associated with Planning Area 5b (79 acres) and road widening along Edmonston Pumping Plant Road (12 acres). As a result, the potentially significant direct impact to biological resources in the foothills is limited to direct impacts to Piute Mountains navarretia, which through conservation of 71% to 76% of the individuals on site in the foothills (MM-BTR-OS) would be less than significant. Impacts to special-status wildlife species associated with riparian habitat in the foothills would be less than significant because trails would be sited outside of riparian habitat and would not be impacted (MM-BTR-RMP); wildlife movement would be less than significant because conservation of the on–site open space, including the foothills, provides habitat that would serve as an east–west habitat linkage to large preserved habitat blocks east and west of the proposed project, contributing to a regional landscape habitat linkage in the southern San Joaquin Valley.

The proposed project could indirectly affect the biological resources in the foothills over the long-term (operations-related) at the urban-open space edge, but with mitigation provided in Sections 4.6.3 through 4.6.8, this impact would be less than significant.

4.6.2 Valley Floor

Within the study area, the majority of development would occur within the valley floor. During the Ranchwide Agreement process, the areas identified for conservation were determined to have higher conservation value than the lands in which future development, including the proposed project, is located. The proposed project would accordingly result in the loss of lower-quality valley floor habitat generally consisting of grazed and some irrigated lands on the valley floor.

More specifically, approximately 4,349 acres of natural lands (i.e., all areas excluding non-natural land covers) would be impacted by the proposed project in the valley floor. In addition to the proposed development, up to 100 acres of land zoned as Exclusive Agriculture in the central open space west of Planning Area 5b, north of Edmonston Pumping Plant Road, and east of Planning Area 5a and could be converted to agricultural uses and irrigated. This would result in the loss of up to 100 acres of valley floor habitat for grassland species. The lands that may be converted to agricultural land uses would be sited and designed to allow wildlife movement through and/or around the agricultural area such that east–west movement along the valley floor/foothill transition area would be maintained; the design parameters are described in more detail in MM-BTR-OS.

While the proposed project would result in direct and indirect impacts to the valley floor, these impacts would be avoided, minimized, and mitigated through recommended biological resource protection measures, including the preservation of 3,232 acres of on-site open space in the more biologically diverse foothills and biologically sensitive riparian areas in the valley floor, and 85 acres of land that consists of a 100-foot-wide band of land north of the aqueduct right-of-way that would support wildlife movement. In addition, conservation of the 7,233-acre Mitigation Area located in the San Joaquin Valley floor provides long-term conservation of high-quality habitat areas adjacent to other conservation lands within the Ranch. The Mitigation Area contains suitable habitat for San Joaquin kit fox, an "umbrella" species for a wider range of valley floor species that occur or have the potential to occur in the study area, including the following species that also require mitigation for loss of habitat: blunt-nosed leopard lizard, Blainville's horned lizard, San Joaquin coachwhip, bald eagle, golden eagle, burrowing owl, ferruginous hawk, loggerhead shrike, Oregon vesper sparrow, Nelson's antelope squirrel, American badger, special-status bats (pallid bat, western mastiff bat, western red bat, and Townsend's big-eared bat), and San Diego black-tailed jackrabbit. The Mitigation Area has higher-quality habitat than the proposed project footprint for valley floor species requiring mitigation and conserves a portion of the valley floor considered important for long-term conservation and recovery for kit fox, blunt-nosed leopard lizard, and other species addressed in the Recovery Plan (USFWS 1998).

Additionally, the proposed project could result in long-term permanent direct impact to waters of the state and other USGS stream features, which would be less than significant through implementation of a mitigation plan for waters of the state, which includes on-site restoration of temporary impacts, and off-site conservation of waters of the state within the same watershed (MM-BTR-WM). In addition to these direct effects, the proposed project could indirectly affect the biological resources in the valley floor over the long-term (operations-related) at the urban-open space edge, but with mitigation provided in Sections 4.6.3 through 4.6.8, this impact would be less than significant.

Potential operations-related direct and indirect impacts and associated recommended biological resource protection measures described in Sections 4.6.3 through 4.6.8 by significance threshold.

4.6.3 Threshold Bio-1

Would the project 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 CDFW or USFWS?

The special-status plant and wildlife species described in Sections 2.4 and 2.5 are analyzed in this section by potential long-term permanent direct and indirect impacts; recommended biological resource protection measures that reduce impacts to less-than-significant levels are provided for each species. In addition to the proposed development, up to 100 acres of land zoned as Exclusive Agriculture in the central open space west of Planning Area 5b, north of Edmonston Pumping Plant Road, and east of Planning Area 5a and could be converted to agricultural uses and irrigated. This would result in the loss of up to 100 acres of valley floor habitat for grassland species as described in Section 4.6.3.1.2.

4.6.3.1 Operations-Related (Long-Term Permanent) Direct Impacts

As described in the introduction to Section 4.6, long-term permanent, operations-related impacts include permanent direct impacts that result in the direct loss of biological resources due to development. The recommended biological resource protection measures focus on long-term planning and land use practices that would avoid or minimize potential direct impacts to biological resources, including preservation of 3,232 acres of on-site open space, 85 acres of open space in a 100-foot buffer north of the aqueduct, and conservation of 7,233 acres of the off-site Mitigation Area.

Within the study area, the majority of development would occur within the valley floor. During the Ranchwide Agreement process, the areas identified for conservation were determined to have higher conservation value than the lands in which the proposed project site is located, and, consequently, were designated to be preserved while the proposed project site was designated for development. The proposed project would accordingly result in the loss of lower-quality valley floor habitat.

In order to mitigate for the loss of valley floor habitat for some special-status species, a 7,233-acre area would be conserved. The Mitigation Area contains suitable habitat for San Joaquin kit fox, an "umbrella" species for a wider range of valley floor species that occur or have the potential to occur in the study area, including the following species that also require mitigation for loss of habitat: blunt-nosed leopard lizard, Blainville's horned lizard, San Joaquin coachwhip, bald eagle, golden eagle, burrowing owl, ferruginous hawk, loggerhead shrike, Oregon vesper sparrow, Nelson's antelope squirrel, American badger, special-status bats (pallid bat, western mastiff bat, western red bat, and Townsend's big-eared bat), and San Diego black-tailed jackrabbit. Additionally, the Mitigation Area has higher-quality habitat than the proposed project footprint for valley floor species requiring mitigation and conserves a portion of the valley floor considered important for long-term conservation and recovery for kit fox, blunt-nosed leopard lizard, and other species addressed in the Recovery Plan (USFWS 1998).

All recommended biological resource protection measures are described in full in Appendix A.

4.6.3.1.1 Special-Status Plants

Foothills

The calico monkeyflower would be conserved in proposed project open space, and therefore, no direct impacts to these species would occur. As described in Section 2.4, Tejon poppy (CRPR 1B.1) was identified in the study area in open space in 1999 west of I-5 (TRC 2013b), but was not observed at the 1999 location or elsewhere during the 2013 special-status plant survey. It is possible that the 1999 observation was mistakenly identified as Tejon poppy. However, the location of the mapped occurrence of Tejon poppy is within proposed project open space.

Of the 14 occurrences of Piute Mountains navarretia in the study area, one occurrence and a portion of two occurrences would be impacted by the proposed project. More specifically, approximately 71% to 76% (3,373 to 12,484 individuals) of the Piute Mountains navarretia on site would be conserved in proposed project open space and 24% to 29% (1,066 to 5,148 individuals) of the Piute Mountains navarretia on site would be impacted by the proposed project (see Figure 4-2).

With implementation of MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses), permanent impacts to 1,066 to 5,148 individuals of Piute Mountains navarretia would be less than significant.

Valley Floor

There are no special-status plants in the valley floor in the study area, and therefore, no direct permanent impacts to special-status plants would occur in the valley floor.

4.6.3.1.2 Special-Status Wildlife

The impacts to special-status wildlife are separated by region (foothills and valley floor), and then by taxonomic group (e.g., reptiles and birds, etc.). Within each taxonomic group, the species are organized alphabetically by the sensitivity status, with listed species addressed first and the remainder of the species addressed second.

Foothill

No long-term, permanent direct impacts to the following special-status wildlife species or their habitat would occur through implementation of the proposed project because their habitat is limited to the foothills regions that are being conserved in proposed project open space and, pursuant to MM-BTR-RMP, final design of the trails will be sited to avoid suitable habitat for the following special-status species: two-striped garter snake, tricolored blackbird (potential nesting habitat), oak titmouse (nesting habitat), northern harrier (potential nesting habitat), Nuttall's woodpecker (nesting habitat), purple martin (nesting habitat), yellow warbler (nesting habitat), Lawrence's goldfinch (nesting habitat), black-chinned sparrow (nesting habitat), and Buena Vista Lake shrew (see Figure 4-3A, Proposed Project Footprint and Special-Status Wildlife Species (Birds), and Figure 4-3B, Proposed Project Footprint and Special-Status Wildlife Species (Mammals, Amphibians, and Reptiles). MM-BTR-PCA includes pre-construction surveys for special-status wildlife species during trail construction.

Valley Floor

No long-term, permanent direct impacts would occur to the following special-status wildlife species or their habitat as a result of the proposed project because their suitable habitat is limited to riparian vegetation conserved in proposed project open space: two-striped garter snake, northern harrier (nesting habitat), Nuttall's woodpecker (nesting habitat), yellow warbler (nesting habitat), Lawrence's goldfinch (nesting habitat), and Buena Vista Lake shrew (see Figure 4-3A and Figure 4-3B).

The remainder of special-status wildlife species described below have potential occur in portions of the valley floor where the majority of development would occur. As described above, in addition to the proposed development, up to 100 acres of land zoned as Exclusive Agriculture in the central open space could be converted to agricultural uses and irrigated. This would result in the loss of up to 100 acres of valley floor habitat for grassland species, including blunt-nosed leopard lizard, Blainville's horned lizard, San Joaquin coachwhip, burrowing owl, San Joaquin kit fox, Nelson's antelope squirrel, American badger, and San Diego black-tailed jackrabbit; and foraging habitat for bald eagle, Swainson's hawk, golden eagle, ferruginous hawk, loggerhead shrike, Oregon vesper sparrow, and special-status bats. Even with this additional potential impact to valley floor grassland, implementation of MM-BTR-OS and MM-BTR-OOS would reduce these direct, permanent impacts for these species to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Amphibians and Reptiles

Blunt-Nosed Leopard Lizard (FE/SE; FP)

No blunt-nosed leopard lizards were observed during 2013 plant and wildlife surveys or subsequent surveys of the off-site impact areas in 2014 and 2015, which provided essentially 100% visual surveys of the study area. Due to the lack of observations, if this species is present on site, it likely occurs in limited areas of the site instead of site-wide. Based upon the information collected during habitat assessments in the study area for blunt-nosed leopard lizard and small mammal trapping (see Appendix B for methods), it is analyzed as having low potential to occur at high densities on the valley floor. The most suitable area for blunt-nosed leopard lizard within the study area is the southwest quadrant of Planning Area 6c in the valley floor near the existing oil fields (see Figure 1-4 for the location of Planning Area 6c). None of the other areas assessed by Dr. Germano were suitable habitat for blunt-nosed leopard lizard (Germano 2014b). Nonetheless, pre-construction focused protocol-level surveys for blunt-nosed leopard lizard would be conducted in the survey season immediately prior to any on-site grading or construction activities to determine their presence or absence from the study area.

If blunt-nosed leopard lizard occurs on site, there could be potential impacts to individuals. In the absence of biological resource protection measures, long-term permanent direct impacts to blunt-nosed leopard lizard individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) would reduce the adverse effect the proposed project could have on individual species because MM-BTR-PCA requires focused surveys, as well as avoidance and monitoring measures. Prior to the initiation of on-site grading and construction activities, focused protocol surveys would be conducted in accordance with CDFW's *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard* (CDFG 2004) within suitable habitat for blunt-nosed leopard lizard in the survey season immediately prior to grading or construction. Additionally, 3 to 5 clearance surveys would be conducted within 30 days of initiation of construction activities between March and November within 50 feet of proposed disturbance. If detected, MM-BTR-PCA requires several avoidance and monitoring measure options to avoid direct or indirect impacts to this species.

First, all observations of blunt-nosed leopard lizards, as well as available burrows within 50 feet of the observation, shall be marked in the field and on appropriate maps. Second, any blunt-nosed leopard lizard observations within 50 feet of proposed disturbance areas shall be fenced with exclusion fencing and the project biologist shall be on site during the fencing installation to ensure that no blunt-nosed leopard lizards are inadvertently harmed/harassed during installation. Third, daily surveys within the fenced construction zone shall be conducted for 5 consecutive days to ensure blunt-nosed leopard lizards have left the construction area via escape routes in the fencing. Last, the project biologist would monitor the exclusion areas during construction activities, inspect the condition of the exclusion fencing, and if a blunt-nosed leopard lizard is observed during disturbance activities and the project biologist believes the work may injure or kill a blunt-nosed leopard lizard, he/she would have the authority to stop work temporarily to verify if lizards are present in the immediate area of construction. Work would only be allowed to resume at the discretion of the project biologist and only when any threat to blunt-nosed leopard lizards has passed. MM-BTR-PCA is designed to avoid "take" of blunt-nosed leopard lizard; however, if there are potential impacts to blunt-nosed leopard lizard individuals, relocation and/or take of this species may only occur if authorized pursuant to an NCCP.

Based upon Dr. Germano's site visits conducted in April and May 2014, suitable habitat is limited to Planning Area 6c and is estimated to be approximately 50 acres; however, for conservative purposes, for this report, all valley floor grasslands with slopes that are flat or gently rolling hills (i.e., 15% or less) are considered potential blunt nosed leopard lizard habitat. Under this assumption, out of the 5,614 acres of suitable habitat for blunt-nosed leopard lizard in the study area, approximately 4,372 acres (78%) of suitable habitat are within the proposed project footprint (including off-site impact areas). Of the 5,614 acres of suitable habitat, approximately 1,242 acres (22%) would be conserved as proposed project open space. Although the proposed project would preserve 1,242 acres, the loss of up to 4,372 acres would result in the loss of valley floor habitat that could be considered potentially suitable for blunt nosed leopard lizard. In the absence of biological resource protection measures, these long-term permanent direct impacts to blunt-nosed leopard lizard habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) would preserve 7,428 acres of modeled suitable valley floor habitat for blunt-nosed leopard lizard, including 1,242 acres on site and 6,186 acres in the Mitigation Area. The Mitigation Area contains higher value habitat for blunt-nosed leopard lizard than the study area, and it is known to support the species; the Mitigation Area also conserves an area considered important for the long-term conservation and recovery of blunt-nosed leopard by the USFWS (1998); and the site would conserve valley floor portions of the Ranch that provide unconstrained linkages for multi-generational movement of blunt-nosed leopard lizard. Therefore, the on-site conservation and Mitigation Area provide suitable habitat to reduce potential impacts to blunt-nosed leopard lizards.

Implementation of MM-BTR-PCA, in conjunction with MM-BTR-OS and MM-BTR-OOS, would reduce direct, permanent impacts to blunt-nosed leopard lizard individuals and suitable habitat to less-than-significant levels through avoiding take of blunt-nosed leopard lizard or requiring authorization pursuant to an NCCP if relocation or take may occur, and by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor.

Blainville's Horned Lizard (—/SSC)

If Blainville's horned lizard was common on site, it most likely would have been observed during the field surveys because the surveys involved intensive visual inspections of the ground, providing virtually 100% survey of the study area. However, Blainville's horned lizard was not observed on site, indicating that if the species is present on site, it is likely present in low numbers or limited distribution. For purposes of this analysis, Blainville's horned lizard is considered to have moderate potential to occur. Suitable habitat in the study area includes grasslands, riparian scrub and woodland, oak savannah, scrub, and washes.

Out of the total 7,196 acres of suitable habitat for Blainville's horned lizard in the study area, approximately 4,452 acres, or 62%, of suitable habitat are within the proposed project footprint (including off-site impact areas). Of the 7,196 acres of suitable habitat, approximately 38% would be conserved as proposed project open space. Although the proposed project would preserve 2,744 acres, the loss of up to 4,452 acres of suitable habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to Blainville's horned lizard individuals and habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) include permanent conservation of 9,958 acres of suitable habitat for Blainville's horned lizard, including 2,744 acres of proposed project open space and 7,214 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to Blainville's horned lizard to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

San Joaquin Coachwhip (Snake) (—/SSC)

There is one documented occurrence of San Joaquin coachwhip in the study area from 1999 (TRC 2013a). An individual was also observed adjacent to the study area in 2013, and a possible San Joaquin coachwhip was captured on one camera during the April/May 2014 wildlife camera study (see Figure 4-3B). San Joaquin coachwhip has also been observed at Wind Wolves Preserve west of the study area (Cypher et al. 2011). Because this species can be difficult to observe using standard meandering transects due to its tendency to take refuge in rodent burrows, vegetation, and rock piles, the assessment of impacts to this species is based upon the loss of habitat that is at least moderately suitable for this species, which includes the grassland communities.

Out of the total 6,994 acres of suitable habitat for San Joaquin coachwhip in the study area, approximately 4,445 acres, or 64%, of suitable habitat are within the proposed project footprint (including off-site impact areas). Of the 6,994 acres of suitable habitat, approximately 2,549 acres (36%) would be conserved as proposed project open space. Although the proposed project would preserve 2,549 acres, the loss of up to 4,445 acres of suitable habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to San Joaquin coachwhip individuals and habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes the permanent conservation of 9,736 acres of suitable habitat for San Joaquin coachwhip, including 2,549 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable habitat for San Joaquin coachwhip to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

<u>Silvery Legless Lizard (—/SSC)</u>

Silvery legless lizard has not been documented in the study area but is considered to have moderate potential to occur along the southern edge of the site, in the foothills, within riparian scrub and woodland, and scrub associated with sandy or sandy loam soils (i.e., friable) on flat and gentle slopes. Because this species is a secretive, fossorial lizard and is difficult to observe using standard meandering transects, an assessment of impacts to this species is based upon the loss of habitat that is at least moderately suitable for this species.

Out of the total 136 acres of suitable habitat for silvery legless lizard in the study area, 2 acres, which is less than 1%, of suitable habitat is within the proposed project footprint (including off-site impact areas). Of the 136 acres (more than 99%) of suitable habitat, approximately 135 acres would be conserved as proposed project open space. Because such a small amount of suitable habitat for silvery legless lizard would be impacted, development activities would not result in significant long-term permanent direct impacts to suitable habitat for silvery legless lizard. In addition, MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) ensures avoidance of direct impacts to suitable habitat for the species and provides for protection of on-site open space, and MM-BTR-OOS (conservation of Off-Site Mitigation Area) provides suitable habitat based on the vegetation communities within the 7,233-acre Mitigation Area.

Western Spadefoot (Toad) (—/SSC)

Western spadefoot was mapped in 1999 within the study area in Grapevine Creek (TRC 2013b) (see Figure 4-3B), but has not been documented in the study area during 2013-2015 wildlife surveys, including during focused surveys for California red-legged frog. It is considered to have moderate potential to occur in the study area at lower elevations where ephemeral breeding pools may form in depressions or within drainages. Due to the lack of large storm events over the past 2 years, potential breeding locations are generally unknown, so the species' presence on site cannot be ruled out.

Suitable breeding and aestivation habitat for western spadefoot was not found, as their habitat is limited to ephemeral sites with adequate hydroperiods for supporting larval (tadpole) development and adjacent upland areas that support aestivation the rest of the year. If the species occurs on site, its distribution is likely to be scattered and limited. (Complete metamorphosis can occur rapidly, within as little as 3 weeks (Holland and Goodman 1998), but may last up to 11 weeks (Burgess 1950; Feaver 1971; Jennings and Hayes 1994) depending on environmental conditions). Development activities could directly impact western spadefoot breeding sites and adjacent uplands. In the absence of biological resource protection measures, long-term permanent direct impacts to western spadefoot habitat would be significant.

MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys prior to the initiation of ground-disturbing activities within suitable habitat and 300 feet of the proposed project boundary. If western spadefoot is detected within the proposed project footprint and cannot be avoided, then impacted habitat would be created at a 2:1 ratio in suitable habitat within on-site open space, away from development and roads, and designed specifically for the life cycles of spadefoot. If spadefoot is found within the 300-foot survey buffer, but not within the proposed project footprint, then an exclusion fence shall be constructed along the proposed project boundary between the construction footprint and the occupied breeding site to prevent spadefoots from moving into and aestivating within the construction footprint. MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve suitable habitat in open space. Implementation of MM-BTR-PCA and MM-BTR-OS would reduce permanent direct impacts to potential western spadefoot breeding sites and adjacent uplands used during aestivation to less-than-significant levels because these features would ensure avoidance and minimization of direct impacts, create suitable habitat at a 2:1 mitigation ratio, and provide for protection of on-site open space.

Birds

California Condor (FE, MBTA/SE; FP)

As discussed in the Condor Technical Report (Appendix K), the proposed project footprint is limited to the San Joaquin Valley floor where condors historically did not and currently do not use to a significant extent. No nesting, roosting, or important foraging habitat is located within or immediately adjacent to the proposed project footprint; higher-value foraging habitat, where more hunting and grazing occurs, is located in the foothills portion of the study area and would be avoided by proposed development activities. Because the only game hunting (that serves as an important source of food for condors on the Ranch) in the study area occurs in the more wooded foothills south of Edmonston Pumping Plant Road (which would be preserved in open space), and due to the flat and relatively treeless topography of the study area (condors generally prefer to forage in more hilly/mountainous open terrain where they can take advantage of updrafts), the proposed project footprint is considered of relatively low foraging value to condors. To this point, only 12 (0.009%) out of 133,653 stationary points collected from 2005–2013 were within the proposed project footprint, representing only two different days of stationary activity (likely from a dead cow or other animal carcass) (see Appendix K).

Although the proposed project footprint is not heavily used, out of the total 4,907 acres of suitable habitat for California condor in the study area, approximately 2,817 acres, or 57%, of habitat considered suitable for condor foraging, all of which is located in designated critical habitat, are within the proposed project footprint (including off-site impact areas).

Indirect impacts to suitable condor foraging were also quantified because condors may locate a food source adjacent to developed areas but not land and feed due to the location of the carcass in close proximity to that development and associated disturbance. The USFWS has determined that condors are not likely to access and feed on carcasses within 0.5 mile of developed areas (USFWS 2012). Applying this setback from the edge of the proposed project footprint, an additional 4,534 acres of suitable condor foraging habitat would be indirectly impacted by proposed development. These indirect impacts are limited in scope because suitable foraging habitat is only located south of Laval Road; therefore, such indirect impacts extend approximately to the boundary of the proposed project open space to the south and east, with minor off-site impacts to the west of I-5.

According to the USFWS GPS data (USFWS 2013b), the predominant foraging activity of California condors on the Ranch occurs much further to the south of the study area in the upper elevations of the Ranch. Because of the extensive amount of high-quality foraging habitat that will remain in preserved areas of the Ranch (pursuant to the TU MSHCP and the Ranchwide

Agreement) to the south, southeast, and southwest of the study area, and because hunting and grazing will continue at current levels and practices in these preserved areas, the Ranch will continue to meet the foraging and feeding needs of condors that currently forage on the Ranch and will accommodate the foraging and feeding needs of condors in the future as the population expands (USFWS 2013b). The direct and indirect loss of foraging habitat associated with the proposed project is therefore not considered an impact that would significantly adversely affect this species or rise to the level of causing "injury" or "harm" to condors or otherwise interfere with essential behavior patterns. Consequently, no "take," as defined by FESA as a result of habitat loss (harm) is expected to occur and loss of foraging habitat (including loss of critical habitat) is not considered to be a significant impact on this species under CEQA. While impacts are less than significant, recommended biological resource protection measures would, nevertheless, minimize the overall loss of this foraging habitat. This includes MM-BTR-OS, which provides for the dedication of on-site open space containing habitat of much higher foraging value to condors, and MM-BTR-OOS, which conserves 7,217 acres of suitable condor foraging habitat within the Off-Site Mitigation Areas, of which 1,661 acres is within condor critical habitat.

Bald Eagle (Delisted, BCC, MBTA/ST; FP)

Bald eagles do not nest on the Ranch and only occur in the area in small numbers during the winter. The proposed project would result in the loss of at least one wintering roost tree along Edmonston Pumping Plant Road that appears to be used regularly by a pair of bald eagles (Figure 4-3A). However, there are available trees and snags in the proposed project open space south of the development, some of which are used by the same bald eagle pair utilizing the roost tree along Edmonston Pumping Plant Road. Because the existing roost tree is not located in a unique habitat area (i.e., near a large body of water or in dense trees), it is expected that the bald eagles overwintering in the area could use other trees and snags within the open space for roosting. However, the loss of a winter roost tree could impact bald eagles.

The habitat in the study area does not include large bodies of water, which is more typical foraging habitat for bald eagle. There is a small potential for bald eagle foraging within the California Aqueduct—bald eagles have been observed perching near the California Aqueduct in the proposed project vicinity (Babcock, pers. obs. 2013), and the aqueduct supports a limited number of fish species, such as striped bass (*Morone saxatilis*) and catfish (DWR 2014). Based on observations made during winter surveys, it appears that much of the foraging conducted by the bald eagles wintering in the area is on California ground squirrels and other small mammals within the open upland portions of the study area. However, because the site supports only a few wintering individuals at any given time, foraging is probably limited to a few locations rather than spread across the landscape, and therefore, the total amount of suitable foraging habitat was not quantified. Nevertheless, impacts associated with the proposed project may result in the loss of some upland foraging habitat for overwintering bald eagles. In the absence of biological resource protection measures, these long-term permanent direct impacts to the bald eagle winter roost site and foraging habitat would be significant.

MM-BTR-BALD provides measures to preserve a suitable winter roost site for bald eagles; specifically, the project biologist shall, through field surveys and assessments, identify snags and trees within preserved open space areas within and adjacent to the proposed project that are considered, based on tree species, height, location, structure, etc., to be suitable as roost/perch sites for wintering bald eagles in the Grapevine site. Trees mapped and marked as known or potential winter roost/perch sites for bald eagles shall have appropriate activity setbacks established for each tree. MM-BTR-OS would conserve more than 3,232 acres of on-site open space, including areas with suitable roosting and foraging habitat, and MM-BTR-OOS would conserve approximately 7,233 acres in off-site valley floor areas of the Mitigation Area. Implementation of MM-BTR-BALD, MM-BTR-OS, and MM-BTR-OOS would reduce permanent direct impacts to winter roosting and foraging habitat to less-than-significant levels because these measures would ensure suitable alternative roost sites and provide more than a 1:1 mitigation ratio of suitable upland foraging habitat.

<u>Swainson's Hawk (BCC, MBTA/ST)</u>

Swainson's hawk has not been observed within the study area either during nesting raptor surveys in 2013, during winter raptor surveys in 2013/2014, or incidentally during other field studies; however, a large kettle (group of raptors circling in the air) of migrating Swainson's hawks was observed moving south over the northern flank of Grapevine Peak and the southern portion of the study area in the fall of 2009 (K. Babcock, pers. comm. 2015). Most of the Swainson's hawks that nest in the Central Valley winter in central Mexico and generally pass through this region during migration periods (Bradbury, unpublished data).

The nearest known active nest occurs in the White Wolf area of the Ranch approximately 20 miles northeast of the study area. Also, Swainson's hawks are known to nest in relatively low numbers elsewhere in Kern County as well as in the Antelope Valley approximately 30 miles to the east (CDFG 2007). Very little nest habitat (suitable nest trees either along valley riparian habitat or within grassland or oak savannah habitat) occurs within the study area. However, the grassland and rangeland habitat within the study area represent suitable foraging habitat for the species.

Because Swainson's hawk has not been observed nesting or foraging on the site or in the site vicinity during the 2013-2015 breeding and winter field studies, and because of the general lack of suitable nest trees on the site, its current use of the site, if any, is likely limited to brief foraging periods during migration. For these reasons, while the proposed project would result in direct impacts to suitable foraging habitat for Swainson's hawk, the impact would be less than significant.

Implementation of MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would further reduce effects to the species resulting from loss of suitable foraging habitat by providing substantial available foraging habitat for occasional individuals that use the site during migration and managing the habitat to maintain adequate prey. Additionally, implementation of MM-BTR-PCA, which requires pre-construction surveys for nesting Swainson's hawk within 0.5 mile of the proposed project footprint and avoidance measures consistent with the Swainson's Hawk Technical Advisory Committee, would further reduce effects to the species if the species nests on site or within 0.5 mile of the site in the future.

Golden Eagle (BCC, MBTA/FP)

No golden eagles have been documented nesting within the study area. Some suitable nesting habitat is present within the study area but is outside the proposed project footprint in the foothill areas that are located in proposed project open space. No active nests were located within these areas during focused golden eagle nest surveys (see Appendix L, Eagle Technical Report). The closest active golden eagle nests are located more than 1 mile south of the study area, where two active and occupied nest territories, and two active but unoccupied territories were documented in 2014 (Bloom Biological Inc. 2014) (see Figure 7 of Appendix L). Because the closest active nest is more than 1 mile to the south and is surrounded by open space per the Ranchwide Agreement (see Figure 8 of Appendix L), the proposed project would not result in direct loss of active golden eagle nests.

The four active eagle territories identified in the survey area are located in the San Emigdio Mountains and Tehachapi Mountains. The three territories within the Ranch are surrounded on all sides by open space land that will be conserved through dedicated conservation easements per the Ranchwide Agreement. The fourth territory is located in the San Emigdio Mountains adjacent to the Ranch to the east and Wind Wolves to the west. With the permanent conservation of foraging habitat throughout the grassland and open habitat within proposed project open space, as well as the surrounding Ranch (as shown on Figure 8 of Appendix L), the four golden eagle territories are expected to have sufficient foraging habitat within their normal breeding home range so that the proposed project would not result in the loss of nest productivity.

Golden eagles have been observed foraging on site during 2013–2014 surveys (Figure 4-3A). Out of the total 7,141 acres of suitable habitat for golden eagle in the study area, approximately 4,454 acres (62%) of suitable golden eagle foraging habitat are within the proposed project footprint (including off-site impacts) (see Figure 8 of Appendix L). Of the 7,141 acres of suitable habitat, approximately 2,687 acres (38%) would be conserved as proposed project open space. Although the proposed project would preserve 2,687 acres, the loss of up to 4,454 acres of suitable habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to golden eagle foraging habitat would be significant.

MM-BTR-OS and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,890 acres of suitable habitat, including 2,687 acres on site and 7,203 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce permanent direct impacts to suitable foraging habitat to less-than-significant levels because these measures include the preservation of more than a 1:1 mitigation ratio of suitable upland foraging habitat adjacent to existing active eagle nests south of the proposed project.

Burrowing Owl (BCC, MBTA/SSC)

Burrowing owl individuals and active burrows have been observed in the study area on several occasions during winter raptor surveys in 2013/2014 (see Figure 4-4, Proposed Project Footprint and Special-Status Wildlife Species (Burrowing Owl)). While nesting was not observed during nesting raptor surveys in 2013, the study area is at the southern edge of the burrowing owl's breeding range in the Central Valley, and suitable ground squirrel burrows that could support nesting are present within the study area.

Development could result in long-term permanent direct impacts to burrowing owl individuals. In the absence of biological resource protection measures, long-term permanent direct impacts to burrowing owl individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction take avoidance surveys for burrowing owl conducted 14 days prior to initiating ground-disturbance activities, and, if present, avoidance measures would be implemented. If present, minimum avoidance buffers (75 meters (246 feet)) shall be required for occupied nest burrows during the breeding season (February 1–August 31) so that nesting activities are not disturbed and nesting pairs have the opportunity to rear and successfully fledge young. From September 1–January 31 (the non-nesting period), passive relocation would be implemented for individuals in occupied roost burrows within the proposed project disturbance footprint that cannot feasibly be avoided. Passive relocation would include monitoring, management, and reporting to confirm that the relocation efforts are successful. Additionally, to prevent burrowing owl from recolonizing areas within the proposed project footprint, the development area under immediate construction would be made and maintained unsuitable for burrowing owls through heavy disking or immediate and periodic grading of the development area until development is complete.

These pre-construction surveys, avoidance buffers, passive relocation activities, and measures to prevent owls from recolonizing the development areas (MM-BTR-PCA) would reduce any potential direct, permanent impacts to individual burrowing owls to less-than-significant levels through avoiding take of burrowing owls.

Out of the total 6,993 acres of suitable winter foraging habitat and nesting habitat for burrowing owl in the study area, approximately 4,444 acres, or 64%, are within the proposed project footprint (including off-site impact areas). Of the 6,993 acres of suitable habitat, approximately 2,549 acres (36%) would be conserved as proposed project open space. Although the proposed project would preserve 2,549 acres, the loss of up to 4,444 acres of suitable winter foraging and nesting habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to burrowing owl habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,736 acres of suitable habitat for burrowing owl, including 2,549 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable habitat for burrowing owl to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA would reduce direct, permanent impacts to burrowing owl to less-than-significant levels through avoiding take of burrowing owl and providing long-term management and conservation of suitable habitat for this species.

Ferruginous Hawk (BCC, MBTA/—)

Ferruginous hawks have been observed foraging in the study area on several occasions, including February 2013 during winter raptor surveys in 2013/2014 (see Figure 4-3A). This species is expected to forage regularly in the study area only as a winter visitor; it does not breed in California. Suitable winter foraging habitat within the study area includes grasslands and wash.

Out of the total 7,056 acres of suitable habitat for ferruginous hawks in the study area, approximately 4,452 acres, or 63%, of suitable winter foraging habitat are within the proposed project footprint (including off-site impact areas). Of the 7,056 acres of suitable habitat, approximately 2,604 acres (37%) would be conserved as proposed project open space. Although the proposed project would preserve 2,604 acres, development activities would result in the long-term permanent direct loss of up to 4,452 acres of suitable wintering foraging habitat for this species. Because ferruginous hawk is highly mobile and does not nest on site, direct impacts to individuals are unlikely. In the absence of biological resource protection measures, these long-term permanent direct impacts to ferruginous hawk winter foraging habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,791 acres of suitable winter foraging habitat for ferruginous hawk, including 2,604 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable winter foraging habitat for ferruginous hawk to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Loggerhead Shrike (BCC, MBTA/SSC)

Loggerhead shrikes have been observed on various occasions in the study area and this species is assumed to be a nesting resident on the site (see Figure 4-3A). Suitable nesting/foraging habitat in the study area includes the scrub communities, willow thick communities, and riparian woodlands, and suitable foraging habitat includes grassland communities.

Development or operations and maintenance activities could result in long-term permanent direct impacts to loggerhead shrike individuals. In the absence of biological resource protection measures, long-term permanent direct impacts to loggerhead shrike individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys for nesting birds conducted 7 days prior to any on-site grading and construction activities within each construction area (and surrounding 500-foot buffer) that occurs during the nesting/breeding season, and, if present, avoidance measures would be implemented. If active nests are found, construction activities may be limited within a 250-foot buffer, or as determined by the project biologist. MM-BTR-PCA would reduce any potential direct, permanent impacts to individual shrikes to less-than-significant levels.

Out of the total 7,138 acres of suitable habitat for loggerhead shrike in the study area, approximately 4,452 acres, or 62%, of suitable habitat are within the direct proposed project footprint (including off-site impact areas). Of the 7,138 acres suitable habitat, approximately 2,686 acres (38%) would be conserved as proposed project open space. Although the proposed project would preserve 2,686 acres, development activities would result in the long-term permanent direct loss of up to 4,452 acres of suitable habitat for this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to loggerhead shrike habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,873 acres of suitable habitat for loggerhead shrike, including 2,686 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable habitat for loggerhead shrike to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA would reduce direct, permanent impacts to loggerhead shrike to less-than-significant levels through avoiding impacts to loggerhead shrike individuals and providing long-term management and conservation of suitable habitat for this species.

<u>Oregon Vesper Sparrow (BCC, MBTA/SSC)</u>

Vesper sparrow (*Pooecetes gramineus*) was observed on site (see Figure 4-3A), and since both the Oregon vesper sparrow (*P. g. affinis*) and the more common Great Basin vesper sparrow (*P. g. confinis*) subspecies could occur in the study area, it is not known which subspecies was observed. Oregon vesper sparrow has moderate potential to winter on site. Suitable winter foraging habitat in the study area includes grasslands, wetlands, and wash.

Out of the total 7,056 acres of suitable habitat for vesper sparrow in the study area, approximately 4,451 acres, or 63%, of suitable wintering habitat are within the proposed project footprint (including off-site impact areas). Of the 7,056 acres of suitable habitat, approximately 2,605 acres (37%) would be conserved as proposed project open space. Although the proposed project would preserve 2,605 acres, development activities could result in long-term permanent direct impacts to 4,451 acres of suitable winter foraging habitat if the Oregon vesper sparrow subspecies occurs on site. Because Oregon vesper sparrow is highly mobile and does not nest on site, direct impacts to individuals are unlikely. In the absence of biological resource protection measures, these long-term permanent direct impacts to Oregon vesper sparrow habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 8,943 acres of suitable habitat for Oregon vesper sparrow, including 2,605 acres on site and 6,338 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable wintering habitat for Oregon vesper sparrow to less-than-significant levels by providing more than a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Non-Special-Status Birds (MBTA)

Most native nesting birds are protected under the MBTA and nesting raptors are afforded additional protection under California Fish and Game Code Section 3503.5, as described in Section 3. Non-special-status birds can nest on site, and several non-special-status raptors were observed on site (see Figure 2-10), of which some have potential to nest on site or their active nests were detected during nesting raptor surveys (i.e., red-tailed hawk, American kestrel, and barn owl). Development or operations and maintenance activities directly or indirectly impacting active nests protected under the MBTA and/or California Fish and Game Code 3503.5 would be a significant impact. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) requires pre-construction surveys for nesting birds, and if found, this measure requires minimum setbacks from active nests (typically 500 feet for raptors and tri-colored blackbird and 250 feet for passerines) and restrictions on disturbance activities within the setbacks. These setbacks and restrictions would avoid direct and indirect impacts on active bird nests and would reduce impacts to a level that is less than significant.

Mammals

San Joaquin Kit Fox (FE/ST)

San Joaquin kit fox has not been definitively confirmed in the study area based on surveys conducted in 2013 through July 2015, but has high potential to occur on site during movement events, including juvenile and adult dispersal in search of territories. During these events, individual kit foxes are expected to forage on the site and seek temporary shelter. The study area is considered to have low potential for long-term permanent occupation by kit fox due to negative surveys and an apparent lack of kangaroo rat resources (their preferred prey). Camera surveys in 2013 and 2014 of the potential dens previously identified on site did not find any occupation of the dens by kit fox, and the camera surveys of I-5 crossings did not confirm any use by this species; however, there was one unidentified fox species observed in 2008 that could not be positively identified.

Cypher et al. (2013) modeled suitable habitat for the kit fox in the region using a “GIS-based mapped-algebra model” that used several habitat variables, including land use/land cover, vegetation density, and terrain ruggedness. Within the regional model, areas were determined to be “high” suitability (>90), “medium” suitability (75-90), or not kit fox habitat (<75). Based on the Cypher model, only approximately 1.8 square miles of land (1,146 acres) in the study area are classified as “high” quality and approximately 6.2 square miles of land (3,994 acres) are classified as “medium” quality habitat. Medium quality habitat primarily functions as movement or dispersal habitat and rarely seems to support resident foxes (Cypher pers. comm. 2015). The areas modeled as highly suitable habitat are found in the disjunct parcels at the north end of the study area while the rest of the high suitability are relatively small fragments, mostly along the aqueduct or Grapevine Creek. The fragmented nature of this high quality habitat further reduces the probability of occupancy by kit fox (Cypher pers. comm. 2015). Most of this is found in the disjunct parcels at the north end of the project footprint while the rest occurs as relatively small fragments, primarily along the aqueduct and Grapevine Creek. The fragmented nature of this high quality habitat and the apparent lack of a consistent prey-base (primarily kangaroo rats) on the site reduces the probability of long-term kit fox occupancy (Cypher, pers. comm. 2015). Furthermore, little high suitable habitat occurs adjacent to the study area (Figure 4-5). As noted in Section 2.5, the study area is considered to be high potential for movement events, including juvenile and adult dispersal in search of territories.

If active San Joaquin kit fox dens are present on site, development activities could directly impact San Joaquin kit fox individuals. In the absence of biological resource protection measures, these long-term permanent direct impacts to San Joaquin kit fox would be significant. Implementation of MM-BTR-PCA includes pre-construction take avoidance surveys for San Joaquin kit fox conducted no less than 14 days and no more than 30 days prior to the beginning of grading or construction activity in each construction area in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance* (USFWS 2011b), which requires take authorization for destruction of any known or natal/pupping kit fox den.

The USFWS (2011) guidelines require that vacated dens, or potential dens determined to be vacated, be fully excavated, filled with dirt, and compacted, so that kit fox cannot re-enter the den during construction and become inadvertently entombed. The guidelines also require that excavation activity stop if any individual kit fox is discovered within the den; and excavation can only proceed after a qualified biologist has monitored the den and determined that the kit fox has vacated. Additionally, if present on site in the future, natal/pupping dens that are occupied would not be destroyed until the pups and adults have vacated. Known dens within the study area would be monitored for 3 days/nights to determine the current use and if no kit fox activity is observed, the den shall be excavated immediately to prevent future use. Potential dens may be excavated without monitoring if a take permit has been issued by USFWS; if no take permit has been issued, then the potential dens would be monitored as if they were known dens. These den excavation procedures, which are described more fully in Appendix A, would ensure that individual kit foxes are not directly impacted during construction. If active kit fox dens are found, minimum avoidance buffers shall be required based on the den type: atypical den (50-foot exclusion buffer from den entrance(s)); known den (100-foot exclusion buffer and fencing); and natal/pupping den (200-foot exclusion buffer and fencing). If avoidance of dens is not a reasonable alternative, limited excavation and destruction of known or potential/atypical kit fox dens would be allowed in accordance with guidelines in the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance* (USFWS 2011b), which requires take authorization for destruction of any known or natal/pupping kit fox den. Implementation of MM-BTR-PCA would reduce potential direct impacts to San Joaquin kit fox individuals to less-than-significant levels because it is designed to minimize potential adverse effects and avoid take of San Joaquin kit fox individuals.

The proposed project would directly impact portions of the high suitable habitat (>90) and medium suitable quality habitat (75-90) for San Joaquin kit fox based on the Cypher et al. (2013) model. In addition, indirect impacts[24] to San Joaquin kit fox habitat are estimated by quantifying the area within 100 feet of the proposed project footprint (Figure 4-5). Direct impacts to suitable habitat include 786 acres of high suitable habitat (>90) and 3,056 acres of medium suitable quality habitat (75-90) (including off-site impacts). Indirect impacts to suitable kit fox habitat include 165 acres of high suitable habitat (>90) and 211 acres of medium suitable quality habitat (75-90). Therefore, the proposed project would result in the loss of high and medium suitable kit fox habitat. In the absence of biological resource protection measures, these long-term permanent direct impacts to San Joaquin kit fox habitat would be significant.

The proposed project would directly impact portions of the high suitable habitat (>90) and medium suitable quality habitat (75-90) for San Joaquin kit fox based on the Cypher et al. 2013 model. In addition, indirect impacts[25] to San Joaquin kit fox habitat are estimated by quantifying the area within 100 feet of the proposed project footprint (Figure 4-5). Direct impacts to suitable habitat include 786 acres of high suitable habitat (>90) and 3,056 acres of medium suitable quality habitat (75-90) (including off-site impacts). Indirect impacts to suitable kit fox habitat include 165 acres of high suitable habitat (>90) and 211 acres of medium suitable quality habitat (75-90). Therefore, the proposed project would result in the loss of high and medium suitable kit fox habitat. In the absence of biological resource protection measures, these long-term direct impacts to San Joaquin kit fox habitat would be significant.

Proposed mitigation acreages were quantified based on the type of kit fox habitat impacted within the study area and the type of kit fox habitat available for mitigation. For example, impacts to high suitable habitat (>90) for kit fox would be mitigated at a 3:1 ratio with high

[24] An additional 100-foot "buffer" of habitat adjacent to the development envelope is conservatively presumed to not be used by kit fox due to the indirect impacts associated with the proximity of development.

[25] An additional 100-foot "buffer" of habitat adjacent to the development envelope is conservatively presumed to not be used by kit fox due to the indirect impacts associated with the proximity of development.

suitable habitat (>90) for kit fox in the mitigation lands; and direct impacts to medium suitable habitat (75-90) for kit fox would be mitigated at a 1:1 ratio if it is mitigated with high suitable quality habitat (>90) for kit fox, or at a 3:1 ratio if it is mitigated with medium suitable habitat (75-90) for kit fox. Similarly, indirect impacts to high suitable habitat (>90) for kit fox would be mitigated at a 1:1 ratio with high suitable habitat (>90) for kit fox in the mitigation lands; and indirect impacts to medium suitable habitat (75-90) for kit fox would be mitigated at a 1:1 ratio with medium suitable quality habitat (75-90) for kit fox. Table 4-2 quantifies direct and indirect impacts and proposed mitigation acreages for kit fox habitat based upon the habitat suitability categories.

Table 4-2
Proposed Mitigation for Impacts to San Joaquin Kit Fox Habitat

Suitability Category	Impacts		Mitigation Ratio		Proposed On-Site Mitigation (Acres)		Proposed Off-Site Mitigation (Acres)		Total Mitigation (Project and Off-Site Mitigation)
	H	*M*	*H*	*M*	*H*	*M*	*H*	*M*	
Direct Impacts									
High (H)	786	—	3:1	—	155	—	2,202	—	**2,358**
Medium (M)	—	3,056	1:1	3:1	—	645	1,746	3,285	**5,676**
Subtotal	*786*	*3,056*	—	—	*155*	*645*	*3,948*	*3,285*	***8,034***
Indirect Impacts									
High (H)	165	—	1:1	—	165	—	—	—	**165**
Medium (M)	—	211	—	1:1	—	211	—	—	**211**
Subtotal	*165*	*211*	—	—	*165*	*211*	—	—	**—**
Total	**951**	**3,267**	**—**		**382**	**321**	**3,948**	**3,285**	**8,410**

In summary, there would be a direct or indirect effect to suitable kit fox habitat totaling 951 acres of high suitable habitat (>90) and 3,267 acres of medium suitable habitat (75-90) for kit fox. MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses), MM-BTR-WLM (conservation of 100-foot buffer north of aqueduct), and MM-BTR-OOS (conservation of Off-Site Mitigation Area) would preserve 8,410 acres of modeled suitable habitat for kit fox. Approximately 321 acres of high suitable habitat (>90) and 856 acres of medium suitable habitat (75-90) would be conserved through implementation of MM-BTR-OS and MM-BTR-WLM; and 3,948 acres of high suitable habitat (>90) and 3,285 acres of medium suitable habitat (75-90) in the Mitigation Area. The Mitigation Area contains suitable higher-quality habitat for San Joaquin kit fox than the study area and off-site impact areas, and is known to support kit fox, with potential natal and non-natal dens, foraging areas, and dispersal corridors (see Appendix A). The Mitigation Area conserves areas that, together with other valley floor/foothill lands on the Ranch, allow for movement opportunities within the Ranch and to off-Ranch satellite areas for the kit fox (Figure 2-12B). In addition, the site conserves an area considered important for the long-term conservation and recovery of kit fox and other special-status species by the USFWS (1998).

Implementation of MM-BTR-OS, MM-BTR-WLM, MM-BTR-OOS, and MM-BTR-PCA would reduce direct, permanent impacts to San Joaquin kit fox and its suitable habitat to less-than-significant levels through avoiding take of San Joaquin kit fox, and by conserving 8,410 acres of suitable kit fox habitat within the San Joaquin Valley floor.

Nelson’s Antelope Squirrel (—/ST)

Nelson’s antelope squirrel has not been documented in the study area, and is considered to have low potential to occur in the study area. The species has been documented on the Wind Wolves Preserve west of the study area (Cypher et al. 2011). It also has been documented in the USGS quadrangles surrounding the study area (CDFW 2015b-c), including two 1903 records from the study area. The closest recent occurrences (i.e., since 2000) are at least 23 miles west of the study area (CDFW 2015b).

Suitable habitat for Nelson’s antelope squirrel is characterized by grassland and shrubland on flat or rolling terrain (i.e., 25% slopes or less). This species was not detected during the burrow/den surveys and other ground surveys that provided essentially 100% visual survey cover of the study area. Therefore, if this species does occur on site, its distribution is likely to be limited to just a few areas supporting small populations.

If this species occurs within the proposed project footprint, there could be potential impacts to this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to Nelson’s antelope squirrel individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys within 30 days prior to grading or construction activities within the disturbance area and a 50-foot buffer, and, if present, avoidance measures would be implemented. If found, any burrows that are suspected or known to be occupied by Nelson’s antelope squirrel would be avoided, and a 50-foot buffer around the burrow would be established, as practicable; temporary fencing shall be erected around the buffer area. If present, the avoidance buffers and fencing would avoid impacts to individual squirrels. If burrows suspected or known to be occupied cannot be avoided, then Nelson’s antelope squirrel shall be trapped and relocated to an approved release site on the Ranch pursuant to appropriate authorizations. Trapping and relocation would avoid direct impacts to Nelson’s antelope squirrel individuals if on-site avoidance is not feasible. The pre-construction surveys and avoidance measures (MM-BTR-PCA) would reduce any potential direct, permanent impacts to individual Nelson's antelope squirrel individuals to less-than-significant levels.

Out of the total 6,104 acres of suitable habitat for Nelson's antelope squirrel in the study area, approximately 4,400 acres, or 72%, of suitable habitat including valley floor grassland on flat or rolling terrain (i.e., 25% or less) are within the proposed project footprint (including off-site impact areas). Of the 6,104 acres of suitable habitat, approximately 1,703 acres (28%) of this grassland and scrub on flat or rolling terrain would be conserved as proposed project open space. Although the proposed project would preserve 1,703 acres, loss of up to 4,400 acres of suitable valley floor habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to Nelson's antelope squirrel habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes the permanent conservation of 8,601 acres of suitable habitat for Nelson's antelope squirrel, including 1,703 acres on site and 6,898 acres in the Mitigation Area. The Mitigation Area contains higher-value habitat for Nelson's antelope squirrel than the study area; the site conserves an area considered important for the long-term conservation and recovery of this species by the USFWS (1998); and the site has long-term conservation value because it is contiguous with other Ranch open space that is conserved and managed in perpetuity. The Mitigation Area (MM-BTR-OOS), in conjunction with MM-BTR-OS, would reduce direct, permanent impacts to suitable habitat for Nelson's antelope squirrel to less-than-significant levels by providing at least a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA, would reduce direct, permanent impacts to Nelson's antelope squirrel individuals and habitat to less-than-significant levels through ensuring the proposed project does not result in direct impacts to individual Nelson's antelope squirrel, and by providing long-term management and conservation of suitable habitat for this species within the San Joaquin Valley floor.

<u>American Badger (—/SSC)</u>

American badger has been observed several times in the study area and multiple potential badger dens were mapped (see Figure 4-3B). American badger is considered to have potential to occur in suitable habitat throughout the study area, but in low population numbers (e.g., a few to several individuals) given their large home ranges. Suitable habitat in the study area include grasslands, scrubs, wash, and oak savannah.

Development activities could result in long-term permanent direct impacts to active badger dens (and potentially individuals in the dens). In the absence of biological resource protection measures, long-term permanent direct impacts to American badger individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys for both winter and natal dens, and, if present, avoidance measures would be implemented. The pre-construction surveys shall be conducted by the project biologist no earlier than 14 days prior to construction activities to determine whether American badger dens are present within disturbance zone. If natal dens are found, a 200-foot buffer shall be flagged or fenced to avoid inadvertent impacts to the den. Construction would be postponed or halted until the project biologist determines that the young are no longer dependent on the natal den. With respect to natal den avoidance, MM-BTR-PCA ensures that badgers would be allowed to complete pupping and disperse to on-site open space or off-site habitat when the natal den is vacated. If winter dens are found, a 50-foot avoidance buffer shall be flagged or fenced to avoid inadvertent impacts on the den. If it is not practicable to avoid the wintering den during construction activities, an attempt would be made to trap or flush the individual and relocate it to suitable open space habitat. Additionally, badgers can be relocated by slowly excavating the burrow, either by hand or mechanized equipment under the direct supervision of the project biologist, removing no more than 4 inches at a time. Therefore, MM-BTR-PCA would avoid and minimize direct impacts to individual American badgers during winter construction when they may have entered torpor in their dens.

Out of the total 7,138 acres of suitable habitat for American badger, approximately 4,452 acres, or 62%, of suitable habitat are within the proposed project footprint (including off-site impact areas). Of the 7,138 acres of suitable habitat, approximately 2,686 acres (38%) would be conserved as proposed project open space. Although the proposed project would preserve 2,686 acres , the loss of up to 4,452 acres of suitable habitat could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, these long-term permanent direct impacts to American badger habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,873 acres of suitable habitat for American badger, including 2,686 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable habitat for American badger to less-than-significant levels by providing at least a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA, would reduce direct, permanent impacts to American badger individuals and habitat to less-than-significant levels through avoiding direct impacts to American badger individuals and providing long-term permanent management and conservation of suitable habitat for this species.

Pallid Bat, Western Mastiff Bat, and Western Red Bat (—/SSCs) and Townsend's Big-Eared Bat (—/SSC; SC)

Four special-status bats were detected on site during passive acoustic bat surveys: pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat (see Appendix M).

Development activities impacting potential active bat roosts (including maternity roosts, non-maternity roosts, and winter hibernacula) could result in long-term permanent direct impacts to special-status bats. In the absence of biological resource protection measures, these long-term permanent direct impacts to bat roosts would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys for special-status bats conducted 30 days prior to commencement of construction activities for each construction area, and, if present, avoidance measures would be implemented. If an active maternity roost is identified in these areas, a 300-foot buffer may be established that limits certain construction activities within that buffer until the maternity roost is vacated and juveniles have fledged, as determined by the project biologist. If non-breeding bat roosts (hibernacula or non-maternity roosts) are found, individuals shall be safely evicted or flushed from roosts. Once the bats escape, the roost site shall be removed or the construction disturbance shall occur the next day (i.e., there shall be no less or more than 1 night between initial disturbance and the roost removal). MM-BTR-PCA ensures that reproduction is not inhibited during construction by avoiding maternity roosts until juveniles have fledged. MM-BTR-PCA ensure that individuals are not directly impacted while roosting (non-maternity) or hibernating by evicting or flushing roost prior to disturbance.

Out of the total 7,690 acres of suitable foraging habitat for pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat in the study area, approximately 4,911 acres, or 64%, of suitable foraging habitat are within the proposed project footprint (including off-site impact areas).Of the 7,690 acres of suitable habitat, approximately 2,779 acres (36%) would be conserved as proposed project open space. Although the proposed project would preserve 2,779 acres, development activities would result in the long-term permanent direct loss of up to 4,911 acres of suitable foraging habitat for special-status bats. In the absence of biological resource protection measures, long-term permanent direct impacts to special-status bat foraging habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of between

10,002 and 10,012 acres of suitable foraging habitat for bats (depending on the bat species), including 2,779 acres on site and between 7,223 and 7,233 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to suitable foraging habitat for bats to less-than-significant levels by providing at least a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA, would reduce direct, permanent impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat individuals and habitat to less-than-significant levels through minimizing impacts to roosts and providing long-term conservation of suitable habitat in open space.

San Diego Black-Tailed Jackrabbit (—/SSC)

San Diego black-tailed jackrabbit has been observed in the study area and is considered to have potential to occur in suitable habitat throughout the site. Suitable habitats in the study area include grasslands, scrub, wash, and orchards and vineyards.

Development or operations and maintenance activities could result in long-term permanent direct impacts to individual jackrabbits. In the absence of biological resource protection measures, long-term permanent direct impacts to San Diego black-tailed jackrabbit individuals would be significant. MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) includes pre-construction surveys within disturbance areas and a 200-foot buffer; if present, jackrabbits shall be flushed from the disturbance areas towards non-disturbance areas. Permanent direct impacts from loss of individuals would be less than significant with incorporation of MM-BTR-PCA. Because San Diego black-tailed jackrabbit are relatively mature and mobile from the moment of birth and flush easily, MM-BTR-PCA would avoid and minimize direct impacts to individuals during construction.

Out of the total 7,564 acres of suitable habitat for San Diego black-tailed jackrabbit in the study area, approximately 4,910 acres, or 65%, of suitable habitat are within the proposed project footprint (including off-site impact areas). Of the 7,564 acres of suitable habitat, approximately 2,639 acres (35%) would be conserved as proposed project open space. Although the proposed project would preserve 2,639 acre, the loss of up to 4,910 acres of suitable foraging habitat for this species could directly affect a small but indeterminable number of individuals of this species. In the absence of biological resource protection measures, long-term permanent direct impacts to San Diego black-tailed jackrabbit habitat would be significant.

MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) and MM-BTR-OOS (conservation of Off-Site Mitigation Area) includes permanent conservation of 9,826 acres of suitable habitat for San Diego black-tailed jackrabbit, including 2,639 acres on site and 7,187 acres in the Mitigation Area. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce direct, permanent impacts to San Diego black-tailed jackrabbit to less-than-significant levels by providing at least a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills.

Implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-PCA would reduce direct, permanent impacts to San Diego black-tailed jackrabbit individuals and habitat to less-than-significant levels through minimizing impacts to individual jackrabbits and providing long-term conservation of suitable habitat in open space.

4.6.3.2 Operations-Related (Long-Term Permanent) Indirect Impacts

Operations-related indirect impacts could affect special-status wildlife on the valley floor and in the valley floor riparian areas along Grapevine Creek and the tributary to Cattle Creek. Additionally, operations-related indirect impacts could affect special-status wildlife and plants in the foothills at the interface of the proposed project footprint and open space because of human activity, traffic, and other urban–edge effects in these areas.

Potential long-term permanent indirect impacts to special-status species are summarized in Table 4-3. In general, potential long-term permanent indirect impacts to special-status species, which vary by species and are listed in no particular order of importance or level of effect, include: (1) chemical releases such as oils and grease from vehicles; (2) increased invasive plant and animal species that may alter habitat or may directly impact the species; (3) development-related noise and lighting; (4) habitat fragmentation; (5) hydromodification and degradation of water quality from increased urban runoff and irrigated landscaping; (6) increased abundance of urban-related mesopredators and avian predators (e.g., raccoons, skunks, red foxes, opossums, crows, and ravens), pets, and/or non-native species; (7) increased fire risk that can degrade habitat over time and/or kill individuals and impacts to species from fuel management activities; (8) increased risk of raptor collisions or electrocutions with power lines; (9) increased vehicle collision risk; (10) pesticides that could harm individuals through direct toxic effects or secondary poisoning and/or reduce availability of prey, including ground squirrels, pocket gophers, rabbits, small rodents, and insects; result in the reduction of pollinators or killing or weakening native species and/or allowing establishment of non-native species in edge areas; or reduce the availability of burrows for various wildlife (e.g., burrowing owls, reptiles, amphibians, and small rodents) created by ground squirrels that may be killed by rodenticides; (11) public trail use by humans and dogs that could result in various types of disturbance, including off-site trampling of vegetation and harassment of wildlife; and (12) risk of disease transmission, such as canine distemper and canine parvovirus contracted from dogs. Each of these long-term permanent indirect impacts are described further below. In the absence of biological resource protection measures, potential long-term permanent indirect impacts to special-status species would be significant. These potential long-term permanent indirect impacts would be less than significant with incorporation of biological resource protection measures.

Potential long-term permanent operations-related indirect impacts to suitable habitat for special-status wildlife species and/or those individuals that occur within the valley floor (including riparian) or the foothills are summarized in Table 4-3. Additional measures for MBTA-protected species are included in Table 4-3. Because Swainson's hawk's use of the site would be limited to brief periods of foraging during migration, potential long-term permanent indirect impacts would be less than significant. Although long-term permanent indirect impacts to Swainson's hawk would be less than significant, the applicant-accepted measures that would be implemented would further reduce potential indirect effects. For example, MM-BTR-OS would conserve 3,232 acres of habitat and protect on-site habitat from various adverse edge and other urban-related effects. MM-BTR-IPM would ensure that the use of rodenticides that could harm Swainson's hawk through secondary poisoning from consuming contaminated prey or indirectly by reducing prey abundance would be restricted in open space.

The majority of the development is located within the valley floor, but some development associated with Planning Area 5b, widening of Edmonston Pumping Plant Road, and trails would occur in the foothills; therefore, Table 4-3 includes both valley floor and foothill species that could be indirectly affected by the proposed project. These potential long-term permanent indirect impacts to special-status species would be less than significant with incorporation of recommended biological resource protection measures. Table 4-3 explains how the operations-related indirect impacts would be avoided, minimized, and mitigated to less-than-significant levels with incorporation of the biological resource protection measures. Table 4-3 organizes species by taxonomic group, and within each taxonomic group, the species are listed alphabetically by their sensitivity status, with federally and/or state-listed species addressed first and the remainder of the species addressed second.

(1) Release of Chemical Pollutants

The release of chemical pollution may affect habitat and plant and wildlife species directly. Pollutant impacts may occur as a result of runoff from development areas and roadways, including fertilizers (containing nutrients such as nitrogen and phosphorus), estrogenic chemicals, and petroleum products (fuel, oil, and lubricants). Amphibians are susceptible to changes or degradation of water quality because of integument (skin) permeability. There is clear evidence that chemical contamination can affect amphibian development, reproduction, and survival (e.g., Hayes et al. 2003; Bridges and Semlitsch 2000).

MM-BTR-WQ implements measures included in the WQTR, including BMPs that reduce impacts from runoff that can then affect transport of chemical pollutants to open space areas and affect biological resources. Additionally, MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects, such as chemical pollutants by providing substantial suitable habitat away from the urban–open space interface.

(2) Increased Invasive Plant and Animal Species

Non-native invasive plant species can alter ecosystem processes, such as nutrient cycling; hydrologic cycles; and frequency of wildfires, erosion, and sediment deposition. Invasive plants interfere in ecosystem functions by outcompeting and displacing native plants and animals by providing refuge for non-native animals, and by hybridizing with native species (Bossard et al. 2000). Invasive species can colonize virtually any natural area that is subject to some kind of disturbance. Riparian systems are also extremely vulnerable to invasive plants such as giant reed, tamarisk, and pampas grass (*Cortaderia* sp.) because of the highly effective transport of these species along streams. These species can dominate the biomass of riparian communities where they become established and choke out the native vegetation.

Irrigation in fuel management areas, overspray from landscaped areas, and urban runoff may create edge areas with artificially high moisture, attracting invasive species such as Argentine ants (Menke and Holway 2006). The Argentine ant has demonstrated negative impacts on native wildlife, such as Blainville's horned lizard, which predominantly feeds on native harvester ants that are displaced by Argentine ants (Suarez and Case 2002), and may affect seed dispersers and pollinators of native plants due to its impact on the native invertebrate community.

Implementation of MM-BTR-LAND would minimize impacts from non-native plant and animal species through requiring inspection of plant palettes in landscaped areas within 100 feet of open space areas. The inspection would ensure that the landscape plants do not include invasive plant species (as identified by the most recent version of the California Invasive Plant Inventory for the Central Valley region), disease, weeds, and pests, including Argentine ants. Landscape plans would include a plant palette composed of native or non-native, non-invasive species that do not require high irrigation rates, which also helps reduce attracting Argentine ants. This measure would reduce the potential impacts from non-native, invasive plant and animal species on native plant and wildlife species and habitat areas.

Additionally, African clawed frogs (*Xenopus laevis*) are invasive semi-aquatic species that can be released into open space areas, originating as pets. Several amphibian declines in the western United States have been associated with introduced aquatic predators (Doubledee et al. 2003). Conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of introducing invasive species by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources. Additionally, an RMP would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space (MM-BTR-RMP).

(3) Development-Related Noise and Lighting

Chronic increases in noise related to development primarily result from increased traffic volumes at all hours. Other sources of development-related increases in noise that may affect native wildlife include operation of landscape maintenance equipment and tools (e.g., mowers, blowers, trimmers, wood chippers), active recreation at parks (particularly at night), loud music from vehicles and residences, and on-site heavy equipment and machinery use by commercial and industrial businesses.

Some of these noise sources, such as traffic noise, are relatively constant (although with daily cycles related to peak traffic periods), and some wildlife species may habituate and adapt to the chronic ambient noise levels, while others may avoid noisy areas. Other noise sources are more occasional or discrete and are more likely to startle wildlife and at least temporarily disrupt their behavior at the time. As described in Section 4.5.1.2 for construction-related indirect effects, noise may affect wildlife in several ways that disrupts both their behavior and physiology in complex and interactive ways, including startling or annoying, raising stress levels, interrupting sleep and rest, interfering with acoustic communications, interfering with prey detection, and in the case of loud abrupt noises, causing permanent injury to the auditory system (Dooling 2006; Barrass and Cohn 1984; Brattstrom and Bondello 1983).

Ecological light pollution can have effects at the behavioral and population ecology level, the community ecology level, and the ecosystem level (Longcore and Rich 2004). These effects generally include orientation/disorientation and attraction/repulsion, reproduction, and communication at the behavioral and population ecology level, and competition and predation at the community ecology level, the effects of which would be expected to reverberate to the ecosystem level (Longcore and Rich 2004). Ecological light pollution associated with buildout of the proposed project footprint generally would be chronic as a result of increased ambient light and direct glare from sky glare, lighted buildings, streetlights, and security lights. Lighting from vehicles would be both chronic and unexpected. Light pollution primarily affects nocturnal species that may be more susceptible to predators or their behaviors are disturbed due to increased lighting. Implementation of MM-BTR-LIGHT would reduce impacts from operations-related lighting because this measure requires all exterior lighting comply with Kern County's dark sky ordinance. All lighting along the perimeter of the open space areas exterior to the proposed project footprint, including the project-related open space adjacent to the California Aqueduct, Grapevine Creek, and the tributary to Cattle Creek shall be fully shielded and directed downward in a manner that would prevent light spillage or glare into the adjacent open space. Shielding of light would reduce impacts on nocturnal wildlife species. MM-BTR-OS conserves 3,232 acres of open space and protects against edge and other urban-related effects such as noise and light by providing substantial suitable habitat away from the urban–open space interface. The contiguity of the open spaces would reduce impacts from noise and light by allowing wildlife to move freely through areas away from human activity and development.

(4) Habitat Fragmentation

Habitat fragmentation and isolation of plant and wildlife populations, including impacts on wildlife movement and dispersal as well as impacts on plant pollinators and seed dispersal, may cause extinction of local populations as a result of two processes: (1) reduction in total habitat area, which reduces effective population sizes; and (2) insularization of local populations, which affects dispersal and immigration rates (Wilcox and Murphy 1985; Wilcove et al. 1986). Because of complex community-level interactions (e.g., mutualistic species, habitat guilds, and keystone species), the loss of one or a few species from a habitat patch as a direct result of habitat fragmentation (primary extinctions) may also result in multiple "secondary" extinctions within the habitat patch (Wilcox and Murphy 1985). The buildout of the proposed project would result in potential habitat fragmentation and isolation effects as a result of large-scale development within the valley floor and a small portion of the foothills.

Implementation of MM-BTR-OS conserves 3,232 acres of contiguous open space and movement corridors (e.g., Grapevine Creek). The conservation of on-site open space areas minimizes effects from habitat fragmentation through providing large swaths of open space areas adjacent to other conserved lands on the Ranch that allow for wildlife movement and dispersal as well as plant pollinators and seed dispersal east–west along the California Aqueduct and the Tehachapi and San Emigdio Mountain foothills, and north–south along Grapevine Creek and the tributary to Cattle Creek (CC-2). The contiguity of the open spaces would reduce impacts from habitat fragmentation by allowing wildlife to move freely through areas away from human activity and development, thus reducing the effects of habitat fragmentation on plant and wildlife populations in the region.

(5) Hydromodification

Increased urban and stormwater runoff due to the increase in impervious surfaces from buildout of the proposed project footprint may result in long-term hydrologic alterations, including increased runoff volume. Groundwater levels may be affected as a result of interference with groundwater recharge that could cause a deficit in aquifer volumes or lowering of the local groundwater table. These hydrologic alterations may affect riparian vegetation and wildlife habitat for many species, including semi-aquatic species and riparian birds. For example, excessive and/or perennial runoff could increase downstream ponding, converting riparian communities to marsh, and, thus, altering species' communities.

MM-BTR-WQ implements measures included in the WQTR, which describes site design, source control, low-impact development (LID), and hydromodification control BMPs during the operational phase to reduce adverse effects of modifying natural hydrologic conditions. Specifically, the proposed project would implement hydromodification controls to prevent and control hydromodification impacts to Grapevine Creek and other local channels. The site would, to the extent possible, preserve natural hydrologic conditions and protect hydrologic features, sediment sources, and habitats. The proposed project would also minimize the effects of development though site design practices and implementation of stormwater volume-reducing LID measures. Additionally, MM-BTR-OS conserves the major drainages on site, including Grapevine Creek and a tributary to Cattle Creek, keeping natural hydrology intact throughout most of the study area, and MM-BTR-LAND requires plant palettes with low irrigation requirements, which would help reduce irrigation-related runoff.

(6) Increased Abundance of Urban-Related Species

Urban-related species, including mesopredators, urban-related predators, and stray and feral cats and dogs can outcompete smaller native species for available resources, and increase predation rates, thus reducing the distribution and population of vulnerable native species (Crooks and Soulé 1999).

Urban-related species, such as crows and ravens, seagulls, skunks, raccoons, and red fox, may be attracted to food waste and their populations may artificially increase in areas where this food is available, such as parks, residential developments, and trails. Stray and feral cat and dog populations can increase with residential developments as well, and impact native wildlife populations.

Conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of urban-related species by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-RMP includes control of stray and feral cats and dogs. MM-BTR-TRASH requires property owners to keep trash in covered containers that are fitted with animal- and weather-resistant lids in order to prevent artificially increasing the populations of urban-related species, discourages special-status and other wildlife species from foraging on trash, and reduces negative interactions between wildlife and humans and pets.

Additionally, as required in MM-BTR-TRAIL, trailheads and/or on-trail signage in the open space would state that: (1) pets must be leashed at all times while in project open space; (2) dog owners are required to pick up and pack out their animals' feces; and (3) people and their animals must stay on existing trails at all times. The trail signage would inform and remind trail users of the restrictions related to pets that are in place to avoid and minimize impacts to species in the open space. MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources and reinforce the restrictions associated with trail use, outlined in MM-BTR-TRAIL. Additionally, an RMP would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space. The RMP would address the control of stray and feral cats and dogs in open space areas and require maintenance patrols to monitor trail conditions, such as pet-related impacts (MM-BTR-RMP).

(7) Increased Fire Risk

Urbanization alters natural wildfire regimes in terms of the frequency of fires, but also in regard to the strategic and tactical approaches to preventing and fighting wildfires. Wildfire in Mediterranean type ecosystems affects the structure and function of vegetation communities. In most cases, fires are quickly suppressed for public safety and to protect property, but in some cases fires become uncontrollable and catastrophic, in part because past fire suppression has resulted in much greater fuel loads in urbanized environments than would occur under natural regimes. These types of fire regime alteration (suppression and catastrophic and/or frequent fires) can drastically affect plant and animal communities, through increases or decreases in the natural fire interval to which the plant and animal communities have adapted. Longer than natural fire intervals can result in excessive buildup of fuel loads, so that when fires do occur, they are catastrophic. Shorter than natural fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and, in some cases, result in permanent transitions of the vegetation to non-native communities, such as annual grassland and weedy communities (e.g., Malanson and O'Leary 1982; Keeley 1987; O'Leary et al. 1992). The alteration of vegetation communities consequently has profound effects on the wildlife species communities.

Altered wildfire regime, and particularly increased incidence of fires in urbanizing areas, may also be considered an edge effect because often these fires are a result of human activities at the open space–urban interface, such as accidental ignitions from sparks from equipment, such as mowers striking rocks, cigarettes, children playing with matches, etc., as well as intentional ignitions, such as arson. However, fires may be ignited by downed or arcing power lines or cars catching on fire along roadways in fairly remote areas. More importantly, the effect of large wildfires is at the landscape level, especially when fires are quickly spread by strong winds.

The majority of the development is located within the valley floor, which is primarily grassland with low fuel loads. However, recreational activities within the open space areas, such as hiking or other activities listed above, increases the risk of fire to the scrub, native grassland, and woodland vegetation communities in the foothills. MM-BTR-FIRE implements fuel modification described in the *Fire Safety Plan for the Grapevine Project* (Dudek 2014), which reduces fuel loads and fire risk in open space areas. In addition, conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of fire by providing substantial suitable habitat away from the urban–open space interface, and MM-BTR-RMP requires implementation of a RMP for the open space and includes periodic maintenance patrols to remove fire hazards within open space areas.

(8) Collisions or Electrocutions with Power Lines

Powerlines, transmission towers, and utility poles can cause entanglements and electrocution of large birds, such as the California condor, the golden eagle, and other raptors (Lehman et al. 2007; Franson et al. 1995). To reduce effects from collisions with power lines or towers, MM-BTR-APLIC states that no new aboveground high-voltage towers or power lines shall be built as part of the proposed project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the proposed project or if the proposed project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the *Avian Protection Plan Guidelines* prepared by the Edison Electric Institute's APLIC and USFWS (2005). Because of the potential for raptors, including the California condor, to collide with wind turbines, no wind farms or wind turbines shall be constructed anywhere in the Grapevine Specific Plan Area.

(9) Vehicle Collisions

The increased density and capacity of roads associated with development results in increased risk of vehicle collisions where wildlife use or attempt to cross roadways, particularly in areas that were frequently used by wildlife before roads and other development were built. Factors related to the number and types of species affected include vehicle speeds, traffic volume, traffic pulses, accessibility of cover, structure of the road (e.g., whether the road is raised or at grade level with the surrounding environment), barrier walls to prevent access to a roadway, and availability of alternative crossing, such as bridges and culverts (Dodd et al. 2004).

Most of the proposed roads would be constructed internal to the development areas and would have very little direct contact with open space, and thus relatively little risk of vehicle collisions with wildlife. The primary vehicle collision risk areas are adjacent to Grapevine Creek and the tributary to Cattle Creek (CC-2) and along Edmonston Pumping Plant Road. MM-BTR-OS would conserve 3,232 acres of open space and protect against edge and other urban-related effects, including traffic collisions. Along Grapevine Creek, the road crossings would be bridged, allowing wildlife to move along the creek unimpeded. Also, while Edmonston Pumping Plant Road is adjacent to open space, the road does not bisect open space except where adjacent to planning are 5b, minimizing the edge effect between open space and development. The width of open space along the tributary to Cattle Creek would range from approximately 150 to more than 400 feet wide, with typical widths in the 200- to 300-foot range. Wildlife that are more tolerant of urban development, such as coyotes and raccoons, would likely continue to use the tributary, and vehicle collisions to special-status species adjacent to this tributary would not be substantial.

(10) Use of Pesticides

Pesticides, fertilizers, fungicides, herbicides, and rodenticides may directly affect habitat, be directly toxic to species, indirectly toxic through prey vectors, or reduce prey abundance. These substances may penetrate the open space–urban interface through urban runoff from residential and commercial landscape areas and golf courses, overspray, wind, direct applications in interface areas, soil penetration, and wildlife vectors. Pesticides, for example, can act in several ways. The original pesticide can be toxic, its decomposed elements can be even more toxic, and it can "bio-accumulate," whereby the contaminant concentrates in each link of the food chain, and thus reaches high concentrations at each higher level of the food chain. Indirect mortality due to contaminated prey may also be significant. Rodenticides may also affect wildlife in various ways. Rodenticides are directly toxic to rodents, but may also indirectly affect rodent predators, such as hawks and owls, foxes, coyotes, snakes, etc., either through loss or contamination of prey. Eradication of rodents can also affect habitat quality for other species, such as burrowing owls that use ground squirrel burrows and many species of reptiles, amphibians, and insects that use rodent burrow as refugia, aestivation, and hibernation.

The EPA and California Department of Pesticide Regulation regulate the use of pesticides and require that pesticide applicators be licensed and trained. Therefore, compliance with existing weed and pest control regulations (MM-BTR-PCR) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through a reduction in pollinators, allowing establishment of non-native species in edge areas, through direct poisoning from consuming contaminated prey, or indirectly by reducing prey abundance. Additionally, the use of anticoagulants used for rodent control would be prohibited (MM-BTR-IMP); this would avoid the risk of secondary poisoning of wildlife by anticoagulants. Because poisoned rodents are less wary and more likely to be predated upon, and the ground squirrel average straight-line movement is approximately 450 feet (137 meters) or less (Chapman and Feldhamer 1982), rodenticides shall not be used in areas within 450 feet of areas zoned as Exclusive Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety (MM-BTR-IMP). This restriction on the use of rodenticides would minimize the potential effects of secondary poisoning by reducing the likelihood that a poisoned rodent would enter open space areas.

(11) Increased Human Activity

Increased human activity in open space areas associated with the proposed project would include recreational use of trails by humans and their pets, which could result in off-trail trampling of vegetation, creation of unauthorized trails, increased human presence around and potential harassment of or harm to wildlife (e.g., causing abandonment of nest sites, collection of animals, crushing by bicycles and motorized off-road vehicles), potential harassment of or harm to wildlife by pets, and trash and debris.

Conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risks of increased human activity by providing substantial suitable habitat away from the urban–open space interface. Additionally, as required in MM-BTR-TRAIL, trailheads and/or on-trail signage in the open space would state that: (1) pets must be leashed at all times while in project open space; (2) dog owners are required to pick up and pack out their animals' feces; (3) intentional feeding of wildlife is prohibited; and (4) people and their animals must stay on existing trails at all times. The trail signage would inform and remind trail users of the restrictions related to trail use that are in place to avoid and minimize trampling of vegetation, creation of unauthorized trails, increased human presence around and potential harassment of or harm to wildlife species, and potential harassment of or harm to wildlife by pets in open space.

MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources and would reinforce the restrictions associated with trail use, outlined in MM-BTR-TRAIL. MM-BTR-ED would also provide education on the fact that wildlife could prey on pets, and no actions would be taken against native animals should they prey on pets allowed outdoors by their owners. MM-BTR-IF prohibits the intentional feeding of condor, bald eagle, golden eagle, and San Joaquin kit fox in the Grapevine Specific Plan Area, which reduces potential habituation of wildlife species and minimizes human–wildlife interactions. While California condor does not commonly use the Grapevine Specific Plan Area or off-site impact areas for foraging, the increase in microtrash could affect this species if it were to forage on site. MM-BTR-CONDOR helps reduce harassment to condors and habituation through monitoring their movements near the Grapevine Specific Plan Area and hazing by the USFWS if necessary. This measure also reduces microtrash-related impacts by providing for routine community maintenance activities that would include regular efforts to eliminate microtrash on and near all roads where human presence has occurred.

Additionally, an RMP (MM-BTR-RMP) would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space. The RMP would require maintenance patrols to monitor trail conditions, such as unauthorized impacts from off-trail use. MM-BTR-RMP also provides specific measures to reduce harassment on bald eagles, golden eagles, and condors; specifically, adequate setbacks from bald eagle winter perch sites would be established between October 15 and March 15, no new trails would be constructed within 0.25 mile of an active golden eagle nest, hunting shall become restricted to pest control (e.g., feral pig eradication), and animal carcasses found within 1,000 feet of development shall be relocated to reduce indirect impacts to condors.

(12) Risk of Disease

Increased human and associated pet populations can increase the risk of disease transmission to native wildlife. For example, free-ranging domestic cats and dogs can transmit new diseases to wild animals. Mountain lions (*Puma concolor*) and other native wildlife, such as the raccoon, skunk, and fox, may be at risk to a variety of diseases from domestic cats, including feline immunodeficiency virus, feline leukemia virus, feline infectious peritonitis, feline and canine distemper, panleukopenia, and rabies (Foley 1996; Florida Fish and Wildlife Conservation Commission 2003).

The increased prevalence of non-native amphibians, such as the African clawed frog, increases the risk of disease transmission to native amphibians. African clawed frogs are pets that can be released into open space areas. Based on epidemiological evidence, the African clawed frog has been proposed as the origin of spread of the amphibian chytrid fungus (*Batrachochytrium dendrobatidis*), which infects amphibians with the disease chytridiomycosis that is considered one of the main causes of amphibian die-offs worldwide (Weldon et al. 2004; Lefcort and Blaustein 1995).

Diseases transmitted from humans and pets may also affect raptors. Boal and Mannan (1999) found that mortality of nestling Cooper's hawks (*Accipiter cooperii*) in urban settings was primarily from trichomoniasis, which is caused by the parasitic protozoan *Trichomonas gallinae* that occurs in the digestive and urogenital tracts of many animals and humans. This parasite causes lesions in the mouth, throat, and crop of birds and prevents infected individuals from eating. An important vector of trichomoniasis in urban areas may be domestic pigeons (*Columba livia*) and potentially wild doves (Columbidae), which are preyed upon by hawks and falcons (Stabler 1941).

As described, risk of disease transmission rises with the increase in human presence and associated pet populations. Therefore, conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of disease transmission by providing substantial suitable habitat away from the urban–open space interface. Additionally, as required in MM-BTR-TRAIL, trailheads and/or on-trail signage in the open space would state that: (1) pets must be leashed at all times while in project open space; (2) dog owners are required to pick up and pack out their animals' feces; and (3) people and their animals must stay on existing trails at all times. The trail signage would inform and remind trail users of the restrictions related to pets that are in place to avoid and minimize disease transmission to species in the open space. MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources and reinforce the restrictions associated with trail use, outlined in MM-BTR-TRAIL. Additionally, a RMP (MM-BTR-RMP) would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space. The RMP would address the control of stray and feral cats and dogs in open space areas and require maintenance patrols to monitor trail conditions, such as pet-related impacts.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
Plants			
Special-status plants, including calico monkeyflower, Piute Mountains navarretia, and Tejon poppy	• Chemical releases such as oils and grease from vehicles that could degrade habitat • Habitat fragmentation • Hydromodification from increased urban runoff and irrigated landscaping • Increased fire risk that could degrade habitat through runoff and erosion, or depending on the timing, fire could affect individuals or the seed bank • Increased invasive plant species that may degrade habitat • Pesticides, including effects such as a reduction in pollinators or killing or weakening native species and/or allowing establishment of non-native species in edge areas • Public trail use by humans that could result in trampling of vegetation, collection of individuals, and soil compaction, which could affect soil moisture, water penetration, surface flows, and erosion.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-WQ	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the species, including trampling and collection. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve all of the calico monkeyflower, Tejon poppy, and 3,373 to 12,484 individuals (71% to 76%) of Piute Mountains navarretia and protect against edge and other urban-related effects, such as invasive species, urban runoff, and habitat fragmentation by providing substantial open space where the plants are located away from the urban-open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through a reduction in pollinators or allowing establishment of non-native species in edge areas. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards within the project open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the species, including trampling and collection. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) would reduce adverse effects of modifying natural hydrologic conditions.
Amphibians and Reptiles			
blunt-nosed leopard lizard (BNLL; FE/SE; FP)	• Chemical releases, such as oils and grease from vehicles and pesticide effects such as ingestion of contaminated prey and reduction in prey abundance • Habitat fragmentation • Increased invasive plant and animal species, including Argentine ants, that may alter habitat or directly impact the species • Increased abundance of urban-related mesopredators (e.g., raccoons, skunks, opossum, and red fox) and pets (dogs and cats) • Increased traffic and vehicle collision risk • Increased fire risk that could degrade habitat • Public trail use by humans.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the species. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. Additionally, MM-BTR-LAND requires the rejection of any container plants to be installed within 100 feet of open space containing Argentine ants, which may prey on young blunt-nosed leopard lizards. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects, such as invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the species, including soil compaction. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to mesopredators such as skunks, raccoons, and red foxes.
Blainville's horned lizard (None/SSC)	• Hydromodification from increased urban runoff and irrigated landscaping • Habitat fragmentation • Chemical releases, such as oils and grease from vehicles that could degrade habitat and pesticide effects such as reduction in insect prey (primarily harvester ants) abundance	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the species, including collection of individuals. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that could directly kill horned lizards and destroy harvester ant colonies. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. Additionally, MM-BTR-LAND requires the rejection of any container plants to be installed within 100 feet of open space

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
	• Increased invasive plant and animal species (especially Argentine ants) that may alter habitat or may directly impact the species • An increased abundance of urban-related predators (e.g., crows and ravens) and pets (dogs and cats) • Public trail use by humans that could result in collection of individuals and potential for soil compaction • Increased traffic and vehicle collision risk • Increased fire risk that could degrade habitat.	TRAIL, MM-BTR-TRASH, and MM-BTR-WQ	containing Argentine ants, which compete with and prey on native harvester ants—the horned lizard's primary food source—and also attack horned lizards directly. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban-open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize potential effects related to pesticides, such as improper use that could harm the species indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the species, including soil compaction and collection of individuals. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to urban-related predators such as crows and ravens. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) that would reduce adverse effects of modifying natural hydrologic conditions.
San Joaquin coachwhip (snake) (None/SSC)	• Chemical releases such as oils and grease from vehicles that could degrade habitat, and pesticide effects such as ingestion of contaminated prey and reduction in prey abundance • Habitat fragmentation • Increased abundance of urban-related mesopredators (e.g., red fox) and pets (dog and cats) • Increased fire risk that could degrade habitat • Increased invasive plant and animal species that may alter habitat or may directly impact the species • Increased traffic and vehicle collision risk • Public trail use by humans.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the species, including harassment. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as invasive species, vehicle traffic, habitat fragmentation, and increased abundance of urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the species, including harassment. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to mesopredators such as red fox.
silvery legless lizard (None/SSC)	• Chemical releases such as oils and grease from vehicles that could reduce habitat quality, and pesticide effects such as reductions in insect prey abundance • Development-related nighttime lighting that could increase predation of species by nocturnal predators • Habitat fragmentation • Hydromodification from increased urban runoff and irrigated landscaping • Increased fire risk that could directly kill silvery legless lizards and degrade their habitat • Increased invasive plant and animal species that may alter habitat or may directly impact the species • Increased abundance of urban-related mesopredators (e.g., raccoons and skunks)	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, MM-BTR-TRASH, and MM-BTR-WQ	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public on the species. MM-BTR-FIRE (implementation of a fire safety plan) would minimize the potential exposure of open space to fire ignitions originating in the development areas that could directly kill silvery legless lizards and degrade habitat. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as urban runoff, habitat fragmentation, and an increased abundance of invasive species and urban-related mesopredators by providing substantial suitable habitat away from the urban-open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could reduce insect prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public on the species, including soil compaction.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
	• Public trail use by humans and potential for soil compaction.		• MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to potential mesopredators such as raccoons and skunks. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) would reduce adverse effects of modifying natural hydrologic conditions.
two-striped garter snake (None/SSC)	• Harassment by dogs as a result of trail use by the public • Hydromodification from increased urban runoff and irrigated landscaping • Increased abundance of urban-related mesopredators attracted to trash from public use • Increased fire risk that could degrade habitat over time, such as direct damage to vegetation and erosion into riparian and wetland vegetation. • Trampling of vegetation from off-site trail use.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, MM-BTR-TRASH, and MM-BTR-WQ	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on individual species or suitable habitat including harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality in on-site open space. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as invasive species, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could indirectly affect two-striped garter snake. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on individual species or suitable habitat including trampling of habitat and harassment by pets. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to mesopredators. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) would reduce adverse effects of modifying natural hydrologic conditions.
western spadefoot (toad) (None/SSC)	• Chemical releases such as oils and grease from vehicles and pesticide effects, including habitat degradation, direct harm to spadefoots, and reductions in insect prey abundance • Development-related nighttime lighting that could affect nocturnal behavior • Habitat fragmentation • Hydromodification from increased urban runoff and irrigated landscaping (perennialization of aquatic breeding sites can facilitate colonization by invasive predators of spadefoots, such as bullfrogs, crayfish, and non-native fishes such as mosquitofish) • Increased abundance of urban-related mesopredators (e.g., raccoons, skunks, opossum, and red fox) and pets (cats and dogs), along with lighting that increases predation risk • Increased invasive plant and animal species that may alter habitat or may directly impact the species • Increased traffic and vehicle collision risk • Increased fire risk that could degrade habitat • Public trail use by humans that could result in collection of individuals and soil disturbances and compaction in aestivation habitat	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, MM-BTR-TRASH, and MM-BTR-WQ	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on western spadefoot breeding sites, including collection of spadefoots and pet waste. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-LIGHT (restrictions on operation-related lighting) would reduce indirect effects on spadefoot nocturnal activity and reduce the risk of predation by nocturnal mesopredators. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would protect potential on-site breeding and aestivation locations from various adverse edge and other urban-related effects such as urban run-off, lighting, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could reduce insect prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control of stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public and their pets on western spadefoot breeding sites, including trampling, collection of spadefoots, and pet waste. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to mesopredators. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) that would reduce adverse effects of modifying natural hydrologic conditions.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
Birds			
bald eagle[2] (Delisted, BCC, MBTA/ST, FP), golden eagle[2] (BCC, MBTA/FP)	• Harassment by the public • Collisions with Power Lines and Utility Structures • Pesticides (including rodenticides) that could directly harm individuals if they ingest poisoned prey • Increased fire risk that could degrade habitat	MM-BTR-APLIC, MM-BTR-ED, MM-BTR-FIRE, BTR-MM-IF, MM-BTR-IPM, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, and MM-BTR-TRAIL	**Less than Significant** • MM-BTR-APLIC (bird collision avoidance measures for aboveground utilities) would prohibit new aboveground high-voltage towers or power lines and require BMPs of existing utilities to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on bald and golden eagle, including disturbance from humans and/or their pets. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-IF (prohibition on the intentional feeding of wildlife) would reduce adverse effects of human disturbance and habituation on bald and golden eagles. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid potential effects on individuals and their prey base. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as human disturbances by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) would avoid and reduce effects of the public on bald eagles by restricting trail use within an adequate setback from winter roost sites between October 15 and March 15. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public and their pets on bald and golden eagles, including disturbance from humans and/or their pets.
burrowing owl (BCC, MBTA/SSC)	• Chemical releases such as oils and grease from vehicles that could reduce habitat quality and pesticides (including rodenticides) that could directly harm individuals • Habitat fragmentation • Harassment by the public, including disturbance of active nest sites near any public trails or other public use areas • Impacts to active nests from fuel management activities • Increased abundance of urban-related mesopredators (e.g., red fox) and pets and feral animals (cats and dogs) • Increased invasive plant and animal species that may alter habitat or directly impact the species • Increased risk of collisions or electrocutions with power lines • Increased fire risk that could degrade habitat • Increased traffic vehicle and vehicle collision risk • Increased fence collision risk • Reduction in the availability of burrows created by ground squirrels that may be killed by rodenticides and a reduction in the availability of prey, including insects and small rodents	MM-BTR-APLIC, MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-APLIC (bird collision avoidance measures for aboveground utilities) would prohibit new aboveground high-voltage towers or power lines and require BMPs of existing utilities to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on burrowing owl, including disturbance from humans and/or their pets. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid potential effects on individuals and their prey base. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as invasive species, pesticides, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control of stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public and their pets on burrowing owl, including disturbance from humans and/or their pets. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to mesopredators such as red fox.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
California condor[2] (FE, MBTA/SE, FP)	• Microtrash • Human disturbances/habituation to humans and artificial structures • Collisions with power lines and utility structures	MM-BTR-APLIC, MM-BTR-CONDOR, MM-BTR-ED, BTR-MM-IF, MM-BTR-LIGHT, MM-BTR-OS, and MM-BTR-TRAIL	**Less than Significant** • MM-BTR-APLIC (bird collision avoidance measures for aboveground utilities) would prohibit new aboveground high-voltage towers or power lines and require BMPs of existing utilities to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. • MM-BTR-CONDOR (required notification of condor observations, restrictions on occupant behavior and activities, and community service) would reduce adverse effects from harassment and habituation by monitoring condor movements near Grapevine and hazing by USFWS if necessary, and reduce microtrash by providing for routine community maintenance activities that would include regular efforts to eliminate microtrash on and near all roads where human presence has occurred. • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on bald and golden eagle, including disturbance from humans and/or their pets. • MM-BTR-IF (prohibition on the intentional feeding of wildlife) would reduce adverse effects of human disturbance and habituation on California condors. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as human disturbances by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-RMP (preparation and implementation of an RMP) includes specific measures to help reduce impacts to condor, including restrictions on recreational hunting over time, and the relocation of dead cattle or other carcasses that are found within 1,000 feet of the proposed project footprint to appropriate off-site areas. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce microtrash through requiring property owners to keep trash in covered containers that are fitted with animal- and weatherproof lids. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public and their pets on California condors, including disturbance from humans and/or their pets.
ferruginous hawk (BCC, MBTA/None)	• Habitat fragmentation • Increased risk of collisions or electrocutions with power lines • Increased risk of fire that could reduce foraging habitat quality • Increased traffic and vehicle collision risk • Pesticides (including rodenticides) that could directly harm individuals through secondary poisoning and reduce availability of prey, including ground squirrels, pocket gophers, and rabbits	MM-BTR-APLIC, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-OS, MM-BTR-PCR, and MM-BTR-RMP	**Less than Significant** • MM-BTR-APLIC (bird collision avoidance measures for aboveground utilities) would prohibit new aboveground high-voltage towers or power lines and requires BMPs of existing utilities to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect against edge and other urban-related effects such as habitat fragmentation and vehicle traffic by providing substantial suitable foraging habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid potential effects on individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) that would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space.
loggerhead shrike (BCC, MBTA/SSC)	• Chemical releases such as oils and grease from vehicles and pesticides that could directly harm individuals, primarily through ingestion of contaminated prey and reduced availability of prey, including lizards, small rodents, and insects • Competition with European starlings for resources • Impacts to active nests during fuel management activities • Effects on invasive ants, including red imported fire ants and Argentine ants that are attracted to moist habitats along urban–open space edges and in drainages created by urban runoff and irrigation associated with urban landscaping • Habitat fragmentation • Increased abundance of urban-related mesopredators (especially raccoons and opossums) and pets (especially cats)	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on loggerhead shrikes, including disturbance from humans and/or their pets. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid potential effects on individuals and their prey base. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect on-site habitat from various adverse edge and other urban-related effects such as urban runoff, invasive species (e.g., European starling), pesticides, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban-open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control of stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) that would reduce adverse effects of the public and their pets on loggerhead shrikes, including disturbance from humans and/or their pets.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
	• Increased fire risk that could degrade habitat • Increased traffic and vehicle collision risk • Public trail use by humans that could result in disturbance to active nests		• MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) that would reduce attractants to mesopredators such as raccoons and opossums.
Oregon vesper sparrow (BCC, MBTA/SSC)	• Chemical releases such as oils and grease from vehicles and pesticides that could directly harm individuals, primarily through ingestion of contaminated plant material or prey and reduced availability of prey, including insects • Increased abundance of predators (especially cats) • Increased traffic and vehicle collision risk • Increased fire risk that could degrade habitat.	MM-BTR-FIRE, MM-BTR-OS, MM-BTR-PCR, and MM-BTR-RMP	**Less than Significant** • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect on-site open space habitat from various adverse edge and other urban-related effects such as chemical releases, pesticides, vehicle traffic, habitat fragmentation, and urban-related predators such as cats by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) that would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space.
black-chinned sparrow, oak titmouse, Lawrence's goldfinch, Nuttall's woodpecker, yellow warbler (BCC, MBTA/SSC); and purple martin (MBTA/SSC).	• Chemical releases such as pesticides that could directly harm individuals, primarily through ingestion of contaminated plant material or prey and reduced availability of prey, including insects • Harassment by dogs as a result of trail use by the public • Increased abundance of urban-related mesopredators attracted to trash from public use • Increased fire risk that could degrade habitat over time, such as direct damage to vegetation and erosion • Impacts to active nests during fuel management activities • Public trail use by humans that could result in disturbance to active nests • Trampling of vegetation from off-site trail use.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on nesting birds, individual species, or suitable habitat including trampling of habitat, noise, and harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality in on-site open space and avoid impacts to nesting birds. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect on-site open space habitat from various adverse edge and other urban-related effects such as pesticides, and urban-related predators such as cats by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on nesting birds, individual species, or suitable habitat including trampling of habitat, noise, and harassment by pets. • MM-BTR-TRASH (requirement for trail users to use animal- and weather-resistant trash receptacles) would reduce attractants to mesopredators such as raccoons, opossums, and red foxes.
northern harrier (MBTA/SSC) and tricolored blackbird (BCC, MBTA/SE)	• Chemical releases from urban runoff, such as pesticides that could directly harm individuals, primarily through ingestion of contaminated plant material or prey and reduced availability of prey, including insects • Harassment by dogs as a result of trail use by the public • Hydromodification • Increased abundance of urban-related mesopredators attracted to trash from public use • Increased fire risk that could degrade habitat over time, such as direct damage to vegetation and erosion into riparian and wetland vegetation • Impacts to active nests during fuel management activities	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, MM-BTR-TRASH, and MM-BTR-WQ	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on nesting birds, individual species, or suitable habitat including trampling of habitat, noise, and harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality in on-site open space and avoid impacts to nesting birds. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect on-site open space habitat from various adverse edge and other urban-related effects such as pesticides, and urban-related predators such as cats by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could affect individuals and their prey base. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on nesting birds, individual species, or suitable habitat including trampling of

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
	• Public trail use by humans that could result in disturbance to active nests • Trampling of vegetation from off-site trail use.		habitat, noise, and harassment by pets. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant receptacles) would reduce attractants to mesopredators such as raccoons, opossums, and red foxes. • MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) would reduce adverse effects of modifying natural hydrologic conditions.
Native birds and raptors protected under MBTA and California Fish and Game Code Section 3503	• Loss of active nests during fuel management activities	MM-BTR-FIRE	**Less than Significant** • MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas and requires the avoidance of nesting birds during fuel management activities.
Mammals			
Buena Vista Lake shrew (FE/SSC)	• Harassment by dogs as a result of trail use by the public • Increased abundance of urban-related mesopredators, such as red foxes, attracted to trash from public use • Increased fire risk that could degrade habitat over time that could degrade habitat quality, such as direct damage to vegetation and erosion into riparian and wetland vegetation. • Trampling of vegetation from off-site trail use.	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-OS, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on suitable habitat for Buena Vista Lake shrew, including trampling of habitat and harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality in on-site open space. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect potential on-site and off-site habitat from various adverse edge and other urban-related effects such as urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-RMP (preparation and implementation of an RMP) that would require periodic maintenance patrols to monitor trail conditions and fire hazards in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on suitable habitat for Buena Vista Lake shrew, including trampling of habitat and harassment by pets. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) that would reduce attractants to mesopredators such as red foxes.
San Joaquin kit fox (FE/ST)	• Chemical releases from urban runoff, such as oils and grease from vehicles and pesticide effects that may be directly harmful or that could reduce availability of prey such as kangaroo rats (their primary prey), ground squirrels (primary prey in some areas), other small rodents and rabbits • Habitat fragmentation • Increased abundance of urban-related predators (especially coyotes that are both a primary predator and potential competitor for resources, as well as red foxes that may be attracted to water sources (see USFWS 2010a)) and pets and feral animals (especially dogs) • Increased fire risk that could degrade habitat over time • Habitat modification through the introduction of non-native plant species, and an increase in grass and herb cover from increased water runoff • Increased vehicle collision risk • Public use of trails that could result in harassment • Risk of disease such as canine distemper and canine	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on suitable habitat for kit fox, including increased human presence and noise, and harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects related to pesticides that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-LIGHT (restrictions on operation-related lighting) would reduce indirect effects on kit fox nocturnal activity. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect potential on-site and off-site habitat from various adverse edge and other urban-related effects such as urban runoff, lighting, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter and monitor trail conditions and fire hazards within the project open space, control stray and feral animals in open space, and habitat enhancement activities, such as the creation of escape dens for San Joaquin kit fox. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on suitable habitat for kit fox, including increased human presence and noise, and harassment by pets.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
	parvovirus contracted from dogs • Development-related lighting that could affect their nocturnal behavior patterns.		• MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to predators such as coyotes and red foxes.
Nelson's antelope squirrel (None/ST)	• Chemical releases such as oils and grease from vehicles and pesticide effects, especially use of rodenticides and insecticides, that can reduce insect and small vertebrate prey • Habitat fragmentation • Increased abundance of urban-related predators (especially coyotes) and pets (especially cats) • Increased fire risk that could degrade habitat • Increased invasive plant and animal species that may alter habitat or may directly impact the species • Increased traffic and vehicle collision risk • Public trail use by humans	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on suitable habitat for Nelson's antelope squirrel, including harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects related to pesticides that could harm the species through direct poisoning. • MM-BTR-LAND (restrictions on landscaping palettes and plants) that would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would protect potential on-site habitat from various adverse edge and other urban-related effects such as urban runoff, lighting, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides and insecticides, such as improper use that could harm the species through direct poisoning or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on suitable habitat for Nelson's antelope squirrel, including trampling and harassment by pets. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to predators such as coyotes.
American badger (None/SSC)	• Chemical releases from urban runoff, such as oils and grease from vehicles and pesticide effects, and especially rodenticides, that could directly poison badgers and contaminate and reduce availability of prey such as ground squirrels, pocket gophers, other small rodents, and rabbits • Habitat fragmentation • Increased abundance of urban-related predators (coyotes) and/or potential competitors for food (e.g., coyotes, red foxes, raccoons) and pets (especially dogs) • Increased fire risk that could degrade habitat over time and reduce prey availability • Increased traffic and vehicle collision risk • Public use of trails that could result in harassment • Development-related lighting that could affect their nocturnal behavior patterns • Urban lighting that could affect their nocturnal behavior patterns	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on suitable habitat for American badger, including trampling of habitat and/or dens, increased noise, and harassment by pets. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects related to pesticides that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-LIGHT (restrictions on operation-related lighting) would reduce indirect effects on badger nocturnal activity. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect potential on-site habitat from various adverse edge and other urban-related effects such as urban runoff, lighting, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators and potential food competitors by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on suitable habitat for American badger, including trampling of habitat and/or dens, increased noise, and harassment by pets. • MM-BTR-TRASH (require residents to use animal- and weather-resistant trash receptacles) would reduce attractants to predators and/or potential food competitors such as coyotes, red foxes, and raccoons.

Table 4-3
Summary of Potential Operations-Related Indirect Impacts to Special-Status Species, Applicable MMs, and Significance

Species (Federal/State Status)[1]	Summary of Potential Operations-Related Indirect Impacts	Applicable MMs	Significance of Impact
pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat (None/SSC)	• Chemical releases such as oils and grease from vehicles and pesticide effects, including direct harm and reductions in insect prey abundance • Development-related noise and lighting • Hydromodification from increased urban runoff and irrigated landscaping (alter existing water sources) • Increased abundance of urban-related mesopredators and pets (cats and dogs) that may disturb roosts or the ground-feeding pallid bat • Increased fire risk that could degrade and/or destroy foraging habitat and roost sites, as well as potential indirect disturbances of roost sites during ongoing vegetation management to reduce fire risks. • Increased invasive plant and animal species that may alter habitat or may directly impact the species • Public trail use by humans that could result in disturbance of active bat roosts • Hydromodification from increased urban runoff and irrigated landscaping (alter existing water sources)	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCA, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public and their pets on active bat roosts, including increased noise and disturbance of roosts. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas. • MM-BTR-LIGHT (restrictions on operation-related lighting) would reduce indirect effects on bat nocturnal activity. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect potential on-site active bat roosts and suitable habitat from various adverse edge and other urban-related effects such as urban runoff, lighting, noise, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. MM-BTR-OS also conserves the major drainages on site, including Grapevine Creek and the tributary to Cattle Creek, which reduces hydromodification impacts by keeping natural hydrology intact throughout most of the Grapevine Specific Plan Area. • MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures) requires pre-construction surveys and avoidance of roost sites prior to construction activities and fuel management activities. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, such as improper use that could harm the species through direct poisoning from consuming contaminated prey or indirectly by reducing prey abundance. • MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public and their pets on active bat roosts, including increased noise and disturbance of roosts. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to mesopredators.
San Diego black-tailed jackrabbit (None/SSC)	• Chemical releases such as oils and grease from vehicles that could degrade habitat and harm jackrabbits and pesticide effects, especially use of rodenticides, that could inadvertently kill jackrabbits • Development-related nighttime lighting that could affect nocturnal behavior • Habitat fragmentation • Increased abundance of urban-related predators (especially coyotes and red foxes) and pets (dogs and cats) • Increased fire risk that could degrade herbaceous forage habitat quality over time. • Increased traffic and vehicle collision risk • Public use of trails that could flush jackrabbits from refugia areas or harassment by dogs on trail • Development-related lighting could increase predation risk and alter nocturnal activity patterns • Chemical releases such as oils and grease from vehicles that could degrade habitat and harm jackrabbits and pesticide effects, especially use of rodenticides, that could inadvertently kill jackrabbits	MM-BTR-ED, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-TRASH	**Less than Significant** • MM-BTR-ED (conservation education and awareness program for occupants) would reduce the adverse effects of the public and their pets on San Diego black-tailed jackrabbit, including harassment and predation. • MM-BTR-FIRE (implementation of a fire safety plan) would minimize potential exposure of open space to fire ignitions originating in the development areas that over time could degrade habitat quality. • MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects related to rodenticides that could harm the species through direct poisoning. • MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat due to invasive plant species that may alter the composition of the community. • MM-BTR-LIGHT (restrictions on operation-related lighting) would reduce indirect effects on jackrabbit nocturnal activity. • MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of open space and protect potential on-site habitat from various adverse edge and other urban-related effects, such as urban runoff, lighting, invasive species, vehicle traffic, habitat fragmentation, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface. • MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to herbicides and pesticides, such as improper use that could harm the species through direct poisoning or reduce availability of herbaceous forage. • MM-BTR-RMP (preparation and implementation of an RMP) that would require periodic maintenance patrols to remove litter, monitor trail conditions and fire hazards, and control of stray and feral animals in open space. • MM-BTR-TRAIL (trail signage) would reduce the adverse effects of the public and their pets on San Diego black-tailed jackrabbit, including harassment and predation. • MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to predators such as coyotes and red foxes.

[1] **Federal Designations:**

BCC	USFWS Birds of Conservation Concern
Delisted	Federally delisted
FE	Federally listed as endangered

MBTA Migratory Bird Treaty Act
State Designations:
FP CDFW protected and fully protected species
SE State listed as endangered
SC State candidate
SSC California Species of Special Concern
ST State listed as threatened

[2] Focused technical reports were completed for California condor (Appendix K) and bald eagle and golden eagle (Appendix L) and potential long-term permanent indirect impacts to these species are analyzed further in those technical reports.

4.6.4 Threshold Bio-2

Would the project 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 CDFW or USFWS?

As noted above, this analysis considers the previously delineated CDFW- and RWQCB-jurisdictional areas delineated in Appendices E-1 and E-2, additional USGS potential stream features as discussed in Section 2.3 and Appendix E-3, and other vegetation communities considered sensitive by CDFW under CEQA (CDFG 2010a) that occur in the study area. Sensitive natural communities include the following vegetation alliances: narrowleaf goldenbush-bladderpod spiderflower scrub, giant wild rye grassland, purple needle grass grassland, red willow thickets, Fremont cottonwood forest, and valley oak woodland.

4.6.4.1 Operations-Related (Long-Term Permanent) Direct Impacts

In terms of acreage, almost all of the wetland waters of the state that were previously delineated (99%) and non-wetland waters of the state that were previously delineated (96%) would be conserved in proposed project open space, and in terms of linear feet, approximately 55% of the other USGS stream features would be conserved in proposed project open space. Additionally, approximately 98% of the sensitive vegetation communities would be conserved in proposed project open space. Operations-related direct impacts to waters of the state and other USGS stream features and sensitive vegetation communities are discussed by region (foothills, valley floor riparian, and valley floor non-riparian).

Foothills

Approximately 4% of the previously delineated acreage of CDFW- and RWQCB-jurisdictional resources in the study area are located in the foothills and would not be impacted by the proposed project because they would be conserved on site in open space. Approximately 44% of linear feet of the additional USGS stream features are located in the foothills, and approximately 90% of the linear feet would be conserved in proposed project open space. Approximately 97% of the sensitive vegetation communities are located in the foothills, of which there would be impacts to 3 acres (6%) of the purple needlegrass grassland alliance[26] associated with Planning Area 5b.

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[26] The proposed project footprint shows a minor trail crossing through red willow thickets, a sensitive vegetation community; however, the red willow thickets habitat will be avoided in the final trail design (see MM-BTR-RMP).

Valley Floor

Approximately 1.6% of the valley floor consists of previously delineated CDFW- and RWQCB-jurisdictional areas, which include the following: (1) 7.0 acres of wetland waters of the state,[27] 98% of which would be conserved on the valley floor; (2) 78.2 acres of intermittent waters of the state, 99% of which would be conserved on the valley floor; and (3) 12.4 acres of ephemeral waters of the state, 86% of which would be conserved on the valley floor. Approximately 56% of the linear feet of the other USGS stream features are located in the valley floor and approximately 28% of the linear feet would be conserved in proposed project open space on the valley floor. The valley floor has one sensitive vegetation community – Fremont cottonwood forest alliance – and 100% of this community would be conserved in open space.

With respect to impacts to wetland waters, 0.1 acre, consisting of mulefat thickets, would be directly impacted from the construction of a minor road crossing and trail crossing in the valley floor riparian area across the tributary to Cattle Creek (CC-2). However, the perennial portions, restricted to an upstream portion of Grapevine Creek, and the higher-quality and denser native wetland waters communities, would be conserved in open space. The road crossing is an existing road (Edmonston Pumping Plant Road) that would be widened as part of the proposed project. The road widening has been designed to be perpendicular to the stream channel to minimize the impacts to wetland waters at this crossing. Realigning the road at this location to avoid wetland waters would result in increased impacts to biological resources because the impacts would occur in areas that were not previously developed when Edmonston Pumping Plant Road was built; shifting the road north or south 0.3 mile would still result in impacts to wetland waters and shifting the road even further would impact areas that were not previously developed. Similarly, within the study area, the proposed trail network was sited to maximize the use of the existing Ranch trail network, but requires a crossing of the tributary to Cattle Creek (CC-2) to create an interconnected trail system. Realigning the trail at this location and maintaining an interconnected trail system would result in increased impacts to biological resources because the impacts would occur outside of the existing trail; shifting the road north or south would impact wetland waters where there is not an existing trail and Arizona crossing. The road crossing is an existing road (Edmonston Pumping Plant Road) that would be widened as part of the proposed project. The road widening has been designed to be perpendicular to the stream channel to minimize the impacts to wetland waters at this crossing. Realigning the road at this location to avoid wetland waters would result in increased impacts to biological resources because the impacts would occur in areas that were not previously developed when Edmonston Pumping Plant Road was built; shifting the road north or south 0.3 mile would still

27 Wetland waters of the state refers to areas that have hydric soils, hydrophytic vegetation, and hydrology (ACOE 1987, 2008a).

result in impacts to wetland waters and shifting the road even further would impact areas that were not previously developed. Similarly, the proposed trail network was sited to maximize the use of the existing Ranch trail network, but requires a crossing of the tributary to Cattle Creek (CC-2) to create an interconnected trail system. Realigning the trail at this location and maintaining an interconnected trail system would result in increased impacts to biological resources because the impacts would occur outside of the existing trail; shifting the road north or south would impact wetland waters where there is not an existing trail and Arizona crossing.

With respect to intermittent channels, the impacts (0.5 acres or 1%) are limited to perpendicular road crossings associated with the proposed project's backbone infrastructure in order to further avoid and minimize impacts to these channels. More than half of the impacted intermittent channels lack vegetation, with the exception of 0.2 acre of tamarisk thickets that are wholly contained within the bed and bank of the channel and are non-native and invasive riparian vegetation. Intermittent channels are typically characterized by water that flows more than 24 hours after a storm event at certain times of the year. On site, many of these intermittent channels are wider and deeper compared to the on-site ephemeral channels and have a higher potential for storage. The on-site intermittent channels also have sparse vegetation scattered throughout, which helps filter sediments, provides some cover for wildlife species, and can function as wildlife movement areas.

Direct impacts to ephemeral channels associated with proposed project development (as opposed to the backbone infrastructure) are limited to ephemeral non-wetland drainages and total 1.8 acres (14%) of previously delineated jurisdictional areas. Ephemeral non-wetland drainages have lower functions and values than the intermittent stream channels and wetland waters. Ephemeral channels are characterized as having brief flow in direct response to precipitation. The ephemeral channels on site are typically more narrow and often less incised compared to the intermittent channels, and often have scattered grasses or annual herbs, but lack vegetation, such as shrubs, that could provide habitat for wildlife. In addition, the proposed project would directly impact 72% or 49,546 linear feet of other USGS stream features in the valley floor. Due to the lack of fluvial indicators, these features may be relics of the previous alluvial fan and may not currently convey water. For purposes of this analysis, they are considered ephemeral channels.

Summary

In sum, 99% of the wetland waters of the state, 97% of previously delineated non-wetland waters of the state, 55% of the other USGS stream features (in terms of linear feet), and 98% of the sensitive vegetation communities would be conserved on site in open space. The majority of the direct impacts to jurisdictional areas, in terms of acreages, are associated with the proposed backbone infrastructure.

Table 4-4 summarizes the maximum potential direct impacts that could occur to CDFW- and RWQCB-jurisdictional areas pursuant to Section 1602 of the California Fish and Game Code and the

Porter-Cologne Water Quality Control Act, as well as the other USGS stream features that are being analyzed as state jurisdictional. Table 4-5 summarizes the proposed direct impacts to and conservation of sensitive vegetation communities. Figure 4-6, Proposed Project Footprint and CDFW- and RWQCB-Jurisdictional Areas, shows the location of these impacts by jurisdiction and periodicity and Figures 4-7A and 4-7B, Proposed Project Footprint and Vegetation Community Alliances and Land Covers, shows the impact to vegetation alliances and land covers.

In summary, 1.8 acres (16,552 linear feet) of previously delineated ephemeral waters of the state; 0.5 acres (956 linear feet) of intermittent waters of the state, including 0.2 acre of tamarisk thickets; 20.6 acres (55,052 linear feet) of the other USGS stream features; and 0.1 acre (171 linear feet) of wetland waters of the state, consisting of mulefat thickets, would be directly and permanently impacted by the proposed project, including off-site impacts. The following mitigation ratios would be used to mitigate for impacts to waters of the state, including wetland waters:

- 1:1 preservation for impacts to ephemeral waters of the state or other USGS stream features that lacked fluvial indicators
- 1:1 preservation for impacts to intermittent waters of the state, with the exception of riparian vegetation
- 2:1 restoration and/or enhancement for impacts to riparian vegetation within non-wetland waters of the state
- 2:1 restoration and/or enhancement for impacts to wetland waters of the state.

These permanent direct impacts to CDFW- and RWQCB-jurisdictional areas would be considered a potentially significant impact in the absence of MM-BTR-WM (implementation of a mitigation plan for waters of the state). However, MM-BTR-WM would reduce direct, permanent impacts to CDFW- and RWQCB-jurisdictional areas to less-than-significant levels. Specifically, at least 97.7 acres (79,242 linear feet) of waters of the state would be conserved on site within the same watershed, including 11.3 acres (33,924 linear feet) of ephemeral waters of the state, 76.4 acres (34,709 linear feet) of intermittent waters of the state, and 10.0 acres (10,609 linear feet) of wetland waters of the state. In addition, 68,300 linear feet of the other USGS stream features would be preserved. Based upon a conditional assessment conducted in the field, the existing non-wetland waters that would be preserved provide greater ecologic functions, such as greater buffer conditions, more physical patch types and diversity, and increased biotic structure, when compared to the waters that would be impacted by the proposed project.

Impacts to 3 acres (6%) of the purple needlegrass grassland alliance in the study area would be less than significant with implementation of MM-BTR-OS. MM-BTR-OS will conserve 49 acres (94%) of the purple needlegrass grassland alliance in the study area.

Table 4-4
Acreage and Linear Feet of CDFW- and RWQCB-Jurisdictional Areas (Impacts and Conservation)

Jurisdiction	Acres				Linear Feet				% of Open Spaces and Impacts by Linear Feet	
	Total in Study Area	*Open Space*	*Permanent Impacts*	*Temporary Impacts*	*Total in Study Area*	*Open Space*	*Permanent Impacts*	*Temporary Impacts*	*Open Space*	*Impacts*
Non-Wetland Waters of the State—Ephemeral	13.0	11.3	1.8	—	50,476	33,924	16,552	—	67%	33%
Non-Wetland Waters of the State—Intermittent	78.5	76.4	0.5[1]	1.6	35,879	34,709	956	215	97%	3%
Other USGS Stream Features	—	—	20.6	—	123,352	68,300	55,052	—	55%	45%
Non-Wetland Waters of the State Subtotal[2]	*91.5*	*87.7*	*22.9*	*1.6*	*209,704*	*136,743*	*72,748*	*215*	*65%*	*35%*
Wetland[3] Waters of the State	10.2	10.0	0.1	—	10,779	10,609	171	—	98%	2%
Wetland Waters of the State Subtotal[2]	*10.2*	*10.0*	*0.1*	—	*10,779*	*10,609*	*171*	—	*98%*	*2%*
Total	**101.7**	**97.7**	**23.0**	**1.6**	**220,486**	**147,542**	**72,730**	**215**	**67%**	**33%**

Notes:
1 Most of the impacted intermittent channels lack vegetation, with the exception of 0.2 acre of tamarisk thickets that are wholly contained within the bed and back of the channel and while non-native, invasive is considered to be riparian vegetation.
2 Sub-totals and totals do not total precisely due to rounding to the nearest tenth.
3 The term "wetlands" refers to locations that meet the criteria for wetlands established by the ACOE (i.e., have hydric soils, hydrophytic vegetation, and hydrology) (ACOE 1987, 2008b).

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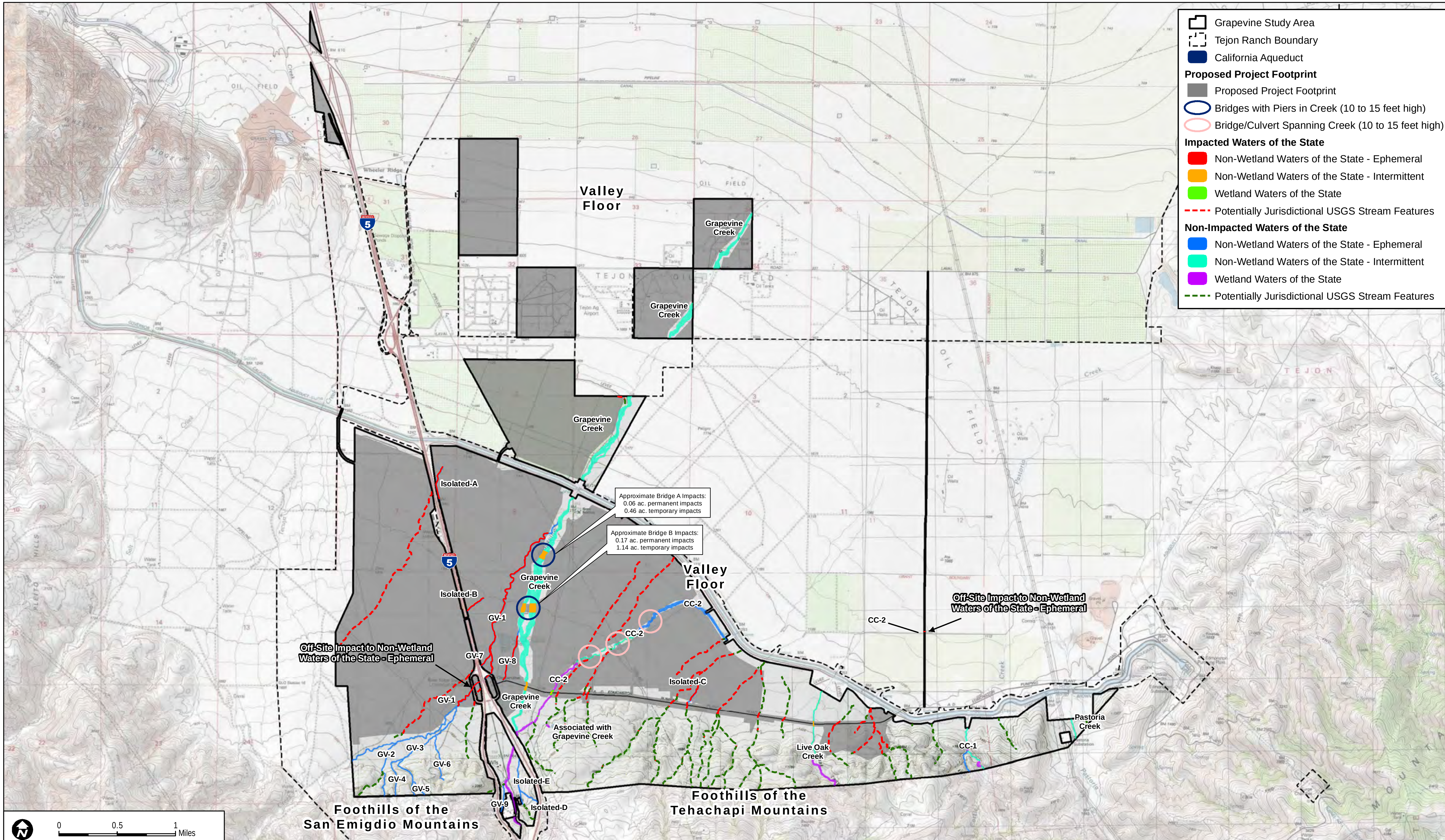
Table 4-5
Acreage of Sensitive Vegetation Communities (Impacts and Conservation)

Generalized Habitat Type (Macrogroup)	Alliance or Land Cover Type	Acres			% of Open Spaces and Impacts by Acres	
		Total in Study Area	*Open Space*	*Impacts*	*Open Space*	*Impacts*
Scrubs (*California Coastal Scrub and Vancouverian Lowland Grassland and Shrubland*)	Narrowleaf Goldenbush-Bladderpod Spiderflower Scrub Alliance	53	53	—	100%	—
Grasslands (*California Annual and Perennial Grassland*)	Giant Wild Rye Grassland Alliance	0.3	0.3	—	100%	—
	Purple Needle Grass Grassland Alliance	52	49	3	94%	6%
Riparian Scrub/Marsh *(Southwestern North American Riparian, Flooded, and Swamp Forest and Western North American Wet Meadow and Low Shrub Carr)*	Red Willow Thickets Alliance	8	—[28]	—	100%	—
Riparian Woodland (*California Forest and Woodlands and Southwestern North American Riparian, Flooded and Swamp Forest*)	Fremont Cottonwood Forest Alliance	6.0	6.0	—	100%	—
	Valley Oak Woodland Alliance (Valley Oak–Arroyo Willow Association)	10	10	—	100%	—
Savannah *(California Forest and Woodlands)*	Valley Oak Woodland Alliance (Valley Oak Woodland/Grass Association)	5	5	—	100%	—
	Total	**133**	**130**	**3**	**98%**	**2%**

28 The proposed project footprint shows a minor trail crossing through red willow thickets, a sensitive vegetation community; however, the red willow thickets habitat will be avoided in the final trail design (see MM-BTR-RMP).

Additionally, MM-BTR-WM includes enhancement and restoration to mitigate for the loss of 0.2 acre of tamarisk thickets and 0.1 acre of wetland waters of the state, consisting of mulefat thickets. The enhancement and restoration areas would be located in the Mitigation Area on a lower reach of Tunis Creek, which is within the same watershed as the impacted resources (see Attachment A-3 of Appendix A the Conceptual Mitigation Plan). The proposed restoration area is highly disturbed from past ranching operations, with eroded banks and non-native vegetation. The approach to restoring this site would be to stabilize the channel banks and improve floodplain connectivity with some minor contouring, and planting and seeding with native species appropriate for the site. The target habitat for the restoration site would be mulefat thickets mixed with some willow and cottonwood trees. The proposed approach to enhancement and restoration is expected to improve the functions and values at the restoration site by improving species richness and vegetation community interspersion through seeding and planting, as well as reducing the presence of invasive plant species through weed control. The restoration site would be maintained and monitored for 5 years. Performance standards and success criteria would be used to determine if the restoration site is successful and self-sustaining. If the performance standards are not met in any given year during the 5-year maintenance and monitoring period, remedial actions would be taken. Following the 5-year maintenance and monitoring period, the site would be managed over the long-term. In summary, implementation of MM-BTR-WM would avoid long-term loss of functions and values of the ephemeral and intermittent waters by conserving at least 79,242 linear feet of waters on site with comparable or greater ecological functions and values, and mitigating for impacts to riparian and wetland habitat through enhancement and restoration. The conservation, enhancement, and restoration will occur within the same watershed as the proposed impacted resources.

Attachment A-3, of Appendix A, the Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project, provides detailed information regarding the proposed mitigation for impacts to waters of the state.



SOURCES: McIntosh & Associated 2014

FIGURE 4-6

Proposed Project Footprint and CDFW- and RWQCB- Jurisdictional Areas

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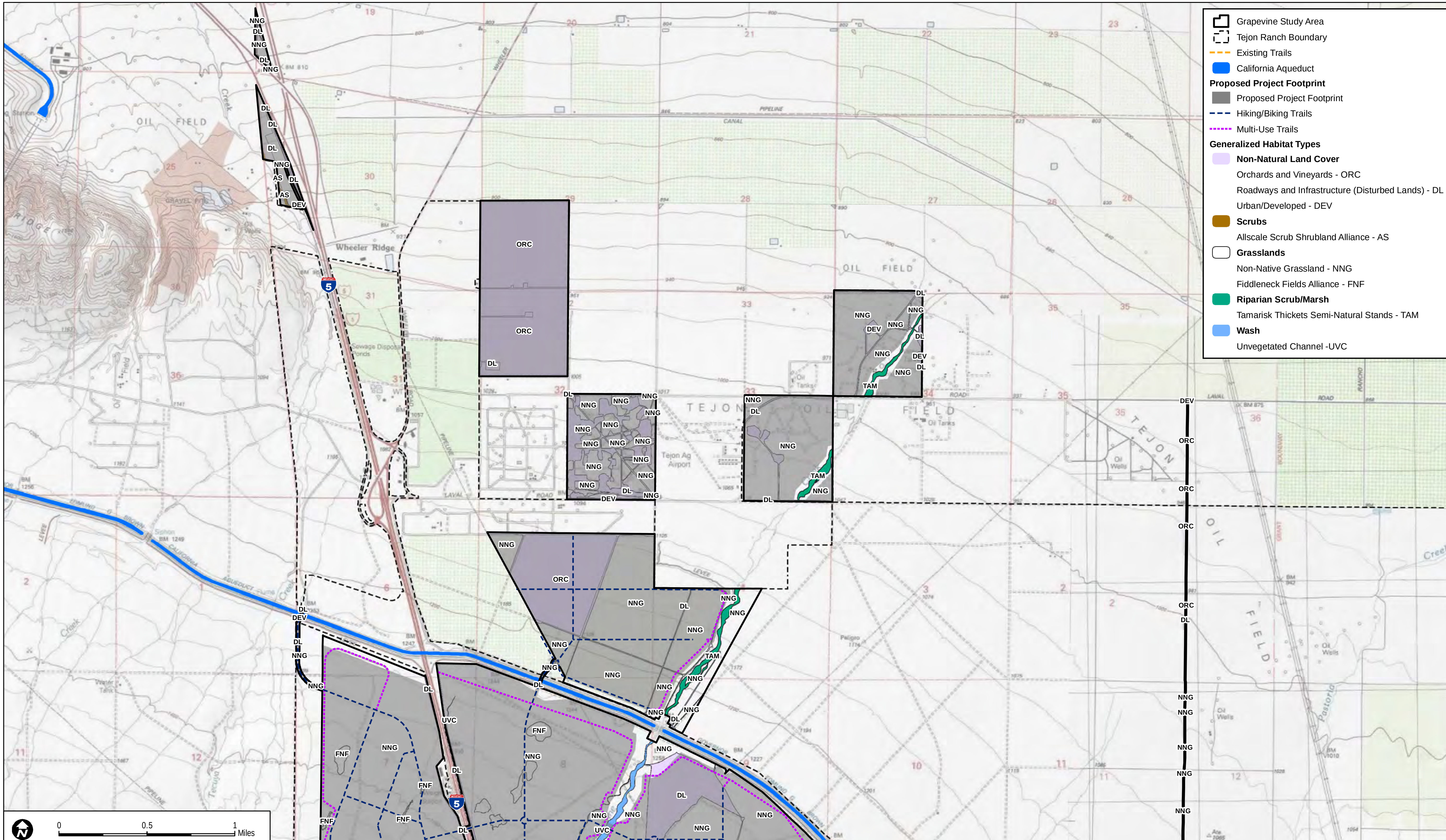

SOURCES: McIntosh & Associated 2014

FIGURE 4-7A

Proposed Project Footprint and Vegetation Community Alliances and Land Covers

GRAPEVINE PROJECT

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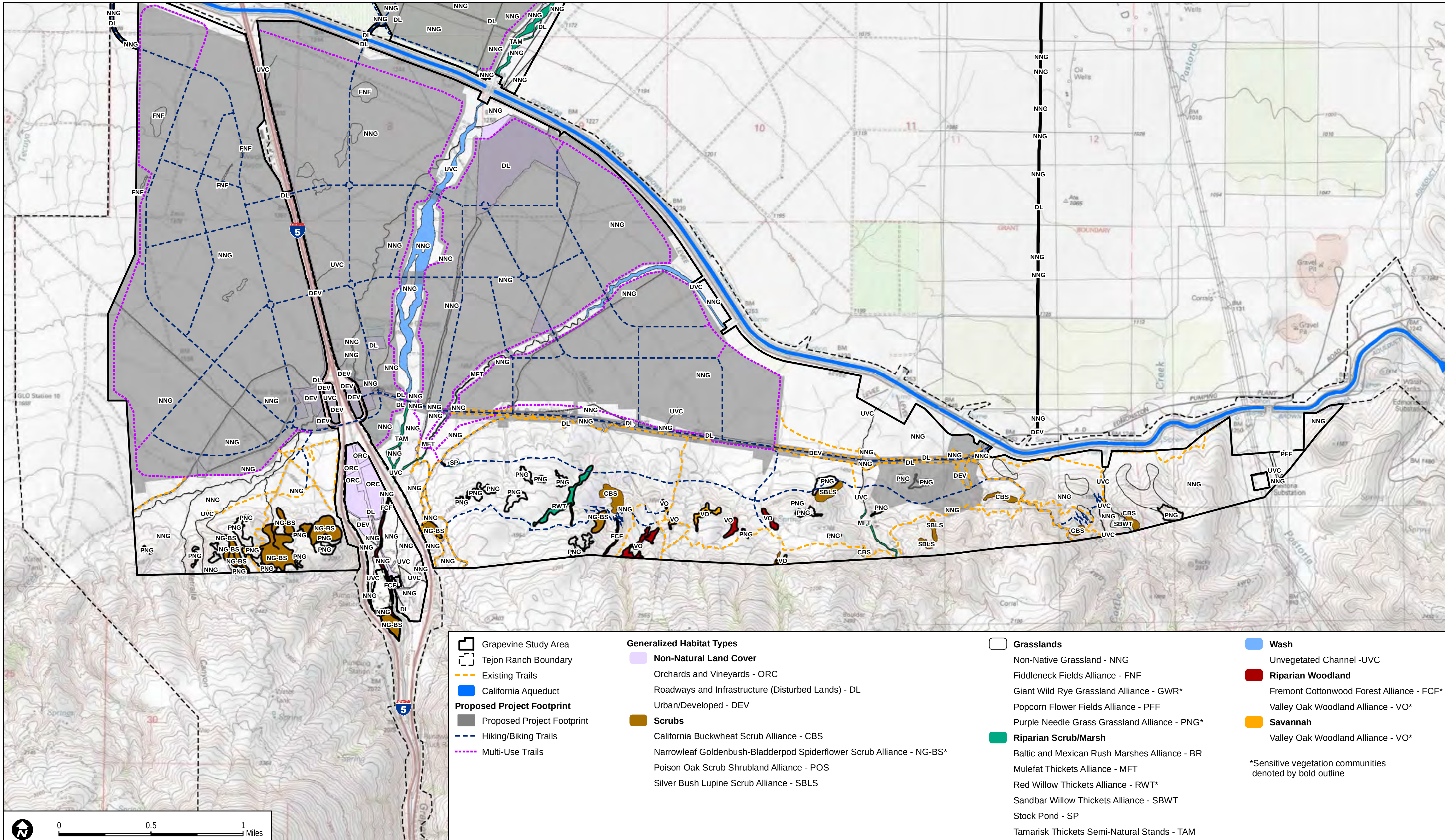

SOURCES: McIntosh & Associated 2014

FIGURE 4-7B

Proposed Project Footprint and Vegetation Community Alliances and Land Covers

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4.6.4.2 Operations-Related (Long-Term Permanent) Indirect Impacts

Operations-related indirect impacts could affect CDFW- and RWQCB-jurisdictional areas in the valley floor along Grapevine Creek and the tributary to Cattle Creek, as well as the other USGS stream features that are being considered waters of the state. The sensitive vegetation community in the valley floor–Fremont cottonwood forest–is located a minimum of approximately 1,400 feet from proposed development is separated from development by I-5; therefore, no indirect impacts to sensitive vegetation communities within the valley floor are anticipated. Additionally, operations-related indirect impacts could affect waters of the state and sensitive vegetation communities in the foothills at the interface of the proposed project footprint and open space because of human activity, traffic, and other urban–edge effects in these areas.

Potential long-term permanent indirect impacts include hydromodification; chemical releases such as oils and grease from vehicles that could degrade habitat and pesticides, including effects such as weakening native species and/or allowing establishment of non-native species in edge areas; habitat fragmentation; increased invasive plant species that may degrade habitat; public trail use by humans could result in trampling of vegetation and soil compaction, which could affect soil moisture, water penetration, surface flows, and erosion; and increased fire risk that could degrade jurisdictional areas. These indirect impacts could degrade CDFW- and RWQCB-jurisdictional areas, other USGS stream features, or sensitive vegetation communities over the long-term, especially at the urban–open space edge, and would be avoided and minimized through implementation of the following measures:

- MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the jurisdictional areas, including trampling, through requiring that people and their animals stay on existing trails, pets are leashed at all times, and educating people about the biological resources on site.
- MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas, which would reduce potential habitat degradation to riparian vegetation from fires.
- MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on CDFW- and RWQCB-jurisdictional areas by prohibiting planting of invasive plant species that may alter the composition of the riparian vegetation communities.
- MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 97.7 acres of land, including Grapevine Creek and the tributary to Cattle Creek, and would reduce edge and other urban-related effects, such as invasive species and

urban runoff, by providing substantial open space located away from the urban-open space interface.

- MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize the potential effects related to pesticides, including herbicides, through prohibiting the improper use that could degrade habitat through a reduction in pollinators or allowing establishment of non-native species in edge areas.
- MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to monitor trail conditions and fire hazards within the project open space, which would ensure long-term preservation and maintenance of the jurisdictional areas within the open space.
- MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the jurisdictional areas, including trampling through requiring that people and their animals stay on existing trails.
- MM-BTR-WQ (implement measures included in the WQTR that address surface water quality and hydromodification impacts) would reduce adverse effects of modifying natural hydrologic conditions through implementing source control, LID, and hydromodification control BMPs.

Potential long-term permanent operations-related indirect impacts to jurisdictional areas and sensitive vegetation communities would be less than significant with incorporation of MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, and MM-BTR-WQ.

4.6.5 Threshold Bio-3

Would the project 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?

The study area does not contain waters, including wetland waters, subject to federal jurisdiction under Section 404 of the Clean Water Act (Appendix E-1 of the BTR) and, therefore, the proposed project would not impact or have a substantial adverse effect on federally protected wetland waters as defined by Section 404 of the Clean Water Act.

4.6.6 Threshold Bio-4

Would the project 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?

4.6.6.1 Operations-Related (Long-Term Permanent) Direct Impacts

The proposed project has the potential to substantially affect the regional east–west habitat linkage along the valley floor/foothills transition zone discussed in Section 2.6. Because active agricultural areas occur immediately north of the proposed project, the site does not serve as a habitat linkage connecting large, preserved open space habitat blocks north and south of the site. Therefore, Grapevine Creek and a tributary to Cattle Creek (CC-2) likely only serve to facilitate more localized and short-term wildlife movements at present, and would be expected to continue to do so post-development.

East–West Movement

The study area is identified as within part of an east–west habitat linkage considered by the Recovery Plan (USFWS 1998) as critical to the long-term preservation and recovery of numerous special-status wildlife species known to occur in valley floor and lower foothill habitats, including San Joaquin kit fox and the three other focal species: Nelson's antelope squirrel, American badger, and blunt-nosed leopard lizard. In the study area, east–west habitat linkages would be conserved in the southern valley floor/foothill transition zone and along the north and south sides of the California Aqueduct. In the southern transition zone, the majority of this habitat, particularly south of Edmonston Pumping Plant Road would be conserved in on-site open space (Figure 4-1). The conserved areas along the aqueduct are modeled habitat for San Joaquin kit fox (Figure 4-5), and are also part of an important regional habitat linkage for San Joaquin kit fox in the USFWS (2010a) 5-year review (Figure 2-12A). The valley habitat portions of this linkage would facilitate movement for blunt-nosed leopard lizard and Nelson's antelope squirrel, should they occur. The entire linkage would also facilitate movement by the fourth focal species, American badger (Figure 2-13). While proposed Planning Area 5b, located just south of Edmonston Pumping Plant Road (Figure 4-1), could create a "bottleneck" for species associated with valley floor habitat such as blunt-nosed leopard lizard and Nelson's antelope squirrel, Planning Area 5b will be a low-density residential development with approximately 30 parcels designed to allow for permeability for wildlife movement through and/or around the parcel such that east–west movement along the valley floor/foothill transition area would be maintained. Additionally, San Joaquin kit fox can move along the proposed project open space north of Edmonston Pumping Plant Road. The study area is identified as within part of an east–west habitat linkage considered by the Recovery Plan (USFWS 1998) as critical to the long-term preservation and recovery of numerous special-status wildlife species known to occur in valley floor and lower foothill habitats, including San Joaquin kit fox and the three other focal species: Nelson's antelope squirrel, American badger, and blunt-nosed leopard lizard. In the study area, east–west habitat linkages would be conserved in the southern valley floor/foothill transition zone and along the north and south sides of the California Aqueduct. In the southern transition zone, the majority of this habitat, particularly south of Edmonston Pumping Plant Road would be conserved in on-site open space (Figure 4-1). The conserved areas along the aqueduct are modeled habitat for San Joaquin kit fox (Figure 4-5), and are also part of an important regional habitat linkage for San Joaquin kit fox in the USFWS (2010a) 5-year review (Figure 2-12A). The valley habitat portions of this linkage would facilitate movement for blunt-nosed leopard lizard and Nelson's antelope squirrel, should they occur. The entire linkage would also facilitate movement by the fourth focal species, American badger (Figure 2-13). While proposed Planning Area 5b, located just south of Edmonston Pumping Plant Road (Figure 4-1), could create a "bottleneck" for species associated with valley floor habitat such as blunt-nosed leopard lizard and Nelson's antelope squirrel, Planning Area 5b will be a low-density residential development with approximately 30 parcels designed to allow for permeability for wildlife movement through and/or around the parcel such that east–west movement along the valley floor/foothill transition area would be maintained. Additionally, San Joaquin kit fox can move along the proposed project open space north of Edmonston Pumping Plant Road.

This southern transition zone habitat corridor would connect north–south to the aqueduct corridor within the site via open space habitat linkages associated with Grapevine Creek and other drainages and would continue to include, and connect to, the Grapevine Creek/I-5 undercrossing as well as to the tunnels under both the northbound and southbound sections of I-5 in the lower foothill regions near Grapevine Road, providing direct access for San Joaquin kit fox, American badger, and a number of other wildlife species to large open space areas west of I-5. As previously noted, the Grapevine Creek and Grapevine Road undercrossings of I-5 are not suitable habitat for blunt-nosed leopard lizard and Nelson's antelope squirrel due to these areas being within steeper topography and elevation, and within dense riparian habitat at the Grapevine Creek crossing, than these two species would normally occur (Figure 2-13). However, these species would be able to access the I-5/California Aqueduct underpass via open space proposed to be preserved adjacent to the portion of the aqueduct that passes through the study area (Figure 4-1).

Specifically, within the study area, an area along the north and south sides of the California Aqueduct would be conserved in open space to allow for wildlife movement along this area and to ultimately connect to the I-5/aqueduct crossing (Figure 4-1). The post-development width of the open space band south of the aqueduct would be variable, and would range from a minimum of approximately 190 feet to a maximum of approximately 900 feet wide (Figure 1-6B). The segment of open space along the aqueduct between I-5 and Grapevine Creek would be fairly wide, with a typical width exceeding 600 feet. The width of the open space band along the north side of the aqueduct would be 100 feet. This band of open space north and south of the aqueduct, as well as the adjacent aqueduct right-of-way outside of the aqueduct proper, would continue to provide movement opportunities for the four focal species, should they occur in the area, through the site to effectively connect to and access the southern aqueduct/I-5 undercrossing (GV-RC1A) and move into suitable open space habitats west of I-5 (Figure 4-1). Conversely, animals approaching from the west could access this undercrossing, move along the aqueduct open space corridor, and connect to the more regional east-west valley/foothill landscape linkage to other large open space habitat blocks (Figure 4-1). The I-5 undercrossing at the California Aqueduct would be suitable, post development, for all the focal species and preservation of the open space band along the north and south sides of the aqueduct would ensure access to these crossings (Figure 4-1).

Post-development, the aqueduct right-of-way and the adjacent open space band to the north and south are expected to allow wildlife access for animals moving westward to the I-5/aqueduct crossings at GV-RC1A, GV-RC2A, and GV-AQ-26 (Figure 2-13). Despite its proximity to development, it is expected that wildlife species in the study area, including the focal species, would occasionally use and move along this corridor (Figure 4-1). The likely least mobile of the focal species—blunt-nosed leopard lizard—is capable of making at least occasional long-distance movements, and are expected to be able to traverse the area finding patches of suitable habitat. The other focal wildlife species—San Joaquin kit fox, American badger, and Nelson’s antelope squirrel—are more mobile and capable of quickly moving through less suitable habitat. East–west movement of these more mobile species along the open space band would not be significantly affected by the proposed project (Figure 4-1).

North–South Movement

Currently, wildlife passage is limited by the agricultural areas to the north of the study area, but they are free to roam throughout the study area and are able to move north and south locally through the numerous culverts and overpass points along the aqueduct. Post-development, north–south and southwest–northeast movement across the valley floor would continue to be accommodated by Grapevine Creek and the tributary to Cattle Creek, respectively. As noted above, use of these drainage features is expected to continue to facilitate more localized and short-term wildlife movements in search of food, shelter, and mates as both Grapevine Creek and the tributary to Cattle Creek eventually lead to active agricultural areas to the north and do not connect to large, preserved open space habitat blocks (Figure 4-1).

Open space along Grapevine Creek, which was largely mapped as highly suitable habitat for San Joaquin kit fox by Cypher et al. 2013 (Figure 4-5), would range from approximately 400 feet wide at its narrowest point at an arterial road crossing for a linear distance of approximately 330 feet along the creek. Two other crossings would occur at the narrowest portions of the Grapevine Creek open space; approximately 450 feet wide at Edmonston Pumping Plant Road crossing at the southern edge of the development area and approximately 790 feet wide at an arterial road crossing in the central portion of the development. Otherwise the creek width would generally be more than 1,000 feet wide (Figure 1-6B). Direct access to the crossing across the California Aqueduct (i.e., GV-AQ1/AQ2) to the north and the tunnel under I-5 (GV-RC11/RC12), as well as the foothills east of the I-5 would be maintained (Figures 2-13 and 4-1). Therefore, Grapevine Creek would remain relatively undisturbed by development and wildlife movement along the creek, and animals moving at night, should not be substantially affected. In addition to kit fox, large wildlife that may use Grapevine Creek for movement include more urban-tolerant species such as coyote, bobcat, and raccoon, as well as numerous smaller species. Grapevine Creek also supports blunt-nosed leopard lizard habitat modeled by Penrod et al. (2003). Open space along Grapevine Creek, which was largely mapped as highly suitable habitat for San Joaquin kit fox by Cypher et al. 2013 (Figure 4-5), would range from approximately 400 feet wide at its narrowest point at an arterial road crossing for a linear distance of approximately 330 feet along the creek. Two other crossings would occur at the narrowest portions of the Grapevine Creek open space; approximately 450 feet wide at Edmonston Pumping Plant Road crossing at the southern edge of the development area and approximately 790 feet wide at an arterial road crossing in the central portion of the development. Otherwise the creek width would generally be more than 1,000 feet wide (Figure 1-6B). Direct access to the crossing across the California Aqueduct (i.e., GV-AQ1/AQ2) to the north and the tunnel under I-5 (GV-RC11/RC12), as well as the foothills east of the I-5 would be maintained (Figures 2-13 and 4-1). Therefore, Grapevine Creek would remain relatively undisturbed by development and wildlife movement along the creek, and animals moving at night, should not be substantially affected. In addition to kit fox, large wildlife that may use Grapevine Creek for movement include more urban-tolerant species such as coyote, bobcat, and raccoon, as well as numerous smaller species. Grapevine Creek also supports blunt-nosed leopard lizard habitat modeled by Penrod et al. (2003).

In addition to Grapevine Creek, the tributary to Cattle Creek that trends to the northeast would be more constrained by adjacent development than Grapevine Creek. The width of open space along this tributary would range from approximately 150 feet wide to more than 400 feet wide, with typical widths in the 200–300 feet range. Wildlife that are more tolerant of urban development, such as coyotes and raccoons, would likely continue to use the tributary. Bobcats may avoid this corridor due to disturbances such as noise, lighting, and dogs, especially given that they could alternatively move along the much wider Grapevine Creek and much more freely through undisturbed open space to the east where most of their activity at the aqueduct crossings was recorded in 2013. Smaller species such as rabbits (including cottontail and jackrabbits), skunks, and ground squirrels would still use this constrained corridor, especially if it contains at least scattered shrubs and other refuge sites. This tributary also supports blunt-nosed leopard lizard habitat modeled by Penrod et al. (2003).

Summary

East–west species movement is preserved in the foothill/valley transition zone and along the California Aqueduct. Species moving across the valley floor/foothill habitat transition zone south of the proposed project footprint would be able to access undeveloped lands west of the I-5 and northeast of the study area (Figure 4-1). Movement opportunities between open space lands east and west of I-5 would be provided by at least three I-5 crossing points south of proposed project development, as well as around the aqueduct. For example, San Joaquin kit fox coming from the east could cross the northbound lane of I-5 at either the tunnel at GV-RC11/RC12 or at GV-RC5A (Figures 2-13 and 4-1) approximately 1,650 feet to the south. Suitable habitat for kit fox is present in the I-5 median south of the vineyard, which would allow animals to access the crossing of the I-5 southbound lane at GV-RC4A. The only constraint to fox movement into this area is a narrowing of suitable habitat adjacent to the vineyard where the habitat funnels into the crossing from the southeast. However, this narrowing should not substantially constrain kit fox movement because they are known to venture into modified landscapes such as agriculture and golf courses. The west entrance to GV-RC4A is not mapped as suitable habitat, but kit foxes would only have to move about 475 feet north to access suitable habitat (Figures 2-13 and 4-1).

Species moving across the valley floor east of I-5 would also be able to move north, northeast, and south via Grapevine Creek and the tributary to Cattle Creek (CC-2). Most of the eastern portion of the study area would be open space and would allow direct access to several of the California Aqueduct crossing points, including GV-AQ4 through GV-AQ25 (Figure 4-1). As summarized in Appendix N, there are numerous records for wildlife activity at these potential crossing points, including bobcat and coyote. The crossing points also include larger box culvert and smaller pipe culvert undercrossings of the aqueduct and the overpass at Pastoria Creek that provide different types of crossings for a suite species. As noted above, wildlife moving along Grapevine Creek would be able to directly access the aqueduct crossing at GV-AQ1 and GV-AQ2, as well as the large east–west open space area south of the proposed project footprint.

Overall, the proposed project would have direct, long-term permanent impacts to wildlife movement. With implementation of MM-BTR-OS, wildlife species are expected to utilize the open space habitat bands in the southern valley/foothill transition zone, adjacent to the California Aqueduct, along Grapevine Creek, and along the tributary to Cattle Creek to make both localized movements within the proposed project footprint and to access east–west habitat linkages through various I-5 underpasses (Figure 4-1). MM-BTR-WLM preserves 85 acres within a 100-foot buffer along the north side of the aqueduct. These habitat connections would ultimately continue to serve as an east–west habitat linkage to large preserved habitat blocks east and west of the proposed project, which, in turn, connect to still other large habitat blocks and landscape linkages, thus contributing to a regional landscape habitat linkage along the southern San Joaquin Valley floor/foothill interface. In total, wildlife movement that the Recovery Plan (USFWS 1998) considers a key priority to conservation and recovery of special-status species would be maintained. Consequently, the configuration and preservation of valley floor and foothill edge habitats associated with the proposed project is consistent with the habitat preservation and landscape connectivity objectives of the Recovery Plan (USFWS 1998). MM-BTR-RMP includes habitat enhancement activities to facilitate movement within proposed project open space. These enhancement activities are described in detail in Attachment A-4 to Appendix A, and include creating escape dens for San Joaquin kit fox and fencing that allows openings for kit fox movement and permeability through open space areas.

In addition, the Mitigation Area (MM-BTR-OOS) includes grasslands and shrublands, as well as riparian corridors and oak-dominated habitats, which represent high-quality habitats that are considered suitable for, and indeed support, several of the special-status species listed in the Recovery Plan (USFWS 1998). Because of its geographic location along the valley floor/foothill transition zone and adjacent to the proposed project open space area, the Mitigation Area would also substantially contribute to the regional east–west landscape corridor by connecting large blocks of conserved lands within and adjacent to the Ranch. Specifically, for kit fox, given the large home ranges of kit foxes, the potential for long-distance dispersal, and the kit fox's apparent tolerance of human activities and modified landscapes, the study area project site after development should not be an inherent obstacle to the use of and movement across the site. With the implementation of MM-BTR-OS, MM-BTR-WLM, MM-BTR-RMP, and MM-BTR-OOS, the proposed project would not substantially affect regional wildlife movement, and long-term permanent direct impacts to wildlife movement would be less than significant.

4.6.6.2 Operations-Related (Long-Term Permanent) Indirect Impacts

Potential long-term permanent indirect impacts to wildlife that use the linkages or corridors for movement include increased noise and lighting. Lighting can have several effects on wildlife, including disorientation; avoidance of lighted areas; disturbances of nighttime rest and sleep periods of diurnal birds; simulated increased day length (potentially affecting reproductive cycles by triggering premature reproductive activity); and increased risk of predation (Longcore and Rich 2004). These potential long-term permanent indirect impacts from nighttime lighting could affect wildlife movement, and would be a significant impact in the absence of MM-BTR-LIGHT, which requires that all lighting along the perimeter of the open space areas exterior to the proposed project footprint shall be downcast luminaries that prevent light spillage or glare into the open space, thus reducing potential light effects on movement. In addition, MM-BTR-OS would provide wide enough open space areas along the southern boundary of the study area, along the open space band between the proposed project footprint, and along Grapevine Creek for wildlife to avoid lighted areas.

Noise can affect the behavior and physiology of wildlife in complex and interactive ways, including startling or annoying; raising stress levels; interrupting sleep and rest; interfering with acoustic communication; interfering with both predator and prey detection; and, in the case of loud abrupt noises, causing permanent injury to the auditory system (Dooling 2006; Barrass and Cohn 1984). Long-term noise generated by the proposed project could affect wildlife movement along undeveloped areas that would be more constrained post-development, although most long-term noises usually occur during the day (e.g., traffic, maintenance equipment, emergency vehicles) and would not substantially affect movement by nocturnal wildlife. In addition, with incorporation of MM-BTR-OS and MM-BTR-WLM, open space would be provided in key movement areas, including along the southern boundary of the study area, between the proposed project footprint and the southern side of the California Aqueduct right-of-way, along the north wide of the aqueduct, and along Grapevine Creek that would provide adequate buffers along the proposed project footprint to attenuate long-term noise effects on wildlife movement. Implementation of MM-BTR-OS and MM-BTR-WLM would reduce any potential long-term noise impacts to less-than-significant levels.

Other potential long-term permanent indirect impacts to wildlife that use the habitat linkages or corridors as "live-in" or "resident habitat"[29] could be affected by edge effects identified in Section 4.6.2.1 that degrade habitat or directly affect individuals. Potential edge effects in linkages and corridors include hydromodification from increased urban runoff and irrigated landscaping; chemical releases such as oils and grease from vehicles and pesticide effects such as ingestion of contaminated prey and reduction in prey abundance; increased invasive plant and animal species that may alter habitat or may directly impact the species; an increased abundance of urban-related mesopredators (e.g., raccoons, skunks, opossum, and red fox) and pets (dog and cats); increased vehicle collision risk; increased fence collision risk or fencing impeding movement; increased risk of collisions or electrocutions associated with power lines; public trail use by humans that could result harassment of wildlife and potential for soil compaction or collection of individuals; urban lighting that could increase predation risk and alter nocturnal activity patterns; and increased fire risk that could degrade

[29] More sedentary wildlife that may only move a few hundred feet during their lifetime may use habitat linkage and corridor habitat as "resident" or "live-in" habitat. For these species linkages and corridors are important for "generational" or "passive" dispersal where genetic exchange between populations may occur over several generations.

habitat. These indirect impacts, which may be magnified in more narrow habitat linkages and corridors (because there is less “core” or “interior” habitat unaffected by edge effects) could alter the behavior of wildlife that use the linkages and/or corridors as live-in or resident habitat and would be avoided and minimized through implementation of the following measures:

- MM-BTR-APLIC (bird collision avoidance measures for aboveground utilities) prohibits new aboveground high-voltage towers or power lines, and requires BMPs of existing utilities to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles, which would reduce collision-related deaths.
- MM-BTR-ED (conservation education and awareness program for occupants) would reduce adverse effects of the public on the wildlife, including harassment, collection, and soil compaction through requiring that people and their animals stay on existing trails, pets are leashed at all times, and educating people about the biological resources on site.
- MM-BTR-FENCE (project fencing design requirements) would enable wildlife (e.g., San Joaquin kit fox, American badger) to pass through the study area after construction is completed if biologically appropriate, as determined by the project biologist, thus reducing impacts associated with wildlife movement by allowing continuous movement through areas.
- MM-BTR-FIRE (implementation of a fire safety plan and avoidance of nesting birds during fuel management activities) would minimize potential exposure of open space to fire ignitions originating in the development areas, which would reduce potential habitat degradation from fires.
- MM-BTR-IPM (restrictions on the use of rodenticides) would avoid and minimize the potential effects of secondary poisoning from consuming contaminated prey or indirectly by reducing prey abundance by prohibiting the use of anticoagulants as well as the use of any rodenticides within 450 feet of the open space.
- MM-BTR-LAND (restrictions on landscaping palettes and plants) would help prevent adverse effects on suitable habitat by prohibiting planting of invasive plant species that may alter the composition of the community and reduce suitability for species’ movement.
- MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses) would conserve 3,232 acres of land and reduce edge and other urban-related effects such as invasive species, vehicle traffic, and urban-related mesopredators by providing substantial suitable habitat away from the urban–open space interface.
- MM-BTR-PCR (compliance with weed and pest control regulations) would avoid and minimize potential effects related to pesticides through compliance with weed and

pesticide application restrictions, which would avoid impacts that could harm the species indirectly by reducing prey abundance.

- MM-BTR-RMP (preparation and implementation of an RMP) would require periodic maintenance patrols to remove litter and monitor trail conditions and fire hazards within the project open space, control of stray and feral animals in open space, and habitat enhancement activities, such as the creation of escape dens for San Joaquin kit fox. These measures would help reduce attractants to mesopredators such as red fox and feral animals that can prey on or disturb wildlife; trail monitoring for fire hazards would help reduce fire-related impacts; and habitat enhancement would allow improve areas for wildlife movement.
- MM-BTR-TRAIL (trail signage) would reduce adverse effects of the public on the wildlife, including harassment, collection, and soil compaction through posting trail signs that require people and their animals stay on existing trails, pets are leashed at all times, and intentional feeding of wildlife is prohibited.
- MM-BTR-TRASH (requirement for residents to use animal- and weather-resistant trash receptacles) would reduce attractants to mesopredators such as red fox that can prey on or disturb wildlife and compete with native species for resources.

Potential long-term permanent operations-related indirect impacts to suitable habitat and/or individuals would be less than significant with incorporation of MM-BTR-APLIC, MM-BTR-ED, MM-BTR-FENCE, MM-BTR-FIRE, MM-BTR-IPM, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, MM-BTR-TRAIL, MM-BTR-TRASH, and MM-BTR-WLM.

4.6.7 Threshold Bio-5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

4.6.7.1 Operations-Related (Long-Term Permanent) Direct Impacts

Foothills

All of the oak woodlands are located within the foothills. None of the vegetation communities with oak trees (i.e., the Fremont cottonwood forest alliance and Valley oak woodland alliance) are located in the proposed project footprint, and the proposed project would not result in direct, permanent impacts to oak trees. Direct impacts are typically associated with ground disturbance that occurs within 5 to 15 feet of a tree’s dripline. The proposed grading near oak trees is limited to grading for new trails located 15 feet or more from the dripline of the oak trees and, therefore, the proposed project grading activities would not impact oak trees.

Valley Floor

There are no oak trees within the valley floor areas.

4.6.7.2 Operations-Related (Long-Term Permanent) Indirect Impacts

Foothills

Potential long-term permanent indirect impacts to oak trees include impacts resulting from public trail use by humans and the potential for soil compaction, an increased fire risk, and the potential increase in the establishment of invasive plant species along the trail's disturbed soils in the foothills. Typical impacts to oak trees along public trails include soil compaction and related root damage/reduced growth, as well as trampling and collection of acorns. These indirect impacts could degrade oak woodlands over the long term, especially at the urban–open space edge. The following measures would avoid and minimize long-term permanent indirect impacts to oak trees:

- MM-BTR-ED (conservation education and awareness program for occupants) that would reduce adverse effects of the public on oaks, including trampling and acorn collection, through requiring that people and their animals stay on existing trails, pets are leashed at all times, and educating people about the biological resources on site.
- MM-BTR-FIRE (implementation of a fire safety plan) that would minimize potential exposure of open space to fire ignitions originating in the development areas, which would reduce potential habitat degradation to oaks from fires.
- MM-BTR-LAND (restrictions on landscaping palettes and plants) that would help prevent adverse effects on oak woodlands by prohibiting planting of invasive plant species that may alter the composition of the oak vegetation communities.
- MM-BTR-OS (exclusive agriculture and restrictions on allowable uses) that would conserve all of the vegetation communities with oak trees and would reduce edge and other urban-related effects, such as invasive species and urban runoff, by providing substantial open space where oaks are located away from the urban–open space interface.
- MM-BTR-PCR (compliance with weed and pest control regulations) that would avoid and minimize the potential effects related to pesticides, including herbicides, through prohibiting improper use that could harm the species through allowing establishment of non-native species in edge areas.
- MM-BTR-RMP (RMP) that would require periodic maintenance patrols to monitor trail conditions and fire hazards within the project open space, which would ensure long-term preservation and maintenance of the vegetation communities within the open space.

- MM-BTR-TRAIL (trail signage) that would reduce adverse effects of the public on the species, including trampling and collection through requiring that people and their animals stay on existing trails.

Potential long-term permanent operations-related indirect impacts to oak vegetation communities would be less than significant with incorporation of MM-BTR-ED, MM-BTR-FIRE, MM-BTR-LAND, MM-BTR-OS, MM-BTR-PCR, MM-BTR-RMP, and MM-BTR-TRAIL.

Valley Floor

There are no oak trees within the valley floor areas.

4.6.8 Threshold Bio-6

Would the project conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Foothills

Tehachapi Uplands Multiple Species Habitat Conservation Plan

As described in Section 3.1.1.1, the proposed project open space generally abuts the TU MSHCP Mitigation Lands. No permanent, direct, or indirect impacts to TU MSHCP covered lands would occur as a result of the proposed project. The proposed project would not conflict with the provisions of this HCP.

Valley Floor

There are no adopted HCPs, NCCPs, or other approved local, regional, or state HCPs in the valley floor areas near the study area.

4.7 Mitigation Measures

Recommended measures that reduce potentially significant proposed project or cumulative impacts to biological resources are listed in Appendix A. These measures have been accepted by the applicant and could serve as mitigation measures and conditions of project approval.

4.8 Level of Significance After Mitigation

Implementation of recommended biological resource protection measures (Appendix A) would reduce potentially significant biological resource impacts to less than significant.

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5 REFERENCES

5.1 Report References

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

16 U.S.C. 1531–1599. Federal Endangered Species Act, as amended

16 U.S.C. 668–668d. Bald and Golden Eagle Protection Act, as amended.

16 U.S.C. 703–712. Migratory Bird Treaty Act, as amended

41 FR 41914–41916. Determination of Critical Habitat for American Crocodile, California Condor, Indiana Bat, and Florida Manatee. September 24, 1976.

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers, Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1.

ACOE. 2008a. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Cold Region Research and Environmental Laboratory, ERDC/CRREL TR-08-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2008.

ACOE. 2008b. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. Accessed March 5, 2013. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/trel08-28.pdf.

ACOE. 2010. *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. Prepared by K.E. Curtis and R.W. Lichvar. Hanover, NH: U.S. Army Engineer Research and Development Center. July 2010.

ACOE and EPA (U.S. Environmental Protection Agency). 2008. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States." December 2, 2008. http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_Jurisdiction_Following_Rapanos120208.pdf.

Ahlborn, G. 2005. *California Wildlife Habitat Relationships System*. Vol I–III. Sacramento, California: California Department of Fish and Game.

Anthony, R.G., R.L. Knight, G.T. Allen, B.R. McClelland, and J.I. Hodges. 1982. "Habitat Use by Nesting and Roosting Bald Eagles in the Pacific Northwest." In *Transactions of the 47th North American Wildlife and Natural Resources Conference*, edited by K. Sabol, 332–342. Washington, D.C.: Wildlife Management Institute.

APLIC (Avian Power Line Interaction Committee). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute, Washington, D.C. 78 pp.

APLIC. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and California Energy Commission. Washington, D.C. and Sacramento, California.

APLIC. 2012. *Reducing Avian Collisions with Power Lines: State of the Art in 2012.*

APLIC and USFWS (U.S. Fish and Wildlife Service). 2005. *Avian Protection Plan Guidelines.*

Audubon Society. 2014. "CA Fish and Game Commission Votes in Favor of Emergency Listing for Tricolored Blackbird." Audublog. December 3, 2014. Accessed December 5, 2014. http://www.audublog.org/?p=13463#more-13463

Babcock, K. 2013. Wintering bald eagles on Tejon Ranch. Personal observations by K. Babcock (Dudek). February 2013.

Babcock, K. 2015. Personal communication. Email between Keith Babcock (Dudek) and Callie Ford (Dudek). August 17, 2015.

Barrass, A., and L. Cohn. 1984. "Variation of the Spacing of Calling Male *Bufo woodhousii* and *Hyla cinerea* near Highway Noise.: *American Zoologist* 24:15A.

Best, T.L., W.M. Kiser, and P.W. Freeman. 1996. "*Eumops perotis*." *Mammalian Species* 534. December 27, 1996. American Society of Mammalogists.

Bjurlin, D., B.L. Cypher, C.M. Wingert, and C.L. Van Horn Job. 2005. *Urban Roads and the Endangered San Joaquin Kit Fox*. Prepared for the California Department of Transportation Contract No. 65A0136 by California State University, Stanislaus Endangered Species Recovery Program.

Bloom, P.H., and S.J. Hawks. 1982. "Food Habits of Nesting Golden Eagles in Northeast California and Northwest Nevada." *Raptor Research* 16(4): 110–115.

Bloom Biological Inc. 2014. "Results from 2014 Aerial Golden Eagle (*Aquila chrysaetos*) Nest Surveys for the Grapevine Project, Kern County, California." Letter report from Peter H. Bloom (Bloom Biological Inc.) to Keith Babcock (Dudek). February 23, 2014.

Boal, C.W., and R.W. Mannan. 1999. "Comparative Breeding Ecology of Cooper's Hawks in Urban and Exurban Areas of Southeastern Arizona." *Journal of Wildlife Management* 63:77–84.

Bossard, C.C., J.M. Randall, and M.C. Hoshovsky. 2000. *Invasive Plants of California's Wildlands*. Berkeley, California: University of California Press.

Bradbury, M. Unpublished data on migratory patterns and wintering range of the Central Valley Swainson's hawk.

Brady, Roland H. III and Kris Vyverberg. 2013. *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants*. California Energy Commission. Publication Number: CEC-500-2014-013.

Brattstrom, B.H., and M.C. Bondello. 1983. "Effects of Off-Road Vehicle Noise on Desert Vertebrates." In *Environmental Effects of Off-Road Vehicles: Impacts and Management in Arid Regions*, ed. R.H. Webb and H.G. Wilshire. New York, New York: Springer-Verlag.

Bridges, C.M., and R.D. Semlistsch. 2000. "Variation in Pesticide Tolerance of Tadpoles Among and Within Species of Ranidae and Patterns of Amphibian Decline." *Conservation Biology* 14:1490–1499.

Brown, L., and D. Amadon. 1968. "*Aquila chrysaetos*, Golden Eagle." In *Eagles, Hawks, and Falcons of the World*, Vol. 2, 663–669. New York, New York: McGraw-Hill.

Brown, B.T., and L.E. Stevens. 1997. "Winter Bald Eagle Distribution is Inversely Correlated with Human Activity along the Colorado River, Arizona." *Journal of Raptor Research* 31(1): 7–10.

Buehler, D.A. 2000. "Bald Eagle (*Haliaeetus leucocephalus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed September 2014. http://bna.birds.cornell.edu/bna/species/506/articles/introduction.

Burgess, R.C. 1950. "Development of Spadefoot Toad Larvae Under Laboratory Conditions." *Copeia* 1950:49–51.

California Fish and Game Code, Section 1602. Lake and Streambed Alteration Program.

California Fish and Game Code, Section 2053. General Provisions of California Endangered Species.

California Fish and Game Code, Section 3000-3012. Methods of Taking.

California Fish and Game Code, Section 3031-3040. Hunting Licenses.

California Fish and Game Code, Section 3503–3513. General Bird Provisions.

California Fish and Game Code, Section 4700. Fully Protected Mammals.

California Fish and Game Code, Sections 1360–1372. Oak Woodlands Conservation Act.

California High-Speed Rail Authority. 2013. "Re: California High-Speed Train: Bakersfield to Palmdale 2013 Botanical Survey Results on Tejon Ranch." Letter report to Nicole Esselman and Derek Abbott (Tejon Ranch Company) with a summary of botanical survey findings. Sacramento, California: California High-Speed Rail Authority. July 30, 2013.

California Public Resources Code, Section 21083.4. General Environmental Quality. SB 1334. Topic: Adding section 21083.4 to Public Resources code, relating to oak woodland conservation. California Assembly. 2004.

California Public Resources Code, Sections 21000–21177. California Environmental Quality Act.

California Water Code Division 7, Sections 13000–16104. Porter-Cologne Water Quality Control Act.

CDFG (California Department of Fish and Game). 2004. *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard*. May 2004. http://www.dfg.ca.gov/wildlife/nongame/docs/BNLLrevisedprotocol.pdf.

CDFG. 2007. *California Swainson's Hawk Inventory: 2005–2006*. U.C. Davis Wildlife Health Center and Department of Fish and Game Resource Assessment Program. P0485902.

CDFG. 2009. "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities." Sacramento, California: CDFG. November 24, 2009. Accessed online October 28, 2014. http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/protocols_for_surveying_and_evaluating_impacts.pdf.

CDFG. 2010a. *List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form.* September 2010. Accessed August 30, 2013. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp.

CDFG. 2010b. "Draft Environmental Impact Report (DEIR) for the Panoche Valley Solar Farm (SCH No. 2010031008)." Letter report from Kevin Hunting (CDFG) to Michael Krausie (Aspen Environmental Group). August 31, 2010.

CDFG. 2012. "*Haliaeetus leucocephalus*." Element Occurrence Query. California Natural Diversity Database (CNDDB). RareFind, Version 4.0 (Commercial Subscription). Sacramento, California: CDFG, Biogeographic Data Branch. Accessed September 2012. http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW (California Department of Fish and Wildlife). 2015a. *Special Vascular Plants, Bryophytes, and Lichens List*. CNDDB. Quarterly publication. October 2015. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline=1

CDFW. 2015b. California Natural Diversity Database GIS layer. October 2015.

CDFW. 2015c. *Rarefind*. Version 5.0. CNDDB. October 2015.

CDFW. 2015d. "Special Animals" (905 Taxa). California Natural Diversity Database (CNDDB). CDFG, Biogeographic Data Branch. October 2015. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline=1

Central Valley RWQCB (Regional Water Quality Control Board). 2004. *Water Quality Control Plan for the Tulare Lake Basin*. 2nd ed. Accessed July 2013. http://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/newpages200401.pdf.

Chapman, J.A. and G.A. Feldhamer. 1982. *Wild Mammals of North America: Biology, Management, and Economics*. Baltimore: The Johns Hopkins University Press.

Cicero, C. 2000. "Oak Titmouse (*Baeolophus inornatus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/485a.

CNPS (California Native Plant Society). 2001. "CNPS Botanical Survey Guidelines." Published December 9, 1983, revised June 2, 2001.

CNPS. 2011. *Carrizo Plain National Monument Vegetation Classification and Mapping Project*. By J. Buck-Diaz and J.M. Evens. California Native Plant Society.

CNPS. 2013. *Vegetation Mapping and Accuracy Assessment Report for Carrizo Plain National Monument*. By D. Stout, J. Buck-Diaz, S. Taylor, and J.M. Evens. California Native Plant Society, Vegetation Program.

Crooks, K.R., and M.E. Soulé. 1999. "Mesopredator Release and Avifaunal Extinctions in a Fragmented System." *Nature* 400:563–566.

Cypher, E.A. 2002. "General Rare Plant Survey Guidelines." Bakersfield, California: California State University, Stanislaus, Endangered Species Recovery Program. Revised July 2002. Accessed online May 2012. http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/rare_plant_protocol.pdf.

Cypher, B.L. and T.L.Westall. 2014. *Buena Vista Lake Shrew Habitat Evaluation, Tejon Ranch Grapevine Area, Kern County, California*. Bakersfield California: State University, Stanislaus, Endangered Species Recovery Program. February 17, 2014.

Cypher B., C. Van Horn Job, C.E. Tennant, A. Madrid, T. Westall, and S. Phillips. 2011. *Surveys for Rare Species at the Wind Wolves Preserve, California*. Prepared for The Wildlands Conservancy. Turlock, California: California State University, Stanislaus. January 6, 2011.

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. "Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications." *Canid Biology and Conservation* 16(7): 25–31. http://www.canids.org/CBC/16/San_Joaquin_kit_fox_habitat_suitability.pdf.

Cypher, B. 2010. "Kit Fox Habitat Survey on Tejon Ranch Properties." Memorandum from B Cypher (Endangered Species Recovery Program) to K. Babcock (Dudek). June 3, 2010.

Cypher, B. 2014. Personal Communication. Conversation between Brian Cypher (ESRP) and Brock Ortega (Dudek). April 18, 2014.

Cypher, B. 2015. Personal Communication. Email between Brian Cypher (ESRP) and Callie Ford (Dudek). August 17, 2015.

Cypher, B., M. Koopman, and D. McCullough. 2001. Space use and Movements by Kit Fox Family Members. *Transactions of the Western Section of the Wildlife Society* 37:84-87.

Davis, J.N., and C.A. Niemela. 2008. "Northern Harrier (*Circus cyaneus*)." Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

DeGraaf, R.M., V.E. Scott, R.H. Hamre, L. Ernst, and S.H. Anderson. 1991. *Forest and Rangeland Birds of the United States: Natural History and Habitat Use*. U.S. Department of Agriculture, Forest Service, Agriculture Handbook 688. Washington, DC: U.S. Department of Agriculture, Forest Service. Accessed July 2, 2014. http://www.npwrc.usgs.gov/resource/birds/forest/.

Dodd, C.K., Jr., W.J. Barichivich, and L.L. Smith. 2004. "Effectiveness of a Barrier Wall and Culverts in Reducing Wildlife Mortality on a Heavily Traveled Highway in Florida." *Biological Conservation* 118:619–631.

Dooling, R.J. 2006. "Estimating Effects of Highway Noise on the Avian Auditory System." In *Proceedings of the 2005 International Conference of Ecology and Transportation*, ed. C.L. Irwin, P. Garrett, and K.P. McDermott, 30–31. Raleigh, North Carolina: North Carolina State University, Center for Transportation and the Environment.

Doubledee, R.A., E.B. Miller, and R.M. Nisbet. 2003. "Bullfrogs, Disturbance Regimes, and the Persistence of California Red-Legged Frogs." *Journal of Wildlife Management* 67: 424–438.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared for Tejon Mountain Village LLC. Prepared by Dudek. May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan.* Draft. Prepared for Tejon Ranchcorp. Encinitas, California: Dudek. With technical assistance from U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

Dudek. 2014. *Fire Safety Plan for the Grapevine Project.*

DWR (California Department of Water Resources). 2014. "Monthly Precipitation: Bakersfield Airport." DWR, California Data Exchange Center. Accessed April 29, 2014. http://cdec.water.ca.gov/cgi-progs/queryMonthly?BFK.

Environ. 2014. "Re: Climate Section of BTR." Email with attachment ("Temperature Summary") from E. Lu (Environ) to M. Enright (Dudek). November 11, 2014.

Erickson, R.A. 2008. "Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)." *California Bird Species of Special Concern: Studies of Western Birds No. 1*. Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

ESRP (Endangered Species Recovery Program). 2015. "Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*)." Turlock, California: California State University Stanislaus, ESRP. Accessed August 25, 2015. http://esrp.csustan.edu/speciesprofiles/profile.php?sp=esle.

Evelyn, C. 2014. "Habitat Assessment for Tehachapi Slender Salamander in Grapevine Specific Plan Area on Tejon Ranch." Memorandum from C. Evelyn (University of California, Santa Barbara) to Megan Enright (Dudek). April 23, 2014.

Feaver, P.E. 1971. "Breeding Pool Selection and Larval Mortality of Three California Amphibians: *Ambystoma tigrinum californiense* Gray, *Hyla regilla* Baird and Girard, and *Scaphiopus hammondii* Girard." Master's thesis; California State University, Fresno.

Foley, J. 1996. "The Role of Infectious Disease in Population Control and Regulation of Western Mountain Lions."" Abstract. In *Fifth Mountain Lion Workshop.* Organized by the California Department of Fish and Game and the Southern California Chapter of the Wildlife Society; San Diego, California, February 27–March 1, 1996.

Federal Geographic Data Committee. 2008. "National Vegetation Classification Standard." Version 2. FGDC-STD-005-2008. Reston, Virginia: Federal Geographic Data Committee, Vegetation Subcommittee. February 2008.

Florida Fish and Wildlife Conservation Commission. 2003. *Issue Assessment: Impacts of Feral and Free-Ranging Cats on Wildlife in Florida*. Prepared by the Feral Cat Issue Team. http://myfwc.com/cats/resources/whitepaper.pdf

Franson, J.C., L. Sileo, and N.J. Thomas. 1995. "Causes of Eagle Deaths." In *Our Living Resources: A Report to the Nation on the Distribution, Abundance and Health of U.S. Plants, Animals and Ecosystems*, edited by E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac. Washington, D.C.: U.S. Department of the Interior, National Biological Service.

French, N.R., R. McBride, and J. Detmer. 1965. "Fertility and Population Density of the Black-Tailed Jackrabbit.: *Journal of Wildlife Management* 29:14–26.

Garrett, M.G., J.W. Watson, and R.G. Anthony. 1993. "Bald Eagle Home Range and Habitat Use in the Columbia River Estuary." *Journal of Wildlife Management* 57(1): 19–27.

Geosyntec Consultants. Hydrology and Hydraulics Report: Grapevine Project. October 2015.

Germano, D. 2013. Potential for special-status small mammals and blunt-nosed leopard lizards to occur in Grapevine planning area. In-person conversation between D. Germano, PhD, B. Ortega (Dudek), and K. Babcock (Dudek).

Germano, D. 2014a. “Small Mammal Trapping – Grapevine Project Site.” Letter report from D. Germano, Ph.D. to Callie Ford (Dudek). May 29, 2014.

Germano, D. 2014b. Personal Communication. Email conversation between David Germano, Ph.D (CUSB) and Brock Ortega (Dudek). August 11, 2014.

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. “Burrowing Owl (*Athene cunicularia*).” In *California Bird Species of Special Concern: Studies of Western Birds No. 1*. Camarillo, California: Western Field Ornithologists, and Sacramento, California: California Department of Fish and Game.

Google Earth. 2013. Aerial photograph. 1:200 scale.

Grinnell, J., and A.H. Miller. 1944. The Distribution of the Birds of California. Pacific Coast Avifauna Number 27. Berkeley, California: Cooper Ornithological Club. Reprinted by Artemisia Press, Lee Vining, California, April 1986.

Grubb, T.G., and R.M. King. 1991. “Assessing Human Disturbance of Breeding Bald Eagles with Classification Tree Models.” *Journal of Wildlife Management* 55(3): 500–511.

Hall, E.R. 1981. *The Mammals of North America*. 2nd Edition. New York: John Wiley and Sons.

Hamilton, W.J. III. 1998. “Tricolored Blackbird Itinerant Breeding in California.” Condor 100:218–226.

Harris, J.H., and D.M. Stearns. 1991. “Population density, census methods, habitat relationships, and home range of the San Joaquin antelope ground squirrel, 1988-89.” *California Dept. Fish and Game, Nongame Bird and Mammal Section Rep*. 91-02:1–37.

Hawbecker, A. 1947. “Food and Moisture Requirements of the Nelson Antelope Squirrel.” *Journal of Mammalogy* 28(2): 115–125.

Hawbecker, A. 1958. “Survival and Home Range in the Nelson Antelope Ground Squirrel.” *Journal of Mammalogy* 39(2): 207–215.

Hayes, T., K. Haston, M. Tsui, A. Hoang, C. Haeffele, and A. Vonk. 2003. "Atrazine-Induced Hermaphroditism at 0.1 PPB in American Leopard Frogs (*Rana pipiens*): Laboratory and Field Evidence." *Environmental Health Perspectives* 111:568–575.

Heath, S.K. 2008. "Yellow warbler (*Dendroica petechia*)." In *Studies of Western Birds 1: California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 332–339. Camarillo, California: Western Field Ornithologists, and Sacramento, California: CDFG. Accessed at http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Historic Aerials Online. 2013. Historic Aerials. Accessed August 2013. http://www.historicaerials.com/

Holland, D.C., and R.H. Goodman. 1998. *A Guide to the Amphibians and Reptiles of MCB Camp Pendleton, San Diego County, California*. Prepared for AC/S Environmental Security Resource Management Division MCB Camp Pendleton, California. Contract M00681-94-C-0039.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. 156 pp.

Humple, D. 2008. "Loggerhead shrike (*Lanius ludovicianus*) (Mainland Populations)." In *Studies of Western Birds 1: California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 271–277. Camarillo, California: Western Field Ornithologists, and Sacramento, California: CDFG. Accessed at http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Impact Sciences Inc. 2000. *Resource Management and Monitoring Plan Tejon Industrial Complex Habitat Preserve*. July 27, 2000.

Impact Sciences Inc. 2001. *Biological Assessment Tejon Industrial Complex*. April 18, 2001.

Intermap. 2013. "Grapevine contours" [Shapefiles]. January 2013.

Jackman, R.E., W.G. Hunt, J. M. Jenkins, and P.J. Detrich. 1999. "Prey of Nesting Bald Eagles in Northern California." *Journal of Raptor Research* 33(2): 87–96.

Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final report submitted to the California Department of Fish and Game, Rancho Cordova, California. Contract 8023.

Jepson Flora Project (eds.). 2015. *Jepson eFlora*. Version 3.0. Berkeley, California: University of California. Accessed October 21, 2015. http://ucjeps.berkeley.edu/IJM.html

Jones, S.L. and J.E. Cornely. 2002. "Vesper Sparrow (*Pooecetes gramineus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/624doi:10.2173/bna.624.

Keeley, J.E. 1987. "Role of Fire in Seed Germination of Woody Taxa in California Chaparral." *Ecology* 68:434–442.

Kern County Board of Supervisors. 2004. *Kern County California Environmental Quality Act (CEQA) Implementation Document*. Kern County Board of Supervisors Resolution 2004-163. Adopted June 1, 2004.

Kern County. 2006a. *Guide for the Preparation of Environmental Impact Reports*. Bakersfield, California: Kern County Planning Department. June 2006.

Kern County. 2006b. *Kern County Valley Floor Habitat Conservation Plan*. Draft. Prepared by Garcia and Associates. Lompoc, California: Garcia and Associates. December 2006.

Kern County Planning Department. 2002. *Final Environmental Impact Report Tejon Industrial Complex East Specific Plan Volume 1*. SCH No. 2001101133. Prepared by Kern County Planning Department with technical assistance by Impact Sciences, Inc. Bakersfield, California: Kern County. November 2002.

Kern County Planning Department. 2009. Land Use, Open Space, and Conservation Element. Kern County General Plan - Chapter 1, Land Use. Adopted 2004, as amended.

Kern County. 2012. *Kern County Environmental Checklist Form*. Kern County Planning and Community Development Department. January 2012.

Kochert, M.N, and K. Steenhof. 2002. "Golden Eagles in the U.S. and Canada: Status, Trends, and Conservation Challenges." *Journal of Raptor Research* 36:32–40.

Kozlowski, A.J., E.M. Gese, and W.M. Arjo. 2008. "Niche Overlap and Resource Partitioning between Sympatric Kit Foxes and Coyotes in the Great Basin Desert of Western Utah." *The American Midland Naturalist* 160(1):191–2008.

Lefcort, H., and A.R. Blaustein. 1995. "Disease, Predator Avoidance, and Vulnerability to Predation in Tadpoles." *Oikos* 74:469–474.

Lehman, R.N., P.L. Kennedy, and J.A. Savidge. 2007. "The State of the Art in Raptor Electrocution Research: A Global Review." *Biological Conservation* 136:159–174.

Lehman, R.N., J.A. Savidge, P.L. Kennedy, and R.E. Harness. 2010. "Raptor Electrocution Rates for a Utility in the Intermountain Western United States." *Journal of Wildlife Management* 74:459–470.

Lindzey, F.G. 1978. "Movement Patterns of Badgers in Northwestern Utah." *Journal of Wildlife Management* 42:418–422.

Long, C.A. 1973. "*Taxidea taxus*." *Mammalian Species* 26:1–4. American Society of Mammalogists.

Longcore, T., and C. Rich. 2004. "Ecological Light Pollution." *Frontiers in Ecology and the Environment* 2:191–198.

Malanson, G.P., and J.F. O'Leary. 1982. "Post-Fire Regeneration Strategies in California Coastal Sage Shrubs." *Oecologia* 53:355–358.

Maldonado, J. Dr. and Dr. T. Dutta. 2014. *Levels of Genetic Structure of Ornate Shrews in the San Joaquin Valley and Surrounding Localities Based on mtDNA and Microsatellite Variation*. February 27, 2014.

McIntosh & Associates. 2014. *Hydrology and Hydraulic Analysis*. Draft. January 2014.

Menke, S.B., and D.A. Holway. 2006. "Abiotic Factors Control Invasion by Argentine Ants at the Community Scale." *Journal of Animal Ecology* 75:368–376.

Messick, J.P., and M.G. Hornocker. 1981. "Ecology of the Badger in Southwestern Idaho." *Wildlife Monographs* 76:1–53.

Minta, S.C. 1993. "Sexual Differences in Spatio-Temporal Interaction among Badgers." *Oecologia* 96:402–409.

Nafis, G. 2013. "Coluber flagellum ruddocki, San Joaquin Coachwhip." California Herps: A Guide to the Amphibians and Reptiles of California. <http://californiaherps.com/snakes/pages/c.f.ruddocki.html#description>

Nafis, G. 2014. "Two-striped Gartersnake – Thamnophis hammondii." California Herps: A Guide to the Amphibians and Reptiles of California. http://www.californiaherps.com/snakes/pages/t.hammondii.html

O'Leary, J.F., D. Murphy, and P. Brussard. 1992. *The Coastal Sage Scrub Community Conservation Planning Region: An NCCP Special Report*. Natural Community Conservation Planning/Coastal Sage Scrub Special Report 2.

Pagel, J.E., D.M Whittington, and G.T. Allen. 2010. *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations*. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. February 2010.

Papenfuss, T.J., and J.F. Parham. 2013. “Four New Species of California Legless Lizards (*Anniella*). *Breviora* 536:1–7.

Penrod, K., C.R. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. *South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection*. Monrovia, California: South Coast Wildlands Project. October 2003.

Phillips, R.L., A.H. Wheeler, J.M. Lockhart, T.P. McEneaney, and N.C. Forrester. 1990. *Nesting Ecology of Golden Eagles and Other Raptors in Southeastern Montana and Northern Wyoming*. Fish and Wildlife Technical Report 26. Washington, D.C.: U.S. Fish and Wildlife Service.

Ralls, K., and P.J. White. 1995. “Predation of San Joaquin Kit Foxes by Larger Canids.” *Journal of Mammology* 76:723–729.

Rosenberg, D., Berkes, F., Bodaly, R., Hecky, R., Kelly, C., Rudd, J. 1997. “Large-scale impacts off hydroelectric development.” *Environmental Review* 5: 27–54.

Sargeant, A.B., and D.W. Warner. 1972. “Movement and Denning Habits of a Badger.” *Journal of Mammalogy* 53:207–210.

Sawyer J., T. Keeler-Wolf., and J.M. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. California Native Plant Society.

Scott, T.A. 1985. “Human Impacts on the Golden Eagle Population of San Diego County.” Master’s thesis; San Diego State University.

Smith, G.W. 1990. “Home Range and Activity Patterns of Black-Tailed Jackrabbits.” *Great Basin Naturalist* 50:249–256.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California.* Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stabler, R.M. 1941. "Further Studies on Trichomoniasis in Birds." *Auk* 58:558–562.

Stalmaster, M.V., and J.L. Kaiser. 1998. "Effects of Recreation Activities on Wintering Bald Eagles." *Wildlife Monographs* 137:1–46.

Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians.* Second Edition. Peterson Field Guide Series. Boston, Massachusetts: Houghton Mifflin Company.

Suarez, A.V., and T.J. Case. 2002. "Bottom-Up Effects on Persistence of a Specialist Predator: Ant Invasions and Horned Lizards." *Ecological Applications* 12:291–298.

Tejon Ranch Conservancy. 2011. *Baseline Conditions Report White Wolf Easement Area*. February 2011.

Tejon Ranch Conservancy. 2013a. *Ranch-Wide Management Plan, Volume 1: Natural Community Description*. June 2013.

Tejon Ranch Conservancy. 2013b. "Tejon Ranch Conservancy Species GIS Data, including Mammal (January 28, 2013), Plant (August 7, 2013), and Bird (March 20, 2013) points" [Shapefiles]. Received from TRC on January 7, 2014.

Tejon Ranch Conservancy. 2014. "Tejon Ranch Conservancy San Joaquin Kit Fox Data" [Shapefiles, Excel Spreadsheet]. Received from Tejon Ranch Conservancy May 27, 2014; June 19, 2014; and July 17, 2014.

TRC (Tejon Ranch Company), Sierra Club, National Audubon Society, National Resources Defense Council, Endangered Habitats League, Planning and Conservation League, Tejon Ranch Conservancy, and Centennial Founders LLC, Tejon Industrial Corp., and Tejon Mountain Village LLC. 2008. *Tejon Ranch Conservation and Land Use Agreement*. June 17, 2008. http://www.sec.gov/Archives/edgar/data/96869/000119312508138009/dex1028.htm.

TRC. 2013a. "Topography GIS data, including 5-meter Digital Elevation Model, Hillshade, and Slopes, for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 17, 2013.

TRC. 2013b. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

TRC. 2013c. "Tejon Ranch Infrastructure GIS Data" [Shapefiles]. Received from TRC on February 12, 2013.

TRC. 2013d. "Wildlife camera data." Received from Tejon Ranch Company on July 16, 2013.

USDA (U.S. Department of Agriculture). 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USDA. 2012. "1-Meter Digital Ortho Imagery of Kern County" [JPEG]. Salt Lake City, Utah: USDA Farm Service Agency, National Agriculture Imagery Program, Aerial Photography Field Office. October 22, 2012.

USFS (U.S. Forest Service). 2013. "Put on Your Eagle Eyes! It's Time to Count Eagles!" USFS, San Bernardino National Forest. February 2, 2013. http://www.fs.usda.gov/detail/sbnf/news-events/?cid=STELPRDB5408473.

USFWS (U.S. Fish and Wildlife Service). 1986. *Pacific Bald Eagle Recovery Plan*. Portland, Ore.: U.S. Fish and Wildlife Service.

USFWS. 1996. *California Condor Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service.

USFWS. 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2007. "National Bald Eagle Management Guidelines." U.S. Fish and Wildlife Service. May 2007.

USFWS. 2010a. *San Joaquin Kit Fox (*Vulpes macrotis mutica*), 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

USFWS. 2010b. *Blunt-Nosed Leopard Lizard (*Gambelia sila*), 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2011a. *Buena Vista Lake Ornate Shrew (*Sorex ornatus relictus*), 5-Year Review: Summary and Evaluation*. September 2011.

USFWS. 2011b. *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance*. Prepared by the Sacramento Fish and Wildlife Office. January 2011.

USFWS. 2012. Volume 1 of the Supplemental Draft Environmental Impact Statement for the Tehachapi Uplands Multiple Species Habitat Conservation Plan. January 2012.

USFWS. 2013a. *Biological Opinion on the Proposed Issuance of an Incidental Take Permit for the Tehachapi Uplands Multiple Species Conservation Plan* (8-8-12-FW-55). April 26, 2013.

USFWS. 2013b. "Final_2013—Known locations of California condors fitted with GPS tracking devices" [digital GIS data]. Ventura, California: USFWS, Hopper Mountain National Wildlife Refuge Complex. Received February 11, 2014.

USFWS. 2013c. *5-Year Review: Summary and Evaluation of California Condor* (Gymnogyps californianus). U.S. Fish and Wildlife Service Pacific Southwest Region. June 2013.

USFWS. 2013d. *Eagle Conservation Plan Guidance, Module 1 – Land-Based Wind Energy. Version 2*. USFWS Division of Migratory Bird Management. April 2013. http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf.

USFWS. 2014. Condor Monthly Status Report & Locations 2014-3-31. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/condor/docs/StatusReport.pdf.

USGS (U.S. Geological Survey). No date. 7.5-Minute Series, Grapevine and Pastoria Creek Quadrangles.

USGS. 2015. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies" [digital GIS data]. National Hydrography Dataset website. Accessed July 22, 2013 and October 22, 2015. http://nhd.usgs.gov/.

Vyverberg, K. 2010. *A Review of Stream Processes and Forms in Dryland Watersheds.* California Department of Fish and Wildlife. December 2010.

Watson, J.W., M.G. Garrett, and R.G. Anthony. 1991. "Foraging Ecology of Bald Eagles in the Columbia River Estuary." *Journal of Wildlife Management* 55(3): 492–299.

Weldon, C., L.H. du Preez, A.D. Hyatt, R. Muller, and R. Speare. 2004. "Origin of the Amphibian Chytrid Fungus." *Emerging Infectious Diseases* 10:2100–2105. www.cdc.gov/eid.

Whitaker Jr., J.O. and NatureServe. 2008. "*Ammospermophilus nelsoni* (San Joaquin Antelope Ground Squirrel)." In *IUCN Red List of Threatened Species*. Version 2014.2, edited by G. Hammerson and D.F. Williams. Downloaded October 23, 2014. www.iucnredlist.org.

White, P.J., and R.A. Garrott. 1997. "Factors Regulating Kit Fox Populations." *Canadian Journal of Zoology* 75:1982–1988.

White, M.D., E.R. Pandolfino, and A. Jones. 2011. "Purple Martin Survey Results at Tejon Ranch in the Tehachapi Mountains of California." *Western Birds* 42:164–173.

White et al. 1995White, P.J., K. Ralls, and C.A. Vanderbilt. 1995. "Overlap in Habitat and Food Use Between Coyotes and San Joaquin Kit Foxes." *Southwestern Naturalist* 40:342–349.

White, M. 2013. Personal Communication. Conference call with Mike White, Ph.D. (Conservation Science Director of Tejon Ranch Conservancy) and Brock Ortega (Dudek, Megan Enright (Dudek), and Callie Ford (Dudek). November 11, 2013.

White, P.J., and K. Ralls. 1993. "Reproduction and Spacing Patterns of Kit Foxes Relative to Changing Prey Availability." *Journal of Wildlife Management* 57(4): 861–867.

Wilcove, D.S. C.H. McLellan, and A.P. Dobson. 1986. "Habitat Fragmentation in the Temperate Zone." In *Conservation Biology: The Science of Scarcity and Diversity*, ed. M.E. Soulé, 237–256. Sunderland, Massachusetts: Sinauer Associates Inc.

Wilcox, B., and D. Murphy. 1985. "Conservation Strategy: The Effects of Fragmentation on Extinction." *American Naturalist* 125:879–887.

Winter, K. 2002. "Black-Chinned Sparrow (*Spizella atrogularis*)." In *The Coastal Scrub and Chaparral Bird Conservation Plan: A Strategy for Protecting and Managing Coastal Scrub and Chaparral Habitats and Associated Birds in California*. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/scrub.html.

WRCC (Western Regional Climate Center). 2013. "Tejon Rancho." http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8839.

WRI (Wildlife Research Institute). 2014. "Bald Eagles: Lake Henshaw, Ramona, and Lake Morena, San Diego County." July 2, 2014.

WZI Inc. 2013. Grapevine Regional Groundwater Assessment. Prepared for R. Marshall and S. Letterly (DMB). Prepared by L.M. Bazeley (WZI Inc.). November 2013.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990.

5.2 Figure References

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. "Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications." *Canid Biology & Conservation* 16(7): 25–31. http://www.canids.org/CBC/16/San_Joaquin_kit_fox_habitat_suitability.pdf.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared for Tejon Mountain Village LLC. Prepared by Dudek. May 2009.

Ken Kay and Associates. 2014. "Special Plan Areas/Planning Areas" [CAD file]. Received March 27, 2014.

Kern County. 2013. "Annually Permitted Crop Data, Kern County Spatial Data for Year 2013" [Shapefile]. Bakersfield, California: Kern County, Department of Agriculture and Measurement Standards. Updated July 15, 2013. Accessed August 2, 2013. http://www.kernag.com/gis/gis-data.asp.

McIntosh & Associates. 2013. "Grapevine Project Site Boundary GIS Data" [Shapefiles]. Received from McIntosh & Associates on July 25, 2013.

McIntosh & Associates. 2014. "Grapevine Project Footprint GIS Data" [Shapefiles]. Received from McIntosh & Associates on April 8, 2014.

Penrod, K., C.R. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. *South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection*. Monrovia, California: South Coast Wildlands Project. October 2003.

TRC (Tejon Ranch Company). 2007. [In Progress]

TRC. 2013a. "Tejon Ranch Boundary GIS Data" [Shapefiles]. Received from TRC on October 15, 2013.

TRC. 2013b. "Grapevine Planning Are Boundary GIS Data" [Shapefiles]. Received from TRC on January 8, 2013.

TRC. 2013c. "Infrastructure GIS Data" [Shapefiles]. Received from TRC on February 12, 2013.

TRC. 2013d. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from TRC on January 15, 2013.

TRC. 2013e. "Wildlife camera data." Received from Tejon Ranch Company on July 16, 2013.

TRC. 2014a. "5-meter Digital Elevation Model, created January 6, 3013" [Raster Dataset]. Received from Tejon Ranch Company on January 9, 2014.

TRC. 2014b. "Points of diversion for the Grapevine project site" [Shapefiles]. Received from TRC (via Geosyntec) in November 2014.

USDA (U.S. Department of Agriculture). 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USFWS 2014. Condor Monthly Status Report & Locations 2014-3-31. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/condor/docs/StatusReport.pdf.

USGS (U.S. Geological Survey). 2014. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies " [digital GIS data]. National Hydrography Dataset website. December 5, 2014 . http://nhd.usgs.gov/.

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APPENDIX A

Biological Resource Protection Measures

APPENDIX A
Biological Resource Protection Measures

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TABLE

1 INTRODUCTION

This appendix includes the biological resource protection measures that have been accepted by the applicant and serve as mitigation measures and conditions of project approval for the County of Kern's Environmental Impact Report (EIR) for the proposed Grapevine project. These measures avoid or reduce potentially significant biological impacts to a less-than-significant level consistent with the California Environmental Quality Act (CEQA).

Some measures have general applicability and avoid or minimize impacts to biological resources. For example, MM-BTR-C is the implementation of general construction-related avoidance and minimization measures and includes the following elements:

- Restrictions on construction work hours
- Flagging/fencing/demarcation
- Restrictions to avoid debris/non-native vegetation/pollution
- Vehicle/equipment and maintenance restrictions
- Restrictions to minimize impacts related to erosion and silt
- Other restrictions on construction activities and personnel.

Other measures are specific to a particular species or activity. For example, MM-BTR-PCA includes pre-construction surveys and avoidance and minimization measures for a number of special-status species or resources, including:

- Bat roosts
- Blunt-nosed leopard lizard (*Gambelia sila*)
- Nelson's antelope squirrel (*Ammospermophilus nelsoni*)
- San Joaquin kit fox (*Vulpes macrotis mutica*)
- Swainson's hawk (*Buteo swainsoni)*
- American badger (*Taxidea taxus*)
- Burrowing owl (*Athene cunicularia*)
- Nesting birds
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Western spadefoot (*Spea hammondii*).

The mitigation measures are organized into the following sections:

- Section 2: compliance with existing regulations and/or measures identified for other resources;
- Section 3: construction-related biological resource protection measures;
- Section 4: pre-construction surveys and/or species-specific avoidance and minimization measures;
- Section 5: measures related to project design, such as specifying that no new aboveground high-voltage towers or power lines shall be built as part of the project;
- Section 6: conservation and management of on-site open space;
- Section 7: operations-related measures associated with development;
- Section 8: operations-related measures associated with open space, such as the requirement for trail signage; and
- Section 9: conservation and management of off-site open space.

Each biological resource protection measure has a unique abbreviated code, and within each of the categories listed above, the measures are presented in alphabetical order.

In addition to the biological resource protection measures described below, the following attachments are included and expand on specific biological resource protection measures:

- Attachment A-1, Burrowing Owl Exclusion Plan, which provides more details on avoidance buffers and relocation methods for burrowing owls;
- Attachment A-2, Grapevine Off-Site Mitigation Area, which describes the 7,233-acre off-site mitigation area;
- Attachment A-3, Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project, which addresses the proposed mitigation for impacts to state-jurisdictional waters, wetland waters, and riparian habitat; and
- Attachment A-4, San Joaquin Kit Fox Escape Dens and Fencing Plan, which provides more detail on enhancement of open space areas for San Joaquin kit fox.

2 COMPLIANCE WITH EXISTING REGULATIONS IDENTIFIED FOR OTHER RESOURCES

MM-BTR-DCP Preparation and Implementation of a Dust Control Plan

The construction contractor(s) will prepare a dust control plan to demonstrate compliance with San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive PM_{10} Prohibition). The dust control plan will be submitted for approval to the San Joaquin Valley Air Pollution Control District prior to the commencement of any soil-disturbing activity.

MM-BTR-PCR Compliance with Weed and Pest Control Regulations

All uses of such compounds will comply with the application restrictions mandated by the U.S. Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation.

MM-BTR-WQ Implement Measures Included in Water Quality Technical Report

Biological resource protection measures incorporated into the Grapevine project to address surface water quality and hydromodification impacts include erosion and sediment control best management practices (BMPs) during the construction phase of the project and site design, source control, low-impact development (LID), and hydromodification control BMPs during the operational phase. These measures (i.e., water quality features) are considered a part of the project for the impacts analysis. Full text of these measures is included in the Water Quality Technical Report for the Grapevine project (Geosyntec Consultants 2015a) and the Hydrology and Hydraulics Report for the Grapevine Project (Geosyntec 2015b).

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3 CONSTRUCTION-RELATED MEASURES

MM-BTR-C General Construction-Related Avoidance and Minimization Measures

Construction activities will be performed in accordance with applicable local, state, and federal laws.

Additionally, the following avoidance and minimization measures shall be implemented during project construction. These measures have been organized into subcategories for ease of reading.

Construction Work Hours

- Construction activities within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be prohibited between sunset and sunrise, and all construction-related lighting will be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be directed away from natural areas.

Flagging/Fencing/Demarcation

- The project biologist shall designate the construction area using highly visible materials in the field and review with the contractor in accordance with the final grading plan. State-jurisdictional channels or wetland/riparian areas within 50 feet of the construction area to be preserved will also be demarcated in the field and avoided.

Debris/Non-Native Vegetation/Pollution

- Fully covered trash receptacles that are animal-proof will be installed and used by the operator to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Trash contained within the receptacles will be removed at least once a week from the project site.
- No litter, construction materials, or debris will be discharged into state-jurisdictional waters.
- Construction work areas shall be kept clean of debris, such as cable, trash, and construction materials. All construction/contractor personnel shall collect all

microtrash and litter (anything shiny, such as broken glass), vehicle fluids, and food waste from the project area on a daily basis.

- No construction material shall be stockpiled in the streambed, banks, or channels, except that native vegetation removed from the channel may be chipped and the chips used as mulch for disturbed sites in or near the work sites. All disturbed invasive plants, such as tamarisk, shall be removed from the work site and not used in mulching, composting, etc. If weed biomass must be removed from the site to a designated disposal area, propagules shall be secured in a tarp (without holes or rips) and then carried to a vehicle. Biomass shall be properly wrapped to prevent plant parts from blowing away in transit, and vehicles carrying weed biomass shall be inspected prior to leaving the site to ensure that no plant parts are resting on the bumpers, tailgates, or other exposed areas.

Vehicle and Equipment Restrictions and Maintenance

- Maximum construction vehicle speed will be 15 miles per hour (mph) within the project footprint. Nighttime construction should be minimized to the extent possible. However, if nighttime construction or construction-related activity (e.g., security patrols, equipment maintenance) is necessary, then the speed limit shall be 10 mph.
- Vehicle operation within state-jurisdictional waters when surface water is present will be prohibited. Any equipment or vehicles driven and/or operated within or adjacent to a state-jurisdictional channel will be checked and maintained by the operator daily to prevent leaks of oil or other petroleum products that could be deleterious to aquatic life if introduced to the watercourse.
- Vehicles and equipment access will be limited to the project footprint and ingress and egress on existing roads.
- Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents will be located outside the state-jurisdictional channels and within the designated project footprint. Stationary equipment, such motors, pumps, generators, compressors, and welders, located within or adjacent to state-jurisdictional waters shall be positioned over drip-pans or other containment. Prior to refueling and lubrication, vehicles and other equipment shall be moved away from the state-jurisdictional channels.

Erosion/Silt

- During construction activities, temporary erosion control devices, such as straw bales, silt fencing, and sand bags, shall be used to prevent siltation in state-jurisdictional areas. Coir rolls, erosion control mats or blankets, straw or fiber wattles, or similar erosion control products shall be composed of natural-fiber, biodegradable materials; photodegradable or other plastic erosion control materials shall be prohibited.
- Silt settling basins installed during the construction process will be located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes.

Other Restrictions on Construction Activities and Personnel

- During construction, no pets, such as cats or dogs, should be permitted on the project's construction sites.
- No commercial hunting will be authorized or permitted on a portion of the project site under construction.
- Any contractor, employee, or agency personnel who are responsible for inadvertently killing, injuring, or trapping a listed species (e.g., San Joaquin kit fox, blunt-nosed leopard lizard) shall immediately report the incident to the project biologist. The project biologist shall contact the U.S. Fish and Wildlife Service (USFWS) (for federal Endangered Species Act (FESA) species) and California Department of Fish and Wildlife (CDFW) (for California Endangered Species Act (CESA) species) immediately in the case of a dead, injured, or entrapped listed species. The Sacramento USFWS Office and CDFW shall be notified in writing within 3 working days of the accidental death or injury to a listed species 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 USFWS contact is the Chief of the Division of Endangered Species, at 2800 Cottage Way, Suite W-2605, Sacramento, California 95825-1846, 916.414.6620 or 916.414.6600. The CDFW Central Region office is located at 1234 East Shaw Avenue, Fresno, California 93710, 559.243.4005.
- To prevent inadvertent entrapment of San Joaquin kit fox during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at the close of each working day, or

be provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped kit fox. If trapped kit fox are observed, escape ramps or structures shall be installed immediately to allow escape. If kit fox are trapped, the USFWS and CDFW shall be contacted.

- All pipes, culverts, or similar structures with a diameter of 4 inches or more that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for San Joaquin kit fox before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If kit fox is discovered inside a pipe, the project biologist shall flush the species from the pipe. If kit fox is discovered, that section of pipe shall not be moved until the USFWS and/or CDFW has been consulted. If necessary, under the direct supervision of the project biologist, the pipe may be moved once to remove it from the path of construction activity until the species has escaped.

MM-BTR-R Restoration of Temporary Impacts to Uplands with Non-Invasive Species

Site construction areas subjected to temporary ground disturbance, including storage and staging areas, and temporary roads, shall be recontoured to natural grade (if the grade was modified during the temporary disturbance activity), and revegetated with an application of a native seed mix, if necessary, prior to or during seasonal rains to promote passive restoration of the area to pre-project conditions (except that no invasive plants will be restored). An area subjected to "temporary" disturbance means any area that is disturbed but will not be subjected to further disturbance as part of the project buildout. This measure does not apply to situations that are urban/developed that are temporarily impacted and will be returned to an urban/developed land use. Prior to seeding temporary ground disturbance areas, the project biologist will review the seeding palette to ensure that no seeding of invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the Central Valley region, will occur.

MM-BTR-T Environmental Awareness Training, Biological Monitoring, and Compliance

Worker Environmental Awareness Program and Ongoing Training

Prior to the initiation of any on-site grading and construction activities (e.g., for roads, utilities, building foundations, and trails) in each project construction area, all construction/contractor personnel working on site must complete biological resource mitigation training through a Worker Environmental Awareness Program (WEAP). New construction workers engaged in construction activities (e.g., grading, utility installation, etc.) shall complete WEAP training within the first week of deployment on the site.

The project biologist shall perform the following:

- Provide the training materials for WEAP training. These materials shall include the measures and mitigation requirements for protected plant and wildlife species (e.g., avoidance and buffer requirements, nighttime construction limitations, etc.); the location and mitigation requirements for waters of the state; and applicable fire protection measures. The WEAP training will also provide educational materials describing condor protection measures, including where condors potentially occur within the Grapevine site, prohibited behaviors related to condors such as the pursuit, capture, harassment, and all other potential direct interaction of the species. The information shall also identify types of microtrash that could be ingested by adult breeding condors and describe measures to eliminate microtrash on and near all construction sites, recreational areas, roads, and backcountry locations where human presence has occurred. WEAP training will also include driver training to avoid and minimize collision risks with protected species, and reporting protocols in the event that any dead or injured wildlife are discovered.
- Copies of biological resource protection measures, and permits from resource agencies, such as the CDFW and Regional Water Quality Control Board (RWQCB), will be made available by the project biologist.
- Complete a timely review of construction schedules to ensure that timing/location of construction activities do not conflict with other measures or mitigation requirements (e.g., seasonal surveys for nesting birds, pre-construction surveys, or relocation efforts).
- Ensure that construction area boundary markers are placed to comply with applicable avoidance and/or buffer measure requirements (e.g., for riparian areas).

Biological Monitoring and Compliance Documentation

The project biologist shall perform the biological monitoring and compliance documentation for the Grapevine project, including the following:

- Prior to the initiation of any on-site grading and construction activities in each construction area, the project biologist will document that required pre-construction surveys and/or relocation efforts have been implemented.

- The project biologist will be present and will monitor activities during initial grading.
- The project biologist will note any evidence of microtrash and, if present, communicate the presence and requirement to remove the microtrash to the construction manager.
- If the project biologist observes a non-listed CDFW Species of Special Concern in harm's way during construction activities, a qualified biologist who holds a scientific collecting permit for the species shall move the individual(s) out of harm's way to the nearest area of suitable habitat at least 100 feet from the project footprint.
- If a listed FESA or CESA species is encountered during construction work, activities that could cause direct harm to the species, as determined by the project biologist, will cease until the animal is allowed to leave the work site unless species relocation is authorized by USFWS (for FESA species) and/or CDFW (for CESA species). If condors are observed landing in the project footprint, construction within 500 feet of the siting will cease until the bird(s) have left the area, or as otherwise authorized by CDFW and the USFWS. Should condors be found roosting within 0.5 mile of the construction area (based upon USFWS data provided to Tejon Ranch), no construction activity shall occur between 1 hour before sunset to 1 hour after sunrise, or until the condors leave the area, or as otherwise directed by the USFWS. The USFWS will be notified with 24 hours of an encounter with FESA species, and CDFW will be notified within 24 hours of an encounter with a CESA species. The USFWS contact is the Chief of the Division of Endangered Species, at 2800 Cottage Way, Suite W-2605, Sacramento, California 95825-1846, 916.414.6620 or 916.414.6600. The CDFW Central Region office is at 1234 East Shaw Avenue, Fresno, California 93710, 559.243.4005.
- Prior to construction of each project area, the project biologist will review grading plans to verify that plans include necessary measures and construction notes to avoid impacts to special-status biological resources as described in the biological resource protection approved by the County and in any resource agency permits.

4 PRE-CONSTRUCTION SURVEYS AND/OR SPECIES-SPECIFIC AVOIDANCE AND MINIMIZATION MEASURES

MM-BTR-BALD **Bald Eagle Perch Relocation**

A pair of bald eagles were observed regularly during the 2013/2014 winter season perched in a snag near Edmonston Pumping Plant Road. Bald eagles have been observed using this snag during the winter months in the past as a roost and foraging perch. As a result of proposed development, the snag and associated live trees adjacent to the snag will be removed. The following measures will be implemented to mitigate the loss of this roost/perch area:

Avoidance Measures

- This roost and foraging area shall not be removed between October 15 and March 15, when bald eagles winter in this region.

Roost Relocation/Creation

- An assessment of the feasibility of relocating the snag tree shall be conducted. The assessment will include an evaluation of the integrity of the snag to withstand relocation, potential relocation sites, and methodology of relocation. If relocation of the snag is determined to be feasible and have a high degree of success, the snag shall be relocated to an appropriate on-site open space or a suitable off-site location as close to the existing snag as feasible, as approved by a qualified eagle biologist, but at a minimum distance of 200 meters (656 feet) from development and potential human disturbance areas, particularly foot traffic (e.g., trails) (Grubb and King 1991, cited in NatureServe 2014; Richardson and Miller 1997). The snag shall be relocated prior to the bald eagle wintering season (generally October 15 through March 15 in this region).
- If relocating the existing snag is considered not to be practical and not to have a high probability of success, a new roosting/perching area shall be created that shall meet the following criteria:

    1. The created roost and foraging area shall be installed prior to the bald eagle wintering season (generally October 15 through March 15 in this region).

2. Because bald eagles prefer dead trees for daytime perches (Stalmaster and Newman 1979), at least one snag along with deciduous trees (at a 1:1 ratio to the trees being removed near the existing snag) shall be installed. The snag and deciduous trees shall replicate as closely as possible the dimensions, structure, and overall characteristics of the existing snag and deciduous trees to both provide unobstructed views and serve as a stable perch/roost site for the eagles.
3. The snag and associated deciduous trees shall be located at an appropriate on-site open space or a suitable off-site location as close to the existing snag as feasible, as approved by a qualified eagle biologist, and at a minimum in a location that maximizes flight clearance, visibility of foraging grounds, and proximity to foraging habitat (USFWS 2004). In addition, the roosting/perching area shall be located a minimum of 200 meters (656 feet) away from development and potential human disturbance, particularly foot traffic (e.g., trails) (Grubb and King 1991, cited in NatureServe 2014; Richardson and Miller 1997).

MM-BTR-PCA Pre-Construction Surveys and Avoidance and Minimization Measures

Prior to any project-related grading and construction activities, including trail construction, or other construction activities as described in the species-specific measure, the project biologist will conduct pre-construction surveys for specific species, and, if necessary, implement avoidance measures, monitoring, and/or reporting. The measures are organized by species' status (i.e., listed or candidate for listing first and other special-status species second) and then alphabetically by common name. The status of each is noted in parentheses next to the species common name.

Bat Roosts (—/SSC; State Candidate for Listing)

This measure applies to pallid bat, western mastiff bat, and western red bat, all of which are CDFW Species of Special Concern (SSC) and have no federal status. Townsend's big-eared bat is a SSC but is also a candidate for state listing.

Pre-Construction Surveys

No earlier than 30 days prior to the commencement of construction activities for each construction area, a pre-construction survey shall be conducted by the project biologist to determine whether active roosts of special-status bats (including maternity roosts, non-maternity roosts, and winter hibernacula) are present in the project disturbance zone or within 300 feet of the project disturbance zone boundary.

Avoidance Measures

If roosts are detected during pre-construction surveys, the following avoidance measures will be implemented unless relocation and/or take is authorized under CESA, as required by applicable law.

Maternity Roosts

If an active maternity roost is identified in these areas, the maternity roost will not be directly disturbed, and some construction activities, such as mass-grading or other activities involving heavy equipment, within 300 feet of the maternity roost may be postponed or halted until the maternity roost is vacated and juveniles have fledged, as determined by the project biologist. The rearing season for native bat species in California is approximately April 1 through August 31.

Hibernacula or Non-Maternity Roosts

If non-breeding bat roosts (hibernacula or non-maternity roosts) are found within the disturbance zone, the individuals shall be safely evicted, under the direction of the project biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the project biologist (e.g., installation of one-way doors). If flushing species from tree or rock roosts is required, this shall be done when temperatures are sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months. In situations requiring one-way doors, a minimum of 1 week shall pass after doors are installed and temperatures should be sufficiently warm (for winter hibernacula) for bats to exit the roost. This action should allow all bats to leave during the course of 1 week. If a roost needs to be removed and the project biologists determines that the use of one-way doors is not necessary, the roost shall first be disturbed following the direction of the project biologist at dusk to allow bats to escape during the darker hours. Once the bats escape, the roost site shall be removed or the construction disturbance shall occur the next day (i.e., there shall be no less or more than 1 night between initial disturbance and the roost removal).

Blunt-Nosed Leopard Lizard (FE/SE; FP[1])

Surveys

Focused Protocol Surveys Prior to Construction

Prior to the initiation of any on-site grading and construction activities, the project biologist shall conduct focused protocol surveys in accordance with the CDFW *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard* (CDFG[2] 2004) within suitable habitat for blunt-nosed leopard lizard in the survey season immediately prior to grading or construction.

Clearance Surveys Prior to Construction

Prior to ground-disturbing activities that would occur between March and November, three to five clearance surveys shall be conducted for blunt-nosed leopard lizard. The surveys shall be conducted within 30 days of the initiation of construction activities and shall be conducted, to the extent feasible, pursuant to protocol-required timing and weather criteria (CDFG 2004). If construction activities are initiated within 30 days of the focused protocol surveys describe above, then clearance surveys are not required.

Clearance surveys shall be conducted in areas of proposed disturbance and within 50 feet of proposed disturbance. Surveys shall be conducted by a team of two or more biologists, with at least one out of every four biologists qualified as a CDFW-approved Level 2 blunt-nosed leopard lizard surveyor, as defined by CDFW (CDFG 2004).

Should any blunt-nosed leopard lizards be observed during the surveys, all locations where the species was observed shall be conspicuously marked

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1 FE = federally listed endangered; SE = state-listed endangered; and FP = State Fully Protected.

2 Prior to 2013, the California Department of Fish and Wildlife (CDFW) was called the California Department of Fish and Game (CDFG). In this document, references citing department guidance prior to the official name change (January 2013) use CDFG; references after this date and general references to the department use CDFW.

in the field and on appropriate maps. In addition, all available burrows within 50 feet of the blunt-nosed leopard lizard observation shall be conspicuously marked in the field and on maps.

Avoidance Measures During Construction

Fencing Installation

If blunt-nosed leopard lizards are observed within 50 feet of proposed disturbance areas during the clearance surveys, exclusion fencing shall be installed in such a manner as to segregate blunt-nosed leopard lizard from the construction footprint and to ensure that direct take of the species does not occur. The actual distance from the construction area where exclusion fencing is installed may depend on each construction site, but the fencing will be installed at a maximum 50-foot radius from the outermost edge of the construction footprint. The project biologist shall be on site during the fencing installation to ensure that no blunt-nosed leopard lizards are inadvertently harmed/harassed during installation.

Fencing shall provide escape routes from excluded areas to enable blunt-nosed leopard lizards to move outside the excluded area away from construction activities. After exclusionary fences are installed, a qualified Level 2 surveyor, as defined by CDFW (CDFG 2004) shall perform a minimum of five consecutive daily surveys within the fenced area to ensure no blunt-nosed leopard lizards are located within the excluded zone. At the discretion of the project biologist, but no sooner than after the 5 days of surveys, the fencing escape routes shall be closed to prevent blunt-nosed leopard lizard from reoccupying the area prior to commencing earth-disturbing activities. The fenced zone can be expanded in the proposed project footprint, as necessary and following the same survey and escape route protocol described above, to exclude individual blunt-nosed leopard lizard from construction zones.

If blunt-nosed leopard lizards are observed or suspected (based on scat, tail drag marks, or other sign) of occurring within a fenced construction zone during the exclusion zone surveys, daily surveys shall be conducted for another consecutive 5 days from the date of the observation to allow sufficient time for individual blunt-nosed leopard lizard to vacate the excluded area.

Fencing Specifications

The exclusion fencing shall meet several criteria:

1. The exclusion fencing shall be long-lasting and ultraviolet stable and shall be maintained and repaired as directed by the project biologist.
2. The fencing shall be constructed of a material that will not permit blunt-nosed leopard lizard to pass through or become endangered or trapped.
3. The fencing shall include 36-inch flashing buried 12 inches below the ground and reinforced with metal rebar or wood stakes.
4. Where needed, fencing shall provide escape routes from excluded areas, including the construction footprint.
5. Tightly woven fiber netting or similar material shall not be used for erosion control or other purposes at the project site to ensure that blunt-nosed leopard lizard do not become entangled or trapped.

Monitoring During Construction

Relocation and/or take of a blunt-nosed leopard lizard may only occur if authorized pursuant to a Natural Community Conservation Plan (NCCP).

During on-site grading and construction activities, the exclusion fencing shall be maintained to continue to exclude blunt-nosed leopard lizard from entering all construction and activity areas. During on-site grading and construction activities, the project biologist shall be on site in any areas where exclusion fencing has been installed to confirm the absence of blunt-nosed leopard lizards within these areas and to serve as a monitor to ensure that no harm to individual blunt-nosed leopard lizards occurs in the event a blunt-nosed leopard lizard is observed or found to be within an excluded area. The project biologist shall also regularly inspect buffer and exclusion fencing during these activities to ensure the fencing remains in good condition. Constructions crews and vehicles shall not enter (including temporarily entering) any designated 50-foot buffer zones around suspected blunt-nosed leopard lizard burrows at any time. Buffer flagging and exclusion fencing will only be removed once all ground disturbance activities have ceased and it is confirmed that no additional ground-disturbance activities will occur within the fenced area or near burrow buffer zones. Once the fencing has been removed, appropriate signage will be installed to educate workers of the need to avoid known blunt-nosed leopard lizards within and near activity areas.

Stop Work Authority

The project biologist may authorize the cessation of construction activities for the following reasons:

1. The monitoring biologist believes, for any reason, blunt-nosed leopard lizards may be at risk;
2. If blunt-nosed leopard lizards are observed within a work area;
3. Poor fence condition necessitates repair;
4. If construction activities threaten established fence or buffers;

Stop work may be rescinded only at the discretion of the project biologist and only when any threat to blunt-nosed leopard lizards has passed.

Documentation

Documentation shall be provided for focused protocol surveys, pre-construction clearance surveys, final fence design and installation, education training, and monitoring activities and monitoring results (i.e., the avoidance of take of blunt-nosed leopard lizard). This documentation shall be submitted to CDFW and the USFWS.

Nelson's Antelope Squirrel (—/ST[3])

Pre-Construction Surveys

Surveys for Nelson's antelope squirrel shall be conducted no more than 30 days prior to grading or construction activities by the project biologist. Surveys shall cover the disturbance area and a 50-foot buffer. If there is a break in construction activities for more than 30 days, subsequent one-pass surveys shall be required prior to commencement of construction activities. A report documenting the results of the pre-construction surveys shall be submitted to the County within 30 days after performing surveys.

3 ST = State-listed threatened.

Avoidance Measures

If practicable, any burrows that are suspected or known to be occupied by Nelson's antelope squirrel and a 50-foot avoidance buffer around the burrows will be avoided by grading and construction activities, and shall include the erection of temporary fencing.

Relocation

If burrows suspected or known to be occupied and/or a 50-foot avoidance buffer around the burrows cannot be avoided, then Nelson's antelope squirrel shall be trapped and relocated to an approved release site on Tejon Ranch pursuant to appropriate authorizations.

San Joaquin Kit Fox (FE/ST)

Pre-Construction Surveys

Pre-construction surveys shall be conducted within the disturbance zone and a 200-foot buffer around the disturbance zone in suitable habitat no less than 14 days and no more than 30 days prior to the beginning of each construction area of grading or construction activity. Pre-construction surveys will identify kit fox habitat features on the project site and evaluate use by kit fox. The status of all possible kit fox dens will be categorized as a potential, atypical, known, or pupping den type and will be mapped. The results of these surveys shall be submitted to the USFWS and CDFW within 5 days of survey completion and prior to commencement of ground disturbance and/or construction activities.

Avoidance Measures

Buffer distances and measures shall be established, as described below, by den type prior to construction activities:

- Kit fox potential or atypical den: If a potential or atypical den is found, placement of four or five flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required but the 50-foot exclusion zone must be observed. Essential vehicle operation on existing roads and foot traffic is permitted within the exclusion zones, but the speed limit shall be 15 mph within the exclusion zone.

- Kit fox known den: If a known den is found, a 100-foot exclusion zone shall be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit fox. Acceptable fencing includes untreated wood particleboard, silt fencing, orange construction fencing, or other fencing as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction-related disturbances have ceased, or until the den has been monitored and a lack of kit fox activity is documented, as described under Den Excavation, below. At that time, all fencing shall be removed to avoid attracting post-construction attention to the dens, or the den can be excavated as described under Den Excavation, below.
- Kit fox natal/pupping den: If a kit fox natal/pupping den is documented during pre-construction surveys, a 200-foot exclusion zone shall be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit fox. Acceptable fencing includes untreated wood particleboard, silt fencing, orange construction fencing, or other fencing as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction-related disturbances have ceased, or until the den has been monitored and a lack of kit fox activity is documented, as described under Den Excavation, below. At that time, all fencing shall be removed to avoid attracting post-construction attention to the dens, or the den can be excavated as described under Den Excavation, below.
- Buffer distances and measures can be modified with prior authorization from the CDFW and USFWS.

Den Excavation

Based on the results of the pre-construction surveys, if avoidance of dens is not a reasonable alternative, limited destruction of kit fox dens may be allowed. Dens shall be fully excavated, filled with dirt, and compacted so that kit fox cannot reenter the den during the construction period. Hand excavation shall be used whenever feasible. If at any point during the excavation a kit fox is discovered inside the den, the excavation activity shall cease immediately and the den shall be monitored as described below. Destruction of the den may be completed when, in the judgment of the project biologist, the animal has escaped without further disturbance. Excavation of dens shall be conducted under the supervision of the project biologist, in accordance with USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance* (2011), as follows:

- Absolutely no excavation of kit fox known dens shall occur without prior authorization from the USFWS or CDFW. Destruction of any known or natal/pupping kit fox den requires take authorization from the USFWS and CDFW.
- Natal/pupping dens: Natal/pupping dens that are occupied will not be destroyed until the pups and adults have vacated and consultation with the USFWS and CDFW has occurred.
- Known dens: Known dens within the project footprint must be monitored for 3 days/nights using a tracking medium or infrared camera stations to determine the current use. If no kit fox activity is observed during this period, the den shall be destroyed immediately to prevent future use. If kit fox activity is observed at the den, then the den shall be monitored for at least 4 consecutive days from the time of 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 the entrance(s) with soil in such a manner that any resident animal can escape easily. Once the den is determined to be unoccupied, then the den may be excavated. If the animal is still present after 4 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of the project biologist, it is temporarily vacant; for example, during the animal's normal foraging activities.
- Potential/atypical dens: If a take authorization/permit has been obtained from the USFWS and CDFW, destruction of potential and atypical dens may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential and atypical dens should be monitored as if they were known dens. If any den was considered to be a potential or atypical 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 all construction activities shall cease and the USFWS and CDFW shall be notified immediately.

Reporting

New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database (CNDDB). For federally listed species, a copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the USFWS.

Swainson's Hawk (BCC, MBTA[4]/ST)

Pre-Construction Surveys

Pre-construction surveys for Swainson's hawk shall be conducted during the two survey periods prior to construction by the project biologist following the survey methods developed by the Swainson's Hawk Technical Advisory Committee (SWHA TAC 2000). These methods include surveying for active nests within a 0.5-mile radius of all project activities prior to construction activities.

Avoidance Measures

If active nests are found during these surveys, the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California* (CDFG 1994) recommends no intensive disturbances (e.g., heavy equipment operation associated with construction, use of cranes or draglines, new rock-crushing activities) or other project-related activities that may cause nest abandonment or forced fledging within 0.25 mile of an active nest. The buffer zone should be increased to 0.5 mile in nesting areas away from urban development (i.e., in areas where disturbance–such as heavy equipment operation associated with construction, use of cranes or draglines, new rock-crushing activities–is not a normal occurrence during the nesting season). Active nest trees (where the nest is intact and has been used in the last 5 years) shall not be removed unless there is no practicable way of avoiding them.

If an active nest tree must be removed, a California Fish and Game Code Section 2081 ITP (including conditions to offset the loss of the nest tree) may be required to be obtained with the tree removal period specified in the ITP, generally between October 1 and February 1.

4 MBTA = Migratory Bird Treaty Act

Monitoring During Construction

If construction or other project-related activities that may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site by the project biologist to determine whether the nest is abandoned shall be required. If it is abandoned and if the nestlings are still alive, the master developer shall fund the recovery and hacking (i.e., the controlled release of captive-reared young) of the nestling(s). Existing activities such as agricultural activities, commuter traffic, and routine facility maintenance activities within 0.25 mile of an active nest shall not be prohibited.

Other Special-Status Species

American Badgers (—/SSC)

Impacts to American badger individuals and wintering and natal dens shall be avoided and minimized during construction activities through the following measures.

Pre-Construction Surveys (Wintering)

During the colder months (generally between November 1 and February 15, when daily temperatures do not exceed 45°F), when American badgers may use winter dens during torpid periods, pre-construction surveys shall be conducted by the project biologist in suitable habitat no earlier than 14 days prior to construction activities to determine whether American badger winter dens are present within disturbance zone or within 50 feet of the disturbance zone boundary.

Avoidance Measures (Wintering)

If an American badger winter den is occupied within the disturbance zone or within 50 feet of the disturbance zone, then the den location shall be clearly marked with fencing or flagging to avoid inadvertent impacts on the den. If it is not practicable to avoid the wintering den during construction activities, an attempt will be made to trap or flush the individual and relocate it to suitable open space habitat. Additionally, badgers can be relocated by slowly excavating the burrow, either by hand or mechanized equipment under the direct supervision of the project biologist, removing no more than 4 inches at a time. After necessary trapping, flushing, or burrow excavation is completed, construction may proceed and the vacated winter den may be collapsed. If trapping is required, trapping will be limited to November 16 through the last day of February in accordance with Section 461, Title 14 of the California Code of Regulations (14 CCR 461). A written report documenting the badger removal shall be provided to the CDFW within 30 days of relocation.

Pre-Construction Surveys (Natal Dens)

During the late winter and summer (generally from March 15 through July 31), when American badgers may use natal dens for birthing and pup rearing, pre-construction surveys shall be conducted by the project biologist no earlier than 14 days prior to ground-disturbing construction activities to determine whether American badger natal dens are present within the project disturbance zone or within 200 feet of the disturbance zone.

Avoidance Measures (Natal Dens)

If active natal dens are located within these areas during pre-construction surveys, construction activities shall be postponed. If natal dens are detected during construction, construction activities shall be halted within 200 feet of the natal den. This buffer may be reduced based on the location of the den or type of construction activity, based on the direction of the project biologist. Construction activities shall not preclude the ability of the documented badgers to disperse to on-site open space or off-site habitat when the natal den is vacated (i.e., habitat suitable for dispersal must be maintained until dispersal occurs). Construction will be postponed or halted in these areas until it is determined by the project biologist that the young are no longer dependent on the natal den. To avoid inadvertent impacts during construction and to ensure that construction activities are at least 200 feet from active natal dens, any active natal dens within the survey area shall be clearly marked with fencing or flagging in a manner that will not inhibit normal behavioral activities (e.g., foraging and dispersing from the site) by the mother and pups.

Burrowing Owl (BCC, MBTA/SSC)

Pre-Construction Surveys

The project biologist shall conduct pre-construction, take-avoidance surveys no earlier than 14 days prior to ground-disturbing activities within each construction area. Focused burrowing owl surveys shall be conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (2012 Staff Report; CDFG 2012), with the exception of the survey buffers, which follows the California Burrowing Owl Consortium (1993). Breeding season surveys shall include at least four survey passes completed between February 15 and July 15, with at least one visit between February 15 and April 15, and a minimum of three survey visits (at least 3 weeks apart) between April 15 and July 15, including at least one visit after June 15. Non-breeding season surveys shall include at least four visits spread evenly throughout the non-breeding season. The surveys shall be conducted in suitable burrowing owl habitat within 150 meters (492 feet) of the project footprint. Surveys shall be conducted by walking 20-meter transects. Because burrowing owls can recolonize a site after a few days, time lapses between project activities trigger subsequent take avoidance surveys, including, but not limited to an additional survey within 24 hours of ground-disturbing activities. Once surveys are completed, the project biologist shall prepare a survey report on the survey methods and results.

<u>Avoidance Measures</u>

See Burrowing Owl Exclusion Plan (Attachment A-1) for more details on avoidance buffers and relocation methods.

Nesting Bird Surveys and Nest Buffers (MBTA and/or BCC/SSC)

Special-status, but non-listed, birds that are known to nest on site or have a moderate or high potential to nest on site, include burrowing owl, loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Setophaga petechia brewsteri*), black-chinned sparrow, oak titmouse, Lawrence's goldfinch (*Spinus lawrencei*), Nuttall’s woodpecker (*Picoides nuttallii*), tricolored blackbird (*Agelaius tricolor*), northern harrier (*Circus cyaneus*), and purple martin (*Progne subis*). Burrowing owl is addressed separately in a species-specific biological resource protection measure in this appendix, including Attachment A-1 of this appendix. This measure would protect these nesting special-status species and more common species protected under the Migratory Bird Treaty Act (MBTA), a federal law, prohibits the “take” of any migratory bird or any part, nest, or eggs of any such bird. The MBTA applies to over 800 species of birds, including rare and common species.

Pre-Construction Surveys

The project biologist shall conduct pre-construction surveys no earlier than 7 days prior to any on-site grading and construction activities within each construction area and a 500-foot buffer that occurs during the nesting/breeding season of special-status bird species potentially nesting on the site, with the exception of the special-status bird species addressed in other measures (including burrowing owl and Swainson's hawk). The pre-construction surveys shall be conducted between March and September, or as determined by the project biologist.

The purpose of the pre-construction surveys will be to determine whether occupied nests are present in the disturbance zone or within 500 feet of the disturbance zone boundary.

Avoidance Measures

If occupied nests are found, then limits of construction to avoid occupied nests shall be established by the project biologist in the field with flagging, fencing, or other appropriate barriers (e.g., 250 to 500 feet) and construction personnel shall be instructed on the sensitivity of nest areas. The project biologist shall serve as a construction monitor during those periods when construction activities are to occur near active nest areas to avoid inadvertent impacts to these nests. The project biologist may adjust the 250-foot or 500-foot setback at his or her discretion depending on the species and the location of the nest (e.g., if the nest is well protected in an area buffered by dense vegetation). Once the nest is no longer occupied for the season, construction may proceed in the setback areas.

San Diego Black-Tailed Jackrabbit (—/SSC)

Pre-Construction Surveys

No earlier than 72 hours prior to construction activities in grasslands, scrubs, savannah, orchards and vineyards, or other suitable habitat, the project biologist shall conduct a survey within the proposed construction disturbance zone and within 200 feet of the disturbance zone for San Diego black-tailed jackrabbit.

Avoidance Measures

If San Diego black-tailed jackrabbits are present, rabbits shall be flushed from the disturbance area towards non-disturbance areas.

Western Spadefoot (—/SSC)

Pre-Construction Surveys

Prior to the initiation of ground-disturbing activities, pre-construction surveys (including aboveground visual searches) shall be conducted for western spadefoot in suitable breeding habitat within the project footprint and within 300 feet of the project footprint boundary. Surveys shall be conducted during a time of year when the species can be detected above ground at suitable breeding sites. Suitable breeding habitat is defined as areas of temporarily ponded water, including within creeks and within the valley floor uplands. Suitable breeding sites should support ponded water for at least 3 weeks. To ensure that diseases are not conveyed between work sites by the project biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (DAPTF 2009) will be followed at all times.

Avoidance Measures

If western spadefoot is detected within the project footprint, measure "a" shall be implemented. If western spadefoot is detected outside the project footprint, but within 300 feet of the project footprint boundary, measure "b" shall be implemented.

a. If western spadefoot is detected (including egg masses, larvae) in water within the project footprint and cannot be permanently avoided (e.g., by placing a resource avoidance area over the site), suitable breeding habitat shall be created within suitable natural sites in open space outside the project footprint under the direction of the project biologist. The amount of occupied breeding habitat to be impacted by the project shall be replaced at a 2:1 ratio. The habitat creation location shall be in suitable habitat within on-site open space and as far away as feasible from residential and commercial development and roads. The created breeding habitat shall be designed such that it only supports standing water for no longer than 3 months following winter rains in order that aquatic predators (e.g., fish, bullfrogs, and crayfish) cannot become established. Terrestrial habitat surrounding the proposed relocation site shall be as similar in type, aspect, and density to the location of the impacted breeding site as feasible. No site preparation or construction activities shall be permitted within 300 feet of the vicinity of the impacted breeding site until the design and construction of the pool habitat in preserved areas of the site has been completed and all detected western spadefoot tadpoles, egg masses, and adults are moved to the created breeding habitat.

The project biologist shall monitor the relocation site for a cumulative total of five years in which environmental conditions are conducive for spadefoots to successfully complete the breeding cycle (i.e., adequate rain for pools to hold water for a sufficient period). Monitoring shall be conducted during and immediately following peak breeding season such that surveys can be conducted for adults as well as for egg masses and larval and metamorphic western spadefoot. Success criteria for the monitoring program shall include verifiable evidence of western spadefoot reproduction at the relocation site during 5 years with suitable breeding conditions.

b. If western spadefoot is detected (including egg masses, larvae) in water within 300 feet of the project footprint boundary, but not within the project footprint itself, an exclusion fence shall be constructed along the project boundary between the construction footprint and the occupied breeding site to prevent spadefoots from moving into and aestivating within the construction footprint. The exclusion fencing shall consist of 16-inch metal flashing, or an equivalent material, which shall be buried at least 6 inches below the ground surface, extending at least 8 inches above the ground. The fencing shall cover a sufficient length of the boundary to inhibit spadefoots from entering the project footprint. The necessary length and appropriate location of the exclusion fence relative to the occupied breeding site shall be determined by the project biologist.

   No construction activities involving heavy equipment generating noise, ground vibration, and/or dust shall be allowed within 300 feet of occupied breeding sites until western spadefoots have metamorphized and are no longer present in the breeding pool, as determined by the project biologist. Acceptable construction activities (e.g., quiet and/or low impact activities) within 300 feet of the occupied breeding site shall be allowed at the discretion of the project biologist.

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5 MEASURES RELATED TO PROJECT DESIGN

MM-BTR-APLIC Bird Collision Avoidance Measures for Aboveground Utilities

No new aboveground high-voltage towers or power lines shall be built as part of the project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the *Avian Protection Plan Guidelines* prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC and USFWS 2005). The *Avian Protection Plan Guidelines* shall be used in conjunction with *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (APLIC 2012), *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (APLIC 1994), or the most current editions of these documents at the time of the installation or construction of these structures. Implementation of these guidelines is the responsibility of the project biologist during construction of master improvements. During the County's review of the tentative tract maps for the project, the applicant shall provide evidence to the County Planning Department either that no new aboveground high-voltage towers or power lines shall be built as part of the proposed construction or, if existing utilities are to be relocated, that construction specifications are consistent with the APLIC guidance (APLIC and USFWS 2005; APLIC 1994, 2006, 2012).

MM-BTR-FENCE Project Fencing Design Requirements

To protect movement corridors and enable wildlife to pass through the project site after construction is completed, any fencing located along Grapevine Creek shall provide a 4- to 8-inch opening above the ground. Fencing design requirements for San Joaquin kit fox are described in Attachment A-4. Where block walls occur and movement is desired, gaps shall be constructed at appropriate locations to allow for wildlife movement. Fences and wall gaps shall be designed to not cause a sink-habitat effect. Prior to construction of fences or walls, the fencing plan shall be reviewed by the project biologist to confirm that the design enables wildlife to pass through the project site.

MM-BTR-LAND Restrictions on Landscaping Palettes and Plants

Prior to the approval of the common landscape improvement plans for each project area, the plant palettes proposed for use on landscaped slopes, street medians, park sites, and other public landscaped zones within 100 feet of open space shall be reviewed by the project biologist to minimize the effects that proposed landscape plants could have on native vegetation and wildlife within adjacent open space areas. Landscape plants will not include invasive plant species, as identified by the most recent version of the California Invasive Plant Inventory for the Central Valley region, as published by the California Invasive Plant Council. Landscape plans will include a plant palette composed of native or non-native, non-invasive species that do not require high irrigation rates.

Immediately prior to installation of common landscape improvements, container plants to be installed within 100 feet of open space shall be inspected by the project biologist for the presence of disease, weeds, and pests, including Argentine ants (*Linepithema humile)*. Plants with pests, weeds, or diseases will be rejected.

6 CONSERVATION AND MANAGEMENT OF ON-SITE OPEN SPACE

MM-BTR-OS **Zoned Exclusive Agriculture and Restrictions on Allowable Uses**

Approximately 3,232 acres of the Grapevine Specific Plan Area shall be set aside as open space and will continue to be zoned as Exclusive Agriculture and managed under the Resource Management Plan required in MM-BTR-RMP in accordance with the additional limitations described below.

Irrigation, agricultural land uses (except grazing), and lighting, with the exception of downcast luminaries on new multi-use trails, where the light is directed away from the natural areas that would be built in the proposed project footprint, would not be allowed in the southern foothills open space or in Grapevine Creek, the tributary to Cattle Creek or along the aqueduct in central open space that is zoned as Exclusive Agriculture, as shown on Figure A-1, Proposed Project Open Space.

Agricultural uses, including irrigation, would continue in the open space area between I-5, and up to 100 acres of land zoned as Exclusive Agriculture in the central open space west of planning area 5b, north of Edmonston Pumping Plant Road, and east of planning area 5a could be converted to agricultural uses and irrigated. The lands that may be converted to agricultural land uses would be sited at least 500 feet from the western edge of Planning Area 5b and designed to allow wildlife movement through and/or around the agricultural area such that east–west movement along the valley floor/foothill transition area would be maintained.

This open space area will be managed by Tejon Ranch, including activities described under MM-BTR-RMP.

MM-BTR-RMP **Resource Management Plan**

Prior to recordation of the final tract map for development adjacent to the open space, a resource management plan shall be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities within the dedicated Exclusive Agriculture area. The following will be included in the resource management plan:

- The resource management plan shall include habitat enhancement activities including the creation of escape dens (e.g., 10–20 feet long and 8–10 inches in diameter covered pipes with exposed ends) for San Joaquin kit fox in on-site conservation areas, including Grapevine Creek, the tributary to Cattle Creek, areas north and south of the California Aqueduct right-of-way, and areas along the northern portion of the project site west of I-5 (see Attachment A-4, San Joaquin Kit Fox Escape Dens and Fencing Plan).

- Control of stray and feral cats and dogs shall be conducted in open space areas. Stray and feral cats and dogs may be trapped and deposited with the local Society for the Prevention of Cruelty to Animals, the Kern County Department of Animal Control, or Shelter on the Hill Humane Society.
- Periodic maintenance patrols will be required in order to remove litter and monitor trail conditions, prohibited uses and fire hazards within the project open space.

To further protect biological resources, including, but not limited to, condors, bald eagles, and golden eagles, the following measures will be included in the resource management plan and implemented in the open space areas:

- To further protect winter roosts for bald eagles, trail use near identified winter perch sites of bald eagles will be restricted between October 15 and March 15, and adequate setbacks from each perch site, considering location, viewshed, and other factors, will be determined by the biologist. Setbacks of 250 meters (820 feet) have been suggested for wintering eagles in open habitats as sufficient to buffer eagles from human activities (Stalmaster and Newman 1978).
- No new trails will occur within 0.25 mile of an active golden eagle nest, within or outside of the viewshed of that nest. Trail use and recreational activities will be restricted within 0.25 to 0.5 mile of the viewshed of an active golden eagle nest during the nesting season (generally February 1 through July 30). Trail use may be allowed during the nesting season if the project biologist has determined that the nest has become inactive and trail use would not otherwise adversely affect golden eagles within the nest territory.
- Guided hunting shall be allowed on an as-needed basis for ongoing resource management or pest control (e.g., feral pig eradication). Hunting for recreational purposes shall be restricted over time as the

community is built out. Recreational hunting will become a restricted activity by phase upon recordation of the final tract maps for each project phase.

- To further protect California condor potentially foraging in the project area over the long term from negative interactions with humans and/or artificial structures, the project biologist shall remove dead cattle, or other carcasses that are found or reported within 1,000 feet of development. Such carcasses shall be relocated to a predetermined location within an area identified for conservation in the Ranchwide Agreement or an area conserved as open space on the Ranch. The locations where carcasses shall be relocated shall be a minimum of 1,000 feet from the edge of the project footprint. Appropriate locations for transfer of carcasses include open grasslands and savannahs where condors can readily detect carcasses and easily land and take off without encountering physical obstacles such as power lines and other utility structures. Pursuant to this measure, a telephone number for reporting dead cattle shall be provided and actively maintained. Any cattle carcasses transferred to the relocation areas shall be reported to the USFWS condor group.
- The conceptual trails plan in the project description includes a proposed trail in the foothills that would impact riparian habitat located along the non-jurisdictional USGS stream feature 16 (Figure E3-1A of Appendix E-3 to the BTR). However, the final trail alignment will be sited to avoid impacts to riparian habitat. Prior to any new trail construction, pre-construction surveys will be conducted and avoidance and minimization will be implemented per MM-BTR-PCA. For future trail proposals that differ from the conceptual plan, the alignments would be reviewed by the project biologist; listed species and riparian habitat would be avoided, if feasible. If avoidance of listed species and riparian habitat is not feasible, future permitting may be required.
- The requirement that trailhead and trail signage be installed at selected open space entrances indicating that the open space areas are a biologically sensitive areas and trail users must remain on designated existing trails at all times.
- The requirement that if overuse of trails is documented by land manager, then one or more of the following management measures

will be implemented: trail closures, trail repair, increased patrols, signage, and/or fencing to restrict use.

- Any future open space uses involving ground disturbance shall be reviewed by the project biologist; listed species and riparian habitat would be avoided, if feasible. If avoidance of listed species and riparian habitat is not feasible, future permitting may be required.

7 OPERATIONS-RELATED MEASURES ASSOCIATED WITH DEVELOPMENT

MM-BTR-CONDOR Required Notification of Condor Observations, Restrictions on Occupant Behavior and Activities, and Community Service

If any California condor is observed on or near developed areas (i.e., perched or on the ground within 1,000 feet of the project footprint), the Property Owners Association (POA) manager must notify the USFWS immediately. The POA manager must call the Hopper Mountain National Wildlife Refuge office (phone: 805.644.5185) and the Ventura Fish and Wildlife Office (phone: 805.644.1766) to report the incident. The USFWS will likely be concurrently monitoring the movements of any California condor that moves toward the Grapevine area (using GPS units or telemetry). If the USFWS has data to indicate that any California condor is on the vicinity of the Grapevine area, the USFWS shall be allowed access to the project to make visual observations of the bird(s). Additionally, the POA must allow the USFWS access to attempt to haze the bird away from the area. Residents and people other than USFWS-designated personnel are not authorized to haze the condors. The USFWS shall be allowed to attempt hazing as often and repeatedly as it deems necessary to prevent habituation or other injury to a condor.

Tejon Ranch staff, Grapevine occupants and their guests shall be required to cease any behavior that constitutes an attractive nuisance or otherwise presents an unreasonable and avoidable danger to California condors upon direction by the POA manager, in consultation with the project biologist. The CC&Rs shall provide examples and authorize the project biologist to respond to changing California condor behaviors, human activities, and other conditions with restrictions that are the least intrusive necessary to provide the protection intended.

Fireworks, explosions (louder than gunshots), or other abnormally loud noises are prohibited on Grapevine open space unless the USFWS determines that no condors are present or would otherwise be adversely affected by the fireworks, explosions, or noise.

The POA manager shall also provide for routine community maintenance activities that will include regular efforts to eliminate microtrash on and near all roads where human presence has occurred.

MM-BTR-FIRE **Implementation of a Fire Safety Plan and Avoidance of Nesting Birds during Fuel Management Activities**

Prior to approval of landscape improvement plans for areas immediately adjacent to the Exclusive Agriculture zone, the Kern County Building Inspection Department will verify that required fuel modification improvement plans are consistent with the requirements of the *Fire Safety Plan for the Grapevine Project* (Fire Safety Plan; Dudek 2014).

Active fuel management measures shall occur outside of the breeding season of native birds in the region of the project site (typically March through August), if practicable. If the breeding season cannot be practicably avoided, prior to implementing active fuel modification measures during the breeding season of native birds in the region of the project site (typically March through August), surveys shall be conducted to determine the presence of nesting birds within the fuel modification zones. Any active breeding nests shall be mapped. The fuel modification zones shall be modified to create a 300-foot buffer (500 feet for most raptors and tricolored blackbird colonies) around these nests and avoid any clearing or grading within these buffer areas during the breeding season.

MM-BTR-IF **Prohibition on the Intentional Feeding of Wildlife**

Intentional feeding of condor, bald eagle, golden eagle, and San Joaquin kit fox shall be prohibited on the Grapevine project. Ducks and other waterfowl that may occur in designated parks with water features can be intentionally fed. The covenants, conditions, and restrictions (CC&Rs) shall provide that the feeding of condor, bald and golden eagle, and San Joaquin kit fox on the Grapevine project is prohibited with the exceptions described.

MM-BTR-IPM **Restrictions on the Use of Rodenticides**

Recorded CC&Rs shall inform future property owners of applicable requirements and include language that prohibits the use of anticoagulants (used for rodent control) at the Grapevine project site. Additionally, rodenticides shall not be used in areas within 450 feet[5] of Exclusive

5 Because poisoned rodents are less wary and more likely to be predated upon, and the ground squirrel average straight-line movement is approximately 450 feet (137 meters) or less (Chapman and Feldhamer 1982), 450 feet is included.

Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety. Other control measures, such as trapping, will be evaluated and used, if appropriate, prior to the use of rodenticides with 450 feet of Exclusive Agriculture. The County Building Inspection Department shall verify that restrictions on the use of anticoagulants and pesticides have been included in the CC&Rs.

MM-BTR-LIGHT Restrictions on Operation-Related Lighting

Exterior lighting shall comply with Kern County's dark sky ordinance. All lighting along the perimeter of the open space areas exterior to the project footprint, including the project-related open space adjacent to the California Aqueduct, Grapevine Creek and tributary to Cattle Creek, shall be fully shielded and directed downward in a manner that will prevent light spillage or glare into the adjacent open space. Prior to issuance of external electrical lighting permits, the Kern County Building Inspection Department will verify that all exterior lighting is compliant with the Kern dark sky ordinance.

MM-BTR-TRASH Requirement for Residents to Use Animal- and Weather-Resistant Trash Receptacles

The CC&Rs shall require that property owners keep trash in covered containers that are fitted with animal- and weather-resistant lids in order to prevent artificially increasing the populations of non-native rats (*Rattus* spp.), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), skunks (*Mephitis mephitis*, *Spilogale gracilis*), and other mesopredators; discourage special-status and other wildlife species from foraging on trash; reduce negative interactions between wildlife and humans and pets; and reduce vehicle collisions with wildlife. Kern County will verify that the CC&Rs require property owners to keep trash in covered containers that are fitted with animal- and weather-resistant lids.

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8 OPERATIONS-RELATED MEASURES ASSOCIATED WITH OPEN SPACE

MM-BTR-ED **Conservation Education and Awareness Program for Occupants**

The property owners' association (POA) manager shall develop and implement a conservation education and awareness program informing the occupants of the special-status biological resources present within the Grapevine project site and providing information on common threats posed by the presence of people and pets to those resources. The conservation education and awareness program shall include the following topics and information:

- The requirement that people and their animals stay on existing trails at all times
- The requirement that pets be leashed at all times while in project open space and on trails
- The requirement that dog owners pick up and pack out their animals' feces when on trails
- Prohibition against intentionally feeding condor, bald eagle, golden eagle, and San Joaquin kit fox, and the unauthorized capture of all wildlife species, both of which are prohibited
- The dangers of microtrash and the benefits of trash receptacles fitted with animal- and weather-resistant lids
- Notification that native animals (e.g., coyote (*Canis latrans*), bobcat (*Felis rufus*), and mountain lion (*Puma concolor*)) are present in the area and could prey on pets, and no actions will be taken against native animals should they prey on pets allowed outdoors by their owners
- Required compliance with federal and state laws governing the use of pesticide and rodenticide products and restrictions on the use of anticoagulants, as described in MM-BTR-IPM.
- Interpretive and educational signage will be installed at appropriate locations informing the public about bald eagles, their habitat requirements, and their sensitivity to human disturbance during the wintering season for the species (late October through March).
- Prohibited behaviors related to condors such as the pursuit, capture, and harassment of condors and all other potential direct interaction with the species and the negative effects of microtrash on the species.

Mandatory reporting by occupants of any California condors seen on or near developed areas, including any condor seen perching on structures, drinking from standing water (e.g., swimming pools), or feeding on carcasses within an estimated 1,000 feet of development.

- Prohibitions on the touching and collection of reptiles and amphibians.
- The negative impacts of off-trail activities near oak trees (*Quercus* spp.).

MM-BTR-TRAIL Trail Signage

Prior to the approval of grading plans for trail systems, trailhead and trail signage indicating that the project open space is a biological conservation area will be installed. At a minimum, the following information will be provided at trailheads and/or on-trail signage:

- Pets must be leashed at all times while in project open space.
- Dog owners are required to pick up and pack out their animals' feces.
- Intentional feeding of wildlife is prohibited.
- People and their animals must stay on existing trails at all times.

9 CONSERVATION AND MANAGEMENT OF OFF-SITE OPEN SPACE

MM-BTR-OOS Conservation of Off-Site Mitigation Area

Approximately 7,233 acres of off-site mitigation lands on Tejon Ranch in the San Joaquin Valley floor will be conserved as mitigation to reduce project-level impacts to habitat for 17 special-status wildlife species, including four state- and/or federally listed species—San Joaquin kit fox, blunt-nosed leopard lizard, bald eagle, and Nelson's antelope squirrel—and 13 non-listed species, to a less-than-significant level. The 13 special-status species, including 1 species that is a candidate for state listing and 1 species that is fully protected, are:

- Golden eagle (USFWS Bird of Conservation Concern (BCC)/MBTA, CDFW Fully Protected)
- San Joaquin coachwhip (*Coluber flagellum ruddocki*) (SSC)
- Blainville's horned lizard (*Phrynosoma blainvillii*) (SSC)
- Burrowing owl (*Athene cunicularia*) (BCC/MBTA, SSC)
- Ferruginous hawk (*Buteo regalis*) (BCC/MBTA)
- Loggerhead shrike (*Lanius ludovicianus*) (BCC/MBTA, SSC)
- Oregon vesper sparrow (*Pooecetes gramineus affinis*) (BCC/MBTA, SSC (wintering))
- American badger (*Taxidea taxus*) (SSC)
- Special-status bats:
  - Pallid bat (*Antrozous pallidus*) (SSC)
  - Western mastiff bat (*Eumops perotis californicus*) (SSC)
  - Western red bat (*Lasiurus blossevillii*) (SSC)
  - Townsend's big-eared bat (*Corynorhinus townsendii*) (SSC and state candidate).
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (SSC).

Because the habitat requirements of 16 of the special-status species requiring off-site mitigation overlap those of the San Joaquin kit fox, the identification and extent of the Grapevine Off-Site Mitigation Area focuses on the mitigation requirements of the kit fox. The mitigation requirements for San Joaquin kit fox are summarized in Table A-1 by impact type and habitat suitability type and are consistent with those typically required by CDFW and USFWS for this species. As shown in Table A-1, a total of 7,233 acres of off-site mitigation, including 3,948 acres of high suitable habitat and 3,285 acres of medium suitable habitat, will be conserved for San Joaquin kit fox.

Table A-1
Proposed Mitigation for Impacts to San Joaquin Kit Fox Habitat Using the 2013 Kit Fox Model (Acres)

Suitability Category	Impacts		Mitigation Ratio		Proposed Project Mitigation (Acres)		Proposed Off-Site Mitigation (Acres)		Total Mitigation (Project and Off-Site Mitigation)
	H	*M*	*H*	*M*	*H*	*M*	*H*	*M*	
Impacts and Mitigation for Direct Impacts									
High (H)	786	—	3:1	—	155	—	2,202	—	**2,202**
Medium (M)	—	3,056	1:1	3:1	—	645	1,746	3,285	**5,031**
Subtotal	*786*	*3,056*	—	—	*155*	*645*	*3,948*	*3,285*	**7,233**
Impacts and Mitigation for Indirect Impacts									
High (H)	165	—	1:1	—	165	—	—	—	—
Medium (M)	—	211	—	1:1	—	211	—	—	—
Subtotal	*165*	*211*	—	—	*165*	*211*	—	—	—
Total[1]	**951**	**3,267**	**—**		**321**	**856**	**3,948**	**3,285**	**7,233**

1 Totals may not add up due to rounding.

The Off-Site Grapevine Mitigation provides at least a 1:1 mitigation ratio of suitable habitat in open space areas within the San Joaquin Valley floor and adjacent foothills for the 17 special-status species requiring mitigation. In addition to the 17 species requiring off-site mitigation, the large amount of habitat being conserved for in the off-site mitigation area will also benefit a number of other special-status species.

See the Grapevine Off-Site Mitigation Area (Attachment A-2) for more details on the off-site mitigation area.

MM-BTR-WM **Implementation of a Mitigation Plan for Waters of the State**

Attachment A-3, Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project, provides detailed information regarding the proposed mitigation for impacts to waters of the state.

MM-BTR-WLM **Conservation of 100-Foot Buffer North of Aqueduct**

The proposed project would designate an additional 85 acres as open space north of the California Aqueduct ("northern open space" shown on Figure A-1). The buffer would continue to be zoned as Exclusive Agriculture, and would primarily provide additional open space for wildlife movement. This additional 85 acres of land is a 100-foot-wide band of open space that parallels the Department of Water Resources (DWR) easement along the northern side of the aqueduct on the Ranch. New irrigated agricultural uses and lighting, with the exception of downcast luminaries associated with multi-use trails, would not be allowed in this northern open space. If a multi-use trail is built in this 100-foot band of open space, lighting for these multi-use trails would be downcast luminaries with light patterns directed away from the proposed open space and would preclude light from casting onto the open space.

This open space area will be managed by Tejon Ranch, including activities described under MM-BTR-RMP.

Enhancement of this area for purposes of wildlife movement is described in Attachment A-4.

10 REFERENCES CITED

APLIC (Avian Power Line Interaction Committee). 1994. *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*.

APLIC. 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Washington DC and Sacramento, California: Edison Electric Institute, APLIC, and the California Energy Commission. http://www.aplic.org/uploads/files/2613/SuggestedPractices2006(LR-2watermark).pdf.

APLIC. 2012. *Reducing Avian Collisions with Power Lines: State of the Art in 2012*.

APLIC and USFWS (Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service). 2005. *Avian Protection Plan Guidelines*. April 2005. http://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Aprl2005.pdf.

California Burrowing Owl Consortium. 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*. April 1993. Accessed September 18, 2014. http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

CDFG (California Department of Fish and Game). 1994. *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California*. November 8, 1994.

CDFG. 2004. *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard*. Revised May 2004. Accessed September 2013. http://www.dfg.ca.gov/wildlife/nongame/docs/BNLLrevisedprotocol.pdf.

CDFG. 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, CDFG. Accessed September 18, 2014. http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

Chapman, J., and G. Feldhamer. 1982. *Wild Animals of North America: Biology, Management, and Economics*. Baltimore and London: Johns Hopkins University Press.

Cypher, B.L. and T.L.Westall 2014. *Buena Vista Lake Shrew Habitat Evaluation, Tejon Ranch Grapevine Area, Kern County, California*. Bakersfield California: State University, Stanislaus, Endangered Species Recovery Program. February 17, 2014.

DAPTF (Declining Amphibian Populations Task Force). 2009. "The Declining Amphibian Task Force Fieldwork Code of Practice." http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/DAFTA.pdf.

Dudek. 2014. *Fire Safety Plan for the Grapevine Project*.

Geosyntec Consultants. 2015a. *Water Quality Technical Report: Grapevine Project*. Los Angeles, California: Geosyntec Consultants. Prepared for Tejon Grapevine LLC. April 2015.

Geosyntec Consultants. 2015b. *Hydrology and Hydraulics Report for the Grapevine Project*. Los Angeles, California: Geosyntec Consultants. Prepared for Tejon Grapevine LLC. October 2015. NatureServe. 2014. "*Haliaeetus leucocephalus*." *NatureServe Explorer: An Online Encyclopedia of Life* [web application]. Version 7.1. Arlington, Virginia: NatureServe. Data last updated July 2013. Accessed May 7, 2014. http://explorer.natureserve.org/servlet/NatureServe?searchSciOrCommonName=Haliaeetus%20leucocephalus.

Richardson, C.T., and C.K. Miller. 1997. "Recommendations for Protecting Raptors from Human Disturbance: A Review." *Wildlife Society Bulletin* 25(3): 634–638.

Stalmaster, M.V., and J.R. Newman. 1979. "Perch-Site Preference of Wintering Bald Eagles in Northwest Washington." *Journal of Wildlife Management* 43:221–224.

SWHA TAC (Swainson's Hawk Technical Advisory Committee). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. May 2000. http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

Tejon Ranch Conservancy. 2013. *Ranch-wide Management Plan*. Frazier Park, California: Tejon Ranch Conservancy. June 2013.

TRC (Tejon Ranch Company), Sierra Club, National Audubon Society, Natural Resources Defense Council, Endangered Habitats League, Planning and Conservation League, Tejon Ranch Conservancy, Centennial Founders LLC, Tejon Industrial Corp., and Tejon Mountain Village LLC. 2008. *Tejon Ranch Conservation and Land Use Agreement*. June 17, 2008. Accessed October 2014. http://www.sec.gov/Archives/edgar/data/96869/000119312508138009/dex1028.htm.

USFWS (U.S. Fish and Wildlife Service). 2004. *Protocol for Evaluating Bald Eagle Habitat and Populations in California*. June 2004.

USFWS. 2011. *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance*. Sacramento, California: USFWS Sacramento Fish and Wildlife Office. January 2011. http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/es_survey.htm.

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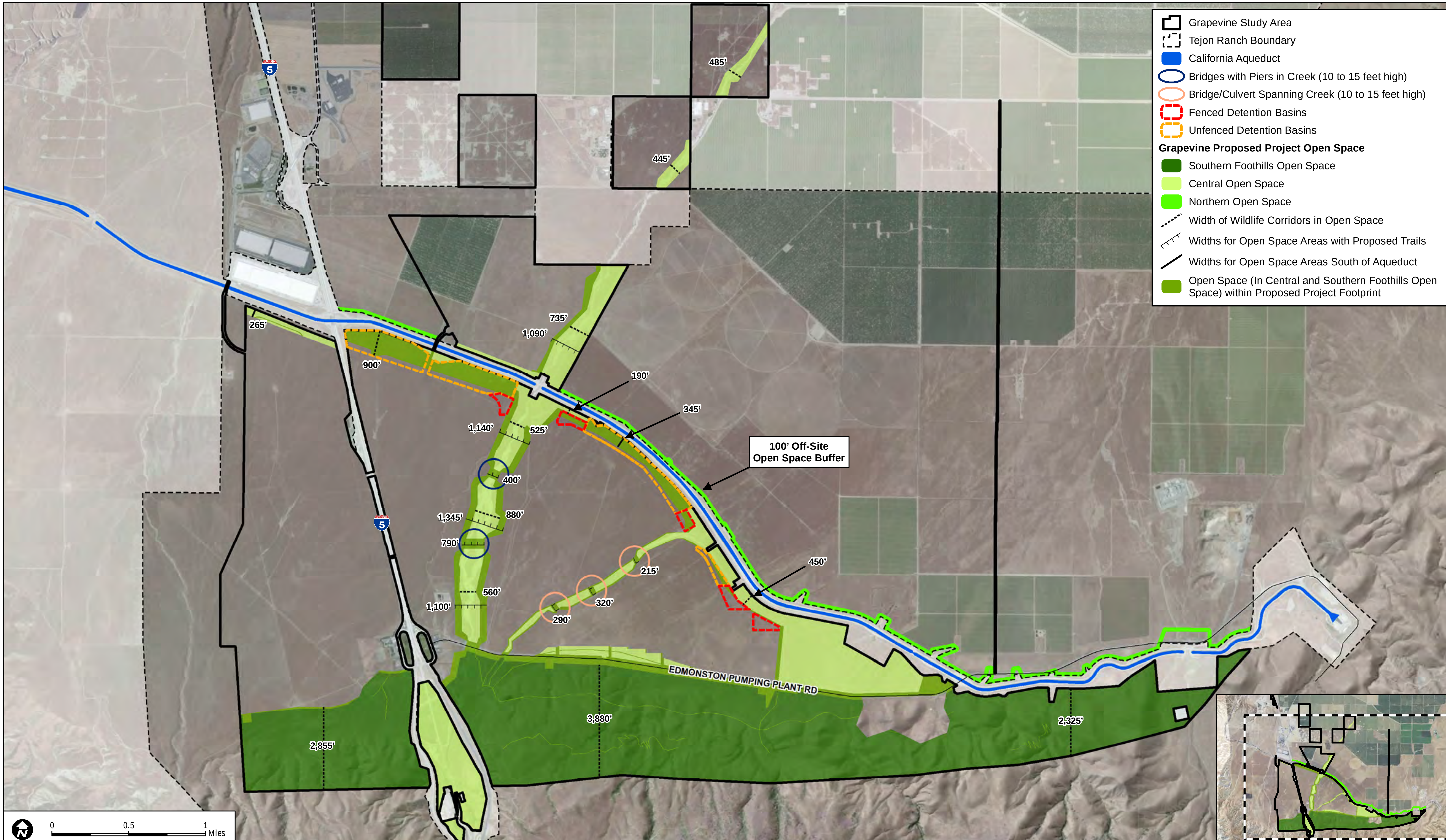

SOURCES: McIntosh & Associates 2014; TRC 2014a

FIGURE A-1

Proposed Project Open Space

GRAPEVINE PROJECT

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ATTACHMENT A-1

Burrowing Owl Exclusion Plan

ATTACHMENT A-1
Burrowing Owl Exclusion Plan

INTRODUCTION

Purpose and Overview

The purpose of this Burrowing Owl Exclusion Plan (Plan) is to outline an effective strategy for implementing passive or active burrowing owl (*Athene cunicularia*) relocation(s). Passive burrowing owl relocation involves relocating individual burrowing owls or pairs from occupied burrows to a nearby location outside the proposed project footprint during the non-breeding season. The nearby location outside the proposed project footprint is supplemented with the installation of multiple artificial burrow structures if natural burrows are not available. Active relocation may be considered if passive relocation is not feasible. Active relocation includes capturing owls within the proposed project footprint and taking them to a new site removed from the original site, and releasing them into a new burrow complex. Owls are temporarily housed in a field enclosure (i.e., hacking cage or aviary) placed over the newly installed artificial burrow structure complexes prior to release into the new burrows. An active relocation effort would only be conducted in consultation and coordination with the California Department of Fish and Wildlife (CDFW).

This Plan describes a tiered approach for avoiding burrowing owls whenever feasible, the methods for passive relocation of burrowing owls from the proposed project footprint, prevention of burrowing owl recolonization of proposed development areas, a monitoring strategy, and an option for active relocation.

Project Biologist

A project biologist (as defined in Section 1.3.4.2 of the Biological Resources Technical Report [BTR]) will oversee and conduct all burrowing owl relocations. The project biologist will be knowledgeable and experienced in the biology, natural history, and survey techniques of burrowing owls and be able to demonstrate the knowledge and ability to conduct activities associated with burrowing owl relocations.

If optional banding or capture occurs, then the project biologist will either currently have or obtain a Federal Bird Banding and Marking Permit, which is administered by the U.S. Geological Survey Bird Banding Laboratory; a Scientific Collecting Permit from the CDFW; and a Memorandum of Understanding or other additional written authorization from the CDFW to capture, band, and relocate burrowing owls.

AVOIDANCE AND RELOCATION STRATEGY

A tiered approach will be implemented to avoid burrowing owls, relocate burrowing owls, and prevent recolonization of proposed development areas by burrowing owls, as outlined below. These methods generally adhere to the recommendations contained in the *Staff Report on Burrowing Owl Mitigation* (2012 Staff Report; CDFG 2012)[1] currently used by CDFW to guide burrowing owl mitigation measures. However, the proposed buffers (or setbacks) from construction activities generally follow the California Burrowing Owl Consortium recommendations (1993), as discussed in greater detail below. The four avoidance and relocation strategy tiers are:

- Tier 1 – Avoidance Buffers
- Tier 2 – Passive Relocation
- Tier 3 – Prevention of Recolonization of Development Areas
- Tier 4 – Active Relocation (Optional).

Tier 1 – Avoidance Buffers

Methods to avoid impacts to burrowing owls will take precedence over passive or active relocation. If pre-construction focused burrowing owl surveys determine that burrowing owls occupy the study area, the project biologist will evaluate each occupied burrow to determine whether the proposed project is likely to directly impact or substantially indirectly impact the burrow such that injury or death of a burrowing owl could occur. Pre-construction surveys may be conducted by biological monitors who understand the biology and survey requirements and are approved by the project biologist. Avoidance buffers can be implemented to avoid direct and substantial indirect impacts to owl burrows and individuals. A substantial indirect impact would be a situation where even though the burrow is not directly impacted during construction, the construction activities could potentially cause injury or mortality of owls, including from collisions with nearby construction equipment, vehicles, fences, or walls. The project biologist will have discretion in determining whether an indirect impact is substantial.

1 On January 1, 2013, the California Department of Fish and Game (CDFG) officially changed its name to the California Department of Fish and Wildlife (CDFW). References to department documents or information prior to January 1, 2013, will cite CDFG and references after this date will cite CDFW.

If occupied burrowing owl burrows are found within the proposed project disturbance footprint or survey buffer during pre-construction surveys, or if burrowing owls arrive on site after construction activities commence, the project biologist will assess the risk of construction activities to the burrowing owl. This risk assessment will consider several factors, including, but not limited to, the following:

- Location of the burrow (e.g., inside the disturbance footprint, within 5 meters (16.4 feet) of the disturbance footprint, more than 40 meters (131.2 feet) from the disturbance footprint)
- Type of burrow use (i.e., occupied nest burrow or non-nesting roost burrow that may include wintering or satellite burrows, referred to herein simply as "roost burrow")
- Type of construction activity and level of potential disturbance (e.g., high disturbance, such as mass grading and excavation versus low disturbance, such as painting and landscaping)
- Timing of burrow use (e.g., occupation of a burrow after construction has been started versus prior to construction).

Avoidance buffers will only be strictly required for occupied nest burrows so that nesting activities are not disturbed and nesting pairs have the opportunity to rear and successfully fledge young. Per the recommendations outlined by the California Burrowing Owl Consortium (1993), a standard minimum avoidance buffer of 75 meters (246 feet) will be applied to occupied nest sites during the burrowing owl breeding season (February 1–August 31). If the project biologist determines that a smaller buffer would be adequate to protect the active nest site, a smaller buffer may be implemented, but only after consultation with and approval from CDFW. This avoidance buffer is not required during the nesting season if the project biologist verifies through noninvasive methods that either (1) the birds have not begun egg laying and incubation or (2) juveniles from the occupied burrows are capable of independent survival (i.e., they are foraging independently and are not dependent on the natal burrow).

The proposed nesting season buffer distances in the California Burrowing Owl Consortium (1993) are generally consistent with findings on burrowing owl disturbance tolerances, flight initiation distances (FIDs; a measured behavioral trait commonly used to evaluate and establish conservation buffer zones for species, including burrowing owl), and individual burrowing owl temperaments (Fisher et al. 2004; Carrete and Tella 2010; Manning and Kaler 2011).

Establishing avoidance buffers from occupied roost burrows during the non-breeding season (September 1–January 31) or from burrows that have been determined to not support nesting (through the noninvasive methods cited above) during the breeding season will be optional and will be based on the judgment of the project biologist in concert with the construction schedules and needs. Roost burrows detected during pre-construction surveys fall into three categories: (1) burrows within the proposed project disturbance footprint, (2) burrows in close proximity to the disturbance footprint (e.g., well inside the FID), and (3) burrows farther from the disturbance footprint, but still potentially within the FID.

As described under Tier 2 – Passive Relocation, passive relocation will be implemented for individuals in occupied roost burrows within the proposed project disturbance footprint that cannot feasibly be avoided. For burrows that are outside the direct disturbance footprint, the first priority is to allow the birds to make their own decision whether to abandon the occupied burrow. Birds that voluntarily vacate a burrow are likely to have more success in relocating to suitable off-site areas than birds that are physically excluded through passive or active relocation. The project biologist shall work with the construction contractor to conduct construction activities, to the extent feasible, in a manner that maximizes the chance that birds voluntarily abandon roost burrows (e.g., working as far from the occupied burrows for as long as feasibly possible, gradually moving construction equipment closer to occupied burrows, and/or providing for escape routes). For birds that refuse to vacate burrows in close proximity to construction activities (e.g., birds that are tolerant of human activities, noise, vibration), the project biologist will assess the risk of injury or mortality of the birds (e.g., due to collisions with construction equipment, vehicles, fences, or walls). If the project biologist determines that the imminent risk of injury or mortality is high, passive relocation will be implemented as described below. Birds that refuse to vacate burrows but are not at imminent risk of injury or mortality related to construction activities will be allowed to remain at their burrows, under the assumption that the best biological outcome for burrowing owl is achieved through achieving the lowest level of disruption of normal behavioral activities feasible and letting the birds themselves make the decision about burrow use.

Prior to allowing construction to occur within the FID area, the project biologist will evaluate the adjacent areas to determine whether suitable natural replacement burrow resources and foraging resources are available. If suitable burrow resources are not available, then constructed, artificial burrow complexes will be installed as necessary and as described below (under the Tier 2 discussion). These burrows will only be constructed where suitable foraging habitat is available.

Tier 2 – Passive Relocation

If temporary avoidance of roost burrows within the proposed project disturbance footprint is not feasible or, in the judgment of the project biologist, occupied burrows are so close to construction activities that birds are at imminent risk of injury or mortality, passive relocation of non-nesting individuals will be implemented to avoid owl take.

Passive relocation involves installing one-way doors at burrow entrances to exclude burrowing owls, collapsing or destroying the original burrow, and, if natural burrows are not available, installing an artificial burrow complex consisting of two to four artificial burrows near the original burrow. Artificial burrow complexes will be installed 50–100 meters (164–328 feet) from the original burrow (Trulio 1995; CDFG 2012) on on-site or off-site open space lands on Tejon Ranch, whenever feasible. The artificial burrow complex is provided with the intent of it serving as the nearest alternate burrow. It is assumed that owls will find and move to the artificial burrows on their own. Owls will be passively relocated only during the non-breeding season (September 1–January 31).

The artificial burrow complex will be installed in suitable habitat in accordance with the artificial burrow design described by Barclay (2008) or other similar design. Artificial burrow complex placement and spacing for relocated owls will consider the location of resident owls, as determined from pre-construction focused burrowing owl surveys, and site conditions. In most cases, artificial burrow structure clusters will be spaced a minimum of 110–300 meters (361–984 feet) away from resident burrowing owls and/or burrowing owl colonies (Johnson et al. 2013). However, in some circumstances, artificial burrow structures may be placed at least 600 meters (1,968 feet) away from resident burrowing owls and/or burrowing owl colonies (Rosenberg and Haley 2004). Burrow structure spacing (110–600 meters (361–1,968 feet)) will be evaluated based on site conditions at the original burrow location and the proposed relocation burrow.

After artificial burrows are installed, owls will be allowed 3 weeks to become familiar with the artificial burrows prior to exclusion from and collapse of occupied burrows (Trulio 1995). If unoccupied natural burrows exist at the relocation site, installation of fewer or no artificial burrows may be sufficient for successful relocation. If unoccupied natural burrows will be relied upon in lieu of artificial burrow installation, the suitability of the natural burrows will be confirmed using an infrared video burrow scope (also known as a snake camera or pipe inspection camera; e.g., Sandpiper Technologies Inc., Manteca, California) to verify that tunnels and interior chambers are intact (not collapsed).

Owls will be photographed and an attempt to identify individual characteristics (e.g., unique banding, color, injuries) will be made (so that non-invasive monitoring may occur) prior to exclusion (e.g., a minimum of 1 week prior to eviction). Three to four days prior to eviction, one-way door excluders (similar in design to those described by Banuelos (1997)) will be placed over all burrows (i.e., primary/nest burrow and all satellite burrows) with evidence of owl use so that owls can leave but not reenter their burrows. Evidence of owl use may include feathers, pellets, prey remains, animal scat, scrap or trash materials used as decoration, whitewash, and tracks at the entrance. The burrows and/or owls will be observed twice daily after burrow exclusion and on the day of burrow collapse to ensure that all owls are out of their burrows. Additionally, on the day of burrow collapse, burrow interiors will be examined using an infrared video burrow scope (e.g., Sandpiper Technologies Inc., Manteca, California) just prior to excavation to ensure that all owls are out of their burrows. All previously occupied burrows will be excavated using hand tools to ensure that no owls are below ground (Trulio 1995; Wild at Heart 2012). After the burrows are excavated and the owls evicted, the burrows will be collapsed/filled in and the site will be graded immediately. Excavation and closure of the burrow will be photographed to demonstrate the success and sufficiency of the exclusion. The relocation receiver site and the installed artificial burrows, or natural burrows, if used, will also be photographed to demonstrate the habitat conditions at the site and that the artificial burrows have been properly installed.

Additional details regarding the passive relocation of burrowing owls are provided below.

Relocation Receiver Sites

Owls will be passively relocated to the adjacent on-site or off-site open space. It should be noted that efforts will be made to install artificial burrows as described below, but owls may choose to relocate to other locations in the vicinity, avoiding the artificial burrow complex. If they choose another nearby natural burrow complex, this also would be considered a success. The planned artificial sites for passive relocation will meet the following criteria:

- Relocation burrow is placed 50–100 meters (361–984 feet) from the original burrow, as feasible. If the relocation site cannot be placed within 50–100 meters (361–984 feet), the relocation site will be within approximately 600 meters to 2.7 kilometers (1,968 feet to 1.7 miles) of the original burrow. This distance is consistent with known home ranges and foraging areas used by burrowing owls in California during the breeding season (Haug and Oliphant 1990; Gervais et al. 2003, 2008; Rosenberg and Haley 2004).
- Area contains suitable burrowing owl burrow and foraging habitat. Highly suitable habitat conditions include short vegetation, the presence of ground squirrels or other burrowing mammals, low shrub density, perches, and available alternate or satellite burrows (Rich 1986; Green and Anthony 1989; Plumpton and Lutz 1993; Desmond and Savidge 1999; Ronan 2002). Habitat will currently support and/or be maintained to provide sparse, short vegetation (≤10 centimeters (4 inches) in height), low shrub density (less than 30% shrub cover), a minimum of one perch near the nest/roost burrow, and multiple available burrows (approximately four burrows per occupied burrow) within 50 meters (164 feet) of the primary burrow. To prevent predation by other owls and raptors, perches will be placed 6–8 meters (20–26 feet) in front or to the side of (not behind) the burrow entrance (Johnson et al. 2013), within a 160° viewshed of the burrow entrance, and will be set at 60 centimeters (2 feet) or less in height (Johnson et al. 2013). If existing fence posts are located within 8 meters of the burrows, no additional perches are required. Passive relocation sites will avoid existing raptor or

common raven (*Corvus corax*) nests or perch opportunities (e.g., power lines or poles, shrubs, trees, wall structures).

- Surrounding area is sufficient in size to support a typical foraging territory during the breeding season (approximately 80% of foraging in the southern San Joaquin and Imperial Valleys in California is within approximately a 600-meter (1,968-foot) diameter radius around the nest) (Gervais et al. 2008).
- Habitat is maintained to support burrowing owls and the land is protected through long-term management and conservation (e.g., by a Conservation Easement).

Possible passive relocation receiver sites outside the proposed project footprint occur in open space. These areas are similar to the existing burrowing owl habitat throughout the study area, containing suitable grassland habitat and ground squirrel activity. The project biologist shall determine the most suitable receiver sites; however, owls are mobile and are likely to find replacement sites away from the biologist-determined area.

Monitoring of Passive Relocations

Monitoring will be conducted prior to, during, and after passive relocation efforts to evaluate relocation success. Owls will be monitored after exclusion during the non-breeding season (season of relocation) and for a duration of 1 year. Site occupancy, dispersal movements, evidence of reproduction (e.g., presence of young), and survival, including any detected predation events, will be recorded throughout the year. Monitoring will include routine burrow site visits, documenting burrow status and characteristics, and estimating reproductive success and survival. Because owls will not be banded, the monitoring effort will focus on overall owl use of the sites. The monitoring strategy is described below.

- **Prior to Relocation** – Daily monitoring at the occupied burrowing owl burrow will occur 1 week prior to exclusion activities to document the number of owls present and patterns of burrow use. Biological monitors that have been approved by the project biologist will be allowed to perform daily monitoring activities.
- **During Relocation** – After placement of the burrow excluders (which occurs 3–4 days prior to burrow collapse) and during burrow excavation, the project biologist will conduct twice-daily monitoring at the original burrow site from which owls are being excluded and at the relocation receiver site. Daily monitoring will include burrow site visits at the original burrow and at the receiver location to document owl activity. Monitoring will include behavioral observations if owls are present. Observations will be conducted from a distance of about 50–100 meters to reduce potential disturbance. The original and receiver location burrow entrances will be inspected for signs of activity, including nest adornments (e.g., prey remains, mammal scat, man-made materials). Potentially, interior

burrow inspection using an infrared video burrow scope will take place to verify occupancy status, but only if necessary.

- **After Relocation** – After burrow excavation and collapse, the project biologist or biological monitor will monitor the original burrow site from which owls were excluded and the relocation receiver site three times per week for the first 2 weeks (most owls have been observed to disperse within 2 weeks after experimental relocation or nest failure (Catlin and Rosenberg 2008; Mitchell et al. 2011)) following burrow exclusion. Due to burrowing owl site fidelity, despite burrows being collapsed, owls may attempt to return to the original burrow location area and possibly use surrounding extant burrows; therefore, the area around the original burrows within the proposed project footprint for the phase under construction will also be monitored for the first 2 weeks after the relocation. After the first 2 weeks, owls will be monitored once per week through the next 3 months of the non-breeding season and the entire subsequent breeding season for use of the new burrows. Monitoring will continue through the next non-breeding season (September 1–January 31), for a total of 1 year of monitoring. Beyond the 3-month weekly monitoring period, non-breeding season monitoring will be conducted once a month until the next breeding season.

Burrow visits and observations will be conducted within 3 hours of sunrise or sunset, when owls are more likely to be active and present at the burrow. Owl resighting will be conducted using a spotting scope and binoculars from a vehicle or on foot at the maximum distance that allows for owl identification, with an absolute minimum distance of 50 meters (164 feet).

Habitat and Artificial Burrow Management

Habitat and artificial nest burrow management activities will be conducted at least once annually for 5 years after passive relocation to maintain conditions that support owls. Also, prior to relocation, habitat immediately surrounding the artificial burrow structures and in the general vicinity of the owls' foraging area will be manipulated, if needed, to enhance or create conditions suitable for owls. Habitat at relocation receiver sites will be managed to provide sparse, short vegetation (≤10 centimeters (4 inches) in height), low shrub density (less than 30% shrub cover), a minimum of one perch near the nest/roost burrow, as described above, and multiple available burrows (approximately four burrows per owl) within 50 meters (164 feet) of the primary burrow. Initial habitat enhancement or creation and long-term management activities to maintain habitat suitability may include mowing, grazing, or shrub or invasive weed removal (e.g., hand-pulling). Native rodent control programs and the use of insecticides will not be permitted within the open space area where owls are relocated. Any commercial application of pesticides (including rodenticides, insecticides, and herbicides) adjacent to open space areas will be strictly controlled through preparation and implementation of an integrated pest management (IPM) plan and a golf course maintenance plan. Additionally, restrictions on pesticides will apply to property owners and will be required to be stated within the Covenants, Conditions, and Restrictions (CC&Rs), as outlined in PDF-IPM. Artificial nest burrows will require monitoring and maintenance. Artificial burrow structures will be checked for structural integrity, plugged or filled entrances and/or tunnels, intact perches, and sufficient dirt covering the nest chamber and tunnels. Artificial burrow structure repairs and debris clearing will be conducted as needed; however, it should be determined that no other special-status species (e.g., San Joaquin kit fox (*Vulpes macrotis mutica*)) have taken up residence prior to maintenance activities occurring. Other management activities at burrowing owl relocation sites may include limiting access to sites by visitors and control of off-road vehicles and unleashed pets, as applicable.

Success Evaluations

Parameters used to evaluate the success of relocations will follow metrics outlined in the 2012 Staff Report (CDFG 2012). This data will be collected for informational purposes only and will not factor toward a re-evaluation of the program. Data collected during monitoring (described above) will be used to determine the number of adult owls and pairs present at relocation sites for a minimum monitoring period of 1 year following relocation. Data collected during monitoring will be used to determine the following:

- Site tenacity or burrow occupancy at artificial relocation sites or nearby natural burrows
- Number of adult owls present
- Number of reproducing adults based on evidence of nest initiation (e.g., copulation, incubation behavior, prey deliveries, presence of young, presence of fledged young)
- Colonization by burrowing owls from elsewhere (by band resight)
- Evidence and causes of mortality
- Changes in distribution
- Trends in stressors.

It is entirely possible that passively relocated burrowing owls will find natural burrows in the vicinity to be more attractive and may take up residence in those resources instead of the artificial burrow complexes provided. To the extent feasible, the same monitoring efforts will be applied to nearby complexes in order to determine if owls relocate to these features. Documented relocation to nearby natural burrows or artificial burrows will be considered a successful passive relocation effort. The details of the analysis will describe which component of the relocation program was most attractive to these particular burrowing owls. It is anticipated that this information will be useful when implementing future passive relocation programs in the vicinity and region.

Reporting

A burrowing owl exclusion report will be submitted to the CDFW within 4 weeks following burrow excavation and collapse. The report will include the following:

- Location of burrow exclusion and the relocation receiver site(s) and all installed artificial burrows and observation data
- Date and time passively relocated owls were excluded from original burrows
- Results of burrow inspections using the infrared video scope
- Photographs and maps of the exclusion and relocation receiver site
- Account of habitat management activities and outcomes
- Results of the burrow monitoring.

Subsequent burrowing owl monitoring reports will be submitted to the CDFW within 30 days following the end of the breeding season monitoring (due by September 30) and again at the end of the non-breeding season monitoring effort (due by March 30). The reports will include the following:

- Project location and location of the original burrow and the relocation receiver site
- Assumed location of owls from the relocation effort
- Number of adults present at the relocation burrow
- Evidence of nesting and/or number of young observed at the relocation site
- Condition of installed artificial burrows and account of artificial nest burrow maintenance activities
- Account of habitat management activities and outcomes
- Number of other burrowing owls present in the area
- Evidence of burrowing owl predation or mortalities
- Photographs and maps of the relocation receiver site
- Results of the burrow monitoring.

Any concerns, issues, or problems that arise during any phase of the relocation effort that may imminently threaten the health or well-being of individual burrowing owls (e.g., problem predator in area, feral dogs and cats, increased human use) will be reported to the CDFW within 24 hours.

Tier 3 – Prevention of Recolonization of Development Areas

Burrowing owls exhibit strong site fidelity behavior (Trulio 1995; Smith and Belthoff 2001); therefore, owls may attempt to return to the original burrow where exclusion occurred. In addition, burrowing owls prefer nesting in areas with a high density of available burrows (Ronan 2002; Poulin et al. 2011). The study area currently supports a high density of ground squirrels and their associated burrows, resulting in an abundance of available nest and roost burrow habitat for burrowing owls throughout the proposed project footprint. Because burrowing owls may return to the exclusion burrow site and recolonize an area adjacent to the exclusion burrow that offers available burrow habitat, the surrounding development area will be made inhospitable to burrowing owls and fossorial (burrowing) mammals. The development area under immediate construction will be made and maintained as unsuitable for burrowing owls through heavy disking or immediate and periodic grading of the development area until development is complete. The biological monitor[2] will evaluate the development site for incursions of ground squirrels or other fossorial mammals into the graded development area and provide recommendations when additional grading activities are required to prevent recolonization by owls and fossorial mammals. If suitable burrow resources return to a previously cleared area, then a resurvey for burrowing owl will be required prior to maintenance.

Burrowing owls select open habitats with low or sparse vegetation. The study area is currently being grazed, which maintains the low vegetation height and open habitat used by burrowing owls. After grazing is removed from the area in preparation for development, the vegetation may grow taller, resulting in the site being less suitable for burrowing owls. The biological monitor will evaluate the vegetative growth at the development site and may recommend that the vegetation be allowed to grow and remain tall (i.e., no mowing or grading) until just prior to construction activities to reduce the chance of burrowing owls recolonizing the development area.

Tier 4 – Active Relocation (Optional)

If it is not feasible to remove all available natural burrows by disking or grading in the development area surrounding occupied burrowing owl burrows, or burrowing owls remain in an area after vegetation has been allowed to grow tall, active relocation may be required. Citing a general lack of scientific study and at least some evidence of reduced hatching success of translocated populations, the CDFW does not currently authorize active relocation (or translocation) except within the context of scientific research or a natural community

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2 The biological monitor does not require or need to currently have or obtain a Federal Bird Banding and Marking Permit, which is administered by the U.S. Geological Survey Bird Banding Laboratory; a Scientific Collecting Permit from the CDFW; or a Memorandum of Understanding or other additional written authorization from the CDFW to capture and relocate burrowing owls, but does need to be approved by the project biologist.

conservation plan (CDFG 2012). Therefore, if necessary, active relocation options will be discussed in consultation with the CDFW.

Methods for selection of the relocation receiver sites, monitoring, habitat and artificial burrow structure maintenance, relocation success criteria, and reporting requirements would be similar to those described under Tier 2 – Passive Relocation. Capture and banding direction is provided below. An overview of a standard active relocation method is provided below.

Active relocation involves capturing owls within a proposed project footprint, taking them to a new site removed from the original site, and releasing them into a new burrow complex (Trulio 1995; Smith and Belthoff 2001). During the non-breeding season, the owls are captured, banded, transported to the relocation site, and placed in an artificial burrow complex (comprising two to four artificial burrows). The owls are temporarily housed in a field enclosure (hacking cage or aviary) placed over the newly installed artificial burrow complexes prior to release into the new burrow (Trulio 1995; Mitchell et al. 2011; Smith and Belthoff 2001). The relocated owls are held in the primary artificial nest burrow for 24 hours by blocking the entrances to the burrow (Mitchell et al. 2011). After the entrances are unblocked, the owls remain in the predator-proof hacking cage surrounding the relocation burrow for approximately 30 days. If a pair has been relocated, the owls are held in the hacking cages until eggs are laid and the clutch is mostly complete. Cage enclosures are dismantled and completely removed from the relocation site after 30 days (single owls) or once clutches are complete and the female is incubating eggs (pairs).

Artificial burrows are constructed and installed as described under Tier 2 – Passive Relocation. The hacking cage is constructed approximately 1 week prior to placement of the owls in the enclosure (Mitchell et al. 2011). The hacking cage is a 3.7 × 3.7 × 1.8-meter (12 × 12 × 6-foot) enclosure constructed with a wooden frame, using twelve 1.8 × 1.2-meter (6 × 4-foot) panels, heavy-gauge steel-mesh side panels, and a strong nylon mesh (2.5 × 2.5-centimeter (1 × 1-inch)) covering (Kidd Biological Inc. 2013). The enclosure also has a welded-mesh bottom extending outward from the enclosure side panels approximately 1 meter (3 feet). Electric fencing set back approximately 1 meter (3 feet) from the enclosure may be used to provide additional protection (Mitchell et al. 2011).

Enough food and water to support the metabolic function of each owl is provided inside the artificial burrow every day for the duration of use of the pre-release holding cage (Nixon 2006). Daily supplemental feedings include two dead mice per owl during the captivity period only. Supplemental food is placed well inside the burrow tunnel to avoid attracting predators such as common ravens (Wildlife Preservation Canada 2013). Once the cage enclosures are removed, supplemental feeding is ended.

Capture and Banding

Passively relocated burrowing owls will be banded for purposes of identification and monitoring. Burrowing owls will be captured approximately 1 week prior to passive relocation activities. To capture adult and juvenile owls, the project biologist will use one or more methods as described by Rosenberg et al. (2007), Conway et al. (2010), and Bloom et al. (2007), including two-way burrow traps, spring nets (modified bow net baited with a caged mouse), tomahawk traps, bal-chatri traps, or noose carpets.

Owls will be banded with either a non-locking or locking USFWS aluminum band (Number 4), and an alphanumeric aluminum color band (e.g., Acraft Sign and Nameplate Co. Ltd., Edmonton, Alberta, Canada) or similar alphanumeric color band style. The project biologist will collect demographic and morphological data including gender (if known), mass, wing cord length, tarsus length, and tail length. A capture data form will be completed and submitted as part of the reporting requirements.

REFERENCES

Banuelos, G. 1997. "The One-Way Door Trap: An Alternative Trapping Technique for Burrowing Owls." In *The Burrowing Owl: Its Biology and Management*, edited by J.L. Lincer and K. Steenhoff, 122–124. Raptor Research Report No. 9. Lawrence, Kansas: Allen Press.

Barclay, J.H. 2008. "A Simple Artificial Burrow Design for Burrowing Owl." *Journal of Raptor Research* 42(1): 53–57.

Bloom, P.H., W.S. Clark, and J.W. Kidd. 2007. "Capture Techniques." In *Raptor Research and Management Techniques*, edited by D.M. Bird, K.L Bildstein, D.R. Barber, and A. Zimmerman. Blaine, Washington: Hancock House Publishers.

California Burrowing Owl Consortium. 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*. April 1993. http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

Carrete, M., and J.L. Tella. 2010. "Individual Consistency in Flight Initiation Distances in Burrowing Owls: A New Hypothesis on Disturbance-Induced Habitat Selection." *Biology Letters* 6:167–170. October 28, 2009.

Catlin, D.H., and D.K. Rosenberg. 2008. "Breeding Dispersal and Nesting Behavior of Burrowing Owls following Experimental Nest Predation." *American Midland Naturalist* 159(1): 1–7.

CDFG (California Department of Fish and Game). 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, CDFG. http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

Conway, C.J., A. Macias-Duarte, V. Garcia, and C.A. Finley. 2010. *Migratory Linkages of Burrowing Owls on Department of Defense Installations and Adjacent Lands*. Final Report. Department of Defense, Legacy Resource Management. http://www.denix.osd.mil/nr/upload/DoD-Legacy-final-report_09-243_ver-2.pdf.

Desmond, M.J., and J.A. Savidge. 1999. "Satellite Burrow Use by Burrowing Owl Chicks and Its Influence on Nest Fate." *Studies in Avian Biology* 19:128–130.

Fisher, R.J., R.G. Poulin, L.D. Todd, and R.M. Brigham. 2004. "Nest Stage, Wind Speed, and Air Temperature Affect the Nest Defence Behaviours of Burrowing Owls." *Canadian Journal of Zoology* 82:707–713.

Gervais, J.A., D.K. Rosenberg, and R.G. Anthony. 2003. "Space Use and Pesticide Exposure Risk of Male Burrowing Owls in an Agricultural Landscape." *Journal of Wildlife Management* 67(1): 155–164.

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing Owl (*Athene cunicularia*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 218–226. *Studies of Western Birds 1*. Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

Green, R.A., and R.G. Anthony. 1989. "Nesting Success and Habitat Relationships of Burrowing Owls in the Columbia Basin, Oregon." *Condor* 91:347–354.

Haug, E.A., and L.W. Oliphant. 1990. "Movements, Activity Patterns, and Habitat Use of Burrowing Owls in Saskatchewan." *Journal of Wildlife Management* 54(1): 27–35.

Johnson, D.H., D.C. Gillis, M.A. Gregg, J.L.Rebholz, J.L. Lincer, and J.R. Belthoff. 2013. *Users Guide to Installation of Artificial Burrows for Burrowing Owls*. Version 2.0. Selah, Washington: Tree Top Inc. www.globalowlproject.com.

Kidd Biological Inc. 2013. "Burrowing Owl Relocation Plan." Prepared for KZ DevCo LP, Irvine, California, and Garfield Beach CVS LLC, La Habra, California. Submitted to the Western Riverside County Regional Conservation Authority. January 31, 2013.

Manning, J.A., and R.S.A. Kaler. 2011. "Effects of Survey Methods on Burrowing Owl Behaviors." *Journal of Wildlife Management* 75(3): 525–530.

Mitchell, A.M., T.I. Wellicome, D.B. Brodie, and K.M. Cheng. 2011. "Captive-Reared Burrowing Owls Show Higher Site-Affinity, Survival, and Reproductive Performance When Reintroduced Using a Soft-Release." *Biological Conservation* 144(5): 1382–1391.

Nixon, P.A. 2006. "Effects of Translocation on the Florida Burrowing Owl, *Athene cunicularia floridana*. Master's thesis; University of South Florida, Tampa.

Plumpton, D.L., and R.S. Lutz. 1993. "Nesting Habitat Use by Burrowing Owls in Colorado." *Journal of Raptor Research* 27:175–179.

Poulin, R., L. Danielle Todd, E.A. Haug, B.A. Millsap, and M.S. Martell. 2011. "Burrowing Owl (*Athene cunicularia*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed July 2, 2013. http://bna.birds.cornell.edu/bna/species/061.

Rich, T. 1986. "Habitat and Nest-Site Selection by Burrowing Owls in the Sagebrush Steppe of Idaho." *Journal of Wildlife Management* 50:548–555.

Ronan, N.A. 2002. "Habitat Selection, Reproductive Success, and Site Fidelity of Burrowing Owls in a Grassland Ecosystem." Master's thesis; Oregon State University, Corvallis.

Rosenberg, D.K., and K.L. Haley. 2004. "The Ecology of Burrowing Owls in the Agroecosystem of the Imperial Valley, California." In *Ecology and Conservation of Birds of the Salton Sink: An Endangered Ecosystem*, edited by W.D. Shuford and K.C. Molina, 120–135. *Studies in Avian Biology 27*. Berkeley, California: University of California Press.

Rosenberg, D.K., L.A. Trulio, D. Catlin, D. Chromczack, J.A. Gervais, N. Ronan, and K.L. Haley. 2007. "The Ecology of the Burrowing Owl in California." Report prepared for the Bureau of Land Management. http://people.oregonstate.edu/~rosenbed/articles/Ecology%20of%20Burrowing%20Owls%20In%20California%20Final%20Report%20March%202007.pdf.

Smith, B.W., and J.R. Belthoff. 2001. "Burrowing Owls and Development: Short-Distance Nest Burrow Relocation to Minimize Construction Impacts." *Journal of Raptor Research* 35(4): 385–391.

Trulio, L.A. 1995. "Passive Relocation: A Method to Preserve Burrowing Owls on Disturbed Sites." *Journal of Field Ornithology* 66(1): 99–106.

Wild at Heart. 2012. "Wild at Heart Thoughts on Effectively and Safely Relocating Burrowing Owls." www.wildatheartowls.org.

Wildlife Preservation Canada. 2013. "Burrow Surprise!" Blog posting: Update from Burrowing Owl Recovery Team, British Columbia. September 4, 2011. http://wildlifepreservation.ca/blog/update-from-burrowing-owl-recovery-team-british-columbia/.

ATTACHMENT A-2

Grapevine Off-Site Mitigation Area

ATTACHMENT A-2
Grapevine Off-Site Mitigation Area

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FIGURES

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TABLES

1 INTRODUCTION AND SUMMARY

1.1 Purpose and Overview

This document expands on the biological resource protection measure MM-BTR-OOS (conservation of Off-Site Mitigation Area) in Appendix A of the biological resources technical report (BTR) for the proposed project by providing a detailed description of the off-site mitigation requirements for the proposed project, a description of the proposed Grapevine Off-Site Mitigation Area (Mitigation Area), and how the Mitigation Area will satisfy off-site mitigation requirements for the proposed project and provide additional benefits for species and biological resources for which off-site mitigation is not specifically required. Mitigation for impacts to waters of the state is described separately in the *Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project*, which is Attachment A-3 of Appendix A of the BTR.

This document includes the following sections:

- Section 1 (Introduction and Summary) discusses the overall purpose of this document and summarizes the off-site species mitigation requirements for the proposed project and benefits of the Mitigation Area to various species.
- Section 2 (Background) discusses the proposed project and proposed Mitigation Area in the context of the Tejon Ranch Conservation and Land Use Agreement (Ranchwide Agreement), the U.S. Fish and Wildlife Service (USFWS) Recovery Plan for Upland Species in the San Joaquin Valley, and previous development and conservation activities in the Grapevine area.
- Section 3 (Grapevine Off-Site Mitigation Area) describes the Mitigation Area in detail and discusses how it satisfies Grapevine off-site mitigation requirements and provides benefits for species for which off-site mitigation is not specifically required (e.g., California condor (*Gymnogyps californianus*), Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*)).

The study area and proposed Mitigation Area are depicted in Figure A2-1 and the proposed development (4,778 acres), off-site impacts (77 acres), and proposed Mitigation Area are depicted in A2-2.

1.2 Species Mitigation Requirements

The proposed project requires off-site mitigation for 17 special-status wildlife species associated with the San Joaquin Valley floor, including four state- and/or federally listed species—San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gambelia sila*), bald eagle (*Haliaeetus* *leucocephalus*), and Nelson's antelope squirrel (*Ammospermophilus nelsoni*)—and 13 non-listed special-status species, of which one is a state candidate for listing and one is a state fully protected (FP) species. All 17 species have similar or overlapping habitat needs. San Joaquin kit fox is discussed in Section 1.2.1 and the others are discussed in Section 1.2.2. Because the San Joaquin kit fox is an umbrella species, as described below, and because the off-site mitigation acreage required for the other 16 species is less than that needed for the kit fox, the identification and extent of the Mitigation Area focuses on the mitigation requirements of the kit fox. Section 3.2 discusses in more detail the amount of suitable habitat that will be conserved within the Mitigation Area for each of the four listed species and golden eagle (*Aquila chrysaetos*), and Table 2 quantifies the amount of suitable habitat conserved for the remaining non-listed special-status species.

In addition to the 17 species requiring off-site mitigation, the large amount of habitat being conserved for the San Joaquin kit fox in the Mitigation Area will also benefit a number of other special-status species, discussed in Section 3.3, that are not subject to off-site mitigation requirements. This is consistent with the 1998 USFWS Recovery Plan for Upland Species of the San Joaquin Valley (Recovery Plan) (USFWS 1998), which identifies the kit fox as an "umbrella" species that occurs in nearly all the habitat types used by the other species addressed by the Recovery Plan and that preservation of habitat for the kit fox will generally include habitat for many or most of the other target species.

The mitigation requirements for San Joaquin kit fox are described in Section 1.2.1 and the mitigation requirements for blunt-nosed leopard lizard, Nelson's antelope squirrel, bald eagle, golden eagle and the remaining 12 non-listed and non-FP special-status San Joaquin Valley floor wildlife species are described in Section 1.2.2. Additional benefited species are described in Section 1.3.

1.2.1 San Joaquin Kit Fox

The proposed project will result in significant impacts to suitable San Joaquin kit fox habitat requiring off-site mitigation. Off-site mitigation requirements for San Joaquin kit fox are summarized in Table 1 by impact type and habitat suitability type and are consistent with those typically required by California Department of Fish and Wildlife (CDFW) and USFWS for this species based on a review of other environmental documents that analyze impacts to San Joaquin kit fox. A description of habitat suitability for kit fox is presented in more detail in Section 3.1. In order to quantify the loss of San Joaquin kit fox habitat that would occur if the proposed project is implemented, the Cypher et al. (2013) modeled suitable habitat for the kit fox was used. The model includes two categories of suitable habitat: high and medium. As shown in Table 1, a total of 7,233 acres of off-site mitigation lands are required for San Joaquin kit fox, including 3,948 acres of high-suitability habitat and 3,285 acres of medium suitability habitat

(Cypher et al. 2013). Table 1 summarizes the proposed mitigation for direct and indirect1 impacts to suitable San Joaquin kit fox habitat. The proposed project would result in direct, permanent impacts to 1,012 acres of land considered low suitability or unsuitable for kit fox by Cypher et al. (2013).

Table 1
Proposed Mitigation for Impacts to San Joaquin Kit Fox Habitat

Suitability Category	Impacts		Mitigation Ratio		Proposed Project Mitigation (Acres)		Proposed Off-Site Mitigation (Acres)		Total Mitigation (Project and Off-Site Mitigation)
	H	*M*	*H*	*M*	*H*	*M*	*H*	*M*	
Impacts and Mitigation for Direct Impacts									
High (H)	786	—	3:1	—	155	—	2,202	—	**2,358**
Medium (M)	—	3,056	1:1	3:1	—	645	1,746	3,285	**5,676**
Subtotal	*786*	*3,056*	—	—	*155*	*645*	*3,948*	*3,285*	***8,034***
Impacts and Mitigation for Indirect Impacts									
High (H)	165	—	1:1	—	165	—	—	—	**165**
Medium (M)	—	211	—	1:1	—	211	—	—	**211**
Subtotal	*165*	*211*	—	—	*165*	*211*	—	—	**—**
Total[1]	**951**	**3,267**	**—**		**321**	**856**	**3,948**	**3,285**	**8,410**

1 Totals may not sum due to rounding.

1.2.2 Special-Status Wildlife

In addition to the San Joaquin kit fox, the proposed project will significantly affect valley floor habitat supporting 16 other special-status wildlife species, three of which are state- and/or federally listed as threatened or endangered, one of which is state FP by CDFW, and one of which is a candidate for state listing. These 16 species include the following:

- Bald eagle (USFWS Bird of Conservation Concern (BCC), Migratory Bird Treaty Act (MBTA)/state endangered (SE); FP)
- Blunt-nosed leopard lizard (federally endangered (FE)/state threatened (ST), FP)
- Nelson's antelope squirrel (—/ST)
- Golden eagle (BCC, MBTA/FP)
- San Joaquin coachwhip (*Coluber flagellum ruddocki*) (—/CDFW Species of Special Concern (SSC))

1 Indirect effects were quantified using a 100-foot "buffer" adjacent to the development area; this additional impact area is analyzed based on the conservative assumption that kit fox would not use this area due to its proximity to development.

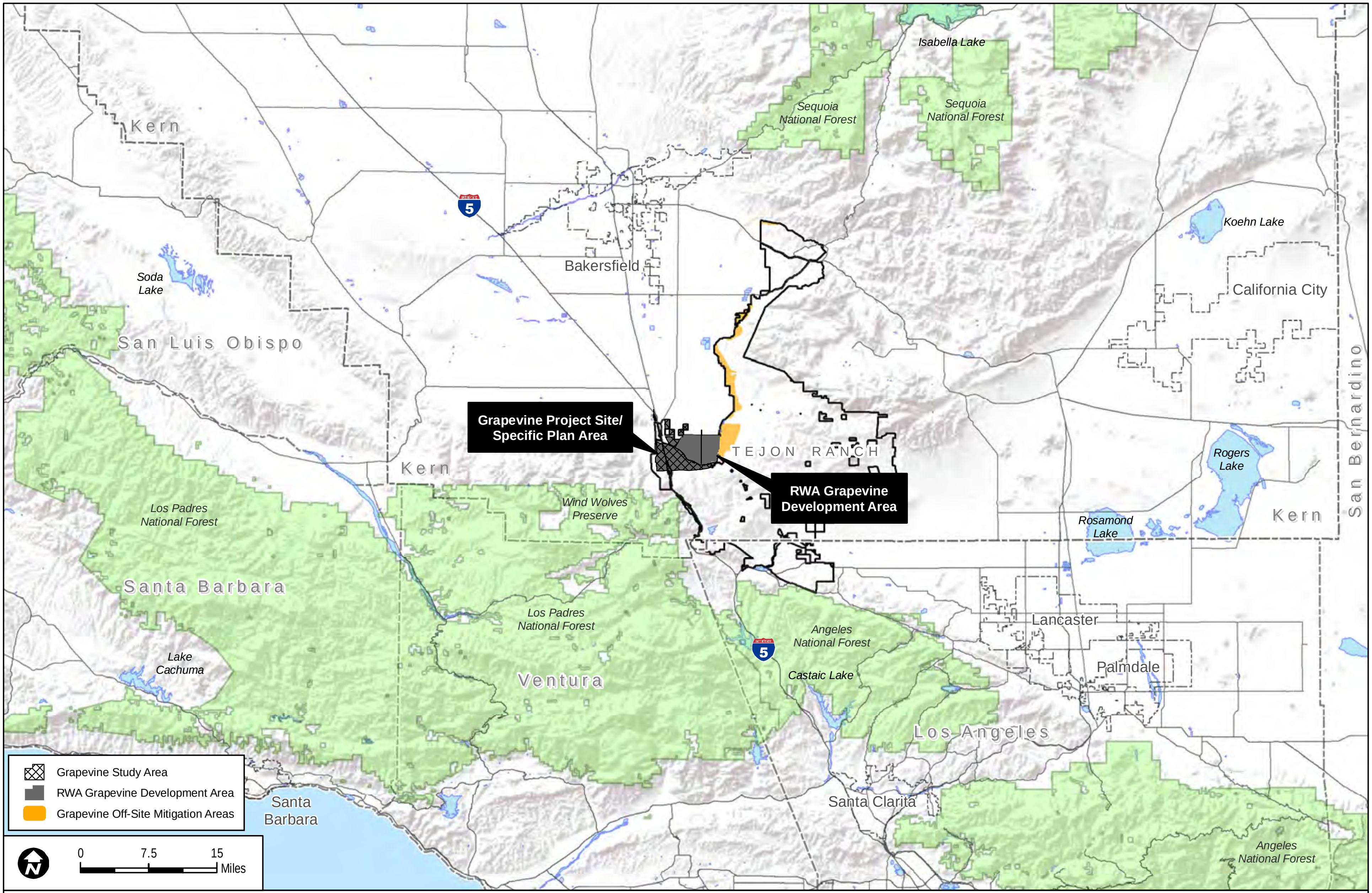
- Blainville's horned lizard (*Phrynosoma blainvillii*) (—/SSC)
- Burrowing owl (*Athene cunicularia*) (BCC, MBTA/SSC)
- Ferruginous hawk (*Buteo regalis*) (BCC, MBTA/—; wintering)
- Loggerhead shrike (*Lanius ludovicianus*) (BCC, MBTA/SSC)
- Oregon vesper sparrow (*Pooecetes gramineus affinis*) (BCC, MBTA/SSC; wintering)
- American badger (*Taxidea taxus*) (—/SSC)
- Special-status bats:
  - Pallid bat (*Antrozous pallidus*) (—/SSC)
  - Western mastiff bat (*Eumops perotis californicus*) (—/SSC)
  - Western red bat (*Lasiurus blossevillii*) (—/SSC)
  - Townsend's big-eared bat (*Corynorhinus townsendii*) (—/SSC and state candidate).
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (—/SSC).

As noted previously, habitat conserved for the San Joaquin kit fox within the Mitigation Area will also serve as off-site mitigation for these valley floor species. Mitigation for impacts to these species will also include on-site avoidance and preservation.

1.3 Benefits to Other Special-Status Species

1.3.1 Listed Species

One state- and federally listed species, California condor, will not be significantly affected by the proposed project but will directly benefit from conservation in the Mitigation Area. California condor is described in detail in Appendix K to the BTR. Benefits to all listed species are described in more detail in Section 3.3.1.



SOURCES: McIntosh & Associates (2013); TRC 2013a, 2013b

The Grapevine project site (McIntosh & Associates 2013) and Tejon Ranch (2013a) boundaries appear on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE A2-1

Regional Location

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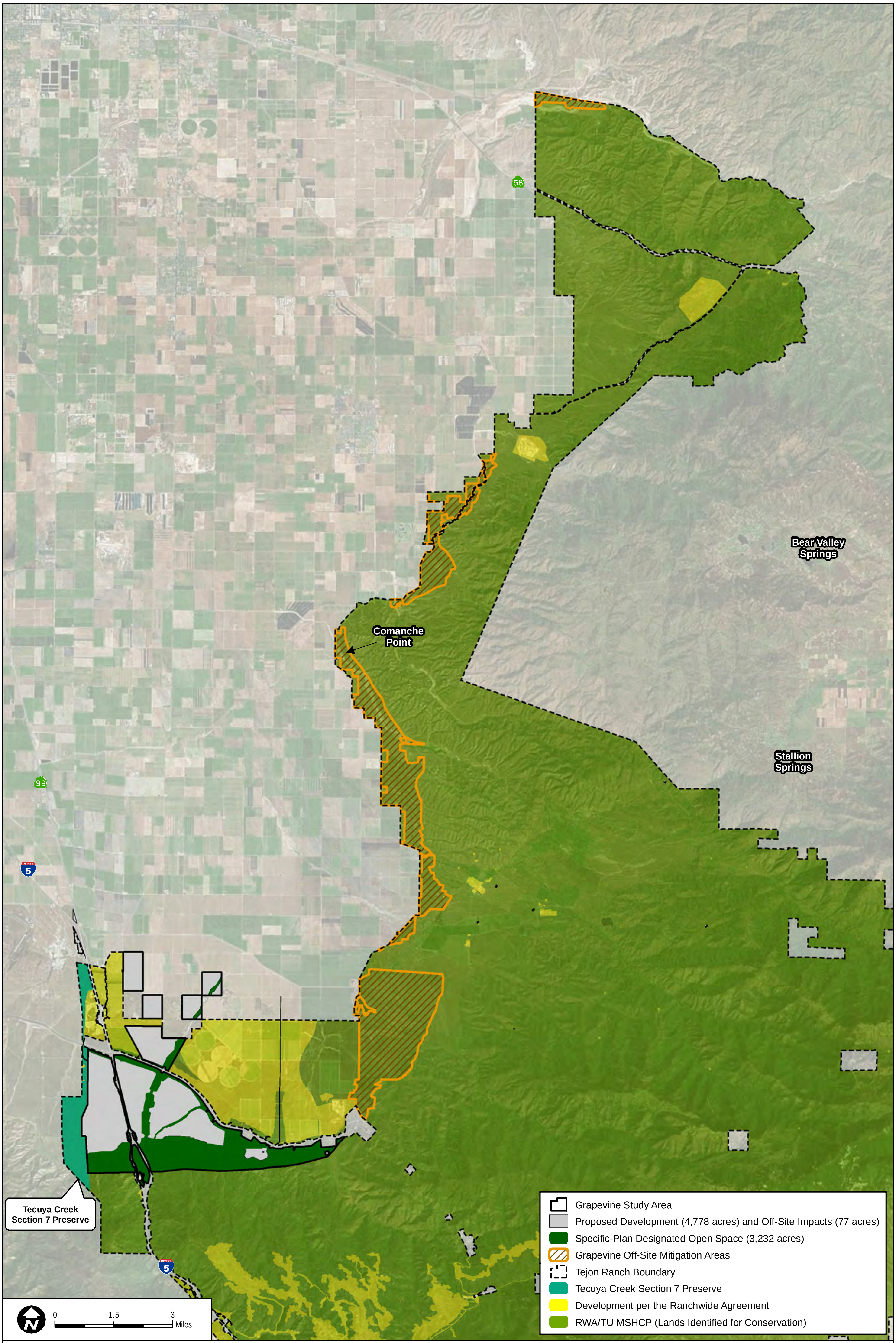

SOURCES: California Resource Agency 2011; TRC 2007; 2014; McIntosh & Associates 2014

FIGURE A2-2
Ranchwide Agreement Map

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1.3.2 Non-Listed Special-Status Species

The Mitigation Area will also benefit a number of non-listed special-status species that will not be significantly affected by the proposed project, some of which occur or potentially occur within the Grapevine study area. Special-status species that are known to occur within the Mitigation Area,[2] based on California Natural Diversity Database (CNDDB) records (CDFW 2015), include American badger (SSC), burrowing owl (BBC, MBTA/SSC), loggerhead shrike (BCC, MBTA/SSC), long-eared owl (MBTA, SSC), northern harrier (MBTA, SSC), short-eared owl (*Asio flammeus*) (MBTA, SSC), Bakersfield cactus (*Opuntia basilaris* var. *treleasei)* (FE/SE, California Rare Plant Rank (CRPR) 1B.1), Comanche Point layia (*Layia leucopappa*) (CRPR 1B.1), cottony buckwheat (*Eriogonum gossypinum*) (CRPR 4.2), kern mallow (*Eremalche kernensis*) (FE/CRPR 1B.1), pale-yellow layia (*Layia heterotricha*) (CRPR 1B.1), Piute Mountains navarretia (*Navarretia setiloba*) (CRPR 1B.1), San Joaquin blue curls (*Trichostema ovatum*) (CRPR 4.2), and Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*) (CRPR 1B.1). Many other valley floor special-status species that have the potential to occur within the Mitigation Area will also benefit and are described in Section 3.3.2.

[2] There is one CNDDB record of San Joaquin woollythreads (*Monolopia congdonii*) (FE, CRPR 1B.2) from a 1935 Munz collection that partially overlaps within the Mitigation Area. This record is considered "possibly extirpated" (CDFW 2015). There are no recent records of this species within the Mitigation Area.

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2 BACKGROUND

2.1 Ranchwide Agreement

Based on landform, the 270,000-acre Tejon Ranch (Ranch) can be divided into the following sections: (1) the San Joaquin Valley floor, which includes the adjacent foothills and within which the proposed project is located; (2) the Tehachapi Mountain Uplands; and (3) the Antelope Valley floor. Approximately 87,136 acres of the Ranch is in the San Joaquin Valley floor, including the adjacent foothills, and 74,094 acres, or 85%, of the valley floor area, including the Mitigation Area, will be conserved and managed as part of the Ranchwide Agreement. The Ranchwide Agreement, the result of a 2-year negotiation between the Tejon Ranch Company (TRC) and five of California's leading environmental groups (Resource Groups), lays the groundwork for conservation of approximately 240,000 acres (90%) of the Ranch, consisting of: (1) 178,000 acres conserved as designated open space areas; and (2) 62,000 additional acres available for conservation through an option to purchase; that option was exercised, and in March 2011, conservation easements were recorded over these option areas. Within the San Joaquin Valley, the 15,500-acre White Wolf Acquisition Area was a portion of the 62,000 acres of land that was acquired in 2011 and is now conserved under a conservation easement. Conservation easements or deed restrictions that preclude development are required to be recorded on areas identified for conservation under the Ranchwide Agreement in tandem with the entitlements for development projects addressed in the agreement.

Specifically, the Ranchwide Agreement does the following:

- Allows TRC to continue its historic ranch uses and to pursue its development objectives for several development projects on the Ranch, including the proposed project, without opposition from the Resource Groups.
- Establishes and funds the independent Tejon Ranch Conservancy, a nonprofit public benefit corporation established in 2008, for the protection and stewardship of these open space lands and the development and implementation of resource management and enhancement programs at the Ranch.
- Commits to preserve and protect conservation values within lands outside of areas designated for development. This commitment is required to be memorialized in conservation easements for such lands, established in tandem with the entitlements for development projects addressed in the Ranchwide Agreement. The use of the Mitigation Area as a preserve area to maintain in perpetuity the conservation values associated with San Joaquin Valley floor habitat and species is consistent with this commitment.
- Requires the creation and implementation of a Ranch-Wide Management Plan with prescribed management standards to ensure that, within designated open space and

preserve areas, existing natural resource and conservation values of the Ranch, noted above, are protected while existing Ranch uses remain ongoing. Specifically, the Ranch-Wide Management Plan establishes reasonable and economically feasible conservation goals and objectives within conservation easement areas with regard to the following: (1) the promotion and restoration of native biodiversity and ecosystem values; (2) protection and enhancement of natural watershed functions and stream and aquatic habitat quality; (3) maintenance of healthy, diverse native forests; (4) protection of human life and property, public safety, and natural resource values from wildfire, recognizing that fire is a natural ecological process; (5) protection and appropriate restoration and interpretation of significant historic and cultural resources; and (6) the protection of scenic vistas and rare visual resources.

2.2 Recovery Plan for Upland Species of the San Joaquin Valley

In 1998, the USFWS approved the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998) to address habitat protection and ultimate recovery of 34 special-status plants and animals that occur within the upland areas of the San Joaquin Valley. Recovery Plan goals and objectives include preservation of grassland and scrubland habitats utilized by these species both on the valley floor as well as in adjacent foothills, protection of such habitat in large blocks whenever possible, and to provide for landscape connectivity of such lands, particularly along the valley floor and adjacent foothills, in order to allow for movement of species between blocks of conserved habitat.

Several of the species addressed in the Recovery Plan, including the blunt-nosed leopard lizard, San Joaquin kit fox, and Nelson’s antelope squirrel, potentially occur within the proposed project site and off-site habitat mitigation will be required as a result of habitat loss due to the proposed project. As previously discussed, the Recovery Plan identifies the kit fox as an “umbrella” species, noting that because this species occurs in nearly all the habitat types used by the other species addressed by the Recovery Plan, preservation of habitat for this species will generally include habitat for many or most of the other target species.

The Mitigation Area includes a portion of Comanche Point, an area on the Ranch that includes the valley floor and adjacent foothills. Comanche Point is identified in the Recovery Plan by the USFWS as important for habitat conservation and connectivity for the Recovery Plan species and the area has been specifically identified in the Recovery Plan as both an area for protection as a “specialty reserve” and as an area of additional research and monitoring for San Joaquin kit fox and blunt-nosed leopard lizard (see Figure 73 in USFWS 1998). In addition, the Recovery Plan identifies the valley floor and adjacent foothills of the Ranch as part of a large habitat linkage area that can benefit numerous special-status species addressed by the Recovery Plan. Consequently, conservation of this area is consistent with the goals and objectives of the

Recovery Plan, demonstrating that it is an area considered important for the long-term conservation and recovery of the valley floor species addressed in the Recovery Plan, as well as an area used for movement and dispersal between populations.

2.3 Natural Resources Conservation and Previous Development within Grapevine Area

While much of the surrounding land area to the north and east of the proposed project site has historically been in, and is currently within, active agriculture, much of the area on both sides of Interstate 5 (I-5) have been converted to industrial and commercial development since the late 1990s. The area that has been developed as industrial and commercial within the Ranch, collectively called the Tejon Ranch Commerce Center, includes what was previously named the Tejon Industrial Center-West (TIC-West) and Tejon Industrial Center-East (TIC-East). Tejon Ranch Commerce Center is adjacent to and located north and northwest of the proposed project site. As part of the California Environmental Quality Act (CEQA) entitlement processes for proposed development in each of these areas, extensive surveys were conducted for special-status species, including San Joaquin kit fox, Nelson's antelope squirrel, and blunt-nosed leopard lizard. In addition, as mitigation for potential impacts to these species, pre-construction surveys, and monitoring during grading and construction activities were also conducted to determine if any individuals of these species occur within or immediately adjacent to the project envelope. To date, no evidence of these three species, and most other special-status species known to occur in the region, have been detected within these project areas. Development activities, as well as biological resource avoidance and conservation measures associated with the Tejon Ranch Commerce Center, are discussed in more detail below.

Tejon Ranch Commerce Center

Located west of I-5 and south of the intersection with Laval Road, the initial TIC-West development project included disturbances of a total of 350 acres as a result of the construction of Phases I and II of the project. Prior to development, the existing habitat was characterized as disturbed grasslands that experienced ongoing grazing and occasional disking for weed abatement purposes and ongoing agricultural operations. Although the habitat was considered marginal for blunt-nosed leopard lizard, San Joaquin kit fox, and other special-status species because of the site disturbance, focused surveys following CDFW and USFWS survey protocols were conducted for blunt-nosed leopard lizard and San Joaquin kit fox. No evidence of either species or any other state- or federally listed species was documented during the surveys.

TIC-East, an approximately 1,109-acre development site, was approved by the County in 2002 (Kern County 2002). Prior to approval, TIC-East, located mostly just east of I-5, was primarily within active agriculture, with smaller areas being used for oil production. Similar to TIC-West, a number of special-status species protocol-level surveys were conducted within the proposed development envelope for TIC-East, including for blunt-nosed leopard lizard and San Joaquin kit fox; however, no evidence of these listed species, or any other state- or federally listed species, was observed during the surveys. Further, for both TIC-West and TIC-East, no blunt-nosed leopard lizard, San Joaquin kit fox, or any other state- or federally listed species were documented during implementation of required pre-construction surveys from 1999 to the present.

Additionally, a total of 1,122 acres of grassland habitat was conserved in the Tecuya Creek Preserve conservation easement, located along the western boundary of the Ranch and west of I-5, south of the California Aqueduct, adjacent to proposed project open space within the Grapevine Specific Plan Area (USFWS 2001).

3 GRAPEVINE PROJECT OFF-SITE MITIGATION AREA

3.1 Site Selection Approach and Methods

The following criteria were used to select the Mitigation Area: (1) it is within areas identified for conservation in the Ranchwide Agreement and is located in the San Joaquin Valley floor; (2) it contains suitable habitat for San Joaquin kit fox, an "umbrella" species for valley floor species, including those requiring off-site mitigation; (3) it has higher quality habitat for valley floor species requiring mitigation, including kit fox, than the habitat that would be impacted by the proposed project; (4) it conserves an area considered important for long-term conservation and recovery for kit fox, blunt-nosed leopard lizard, and other species addressed in the Recovery Plan (USFWS 1998); and (5) it conserves valley floor portions of the Ranch that provide unconstrained linkages contiguous with other conserved and managed lands on the Ranch and allows for movement opportunities to off-Ranch areas important to many valley floor species, including kit fox.

In order to identify off-site mitigation areas that met these criteria, Dudek reviewed the habitat types (TRC 2007), topography (i.e., slope and elevation), hydrology (USGS 2014), and soils (USDA 2007, 2009) within nearby areas identified in the Ranchwide Agreement for conservation. In addition, Dudek reviewed the following data:

- Species mapped on Ranch lands (Tejon Ranch Conservancy 2013a, 2014)
- San Joaquin kit fox modeled habitat (Cypher et al. 2013; TRC 2013)
- California Natural Diversity Database (CNDDB) (CDFW 2015)
- USFWS Occurrence Data and Critical Habitat (USFWS 2015).

To gain a better understanding of the biological resources within areas identified for conservation in the Ranchwide Agreement located in the San Joaquin Valley floor, Dudek biologist Brock Ortega and San Joaquin kit fox expert Dr. Brian Cypher (Endangered Species Recovery Program (ESRP)) conducted a site visit on April 17–18, 2014 in a portion of these areas.[4] The primary goals of the site visit were to identify suitable habitat areas for San Joaquin kit fox and other special-status species potentially impacted by the proposed project.

For a regional perspective, Cypher et al. (2013) modeled suitable habitat for the kit fox using a "GIS-based mapped-algebra model" that included several habitat variables, including land use/land cover, vegetation density, and terrain ruggedness. A cursory San Joaquin kit fox habitat assessment was also conducted for the Ranch in 2010 by kit fox experts Dr. Cypher (ESRP) and Scott Phillips (ESRP) and biologist Keith Babcock (Dudek) (Cypher 2010). Estimated boundaries

4 Dr. Cypher visited the site on April 18, 2014.

of “moderate to high” and “low to moderate” suitability habitat were delineated on field maps, potential barriers to movements were noted, and areas where “enhancements,” particularly in the form of artificial dens, might be implemented were noted (Cypher 2010). Dr. Cypher noted that most of the kit fox habitat on the Ranch was considered medium suitability, but that there are some relatively large areas of high-suitability habitat in the Comanche Point and White Wolf portions of the Ranch (Cypher 2010). Additionally, suitable habitat for other special-status species was evaluated based on the species’ habitat requirements (e.g., vegetation communities, soils, and elevation ranges). The areas visited by Dr. Cypher during these habitat evaluations included portions of the proposed Mitigation Area.

As described in Section 2.5 of the BTR, most of the Grapevine study area is classified as medium-quality or unsuitable habitat (Cypher et al. 2013). The areas modeled as highly suitable habitat are found in the parcels disjunct from other suitable habitat at the north end of the study area while the rest of the high-suitability areas are relatively small fragments, mostly along the aqueduct or Grapevine Creek. The fragmented nature of this high-suitability habitat further reduces the probability of occupancy by kit fox (Cypher, pers. comm. 2015). The sum total of the high-suitability habitat is probably insufficient to support a single pair or family group of foxes (Cypher, pers. comm. 2015; Cypher et al. 2013). Furthermore, little high-suitability habitat occurs adjacent to the Grapevine study area. However, to ensure a conservative analysis and based upon Dr. Cypher’s recommendation, the Cypher et al. (2013) habitat model was used to quantify impacts.

3.2 Mitigation for Species

The Mitigation Area was selected for the proposed project because it met the criteria described in Section 3.1. Namely, the Mitigation Area contains suitable, higher-quality habitat for San Joaquin kit fox and other listed and special-status species than the habitat that would be impacted by the proposed project and the Mitigation Area is known to support both the kit fox and blunt-nosed leopard lizard. The site conserves areas that, together with other conserved valley floor/foothill lands on the Ranch, allow for movement opportunities within the Ranch and to off-Ranch satellite areas for the kit fox and other special-status species. In addition, the site conserves an area considered important for the long-term conservation and recovery of kit fox and other special-status species by the USFWS (1998). Each of these reasons is described in more detail in this section.

3.2.1 San Joaquin Kit Fox

Conservation of Suitable Valley Floor Habitat

As described, during his site visit, Dr. Cypher noted there are some relatively large areas of high-suitability habitat in the Comanche Point and White Wolf portions of the Ranch (Cypher 2010). As mentioned, the 15,500-acre White Wolf area was placed into conservation in 2011. Based on Dr. Cypher's assessment and the habitat model (Cypher et al. 2013), the Mitigation Area includes all of the modeled high-suitability kit fox habitat on the Ranch, conserves portions of Comanche Point that are also modeled as highly suitable for kit fox, and connects to the White Wolf Conservation Area. More specifically, the Mitigation Area will conserve 7,233 acres of modeled suitable habitat for San Joaquin kit fox, including approximately 3,948 acres that have been categorized as high suitability and 3,285 acres that have been categorized as medium suitability (Cypher et al. 2013) (Figure A2-3).

Conservation of Higher Value Habitat

No San Joaquin kit fox have been detected during the 2013–2015 surveys within the study area. There are several CNDDB records within or immediately adjacent to the study area, dated between 1975 and 2000 (CDFW 2015), but no recent records. The study area is considered to have low potential for long-term occupation due to negative surveys and an apparent lack of kangaroo rat resources (their preferred prey). Based upon Dr. Cypher's field visits and the habitat model (Cypher et al. 2013), the habitat modeled as high suitability is probably insufficient to support a single pair or family group of foxes (Cypher, pers. comm. 2015; Cypher et al. 2013). Furthermore, little suitable habitat occurs adjacent to the study area.

There are several recent potential and known detections of the species on adjacent lands conserved under the Ranchwide Agreement (CDFW 2015; Tejon Ranch Conservancy 2013a; White, pers. comm. 2013) (Figure A2-3). The observations of kit fox in the Mitigation Area support Dr. Cypher's assessment that this area is more suitable for kit fox compared to the study area, particularly the proposed development and off-site impact area. Additionally, based on the results of the 2014 site visit with Dudek biologist Brock Ortega and San Joaquin kit fox expert Dr. Brian Cypher (ESRP), the habitat in the Mitigation Area is more suitable for San Joaquin kit fox because it has lower vegetative growth and more evidence of kangaroo rats (their preferred prey). Additionally, the Mitigation Area would expand the lands under conservation in the White Wolf Area, which Dr. Brian Cypher recorded several foxes and concluded that "there appears to be a small but stable population of two to five individuals" (Cypher et al. 2010, as cited in Tejon Ranch Conservancy 2011).

Long-Term Conservation Value

Conservation of suitable habitat in large, unfragmented habitat patches is important for long-term persistence of the San Joaquin kit fox (Cypher et al. 2013). In addition, larger suitable habitat blocks protect against yearly fluctuations in habitat quality due to the amount of grass cover—providing for refuge pockets throughout the seasonal and yearly fluctuations. The permanent open space lands conserved as part of the Ranchwide Agreement, within which the Mitigation Area is located, represent the type of large, unfragmented habitat patches required for this species.

In addition, and as mentioned in Section 2.3, the USFWS (1998) has identified Comanche Point in the Recovery Plan as an area that is important for the long-term conservation of San Joaquin kit fox. The Mitigation Area includes a portion of Comanche Point; therefore, conservation of the Mitigation Area is consistent with the goals and objectives of the Recovery Plan and will conserve an area that has long-term conservation value for San Joaquin kit fox.

Habitat Linkages

As previously noted, the Recovery Plan identifies the valley floor edge and adjacent foothills of Tejon Ranch as part of a large habitat linkage area that can benefit the San Joaquin kit fox and numerous special-status species addressed by the Recovery Plan. The Mitigation Area includes lands that are within this habitat linkage design that can allow for movement opportunities to the Metropolitan Bakersfield and Northeast Bakersfield satellite areas (USFWS 2010a), as well as for movement through the proposed project open space along the north and south of the California Aqueduct and in the transitional foothill area (Figure A2-4).

3.2.2 Other Listed or Fully Protected Species

The USFWS (1998) specifically identifies the San Joaquin kit fox as an umbrella species for species addressed in the Recovery Plan, including both the blunt-nosed leopard lizard and Nelson's antelope squirrel. According to the USFWS, "fulfilling the [San Joaquin] fox's needs also meets those of many other species." Because the habitat conserved within the Mitigation Area for San Joaquin kit fox will also provide suitable habitat for bald eagle, blunt-nosed leopard lizard, golden eagle, and Nelson's antelope squirrel as described below, the Mitigation Area will mitigate for loss of valley floor habitat associated with these four listed/FP species, as well as San Joaquin kit fox. A summary of the proposed impacts to and the on-site and off-site conservation of modeled suitable habitat for the listed or fully protected species is provided in Table 2.

Table 2
Mitigation Area Habitat for Listed or Fully Protected Wildlife Species

Common Name/ Status (Federal/State)	Suitable Habitat	Impacts to Suitable Habitat (Acres)	On-Site Conservation of Suitable Habitat (Acres)	Suitable Habitat in Off-Site Mitigation Area (Acres)	Total On-Site and Off-Site Mitigation (Acres)	Mitigation Ratio
Bald eagle (Delisted; BCC; MBTA/SE; FP)	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, and large lakes; generally forages over and along water bodies, but will also scavenge within nearby terrestrial areas. Winters at large bodies of water in lowlands and mountains	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]
Blunt-nosed leopard lizard (FE/SE; FP)	Sparsely vegetated alkali and desert scrubs, including semi-arid grasslands, alkali flats, and washes	4,372	1,242	6,186 (0%-15% slopes; alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	7,428	1.7:1
Golden eagle (BCC; MBTA; FP)	Nests, forages, and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, and open desert rimrock terrain; nests constructed in large trees and on cliff ledges	4,454	2,687	7,203 (ranch-wide model)	9,890	2.2:1
Nelson's antelope squirrel (None/ST)	Arid annual grassland and shrubland with saltbushes, California ephedra, bladderpod, goldenbushes, matchweed	4,400	1,703	6,898 (0%-25% slopes; alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	8,601	2:1

1 No model. Bald eagle distribution is limited in the San Joaquin Valley, and foraging is probably limited to a few locations rather than spread across the landscape.

3.2.2.1 Bald Eagle

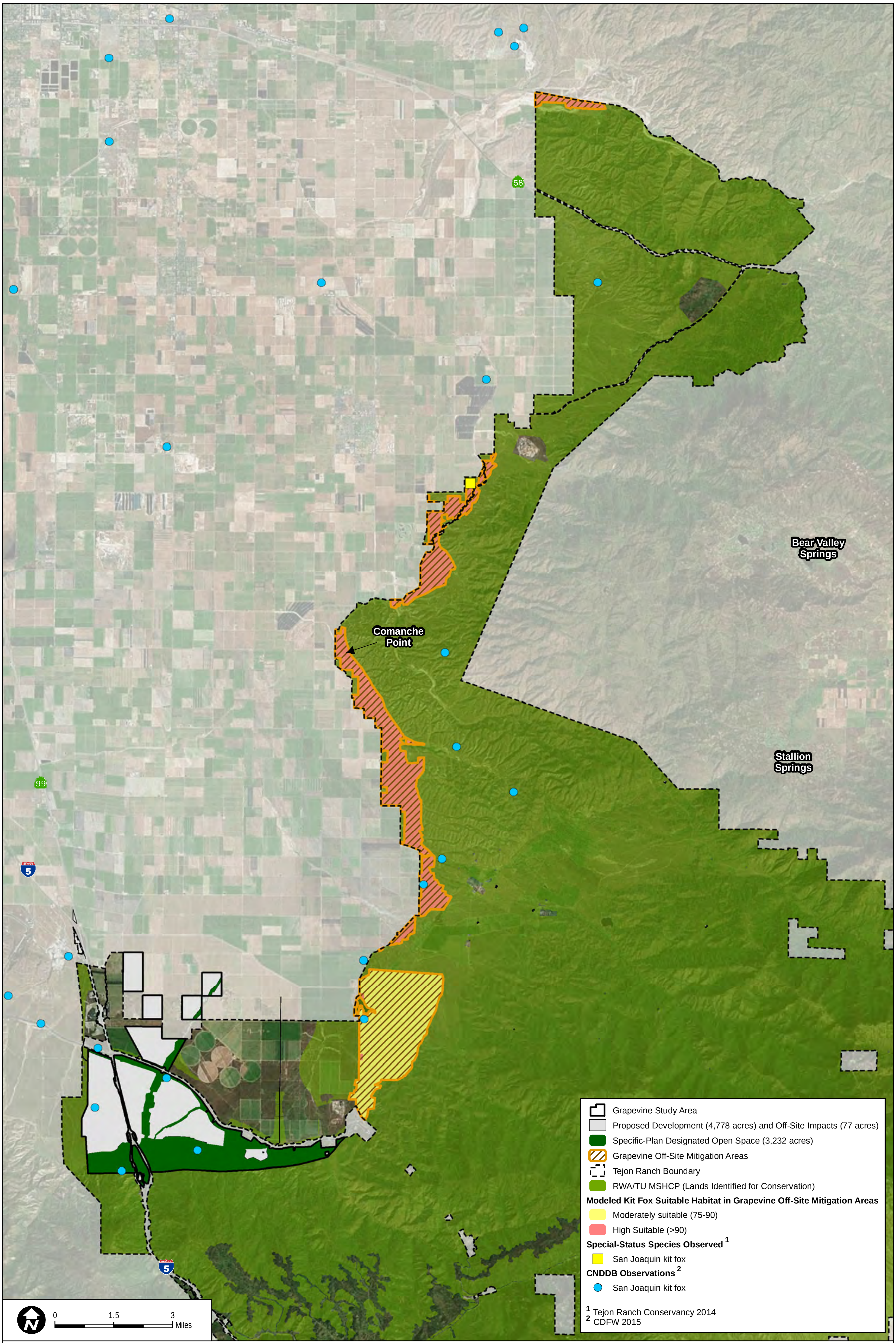
The Mitigation Area will conserve 7,233 acres of habitat in the valley floor, and bald eagles could forage or winter in a variety of locations within the Mitigation Area. Bald eagle is not known to nest in the region and no bald eagles have been recorded on the Ranch during the nesting season. Since 2004, bald eagles have been observed during the winter at a few areas on the Ranch. The Tejon Ranch Conservancy has recently recorded bald eagles perching southeast of Comanche Point during the winter months (Tejon Ranch Conservancy 2013) (see Figure A2-5). Because the Ranch supports only a few wintering individuals at any given time and there are no large bodies of water in the valley floor portion of the Ranch, foraging is probably limited to a few favorite locations rather than spread across the landscape; therefore, the total amount of suitable foraging habitat was not quantified. The Mitigation Area would conserve foraging and roosting habitat for wintering individuals; provide long-term conservation of suitable habitat for this species; and allow for continued use of this portion of the Ranch by wintering individuals. Each of these reasons is described in more detail in this section. Also, see Appendix L, Eagle Technical Report, to the BTR.

Conservation of Suitable Valley Floor Habitat

The Mitigation Area will conserve 7,233 acres of suitable foraging habitat for bald eagle in the Mitigation Area, including 5,900 acres of grasslands, 26 acres of cottonwood/willow riparian, , 20 acres of riparian/wetland, 438 acres of alluvial scrub, 486 acres of valley saltbush scrub, and 363 acres of valley saltbush-buckwheat scrub.

Conservation of Higher Value Habitat

With respect to bald eagle foraging habitat, the conserved Ranch lands in the San Joaquin Valley, including within and around the Mitigation Area, have similar habitat to that which would be impacted by the proposed project. However, the Mitigation Area is contiguous with large conserved open space areas within the valley floor and adjacent foothills of the Ranch, which provides more expanses of open areas for foraging, as well as potential roost areas away from human activity associated with I-5, Edmonston Pumping Plant Road, and the commercial and industrial uses north of the p study area. The cottonwood/willow riparian vegetation within the Mitigation Area will benefit wintering eagles by providing adequate perching and roosting habitat. The grassland habitat will provide suitable foraging opportunities for ground squirrels, rabbits, and other prey items that wintering bald eagles in this region feed on in the winter months. Combined with the additional grassland and valley floor habitat within permanently conserved areas of the Ranch contiguous with the Mitigation Area, wintering bald eagles are expected to continue to forage, perch, and roost in this region. Figure A2-5 shows the location of bald eagles near the Mitigation Area.



SOURCES: TRC 2007; 2014; Tejon Ranch Conservancy 2014; CDFW 2015; McIntosh & Associates 2014

FIGURE A2-3

Grapevine Off-Site Mitigation Areas and Suitable Habitat for San Joaquin Kit Foxes

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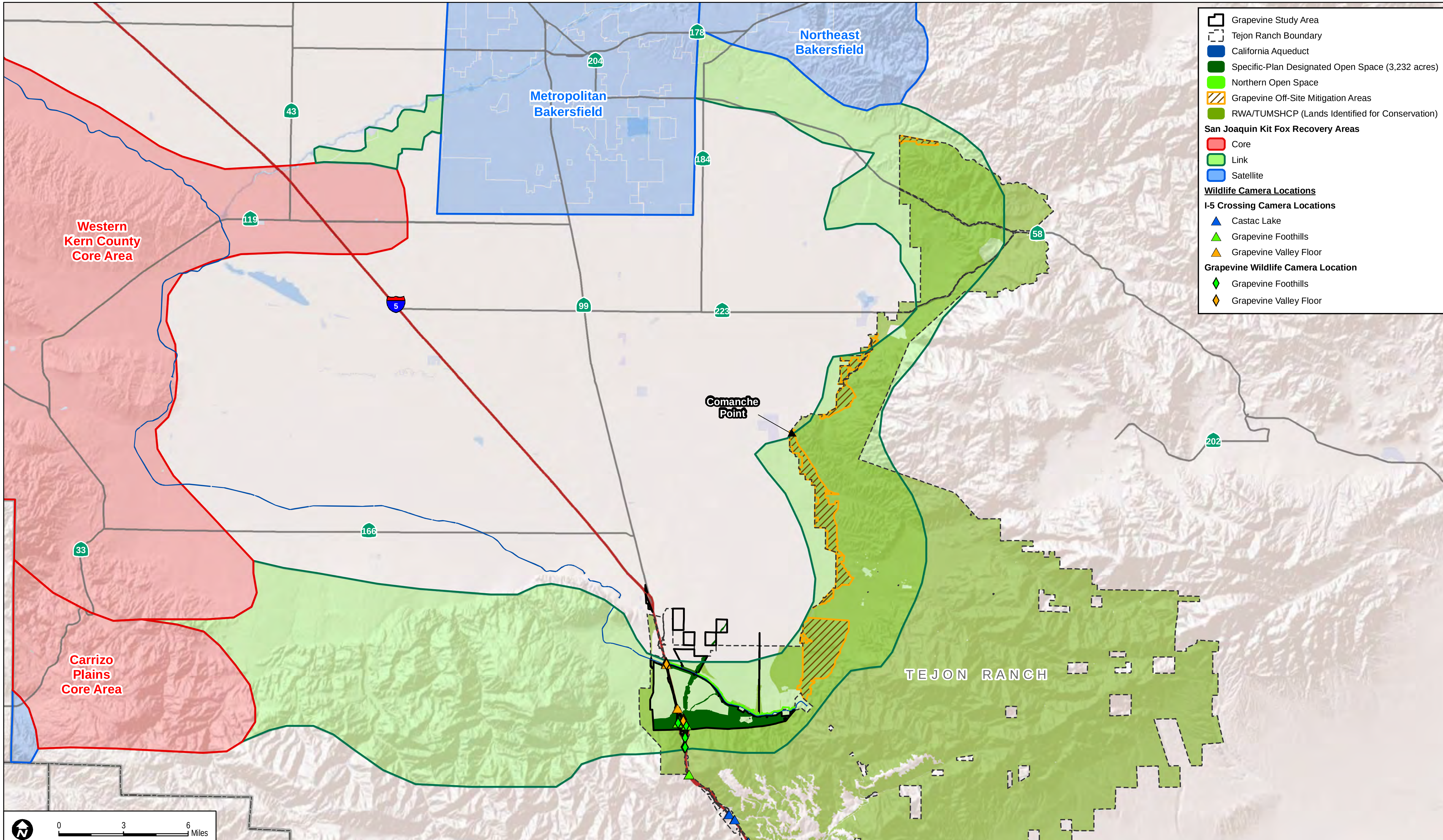

SOURCES: TRC 2008; 2013a McIntosh & Associates 2014; USFWS 2010

FIGURE A2-4

San Joaquin Kit Fox and Satellite Populations Identified in USFWS 5-Year Review

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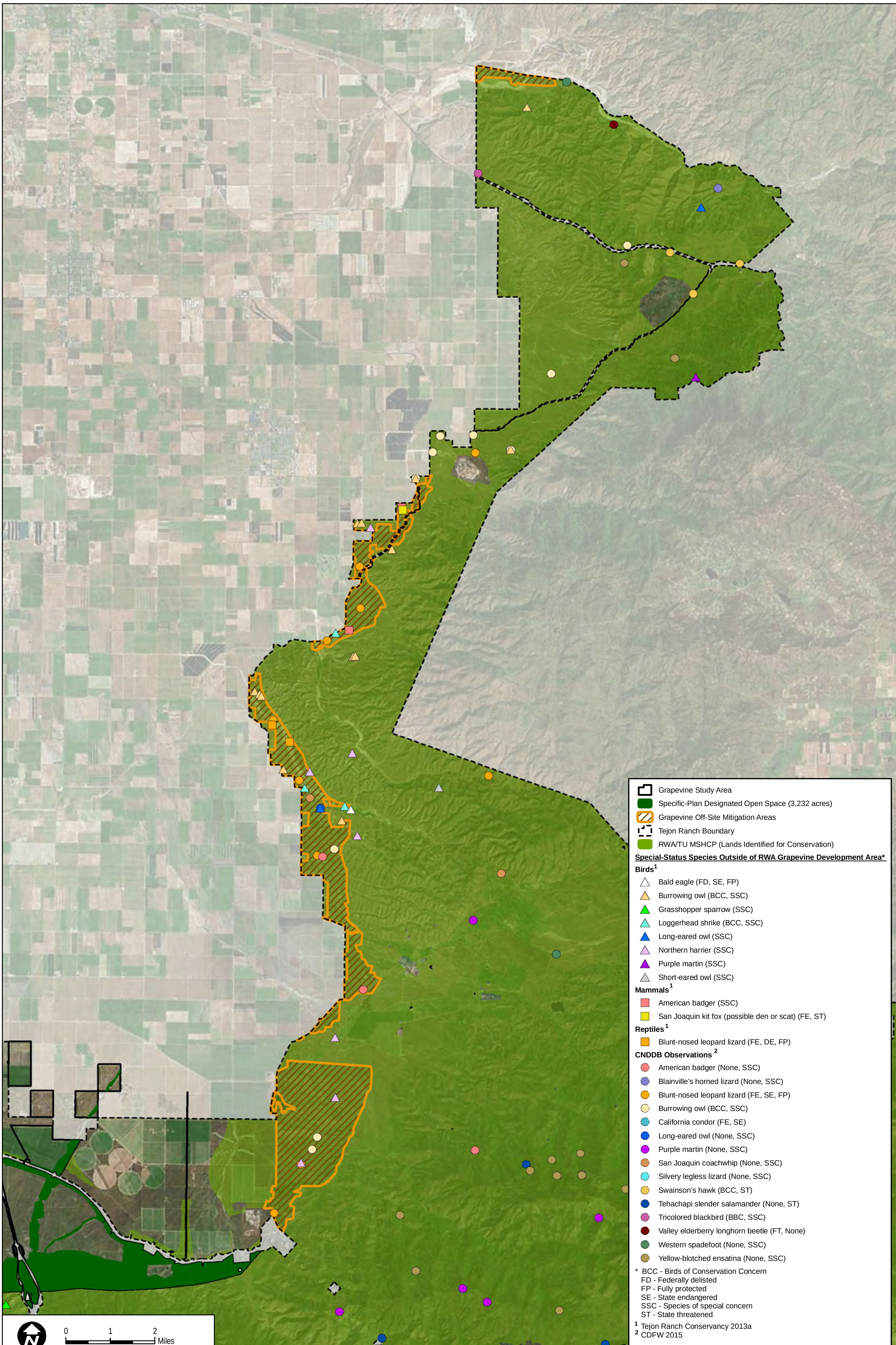

SOURCES: TRC 2007; 2014;Tejon Ranch Conservancy 2013a; CDFW 2015; McIntosh 2014

FIGURE A2-5

Grapevine Off-Site Mitigation Areas - Special-Status Wildlife Species Observed

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Long-Term Conservation Value

The Mitigation Area includes the long-term conservation of habitat suitable for foraging, perching, and roosting for the few bald eagles that have historically wintered in this portion of the Ranch. The long-term conservation of habitat is consistent with management activities undertaken to protect bald eagles, which includes setting aside land for bald eagles (USFWS 1986).

Habitat Linkage

The southern San Joaquin Valley lacks large bodies of water and therefore does not support large congregations of wintering bald eagles. However, areas in the San Joaquin Valley that can support this state-endangered species for a portion of their life cycle, such as the Mitigation Area, will benefit not only overwintering eagles but individuals that may be passing through the area during migration movements.

3.2.2.2 Blunt-Nosed Leopard Lizard

The Mitigation Area will conserve 6,186 acres of modeled suitable valley floor habitat for blunt-nosed leopard lizard. As with the kit fox, the site contains more suitable habitat for blunt-nosed leopard lizard than the habitat that would be impacted by the proposed project and is known to support the species; the site conserves an area considered important for the long-term conservation and recovery of blunt-nosed leopard by the USFWS (1998); and the site would conserve valley floor portions of the Ranch that provide unconstrained linkages for multi-generational movement of blunt-nosed leopard lizard. Each of these reasons are described in more detail in this section.

Conservation of Suitable Valley Floor Habitat

The Mitigation Area will conserve 6,186 acres of modeled suitable habitat for blunt-nosed leopard lizard in the Mitigation Area, including 4,922 acres of grasslands, 436 acres of alluvial scrub, 467 acres of valley saltbush scrub, and 360 acres of valley saltbush scrub/buckwheat scrub with slopes that are flat or gently rolling hills (i.e., 15% or less).

Conservation of Higher Value Habitat

The conserved Ranch lands in the San Joaquin Valley, including within and around the Mitigation Area, have more records of blunt-nosed leopard lizard than the Grapevine study area or areas immediately adjacent (CDFW 2015). In April 2014, Dudek biologist Brock Ortega and Dr. Brian Cypher (ESRP) observed two blunt-nosed leopard lizards in the Mitigation Area (Figure A2-5). There are also two CNDDB records for blunt-nosed leopard lizards in the same areas of the 2014 observations. One CNDDB record indicates that multiple blunt-nosed leopard lizards were collected in this general location (1.6 miles southwest of Comanche Spring) in 1991; and the second CNDDB record was for one blunt-nosed leopard lizard detected in 2011 by Tejon Ranch Conservancy (CDFW 2015). There are additional CNDDB records overlapping the Mitigation Area: one CNDDB record located approximately 1.8 miles northeast of the Edmonston Pumping Plant recorded blunt-nosed leopard lizards in 2003, 2004, 2005, 2010, and 2011; the second CNDDB record is located approximately 0.8 mile west of the Edmonston Pumping Plant recorded one adult and one dead along the road in 2004 (CDFW 2015); the third CNDDB record located approximately 5 miles northwest of Bino Springs, southwest of Tejon Hills and immediately north of Caparell Creek, recorded one individual in 2011; the fourth CNDDB record, located approximately 1.4 miles northwest of Warm Springs, near the mouth of Little Sycamore Canyon, recorded one individual in 1991; and the fifth CNDDB record is for two lizards observed in 2004 (one live adult and one dead lizard along the road), located at the southern end of the Mitigation Area along an access road approximately 0.8 mile northwest of the Edmonston Pumping Plant on the California Aqueduct. See Figure A2-5 for these CNDDB locations. The observations of blunt-nosed leopard lizard in the Mitigation Area, where survey efforts have been minimal, indicate that the habitat there is more suitable for blunt-nosed leopard lizard compared to the Grapevine study area, in which no blunt-nosed leopard lizards have been observed to date during extensive surveys and habitat assessments conducted for other special-status plant and animal species.

Long-Term Conservation Value

As mentioned in Section 2.2, the USFWS (1998) has identified Comanche Point as an area that is important for the long-term conservation of blunt-nosed leopard lizard. The Mitigation Area includes a portion of Comanche Point and, consequently, conservation of the Mitigation Area is consistent with the goals and objectives of the Recovery Plan and will conserve an area that has long-term conservation value for the lizard.

Habitat Linkage

The USFWS (2010b) addresses the importance of establishing corridors between existing natural areas in Kern and Tulare Counties to enhance the blunt-nosed leopard lizard metapopulation recovery strategy and maintain lizard populations. While the USFWS (2010b) did not identify the general area in which the proposed project is located, or other Ranchlands as a necessary corridor for blunt-nosed leopard lizard, conservation of the valley floor portions of the Ranch identified in the Ranchwide Agreement, including the Mitigation Area, would provide unconstrained linkages for multi-generational movement of blunt-nosed leopard lizard. As previously noted, the Recovery Plan does identify the valley floor edge and adjacent foothills of the Ranch as part of a large habitat linkage area that can benefit the valley floor special-status species addressed by the Recovery Plan. The Mitigation Area includes lands that are within this habitat linkage design and, therefore, is consistent with the Recovery Plan's goals and objectives to conserve and maintain a habitat linkage along the valley floor/foothill fringe around the southern San Joaquin Valley.

3.2.2.3 Golden Eagle

The Mitigation Area will conserve 7,203 acres of modeled golden eagle foraging habitat in the valley floor. Golden eagles have not been observed nesting within the Grapevine study area or the Mitigation Area. The site would conserve valley floor portions of the Ranch that could be used for foraging by golden eagles nesting in the region (see Figure A2-6), as well as by dispersing juveniles and migrating and wintering individuals; provide long-term conservation of suitable foraging habitat for this species; and allow for continued foraging on the Ranch by individuals and nesting pairs. Each of these reasons is described in more detail in this section. Also, see Appendix L, Eagle Technical Report, to the BTR.

Conservation of Suitable Valley Floor Habitat

The Mitigation Area will conserve 7,203 acres of suitable modeled foraging habitat for golden eagle in the Mitigation Area, including 5,900 acres of grasslands, 438 acres of alluvial scrub, 486 acres of valley saltbush scrub, 363 acres of valley saltbush/buckwheat scrub, and 16 acres of wetland (see Figure A2-6).

Conservation of Higher Value Habitat

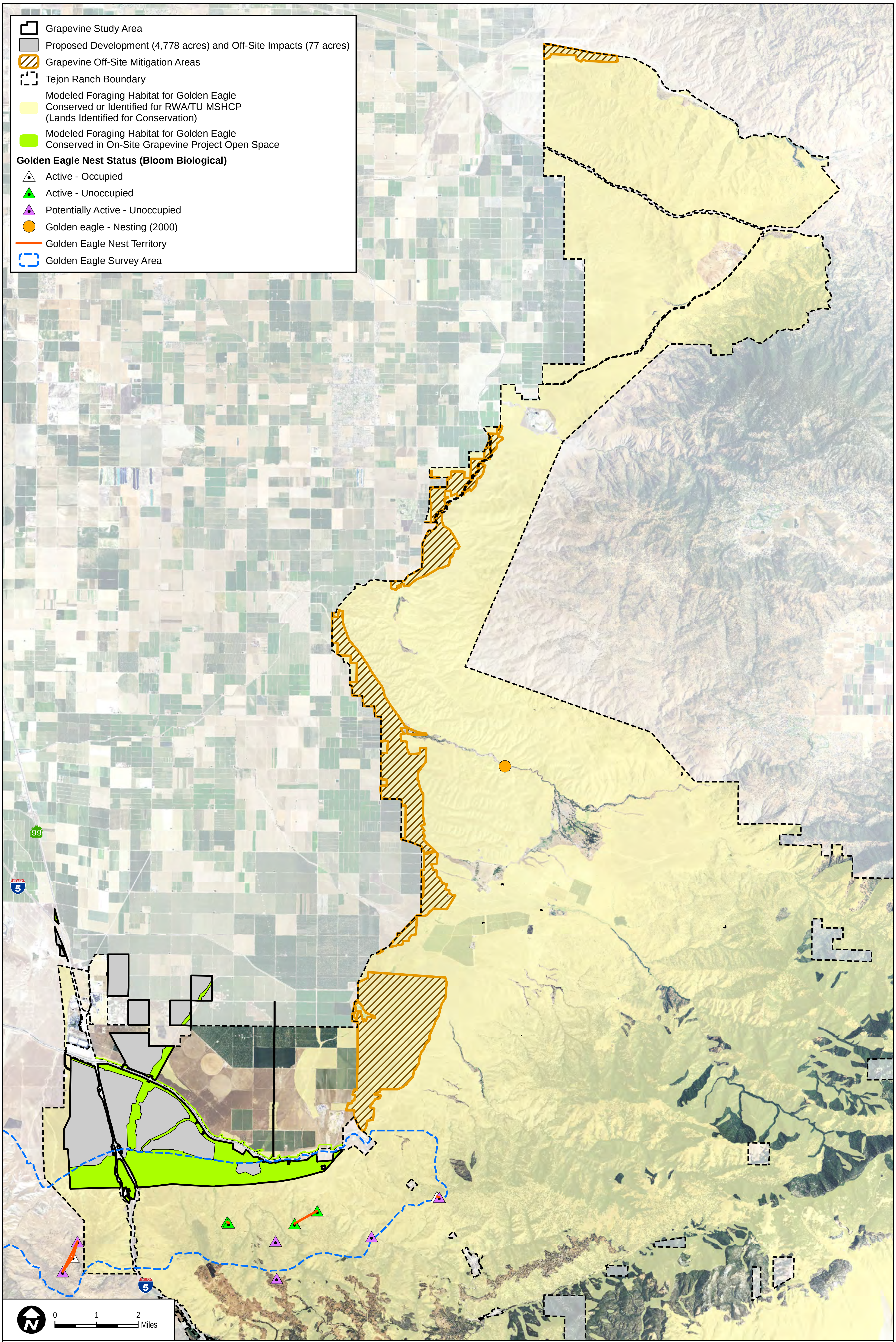
The conserved Ranch lands in the San Joaquin Valley, including within and around the Mitigation Area, have similar habitat for golden eagle to the Grapevine study area, and golden eagles have been regularly reported on the Ranch based on data collected since 1999, including a nesting golden eagle southeast of Comanche Point in 2000 (Tejon Ranch Conservancy 2013a) (Figure A2-6). Tejon Ranch Conservancy recorded two potential golden eagle nests in oak woodland habitat in 2010: one located in the northeast portion of the Ranch and one in the Old Headquarters area (Tejon Ranch Conservancy 2013a) (Figure A2-6). Because golden eagles are regularly observed foraging on different portions of the Ranch, including the Mitigation Area, these points are not always recorded, unless part of a proposed project, such as Grapevine and Tejon Mountain Village (TMV), and submitted to CNDDB. Focused surveys for golden eagles, including recording foraging observations, have not been conducted on areas identified for conservation in the Ranchwide Agreement. However, the proximity of the Mitigation Area to golden eagle nests, combined with vast areas of suitable foraging habitat, provides mitigation for impacts to foraging habitat. Additionally, the Mitigation Area is contiguous with large conserved open space areas within the valley floor and adjacent foothills of the Ranch, which provides expansive conserved open space for foraging and nesting away from human activity associated with I-5, Edmonston Pumping Plant Road, and the commercial and industrial uses north of the proposed project. In addition to nest data on the Ranch, Figure A2-6 shows the more recent golden eagle observations (from 2005 to 2015) on and near the Mitigation Area and modeled suitable habitat on the valley floor portions of the Ranch.

Long-Term Conservation Value

The long-term conservation of habitat is consistent with management and conservation for golden eagle, which generally includes habitat management, population enhancement, hazard management, controlling human activity in sensitive raptor areas, and education. The Mitigation Area includes the long-term conservation of suitable foraging and nesting habitat adjacent to Ranch lands where golden eagles have been observed foraging and nesting; prohibits the installation of collision hazards, such as power lines; and provides large expanses of habitat away from human activity. The Ranch-Wide Management Plan (Tejon Ranch Conservancy 2013b) also allows for some cattle grazing to occur in the Mitigation Area. Cattle ranching can be beneficial to the golden eagle if grazing is maintained at moderate levels that stimulate growth of herbaceous foods used by primary prey species, including ground squirrels and rabbits (Hunt et al. 1995). Ground squirrel populations are reported to reach their highest densities in areas of low grass height typical of grazed lands. Cattle ranching also provides eagles with a source of carrion from dead cows and stillborn calves.

Habitat Linkage

While the San Joaquin Valley floor portion of the Ranch lacks the traditional nesting habitat for golden eagle (e.g., cliffs, large trees, artificial nesting platforms), golden eagles are known to currently nest south of Grapevine in the San Emigdio and Tehachapi Mountains foothills and on TMV and other areas of the Ranch (Figure A2-6). Nesting golden eagles are known to use the northern foothills and valley floor to forage, and winter surveys indicate that golden eagle populations in this area of the Ranch increase during the winter. Conservation of the Mitigation Area will allow for continued foraging and potential for resident eagles, as well as foraging for dispersing, migrating, and wintering eagles.



SOURCES: California Resource Agency 2011; TRC 2007; 2014; Bloom Biological 2014; McIntosh & Associates 2014

FIGURE A2-6

Conserved Golden Eagle Foraging Habitat within and Adjacent to the Grapevine Project

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3.2.2.4 Nelson's Antelope Squirrel

The Mitigation Area will conserve 6,898 acres of modeled suitable valley floor habitat for Nelson's antelope squirrel. As with the kit fox and blunt-nosed leopard lizard, the Mitigation Area contains more suitable habitat for Nelson's antelope squirrel than the proposed development and off-site impact area; the Mitigation Area conserves an area considered important for the long-term conservation and recovery of this species by the USFWS (1998); and the Mitigation Area has long-term conservation value because it is contiguous with other Ranch open space that is conserved and managed in perpetuity in accordance with the Ranch-Wide Management Plan (Tejon Ranch Conservancy 2013b). Each of these reasons is described in more detail in this section.

Conservation of Suitable Valley Floor Habitat

The Mitigation Area will conserve 6,898 acres of modeled suitable habitat for Nelson's antelope squirrel, including 5,617 acres of grasslands, 437 acres of alluvial scrub, 481 acres of valley saltbush scrub, and 362 acres of valley saltbush scrub/buckwheat scrub on flat or rolling terrain (i.e., 25% or less).

Conservation of Higher Value Habitat

The Mitigation Area is more suitable for Nelson's antelope squirrel than the proposed development and off-site impact areas due to the presence of shrub-dominated habitat on flat or rolling terrain in the Mitigation Area, which is mostly lacking on the Grapevine study area, and the larger number of kangaroo rat (*Dipodomys* ssp.) burrows present in the Mitigation Area, as compared to the Grapevine study area. More specifically, there is a distinct lack of kangaroo rat burrows that are available for use by Nelson's antelope squirrel on the Grapevine study area. The vast majority of the shrubs are only present in the foothills of the Grapevine study area, which will be conserved in proposed project open space, and 90% of the shrub-dominated habitat is on slopes 25% or greater, which is not preferred by Nelson's antelope squirrel. Conversely, there are approximately 1,280 acres of shrub-dominated habitats on the Mitigation Area, the vast majority (99%) of which are on flat or rolling terrain (i.e., less than 25% slopes). Additionally, based upon the field assessment (Section 3.1), there is more evidence of kangaroo rats, and thus more burrow opportunities for the antelope squirrel. Therefore, the Mitigation Area has higher conservation value for Nelson's antelope squirrel than the proposed development and off-site impact area, in which no antelope squirrels have been observed to date during extensive surveys and habitat assessments conducted for other special-status plant and animal species.

Long-Term Conservation Value

The Mitigation Area would conserve high-value habitat for Nelson's antelope squirrel, as described above, and would conserve habitat contiguous with other conserved and managed lands on the Ranch in the valley floor. Conservation of the Mitigation Area would result in the conservation of large contiguous habitat blocks within the San Joaquin Valley floor that will allow for more opportunity for dispersal of this species within these areas and provide connectivity to other suitable habitat. Additionally, the Ranch-Wide Management Plan (Tejon Ranch Conservancy 2013b) would ensure that the Mitigation Area is not excessively grazed (a threat to this species) and remains suitable valley floor habitat in perpetuity.

Habitat Linkage

As previously noted, the Recovery Plan identifies the valley floor edge and adjacent foothills of the Ranch as part of a large habitat linkage area that can benefit the valley floor special-status species, including the Nelson's antelope squirrel, addressed by the Recovery Plan. The Mitigation Area includes lands that are within this habitat linkage design and, therefore, is consistent with the Recovery Plan's goals and objectives to conserve and maintain a habitat linkage along the valley floor/foothill fringe around the southern San Joaquin Valley.

3.2.3 Non-Listed Special-Status Species

As previously noted, habitat for 12 non-listed, special-status species[5] that either occur on the proposed development and off-site impact areas, or have a moderate or high potential of occurring, would be impacted by the project such that off-site habitat mitigation would be required.

As described previously, preservation of habitat for San Joaquin kit fox will include habitat for most special-status species that occur in the valley floor, including the 12 non-listed special-status species that will be impacted. The Mitigation Area will mitigate for the loss of habitat for these 12 non-listed special-status species because (1) there are at least 6,338 acres and up to 7,233 acres of suitable habitat for these species in the Mitigation Area; (2) there are a variety of intact habitat types present providing a mosaic of habitats favored by these species (e.g., species that move through grasslands but take refuge in shrubs); (3) the site and adjoining open space areas were determined during the Ranchwide Agreement process to have higher conservation value than the lands in which the proposed project is located and consequently were designated to be conserved while the Ranchwide Agreement Grapevine Development Area (15,644 acres) was designated for development; and (4) the site has long-term conservation value because it is contiguous with other Ranch open space that is conserved and managed in perpetuity in accordance with the Ranch-Wide Management Plan (Tejon Ranch Conservancy 2013b).

[5] Townsend's big-eared bat is a now a candidate for state listing.

The 7,233-acre Mitigation Area consists of valley saltbush scrub (486 acres), valley saltbush scrub/buckwheat scrub (363 acres), grassland (5,900 acres), alluvial scrub (438 acres), riparian/wetland (20 acres), and cottonwood/willow riparian (26 acres) habitats in the San Joaquin Valley floor. While the habitat needs of the 12 non-listed species vary based upon the habitat type present, all 12 of these species use grasslands and alluvial scrub, which represent the vast majority (88%) of the habitat in the Mitigation Area. Table 3 lists the 12 non-listed special-status species and their status, suitable habitat, and provides the acreages of suitable habitat present in the 7,233-acre Mitigation Area.

Table 3
Mitigation Area Habitat for Non-Listed Special-Status Wildlife Species

Common Name/ Status (Federal/State)	Suitable Habitat	Impacts to Suitable Habitat (Acres)	On-Site Conservation of Suitable Habitat (Acres)	Suitable Habitat in Off-Site Mitigation Area (Acres)	Total On-Site and Off-Site Mitigation (Acres)	Mitigation Ratio
San Joaquin coachwhip (None/SSC)	Open, dry treeless areas, including grassland and saltbush scrub	4,445	2,549	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	9,736	2.2:1
Blainville's horned lizard (None/SSC)	Open areas of sandy soil in valleys, foothills and semi-arid mountains, including coastal scrub, chaparral, valley/foothill hardwood, conifer, riparian, pine/cypress, juniper, and annual grassland	4,452	2,744	7,233 acres (all habitats)	9,958	2.2:1
Burrowing owl (BCC/SSC)	Nests and forages in grassland, open scrub, and agriculture, particularly in association with ground squirrel and other mammalian burrows.	4,444	2,549	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	9,736	2.2:1
Ferruginous hawk (wintering) (BCC/None)	In California, winters and forages in open, dry country including grasslands, open fields, and agricultural fields	4,452	2,604	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	9,791	2.2:1
Loggerhead shrike (BCC/SSC)	Nests and forages in open habitats with scattered shrubs, trees, or other perches	4,452	2,686	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub/buckwheat scrub)	9,873	2.2:1
Oregon vesper sparrow (wintering) (BCC/SSC)	Winters in open grassland habitat, including stubble fields, meadows, and road edges (Erickson 2008). Breeds in western Washington and Oregon south to Del Norte County, California (Jones and Cornely 2002).	4,451	2,605	6,338 acres (alluvial scrub and grasslands)	8,943	2:1

Table 3
Mitigation Area Habitat for Non-Listed Special-Status Wildlife Species

Common Name/ Status (Federal/State)	Suitable Habitat	Impacts to Suitable Habitat (Acres)	On-Site Conservation of Suitable Habitat (Acres)	Suitable Habitat in Off-Site Mitigation Area (Acres)	Total On-Site and Off-Site Mitigation (Acres)	Mitigation Ratio
Pallid bat (None/SSC)	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, as well as man-made structures and tunnels	4,911	2,779	7,233 acres (all habitats)	10,012	2:1
Townsend's big-eared bat (None/SSC; SC)	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, as well as in trees and tunnels	4,911	2,779	7,233 acres (all habitats)	10,002	2:1
Western mastiff bat (None/SSC)	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	4,911	2,779	7,233 acres (all habitats)	10,002	2:1
Western red bat (None/SSC)	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed area, and rangelands	4,911	2,779	7,233 acres (all habitats)	10,012	2:1

Table 3
Mitigation Area Habitat for Non-Listed Special-Status Wildlife Species

Common Name/ Status (Federal/State)	Suitable Habitat	Impacts to Suitable Habitat (Acres)	On-Site Conservation of Suitable Habitat (Acres)	Suitable Habitat in Off-Site Mitigation Area (Acres)	Total On-Site and Off-Site Mitigation (Acres)	Mitigation Ratio
San Diego black-tailed jackrabbit (None/SSC)	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, as well as man-made structures and tunnels	4,910	2,639	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub-buckwheat scrub)	9,826	2:1
American badger (None/SSC)	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	4,452	2,686	7,187 acres (alluvial scrub, grasslands, valley saltbush scrub and valley saltbush scrub-buckwheat scrub)	9,873	2.2:1

[1] **Federal Designations:**
BCC USFWS Birds of Conservation Concern
MBTA Migratory Bird Treaty Act

[2] **State Designations:**
FP CDFW protected and fully protected species
SC State candidate
SSC California Species of Special Concern

In addition to containing suitable habitat for these 12 non-listed special-status wildlife species, the Mitigation Area and surrounding conserved Ranch lands are known to already support American badger (SSC), burrowing owl (BCC, MBTA/SSC), and loggerhead shrike (BCC, MBTA/SSC).

3.3 Benefits to Other Special-Status Species

In addition to providing species-specific mitigation as described in Section 3.2, conservation of habitat within the Mitigation Area will provide benefits to a number of other special-status species known to occur in the San Joaquin Valley, either through conserving the habitat directly or through conserving habitat connections.

3.3.1 Listed Species

California condor (FE/SE, FP) historically did not and currently does not use the San Joaquin Valley floor to a significant extent, and there is no nesting, roosting, or important foraging habitat located within the Grapevine study area. Therefore, no off-site habitat preservation is required for the condor (see Appendix K, Condor Technical Report, to the BTR). While the Mitigation Area is located in the San Joaquin Valley floor, it is adjacent to an extensive amount of high-quality condor foraging habitat within the lower and upper foothill regions of the Ranch that, together, serve as a very large and interconnected block of condor habitat that will be conserved in perpetuity pursuant to the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) and the Ranchwide Agreement. Using the habitat model described in the Condor Technical Report (Appendix K to the BTR), the Mitigation Area will conserve 7,217 acres of suitable condor foraging habitat, of which 1,661 acres is within condor critical habitat. Furthermore, because hunting and grazing will continue within the Mitigation Area and in adjacent conserved areas on the Ranch at current levels and practices, these areas will continue to meet the foraging and feeding needs of condors that currently forage on the Ranch and will accommodate the foraging and feeding needs of condors in the future as the population expands.

While potential impacts to Swainson's hawk (ST) and tricolored blackbird (SE) foraging habitat will not require off-site mitigation, the large amount of grassland habitat in the Mitigation Area will serve as suitable foraging habitat for these species if they are passing through the area or nesting in the region.

3.3.2 Other Special-Status Species

There are a number of special-status species that occur or potentially occur in the Grapevine study area or in the region of the study area that will not be significantly impacted by the proposed project, but that will also benefit from conservation of the Mitigation Area. Some species are known to occur in the Mitigation Area and/or within adjacent conserved Ranch lands and many others have the potential to occur in the Mitigation Area based on the presence of suitable habitat within the known range of the species. Special-status wildlife and plant species that do not require mitigation but would benefit from conservation of the Mitigation Area are described in Sections 3.3.2.1 and 3.3.2.2, respectively.

3.3.2.1 Special-Status Wildlife

The Mitigation Area provides important foraging habitat for numerous raptors, including northern harrier, particularly during the winter months (Tejon Ranch Conservancy 2013a). Additionally, the 7,233-acre Mitigation Area consists of bands of riparian/wetland, and cottonwood/willow riparian communities ranging between approximately 80 to 400 feet wide and 825 to 3,400 feet long. These vegetation communities provide approximately 46 acres of habitat for birds that nest and forage in riparian and wetland vegetation communities. Similarly, there are five large patches of scrub vegetation totaling 1,287 acres (including 438 acres of alluvial scrub, 363 acres of saltbush/buckwheat scrub, and 486 acres of valley saltbush scrub) that provide habitat for birds that nest and forage in scrub habitats. Table 4 lists some of the non-listed special-status wildlife that would benefit from conservation of the Mitigation Area, provides a description of suitable habitat, and describes the known occurrences or potential for each of these species to occur in the Mitigation Area. The known occurrences of special-status wildlife are shown on Figure A2-5.

Table 4
Non-Listed Special-Status Wildlife That Benefit from Conservation of theMitigation Area

Common Name (Scientific Name)/Status (Federal[1]/State[2])	Suitable Habitat	Potential to Occur or Occurrence Information
Reptiles and Amphibians		
Silvery legless lizard (*Anniella pulchra pulchra*) None/SSC	Stabilized dunes, beaches, large dry washes with some vegetation, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose loamy soils	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Western spadefoot (*Spea hammondii*) None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley/foothill woodlands, pastures, and other agriculture	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Birds		
Black-chinned sparrow *(Spizella atrogularis)* BCC/None	Nests and forages in mixed chaparral, chamise/redshank chaparral, sagebrush and other brushy habitats	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Grasshopper sparrow (*Ammodramus savannarum*) None/SSC	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Potential to occur in the Mitigation Area and occurs in other portions of the surrounding conserved Ranch lands.

Table 4
Non-Listed Special-Status Wildlife That Benefit from Conservation of theMitigation Area

Common Name (Scientific Name)/Status (Federal[1]/State[2])	Suitable Habitat	Potential to Occur or Occurrence Information
Lawrence's goldfinch *(Spinus lawrencei)* BCC/None	Nests and forages in open oak, native arid woodlands, and chaparral near water	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Long-eared owl (*Asio otus*) None/SSC	Nests in riparian habitat, live oak thickets, other dense stands of trees, and edges of coniferous forest; forages in nearby open habitats	Occurs in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Northern harrier *(Circus cyaneus)* None/SSC	Nests in open wetlands, including marshy meadows, wet lightly grazed pastures, old fields, and freshwater and brackish marshes, but also in drier habitats, such as grassland and grain fields; forages in a variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Occurs in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Nuttall's woodpecker *(Picoides nuttallii)* BCC/None	Nests and forages in low-elevation native riparian and oaks	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Oak titmouse*(Baeolophus inornatus)* BCC/None	Nests and forages in oak woodlands; also in open pine forest, pinyon woodland, and native riparian and chaparral with oak	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.
Purple martin *(Progne subis)* None/SSC	Nest and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands	Potential to occur in the Mitigation Area and occurs in other portions of the surrounding conserved Ranch lands.
Short-eared owl (*Asio flammeus*) None/SSC	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Potential to occur in the Mitigation Area and occurs in other portions of the surrounding conserved Ranch lands.
Yellow warbler (*Setophaga petechia brewsteri*) BCC/SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine and mixed conifer habitats	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands.

1 **Federal Designations:**
BCC USFWS Bird of Conservation Concern
2 **State Designations:**
SSC California Species of Special Concern

3.3.2.2 Special-Status Plants

No off-site mitigation is required for special-status plants as a result of the proposed project. Unlike the valley portion of the Grapevine study area, the Mitigation Area and the surrounding conserved Ranch lands have known occurrences of plants with a CRPR designation, including species that are special status. Specifically, the Mitigation Area has known occurrences of Bakersfield cactus (FE/SE/CRPR 1B.1), Comanche Point layia (CRPR 1B.1) (Tejon Ranch Conservancy 2013a), cottony buckwheat (CRPR 4.2) (Tejon Ranch Conservancy 2013a), kern mallow (FE/CRPR 1B.1) (Tejon Ranch Conservancy 2013a), pale-yellow layia (CRPR 1B.1), Piute Mountains navarretia (CRPR 1B.1) (Tejon Ranch Conservancy 2013a), San Joaquin blue curls (CRPR 4.2) (Tejon Ranch Conservancy 2013a), and Tejon poppy (CRPR 1B.1). The Mitigation Area also contains habitat suitable for several other special-status plants known to occur in the region and in some cases directly adjacent to the Mitigation Area. Figure A2-7 shows the special-status plants located on the Mitigation Area and surrounding conserved Ranch lands. The diversity of special-status plants present on the Mitigation Area and surrounding Ranch lands identified for conservation in the Ranchwide Agreement demonstrates the biological value of these lands. Table 5 lists all plants occurring or potentially occurring within the Mitigation Area.

Table 5
Special-Status Plant/CRPR Species Observed or with the Potential to Occur on Proposed Mitigation Areas and Surrounding Ranch Lands

Common Name	Scientific Name	Status (Federal/ State/CRPR)	Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet amsl)	Potential to Occur or Occurrence Information
Adobe yampah	*Perideridia pringlei*	None/None/4.3	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, serpentinite, often clay/perennial herb/Apr–Jun(Jul)/984–5,906	Occurs in the surrounding conserved Ranch lands (1 record[1]).
Alkali mariposa lily	*Calochortus striatus*	None/None/ 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps, alkaline, mesic/perennial bulbiferous herb/Apr–Jun/230–5,233	Occurs in the surrounding conserved Ranch lands (3 records[1]).
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE/SE/1B.1	Chenopod scrub, cismontane woodland, valley and foothill grassland, sandy or gravelly/ perennial stem succulent/Apr–May/394–3,740	Occurs in the Mitigation Area (6 records[1]) and in other portions of the surrounding conserved Ranch lands (133 records[1]).
California jewel-flower	*Caulanthus californicus*	FE/SE/1B.1	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland, sandy/annual herb/Feb–May/200–3,281	Occurs in the Mitigation Area (1 record[1]) and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.

Table 5
Special-Status Plant/CRPR Species Observed or with the Potential to Occur on Proposed Mitigation Areas and Surrounding Ranch Lands

Common Name	Scientific Name	Status (Federal/ State/CRPR)	Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet amsl)	Potential to Occur or Occurrence Information
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	None/None/1 B.1	Valley and foothill grassland (alkaline hills)/annual herb/Mar–Apr/3–1,493	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.
Comanche Point layia	*Layia leucopappa*	None/None/1 B.1	Chenopod scrub, valley and foothill grassland/annual herb/Mar–Apr/328–1,148	Occurs in the Mitigation Area (3 records[1]); observed in other portions the surrounding conserved Ranch lands (33 records[1]).
Heartscale	*Atriplex cordulata* var. *cordulata*	None/None/1 B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy), saline or alkaline/annual herb/Apr–Oct/0–1,837	Potential to occur in the Mitigation Area and in the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.
Cottony buckwheat	*Eriogonum gossypinum*	None/None/ 4.2	Chenopod scrub, Valley and foothill grassland/clay/ annual herb/ Mar–Sep/328–1804	Occurs in the Mitigation Area (1 record[1]); also occurs in the surrounding conserved Ranch lands (33 records[1]).
Hoover's eriastrum	*Eriastrum hooveri*	Delisted/None /4.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland, sometimes gravelly/annual herb/Mar–Jul/164–3,002	Potential to occur in the Mitigation Area; observed in other portions of the surrounding conserved Ranch lands (2 records[1]).
Kern mallow	*Eremalche kernensis*	FE/None/1B.1	Chenopod scrub, valley and foothill grassland/ annual herb/Mar–May/230–4,232	Occurs in the Mitigation Area (1 record[1]); observed in other portions of the surrounding conserved Ranch lands (7 records[1]).
Lemmon's jewelflower	*Caulanthus lemmonii*	None/None/1 B.2	Pinyon and juniper woodland, valley and foothill grassland/annual herb/Mar–May/262–4,003	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.

Table 5
Special-Status Plant/CRPR Species Observed or with the Potential to Occur on Proposed Mitigation Areas and Surrounding Ranch Lands

Common Name	Scientific Name	Status (Federal/ State/CRPR)	Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet amsl)	Potential to Occur or Occurrence Information
Lost Hills crownscale	*Atriplex coronata* var. *vallicola*	None/None/1 B.2	Chenopod scrub, valley and foothill grassland, vernal pools, alkaline/annual herb/Apr–Aug/164–2,083	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.
Pale-yellow layia	*Layia heterotricha*	None/None/1 B.1	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland, alkaline or clay/annual herb/Mar–Jun/984–5,594	Occurs in the Mitigation Area (1 record[1]); Observed in other portions of the surrounding conserved Ranch lands (1 record[1]).
Piute Mountains navarretia	*Navarretia setiloba*	None/None/1 B.1	Cismontane woodland, pinyon and juniper woodland, valley and foothill grassland, clay or gravelly loam/annual herb/Apr–Jul/935–6,890	Occurs in the Mitigation Area (3 records[1]) and in other portions of the surrounding conserved Ranch lands (40 records[1]).
Recurved larkspur	*Delphinium recurvatum*	None/None/1 B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland, alkaline/ perennial herb/Mar–Jun/10–2,592	Potential to occur in the proposed Mitigation Area and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.
Round-leaved filaree	*California macrophylla*	None/None/1 B.1	Cismontane woodland, valley and foothill grassland, clay/annual herb/Mar–May/49–3,937	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.
San Joaquin bluecurls	*Trichostema ovatum*	None/ None/ 4.2	Chenopod scrub, Valley and foothill grassland/ annual herb/Jul–Oct/213–1,050	Occurs in the Mitigation Area (1 record[1]) and in the surrounding conserved Ranch lands (2 records[1]).
San Joaquin woollythreads	*Monolopia congdonii*	FE/None/1B.2	Chenopod scrub, valley and foothill grassland (sandy)/annual herb/Feb–May/197–2,625	Potential to occur in the Mitigation Area (2 historic records[2] and in other portions of the surrounding conserved Ranch lands; suitable habitat is on site and site is within species' elevation range.

Table 5
Special-Status Plant/CRPR Species Observed or with the Potential to Occur on Proposed Mitigation Areas and Surrounding Ranch Lands

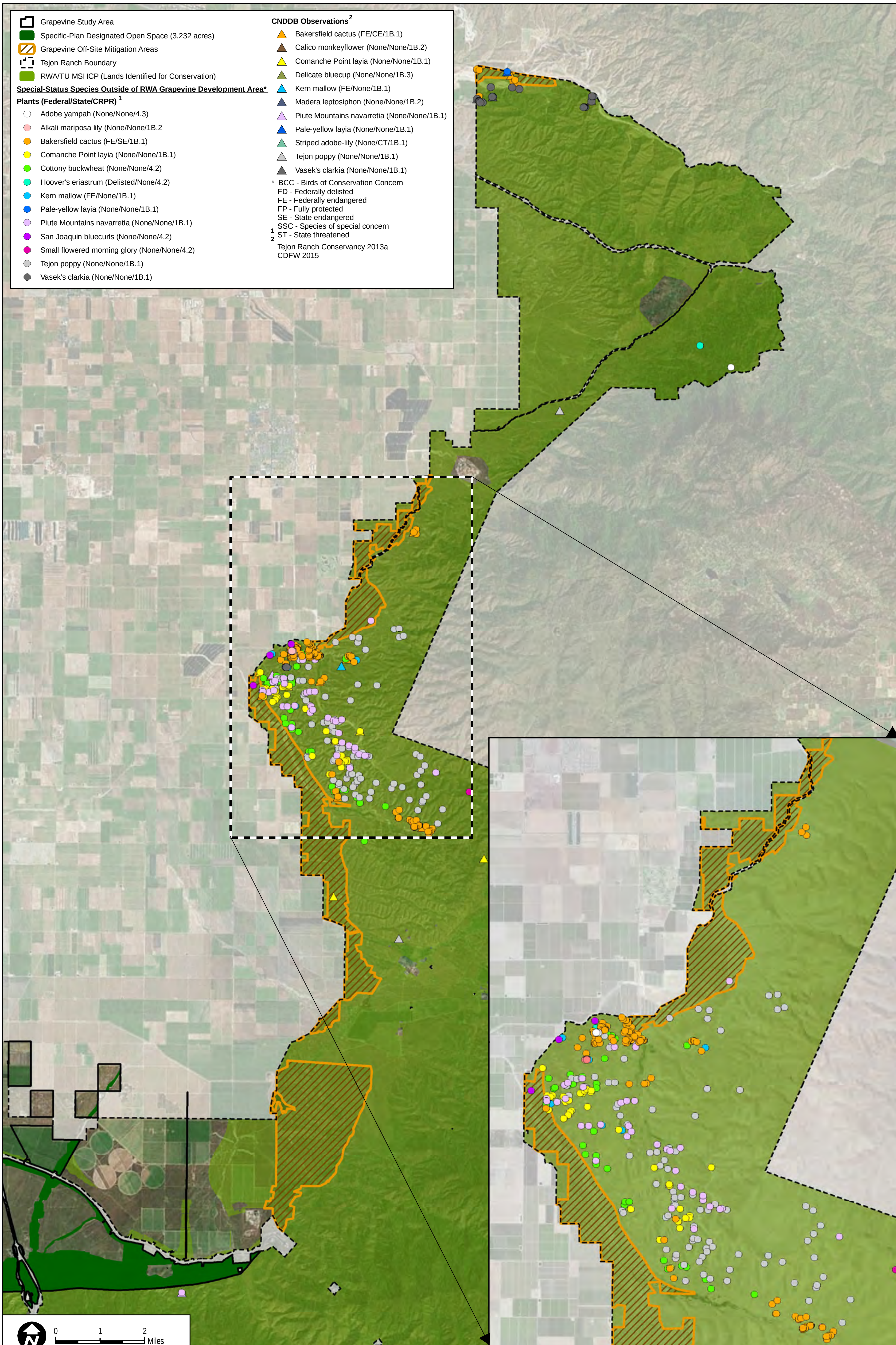
Common Name	Scientific Name	Status (Federal/ State/CRPR)	Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet amsl)	Potential to Occur or Occurrence Information
Small-flowered morning-glory	*Convolvulus simulans*	None/None/ 4.2	Chaparral(openings), coastal scrub, Valley and foothill grassland/clay, serpentinite seeps/ annual herb/Mar–Jul/98–2,297	Occurs in the surrounding conserved Ranch lands (2 records[1]).
Tejon poppy	*Eschscholzia lemmonii* ssp. *kernensis*	None/None/1 B.1	Chenopod scrub, valley and foothill grassland/ annual herb/Mar–May/525–3,281	Occurs in the Mitigation Area (3 records[1]) and surrounding conserved Ranch lands (101 records[1]).
Vasek's clarkia	*Clarkia tembloriensis* ssp. *calientensis*	None/None/1 B.1	Valley and foothill grassland/annual herb/Apr/ 902–1,640	Potential to occur in the Mitigation Area and in other portions of the surrounding conserved Ranch lands (18 records[1]).

Notes:
1 Each record has varying populations of individuals.
2 There is one CNDDB record of San Joaquin woollythreads (FE/CRPR 1B.2) from a 1935 Munz collection that partially overlaps within the Mitigation Area and one record near the Mitigation Area. The record overlapping the Mitigation Area is considered "possibly extirpated" (CDFW 2015). There are no recent records of this species within the Mitigation Area.
amsl = above mean sea level

3.3.3 Landscape-Level Benefits

While no significant landscape-level impacts to biological resources are identified for the proposed project, the Mitigation Area will provide landscape-level benefits in the context of reserve design, wildlife movement, and connectivity to other conserved lands.

Conservation of the Mitigation Area will contribute to the conservation within Tejon Ranch of a significant piece of an intact, large portion of the southern San Joaquin Valley floor adjacent to the Tehachapi Mountains, totaling approximately 74,100 acres. Much of the valley floor has been converted to agricultural, urban, or industrial uses and remnants of the San Joaquin Valley floor outside of the Ranch are relatively small; thus, the Mitigation Area would conserve irreplaceable valley floor and foothill edge habitat. Large blocks of habitat conservation, such as the Mitigation Area, minimize edge effects and maximize the potential for live-in or residential habitat for species (i.e., provide landscape linkages). The Mitigation Area includes grasslands and shrublands, as well as riparian/wetland corridors, representing high-quality habitats in the valley floor/foothill edge that contribute to ecological diversity. The benefit of the Mitigation Area in providing habitat linkages for San Joaquin kit fox, bald eagle, blunt-nosed leopard lizard, Nelson’s antelope squirrel, and golden eagle is described for each species in Sections 3.2.1 and 3.2.2.



SOURCES: TRC 2007; 2014;Tejon Ranch Conservancy 2013a; McIntosh 2014

FIGURE A2-7

Grapevine Off-Site Mitigation Areas - Special-Status Plant Species Observed

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4 REFERENCES CITED

CDFW (California Department of Fish and Wildlife). 2015. *Rarefind*. Version 5.0. CNDDB. September 2015

Cypher, B. 2010. “Kit Fox Habitat Survey on Tejon Ranch Properties.” Memorandum from B Cypher (Endangered Species Recovery Program) to K. Babcock (Dudek). June 3, 2010.

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. “Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications.” *Canid Biology & Conservation* 16(7): 25–31. http://www.canids.org/CBC/16/San_Joaquin_kit_fox_habitat_suitability.pdf.

Cypher, B.L. 2015. Suitability of habitat for kit fox in the study area. Personal communication from B.L. Cypher to Dudek.

Erickson, R.A. 2008. “Oregon Vesper Sparrow (*Pooecetes gramineus affinis*).” *California Bird Species of Special Concern: Studies of Western Birds No. 1*. Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

Hunt, W.G., R.E. Jackman, T.L. Brown, J.G. Gilardi, D.E. Driscoll, and L. Culp. 1995. *A Pilot Golden Eagle Population Study in the Altamont Pass Wind Resource Area, California*. Predatory Bird Research Group, University of California, Santa Cruz.

Jones, S.L. and J.E. Cornely. 2002. “Vesper Sparrow (*Pooecetes gramineus*).” In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/624doi:10.2173/bna.624.

Kern County. 2002. *Final Environmental Impact Report (SCH No. 2001101133) Tejon Industrial Complex East Specific Plan, Volume 1. Environmental Impact Report*. Final. SCH no. 2001101133. Prepared by Impact Sciences. Agoura Hills, California: Impact Sciences. November 2002.

Tejon Ranch Conservancy. 2011. *Baseline Conditions Report White Wolf Easement Area*. February 2011.

Tejon Ranch Conservancy. 2013a. “Biological resources GIS data, including Ranchwide bird, mammal, and plant point location data” [Shapefiles]. Received from Tejon Ranch Company on January 6, 2014; January 7, 2014.

Tejon Ranch Conservancy. 2013b. *Ranch-Wide Management Plan, Volume 1: Natural Community Description*. June 2013.

Tejon Ranch Conservancy. 2014. "Tejon Ranch Conservancy San Joaquin Kit Fox Data" [Shapefiles, Excel Spreadsheet]. Received from Tejon Ranch Conservancy May 23, 2014; June 19, 2014; and July 17, 2014.

TRC (Tejon Ranch Company). 2007. Vegetation Composite GIS Data for Tejon Ranch. Ranch-wide vegetation composite based on the 1980 Environmental Impact Report, the 1994 Biotic Assessment, the 1994 Antelope Valley Grassland exhibit, the 1980 Timber Index survey, and Tejon Valley Floor HCP vegetation information. Supplied by Tejon Ranch Company.

TRC (Tejon Ranch Company). 2013. "Modeled kit fox habitat for Tejon Ranch based 2010 surveys conducted by Brian Cypher Tejon Ranch Properties." Received from Tejon Ranch Company on December 2, 2013.

USDA (U.S. Department of Agriculture). 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2013.

USFWS (U.S. Fish and Wildlife Service). 1986. *Pacific Bald Eagle Recovery Plan*. Portland, Oregon: USFWS.

USFWS. 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2001. "Formal Section 7 Consultation on the Tejon Ranch Industrial Complex (Phase 2), Kern County, California (File #06-KER-5)." Letter from C.C. Goude (USFWS) to M.G. Ritchie (U.S. Department of Transportation). July 25, 2001.

USFWS. 2010a. *San Joaquin Kit Fox (*Vulpes macrotis mutica*), 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

USFWS. 2010b. *Blunt-Nosed Leopard Lizard (*Gambelia sila*), 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2015. "Species Occurrence and Critical Habitat Data" [Shapefiles]. Received from USFWS on September 30, 2015. http://www.fws.gov/carlsbad/gis/cfwogis.html.

USGS (U.S. Geological Survey). 2014. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies" [digital GIS data]. National Hydrography Dataset website. September 2014. http://nhd.usgs.gov/.

White, M. 2013. Personal Communication. Conference call with Mike White, Ph.D (Conservation Science Director of Tejon Ranch Conservancy) and Brock Ortega (Dudek, Megan Enright (Dudek), and Callie Ford (Dudek). November 11, 2013.

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ATTACHMENT A-3

Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project

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ATTACHMENT A-3
Conceptual Mitigation Plan for Impacts to Waters of the State for the Grapevine Project

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1 INTRODUCTION

This Conceptual Mitigation Plan for Waters of the State (CMP or plan) expands on the mitigation measure MM-BTR-WM in Appendix A of the biological resources technical report (BTR) for the proposed Grapevine project (proposed project) by providing a detailed description of the mitigation requirements for impacts to waters of the state resulting from the proposed project. MM-BTR-OOS and MM-BTR-WMP require conservation of the 7,233-acre Grapevine Off-Site Mitigation Area (Mitigation Area) to satisfy off-site mitigation requirements for the loss of valley floor biological resources. The Mitigation Area consists of conservation lands in the valley floor, primarily within the Arvin-Wheeler Ridge hydrologic area in the South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); less than 1% of the Mitigation Area occurs in the Tejon Creek (HUC 556.20) hydrologic area in the Grapevine hydrologic unit (Central Valley RWQCB 2004). These areas are identified for conservation under the Tejon Ranch Conservation and Land Use Agreement (Ranchwide Agreement (or RWA on figures)). The Grapevine study area and the 7,233-acre Mitigation Area are depicted in Figures 1 and 2. This plan describes how impacts to waters of the state will be mitigated in the Mitigation Area. Additionally, this plan outlines the required on-site restoration for temporary impacts to waters of the state and the Grapevine Creek bridges crossings.

Section 1 summarizes the impacts to and avoidance of waters of the state and describes the required compensatory mitigation for impacts to waters of the state. Section 2 discusses the methods used to identify the Mitigation Area. Section 3 provides details about the proposed on-site restoration; and off-site mitigation, including preservation, enhancement, and restoration. The enhancement and restoration site activities are described in detail in Sections 4–10 and include the following information: (1) Section 4 describes the implementation plan which includes the schedule, site preparation, grading and contouring, erosion control, exclusionary fencing, container plants, seed mix, and supplemental watering; (2) Section 5 describes the required maintenance program; (3) Section 6 describes the 5-year monitoring program and the site success criteria; (4) Section 7 describes the required reporting annual reporting during the 5-year maintenance and monitoring period; (5) Section 8 describes the contingency measures in place if the site success criteria are not met; (6) Section 9 describes the long-term management of the site; and (7) Section 10 describes that biological resource protection measure that will be required during implementation. Section 11 includes the references cited in this CMP.

1.1 Background

In 2013, Dudek biologists conducted a jurisdictional delineation of waters in the field (see Appendices B and E for more information). That delineation identified 21 features (out of a total of 59 features on the U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic maps) as subject to California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB) jurisdiction (Figure 3A). However, to ensure a conservative analysis with respect to impacts to waters of the state, the BTR analyzes impacts to all of the features identified on the USGS maps, including the remaining 38 unnamed USGS stream features that Dudek determined were not jurisdictional, as impacts to waters of the state (Figure 3A). These 38 unnamed USGS stream features lacked field indicators of a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, hydrophytic vegetation, or other watercourse features/fluvial indicators as discussed in Appendix E-3; however, to conservatively calculate potential impacts, the 38 unnamed USGS stream features were manually digitized as described in Appendix E-3 and are discussed as ephemeral in this plan. It is expected that through the final permitting process, these impacts will be reduced, as many of the USGS stream features are not likely to be conclusively determined to be state waters. However, as described in this CMP, the 7,233-acre Mitigation Area provides more mitigation that would be required.

1.2 Impacts and Avoidance

As described in the BTR (Dudek 2015), there are no federal jurisdictional waters on the site. Impacts and avoidance of waters of the state, including wetland waters,[1] is further detailed below by wetland waters (Section 1.2.1), streams (Section 1.2.2), and riparian vegetation (Section 1.2.3) and depicted in Figure 3B.

1.2.1 Wetland Waters

A small amount of wetland waters of the state, 0.1 acre, consisting of mulefat thickets in the tributary to Cattle Creek will be directly impacted from the construction of a minor road crossing and trail crossing. However, the perennial portions, restricted to Grapevine Creek in the foothills, and the higher-quality and denser native wetland waters communities will be conserved in open space.

The road crossing is associated with an existing road (Edmonston Pumping Plant Road), and the crossing is perpendicular to the stream channel to further avoid and minimize impacts to wetland waters at this crossing. Realigning the road at this location to avoid wetland waters would result in increased impacts to other biological resources.

Similarly, the proposed trail network was sited to maximize the use of the existing Ranch trail network, and the crossing of the tributary to Cattle Creek (CC-2) was necessary to create an interconnected trail system. Realigning the trail at this location and maintaining an interconnected trail system would also result in increased impacts to biological resources.

[1] Throughout this document the term "wetland waters of the state" refers to areas that have the three wetland criteria—hydric soils, hydrophytic vegetation, and hydrology (ACOE 1987, 2008). If an area is not a wetland water of the state because it lacks one of the three wetland criteria, but is dominated by riparian vegetation, the term riparian vegetation is used to describe those areas.

1.2.2 Streams

Non-wetland streams are described by their periodicity below in Sections 1.2.2.1 and 1.2.2.2.

1.2.2.1 Intermittent Channels

Intermittent channels are typically characterized by water that flows more than 24 hours after a storm event at certain times of the year. On site, many of the intermittent channels are wider and deeper compared to the on-site ephemeral channels and have a higher potential for flood storage. The on-site intermittent channels also have sparse vegetation scattered throughout, which helps filter sediments, provides some cover for wildlife species, and can function as wildlife movement areas. There are 29 acres of tamarisk thickets that are wholly contained within the bed and bank of an intermittent channel (Grapevine Creek) and, while non-native and invasive, are considered to be riparian vegetation. These areas are not wetland waters because they lack the three wetland criteria and are delineated as intermittent non-wetland waters of the state. These areas are described separately in Section 1.2.3.

The impacts to intermittent channels that lack riparian vegetation total 1,455 linear feet (0.4 acre) of permanent impacts and 215 linear feet (1.6 acre) of temporary impacts and are limited to perpendicular road crossings associated with the project's backbone infrastructure in order to further avoid and minimize impacts to these channels. A total of 20,544 linear feet of intermittent channels that lack riparian vegetation, or 93%, will be avoided and/or conserved on site in open space and 215 linear feet, 1%, will be restored on site.

1.2.2.2 Ephemeral Channels

Ephemeral channels are characterized as having brief flow in direct response to precipitation. The ephemeral channels on site are typically more narrow and often less incised compared to the intermittent channels, and they often have scattered grasses or annual herbs but lack vegetation, such as shrubs, that could provide habitat for wildlife. Direct impacts to waters associated with project development (as opposed to impacts associated with only the backbone infrastructure) on the riparian valley floor areas are limited to ephemeral non-wetland drainages, which have lower functions and values than the intermittent stream channels and wetland waters.

Direct impacts to ephemeral non-wetland drainages include 1.8 acres (16,552 linear feet) of previously delineated streams and 20.6 acres (55,052 linear feet) of the UGSG features that were not previously delineated as waters of the state. A total of 102,224 linear feet of ephemeral channels, or 59%, will be avoided and/or conserved on site in proposed project open space, including 33,924 linear feet of delineated ephemeral channels and 68,300 linear feet of the UGSG features that were not delineated as waters of the state.[2] Ephemeral non-wetland drainages have lower functions and values than the intermittent stream channels and wetland waters. Ephemeral channels are characterized as having brief flow in direct response to precipitation. The ephemeral channels on site are typically more narrow and often less incised compared to the intermittent channels, do not support fish or other aquatic species, or riparian vegetation, and often have scattered grasses or annual herbs but lack vegetation, such as shrubs and trees, that could provide habitat for wildlife.

1.2.3 Riparian Vegetation

As mentioned, in Section 1.2.2.1, there are 29 acres of tamarisk thickets that are wholly contained within the bed and bank of Grapevine Creek and, while non-native and invasive, are considered to be riparian vegetation. These areas are not wetland waters because they lack the three wetland criteria and are delineated as intermittent non-wetland waters of the state. The tamarisk thickets semi-natural stands, are dominated by salt cedar (*Tamarix ramosissima*) (5% to 15% absolute cover), and are limited to Grapevine Creek in the valley floor. Of the 29.1 acres (13,216 linear feet) of tamarisk thickets 28.9 acres (13,070 linear feet), or (99%) will be conserved and 0.2 acre (145 linear feet) or 1% would be impacted.

1.2.4 Summary

The proposed project, including off-site impact areas, would result in direct permanent and temporary impacts to waters of the state, including the following:

- ***Wetlands:*** 0.1 acre (171 linear feet) of permanent impacts to wetland waters of the state (mulefat thickets).
- ***Streams***:
  - 0.4 acres (811 linear feet) of permanent impacts and 1.6 acres (215 linear feet) of temporary impacts to non-riparian and non-wetland, *intermittent* waters of the state
  - 1.8 acres (16,552 linear feet) of permanent impacts to previously delineated *ephemeral* non-wetland waters of the state
  - 20.6 acres (55,052 linear feet) of the 38 UGSG features that were not previously delineated as waters of the state and are analyzed here as *ephemeral*
- ***Riparian Vegetation***: 0.2 acre (145 linear feet) of riparian vegetation within non-wetland waters of the state (tamarisk thickets)

2 The ephemeral category includes the 38 unnamed USGS stream features, for which linear feet of avoidance and/or conservation was assessed using the linear stream data from USGS 7.5-minute quadrangle topographical maps (USGS n.d). Only the proposed project footprint area impacts to the 38 unnamed USGS stream features were digitized into acreage.

Table 1
Waters of the State or Potential Waters of the State (Impacts and Conservation)

Jurisdiction or Feature	Acres				Linear Feet				% Open Space and Impacts by Linear Feet	
	Total in Study Area	*Open Space*	*Permanent Impacts*	*Temporary Impacts*	*Total in Study Area*	*Open Space*	*Permanent Impacts*	*Temporary Impacts*	*Open Space*	*Impacts*
Wetland[1] Waters of the State	10.2	10.0	0.1	—	10,779	10,609	171	—	98%	2%
Wetland Waters of the State Subtotal	*10.2*	*10.0*	*0.1*	—	*10,779*	*10,609*	*171*	—	*98%*	*2%*
Non-Wetland Waters of the State—Ephemeral	13.1	11.3	1.8	—	50,476	33,924	16,552	—	67%	33%
Non-Wetland Waters of the State—Intermittent[2]	78.5	76.4	0.5[1]	1.6	35,879	34,709	956	215	97%	3%
Non-Wetland Waters of the State Subtotal	*91.5*	*87.7*	*2.3*	*1.6*	*86,355*	*68,633*	*17,508*	*215*	*79%*	*21%*
Other USGS Stream Features	N/A	N/A	20.6	—	123,352	68,300	55,052	—	55%	45%
Other USGS Stream Features Subtotal	*N/A*	*N/A*	*20.6*	—	*123,352*	*68,300*	*55,052*	—	*55%*	*45%*
Total[3]	**101.7**	**97.7[4]**	**23.0**	**1.6**	**220,486**	**147,542**	**72,730**	**215**	**67%**	**33%**

Notes:

1 The term "wetlands" refers to locations that meet the criteria for wetlands established by the ACOE (i.e., have hydric soils, hydrophytic vegetation, and hydrology) (ACOE 1987, 2008b).

2 The majority of the impacted intermittent channels lack vegetation, with the exception of 0.2 acre of tamarisk thickets that are wholly contained within the bed and back of the channel, and while non-native, is considered to be riparian vegetation.

3 Sub-totals and totals do not total precisely due to rounding to the nearest tenth

4. The open space acreage does not include other USGS stream features because the area was digitized in the proposed project footprint and not in the open space.

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1.3 Compensatory Mitigation

Temporary Impacts

As described in Section 1.2.4, some of the impacts to waters of the state will be temporary impacts. For example, there are temporary impacts associated with bridge crossings that are required in order to construct the bridge. Following construction of the proposed bridges, temporarily impacted areas will be recontoured to pre-disturbance topography. Temporary impacts will be mitigated through restoration.

Permanent Impacts

Permanent direct impacts to waters of the state will be mitigated through a combination of habitat preservation, restoration (e.g., re-establishment and rehabilitation), and enhancement. Section 1.3.1 describes the proposed mitigation ratios, and Section 1.3.2 describes the required mitigation acreages and linear feet by mitigation type based on those proposed mitigation ratios.

1.3.1 Mitigation Ratios

The following mitigation ratios will be used to mitigate for impacts to waters of the state, including wetland waters (also see Table 2):

- ***Wetland Waters:*** 2:1, including 1:1 restoration and 1:1 enhancement, of wetland waters
- ***Streams***:
    - 1:1 preservation of ephemeral and/or intermittent streams for permanent impacts to ephemeral non-wetland waters of the state (non-riparian)
    - 1:1 preservation of intermittent streams for permanent impacts to intermittent non-wetland waters of the state (non-riparian)
    - 1:1 restoration of intermittent streams for temporary impacts to intermittent non-wetland waters of the state (non-riparian)
- ***Riparian Vegetation***: 2:1, including 1:1 restoration and 1:1 enhancement, of riparian vegetation

Table 2
Proposed Mitigation Ratios and Type

Type	Jurisdiction (Impact Type)	Proposed Project Impacts		Proposed Mitigation				
		Acres	*Linear Feet*	*Mitigation Ratio*	*Mitigation Type*	*Habitat/ Stream Type*	*Acres*	*Linear Feet*
Wetlands	Wetland Waters of the State—Mulefat Thickets (Permanent Impacts)	0.1	171	2:1	Restoration and Enhancement	Wetlands	0.2	—
Streams	Non-Wetland Waters of the State—Ephemeral (Permanent Impacts)	1.8	16,552	1:1	Preservation	Ephemeral and/or intermittent streams	1.8	16,552
	Other UGGS Stream Features (Permanent Impacts)	20.6	55,052		Preservation	Ephemeral and/or intermittent streams	20.6	55,052
	Non-Wetland Waters of the State—Intermittent (Permanent Impacts)	0.4	811	1:1	Preservation	Intermittent streams	0.4	811
	Non-Wetland Waters of the State—Intermittent (Temporary Impacts)	1.6	215	1:1	On-Site Restoration	Intermittent streams	1.6	215
Riparian Vegetation	Non-Wetland Waters of the State—Riparian Vegetation, Tamarisk Thickets (Permanent Impacts)	0.2	145	2:1	Restoration & Enhancement	Riparian vegetation	0.4	—
Grand Total[1]		**24.6**	**72,945**	**—**	**—**	**—**	**25.0**	**72,630**

Notes:
1 Subtotals and totals do not total precisely due to rounding to the nearest tenth of a number.

1.3.2 Required Mitigation

Based upon the proposed mitigation ratios outlined in Section 1.3.1, the following mitigation is required to mitigate for impacts to waters of the state, including wetland waters:

- ***Wetland Waters:*** restoration and enhancement of 0.2 acre of wetland waters of the state.
- ***Streams***:
  - Preservation of 22.4 acres, including at least 71,604 linear feet of ephemeral and/or intermittent non-wetland waters of the state.
  - Preservation of 0.4 acre, including at least 811 linear feet of intermittent non-wetland waters of the state.
  - On-site restoration of 1.6 acres (215 linear feet) of temporary impacts to intermittent non-wetland waters of the state.
- ***Riparian Vegetation:*** restoration and enhancement of 0.4 acre of riparian vegetation.

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2 METHODS

2.1 Literature Review

Prior to the site review (see Section 2.2) Dudek reviewed the vegetation communities and land covers (TRC 2007), topography (i.e., slope and elevation), hydrology (USGS 2013), and soils (USDA 2007, 2009) on the 7,233-acre Mitigation Area. In addition, Dudek reviewed the following data:

- Species mapped on Ranch lands, including conservation areas (Tejon Ranch Conservancy 2013a, 2014)
- California Natural Diversity Database (CNDDB) (CDFG 2003; CDFW 2015)
- California Department of Fish and Game List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form (CDFG 2010)
- Biological technical report (Dudek 2015)
- Jurisdictional delineation report (Dudek 2013).

2.2 Site Review

On September 9 and 10, 2014, Dudek restoration ecologist Andy Thomson conducted a site visit to the 8,010-acre Grapevine Specific Plan Area and portions of the 7,233-acre Mitigation Area. The primary goals of these site visits were to identify suitable sites for mitigating permanent impacts to state-jurisdictional waters that would result from the proposed project and to evaluate the functions and values of jurisdictional resources or potentially jurisdictional area at the proposed impact areas relative to jurisdictional resources within the 7,233-acre Mitigation Area.

Dudek conducted a comprehensive search of both the 8,010-acre Grapevine Specific Plan Area and the 7,233-acre Mitigation Area (Figure 4). On the Grapevine Specific Plan Area, all state-jurisdictional features were evaluated, with a focus on areas where impacts are proposed. The majority of the 7,233-acre Mitigation Area was similarly evaluated, focusing on drainage features and associated habitat. During the site review, streams in the Mitigation Area that had fluvial indicators and appeared to be intermittent based upon field indicators were mapped onto hard-copy maps and included the approximately length and width of the feature. Additionally, ephemeral streams or swales that had topographic relief were mapped onto hard-copy maps and included the approximate length of the features. The hard-copy maps included aerial imagery (Bing 2014), USGD NHD stream data and seeps and springs (USGS 2015) and TRC Ranchwide vegetation mapping (TRC 2007). Data collected in the field on hard-copy maps was transferred to GIS.

Dudek referenced the jurisdictional delineation (Dudek 2013) prepared for the Grapevine study area while conducting the mitigation assessment. The stream channel designations identified in the jurisdictional delineation report are referenced for consistency in this CMP.

2.3 Desktop Evaluation of Streams

Following the site visit, a desktop evaluation of the field-verified ephemeral channels or other swales that had some topographic relief but lacked fluvial indicators (similar to the 38 unnamed USGS stream features) was conducted. Additionally, all USGS stream features also were evaluated using existing data and desktop tools resources. In order to quantify the acreage of these stream resources in the Mitigation Area, these linear features were replaced with polygon features through heads-up digitizing by Dudek. For spatial digitization, the following sources and tools were used:

- 5-foot contour data (TRC 2013)
- Google Earth Pro (2015)
- ArcMap10 with the Arc2Earth Satellite Imagery from Google Earth plug-in (Google Earth 2015)
- Ranchwide vegetation mapping (TRC 2007)
- Data collected in the field (see Section 2.2)
- NHD stream data (USGS 2015)

Google Earth Pro and the Arc2Earth Satellite Imagery from Google Earth plug in were used in ArcMap to review the aerial photography and contour data at the same time. The photo signatures for land cover features were reviewed in the context of the contour data. The photo signatures are primarily defined by the following attributes exhibited on the aerial imagery: color and tone (e.g., unvegetated areas have a bright tone and may be beige in color); texture (e.g., smooth vs. rough), size, and pattern (e.g., a row crop will show an evenly spaced crops and natural area will be variable). Based upon the review of the photo signatures, the following areas were included as part of the USGS stream features: bright-toned, beige areas that follow along or adjacent to the V- or U-shaped contours that exhibited a pattern similar to that of a non-vegetated wash; and dark-toned green areas, with or without shrubs or trees, that follow along the V- or U-shaped contours and that contrast with the adjacent photo signature, which in most cases is brown or beige, potentially indicating a change in vegetation or moisture regime. Additionally, if an area was mapped as a riparian, wetlands or a wash (e.g., alluvial scrub, etc.) community (TRC 2007), the outer extent of the vegetation was included as potentially jurisdictional waters of the state.

2.4 Condition Assessment

Dudek conducted a condition assessment of the baseline ecological conditions of the state-jurisdictional resources within the proposed impact areas and Mitigation Area using the California Rapid Assessment Method (CRAM; CWMW 2013). The purpose of the condition assessment was to evaluate the functions and values of the features within the proposed project impacts and the 7,233-acre Mitigation Area to ensure that the mitigation site provides comparable functions and values relative to the proposed project impacts. The results of the condition assessment are included below as supplementary information to help demonstrate functional equivalence and characterize the waters of the state that would be impacted by the proposed project relative to the waters of the state or other USGS stream features that would be conserved in the Mitigation Area.

The condition assessment was completed using the most recent version of CRAM at the time the assessment was conducted (Version 6.1; CWMW 2013). Dudek used CRAM for this assessment because it provides a rapid, scientifically defensible, and repeatable assessment methodology that can be compared objectively across sites.

A substantial amount of work has been completed calibrating wetlands and riparian habitats throughout California. However, dry, unvegetated washes and stream courses (the predominant jurisdictional features in the Grapevine study area) are very different from the wetlands and riparian habitats where much of the CRAM calibration work has been done. Therefore, the Southern California Coastal Water Research Project (SCCWRP), which participated in the development and ongoing training for the application of CRAM, has initiated an effort funded by the Environmental Protection Agency (EPA) to study the utility and application of CRAM in desert ecosystems with these types of dry, often unvegetated, washes and stream courses. In consultation with staff at SCCWRP for prior projects with ephemeral or intermittent washes and streams, SCCWRP has recommended using the existing CRAM modules with the understanding that some of the attributes will score low relative to vegetated wetlands and riparian habitats. For the purposes of this condition assessment, CRAM provides a meaningful method for comparison because it is used to compare jurisdictional resources that share similar characteristics. CRAM is not being used in this assessment to compare functions and values to outside reference sites in the statewide database.

The CRAM divides conditions for evaluation into four main attributes: Buffer and Landscape Context, Hydrology, Physical Structure, and Biotic Structure (CWMW 2013). Letter scores ranging from A to D are assigned to each metric/submetric to reflect relative conditions. For each metric/submetric, the letter score is converted into the corresponding numeric score: A=12, B=9, C=6, and D=3. The attribute scores and overall assessment area (AA) scores have a maximum value of 100 and a minimum value of 25. The scores are intended to represent the condition of an assessment area relative to its best possible condition. However, because several of the features evaluated in this assessment are ephemeral or intermittent channels, the best possible condition is inherently lower than a maximum value of 100.

Dudek evaluated all locations where impacts to waters are proposed and selected AAs that represented the range of ecological conditions, as measured by CRAM. A similar process was completed for portions of the 7,233-acre Mitigation Area. A total of 10 AAs were selected for evaluation within the proposed project impact areas in the Grapevine Specific Plan Area and 8 AAs were selected within the Mitigation Area (Figures 5 and 6). After the condition assessment was conducted, the configuration of the Mitigation Area was modified, which left 4 AAs within the currently proposed 7,233-acre Mitigation Area. However, because the areas reviewed are similar to those in the Mitigation Area, the data collected is still useful in determining adequate mitigation.

The CRAM guidance recommends selection of assessment areas that have the range of conditions (rather than random selection) so that the full range of conditions will be evaluated. This is important here because the intent of the assessment is to compare the proposed project impact areas in the Grapevine Specific Plan Area with the Mitigation Area to demonstrate functional equivalence, rather than to compare CRAM scores to the statewide database. Therefore, the location of each assessment areas was carefully evaluated to ensure that the assessment included narrow ephemeral drainages, large intermittent washes and riparian habitat.

3 MITIGATION PLAN

This section summarizes the mitigation plan for proposed project impacts to verified and potential state-jurisdictional waters. The location for proposed mitigation is within the 7,233-acre Mitigation Area, which includes 531 acres and 144,871 linear feet of wetlands, washes, intermittent or ephemeral channels and riparian habitat. The waters of the state within the Mitigation Area that are proposed for mitigation were analyzed based upon a literature review, site visits, a desktop evaluation, and the condition assessment (CRAM) described in Section 2.

3.1 Proposed Mitigation

Table 3 summarizes the compensatory mitigation ratios and acreages along with the mitigation type (e.g., preservation, enhancement, and restoration) and habitat/stream type.

The following strategy is proposed to mitigate for proposed project impacts to delineated and potential waters of the state:

- ***Wetland Waters:*** restoration and enhancement of wetland waters of the state, which is also dominated by riparian vegetation, at the Restoration Site (see Section 3.3).***Streams***
    - ***Ephemeral streams or other USGS stream features (permanent impacts):*** preservation of ephemeral and intermittent non-wetland waters of the state within the Mitigation Area.
    - ***Intermittent streams (permanent impacts):*** preservation of intermittent non-wetland waters of the state within the Mitigation Area
    - ***Intermittent streams (temporary impacts):*** restoration of temporary impact area following completion of construction. Restoration will consist of recontouring the impacted channels to pre-existing conditions.
- ***Riparian Vegetation***: restoration and enhancement of wetland waters of the state, which is also dominated by riparian vegetation, at the Restoration Site (see Section 3.3).

Table 3
Proposed Mitigation Summary

Type	Habitat or Stream Type (Impact Type)	Impacts	Proposed Mitigation			
		(acres / lf)	*Habitat/ Stream Type*	*Restoration (acres)*	*Enhancement (acres)*	*Preservation (acres/lf)*
Wetlands	Wetland Waters of the State—Mulefat Thickets (Permanent Impacts)	0.1 / 171	Wetlands	0.1	0.1	—
Streams	Non-Wetland Waters of the State—Ephemeral (Permanent Impacts)	1.8 / 16,552	Ephemeral and/or Intermittent Streams	—	—	22.4 / 71,604
	Other UGGS Stream Features (Permanent Impacts)	20.6 / 55,052				
	Non-Wetland Waters of the State—Intermittent (Permanent Impacts)	0.4 / 811	Intermittent Streams	—	—	0.4 / 811
	Non-Wetland Waters of the State—Intermittent (Temporary Impacts)	1.6 / 215	Intermittent Streams	1.6[1] (On-Site)	—	—
Wetlands	Wetland Waters of the State—Mulefat Thickets (Permanent Impacts)	0.2 / 145	Riparian vegetation	0.2	0.2	—
	Grand Total	**24.6 / 72,945**	**—**	**1.9**	**0.3**	**22.8 / 72,415**

Note: lf = linear feet

1 Temporary impacts will be restored on site by recontouring the temporarily impacted drainage channels after completion of construction.

3.2 On-Site Restoration

Proposed temporary impacts to 1.6 acres (215 linear feet) of non-riparian and non-wetland, intermittent waters of the state at bridge crossings A and B, shown on Figure 3-B, will be restored on site. For the restoration of temporary impacts to intermittent channels, only recontouring and erosion control are proposed, as the impact sites are unvegetated and will not require planting. Restoration of temporary impacts will occur following completion of construction of the bridge crossings.

The biological resource protection measures included in Appendix A of the BTR would apply to the restoration activities. Specifically, MM-BTR-C (general construction-related avoidance and minimization measures) and MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would avoid and minimize potential construction-related impacts to resources because these measures require the project biologist to conduct a WEAP for all construction/contractor personnel to ensure compliance with the biological resource protection measures and ongoing biological construction monitoring. This includes demarcation of the construction area using highly visible materials in the field that minimize unintentional impacts to jurisdictional resources outside the designated construction area. Specifically, state-jurisdictional channels within 50 feet of the construction area would be demarcated in the field and avoided. Training and ongoing monitoring would aid in enforcing the requirements that construction must be restricted to designated areas and areas outside the designated proposed project footprint would be avoided.

The following measures, included in Appendix A of the BTR, would also avoid and minimize construction-related impacts during on-site restoration:

- MM-BTR-C (general construction-related avoidance and minimization measures) would minimize the potential effects of construction-related impacts through requiring any excess materials containing invasive plant species to be removed from the site and not included in mulch, which would help prevent future adverse effects of introduced invasive plants that can alter the composition of j streams, and requiring vehicle maintenance restrictions to avoid chemical spills and erosion control measures, which would reduce potential impacts to water quality.
- MM-BTR-DCP (preparation and implementation of a dust control plan) would minimize the effects of dust during construction, such as impacts to riparian vegetation or water resources, by implementation of a dust control plan requiring that construction-related dust is suppressed in compliance with the San Joaquin Valley Air Pollution Control District Regulation VIII.

- MM-BTR-PCR (compliance with weed and pest control regulations), which limits weed and pest control compounds that could indirectly affect stream or other biological through inadvertent removal of vegetation or contamination of water resources.
- MM-BTR-R (restoration of temporary impacts with non-invasive species in uplands) would help prevent future adverse effects associated with leaving bare ground, such as increased dust and erosion, and would help prevent adverse effects of invasive plant species that may alter the composition of streams if introduced during restoration or allowed to passively colonize the area post-construction.
- MM-BTR-T (environmental awareness training, biological monitoring, and compliance) would minimize the potential indirect construction-related impacts by requiring all construction/contractor personnel to attend WEAP training, which would explain each of the construction-related requirements, and by conducting monitoring during construction activities to ensure construction/contractor personnel are complying with these requirements. The WEAP training, in addition to reinforcing the requirements of the construction-related measures through monitoring and compliance reporting, aids in avoiding and minimizing indirect impacts.
- MM-BTR-WQ (implement measures included in the WQTR) would require erosion and sediment control BMPs to be implemented during construction that would avoid and minimize the potential indirect effects that changes in hydrology and water quality may have on jurisdictional streams. More specifically, the proposed project would comply with the requirements of the statewide Construction General Permit for discharges from construction sites, including determination of the proposed project risk level and development of a SWPPP tailored to address the specified risk level. The SWPPP would describe BMPs to be implemented to address each phase of construction, including erosion controls, sediment controls, waste and materials management, non-stormwater management, and training and education. The SWPPP would also detail planned inspections, maintenance, monitoring, and sampling practices to be implemented before and after storm events, as well as routine site inspections, BMP maintenance, and monitoring of non-visible pollutants in the case of a spill or leak.

3.3 Off-Site Preservation

The mitigation approach presented in this CMP is to provide a greater quantity and higher functioning state-jurisdictional resources than those that will be impacted by the proposed project. The quantity (linear feet and acreage) of preserved resources is much higher compared to the impacted resources at the proposed project as documented in Table 3. This CMP also includes an analysis of the functions and services of the impacted resources relative to those that will be preserved to demonstrate functional equivalency. The functional equivalency results based upon the condition assessment of the Grapevine Specific Plan Area and the 7,233-acre Mitigation Area is described in Section 3.3.1, and more specific information on the selection of the preservation sites is provided in Section 3.3.2.

3.3.1 Off-Site Preservation Mitigation

The Mitigation Area includes 530.6 acres and 144,871 linear feet of stream channels, riparian or wetlands including 46.1 acres or 9,397 linear feet of riparian/wetlands, 439.4 acres or 28,388 linear feet of wash (i.e., alluvial scrub), 0.4 acre or 6,051 linear feet of intermittent stream channels, 34.4 acres or 84,671 linear feet of ephemeral streams, and 10.3 acres or 16,363 linear feet of USGS stream features, which is greater than the mitigation required for the proposed project. As mentioned, the analysis of impacts to waters of the state is conservative and the maximum amount preservation required is 22.8 acres or 72,415 linear feet, including 0.4 acre or 6,051 linear feet of intermittent stream channel and 22.4 acre or 71,604 linear feet of ephemeral stream channel. In sum, the Mitigation Area provides the required preservation and an excess of 507.8 acres and 72,456 linear feet of waters of the state or potential waters of the state. Table 4 provides a summary of the stream channels, wetland and riparian habitats present within the Mitigation Area and these resources are shown in Figures 4 and 6. Photos of these resources in the Mitigation Area are provided in Figures 8A and 8B.

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Table 4
Summary of Preserved Stream Channels, Riparian Habitat or Wetlands within the Mitigation Area

	Mitigation Area				Preservation Required		Excess Mitigation	
	Waters of the State or Potential Waters of the State	*Vegetation Community*	*Acres*	*Linear Feet*	*Acres*	*Linear Feet*		
Riparian/Wetland	Riparian/Wetland	Cottonwood/Willow/Riparian	26.3	3,393	—	—	26.3	3,393
		Riparian/Wetland	4.0	2,504	—	—	4.0	2,504
		Wetland	15.8	3,500	—	—	15.8	3,500
		Riparian/Wetland Subtotal	*46.1*	*9,397*	—	—	*46.1*	*9,397*
Streams	Wash	Alluvial Scrub	439.4	28,388	—	—	439.4	28,388
	Intermittent Stream Channel	N/A	0.4	6,051	0.4	811	—	5,240
	Ephemeral Stream Channel	N/A	34.4	84,671	22.4	71,604	22.3	29,430
	USGS Stream Features	N/A	10.3	16,363				
		Streams Subtotal	*484.5*	*135,473*	*22.8*	*72,415*	*461.7*	*63,058*
Grand Total			**530.6**	**144,871**	**22.8**	**72,415**	**507.8**	**72,456**

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3.3.2 Evaluation of Functional Equivalency

Dudek first compared the environmental setting for the 7,233-acre Mitigation Area and the 8,010-acre Grapevine Specific Plan Area. A summary of the environmental setting of these two locations is provided in Table 5. More specifically, both sites have similar topography and are located in the same hydrologic unit. The vegetation communities are also similar with riparian scrubs and woodlands. The Mitigation Area contains alluvial scrub vegetation and more clay soils whereas the washes on the Grapevine Specific Plan Area have little vegetation, except for tamarisk, and the soils include are more sand and loam type soils. The elevations are approximately the same with the Mitigation Area being slightly lower in elevation.

Table 5
Comparison of Environmental Setting

Environmental Setting Factor	Grapevine Specific Plan Area	Grapevine Off-Site Mitigation Area
Topography	Foothills and portions of the San Joaquin Valley floor	Foothills and portions of the San Joaquin Valley floor
Hydrologic Setting	Tulare Lake Hydrologic Basin, in the South Valley Floor Hydrologic Unit, including portions of the Tejon Creek, Arvin-Wheeler Ridge, and San Emigdio hydrologic areas (HA , 556.20, 557.30, and 556.30)	Tulare Lake Hydrologic Basin in the South Valley Floor Hydrologic Unit, including portions of the Arvin Wheeler Ridge hydrologic areas (HA 557.30)
Riparian Vegetation Communities or Other Features	Riparian Scrub/Marsh • mulefat thickets • red willow thickets • sandbar willow thickets • tamarisk thickets • Baltic and Mexican rush marshes Riparian Woodland • Fremont cottonwood forest	Riparian Scrub/Scrub • alluvial scrub • mulefat thickets • willow thickets • tamarisk thickets Riparian Woodland • cottonwood/willow riparian
Elevations	898–2,186 feet above mean sea level	412–1,432 feet above mean sea level
Soils (USDA 2007, 2009)	94% sand or loam-type (e.g., gravelly loam, sandy, sandy loam, and loam) 5% clay-type (e.g., cobbly clay, gravelly sandy clay loam, and sandy clay loam)	57% sand or loam-type (i.e., fine sandy loam, gravelly loamy coarse sand, gravelly sandy loam, loamy sand, stony sandy loam, very gravelly loam, sandy, sandy loam, and loam) 43% clay-type (i.e., cobbly clay and sandy clay loam) <0.1% wet

The non-wetland ephemeral and intermittent stream channels that will be impacted by the proposed project convey stormwater flow typically only during precipitation events and for a short period after (i.e., for ephemeral channels less than 24 hours). They are generally composed of a course sandy, alluvial bottom, often with steep side banks. The other USGS stream features, which are analyzed as ephemeral, are likely historical alluvial features as the delineated features convey stormflows and have become more incised and permanent due to existing hydromodification (Geosyntec 2015). Non-wetland ephemeral and intermittent stream channels in the Mitigation Area are similar in character and function to those that will be impacted (Figures 7A–E and 8A–B). The ephemeral and intermittent stream channels provide storm flow conveyance, surface water storage, subsurface water storage, and moderation of groundwater flow or discharge. However, because the channels are mostly unvegetated, they provide very minimal biotic functions and values for plants and wildlife. These qualitative observations are consistent with the results of the condition assessment using CRAM. A comparative summary of the results of the condition assessment of the 8,010-acre Grapevine Specific Plan Area and the overall 7,233-acre Mitigation Area are provided in Table 6. Detailed results of the condition assessment are in Appendix A of this CMP.

Table 6
Comparative Summary of Condition Assessment Scores

Attribute	Minimum Score		Maximum Score		Average	
	Impact Sites	*7,233-acre Mitigation Area*	*Impact Sites*	*7,233-acre Mitigation Areas*	*Impact Sites*	*7,233-acre Mitigation Area*
Buffer and Landscape Context	36	75	75	93	63	85
Hydrology	75	92	92	92	83	92
Physical Structure	25	38	63	63	46	53
Biotic Structure	17	25	28	39	27	32
Overall AA Score	**45**	**57**	**61**	**76**	**55**	**65**

As illustrated by the scores in Table 6, the conclusions from the condition assessment are that the wetlands and waters within the Mitigation Area provide greater ecologic functions when compared to the waters that will be impacted by the proposed project. On average, all attributes scored higher in the Mitigation Area compared to the proposed project impact sites. Specifically, the Mitigation Area drainages had slightly higher functions and values related to greater buffer conditions, more physical patch types, and an increased biotic structure (e.g., plant layers and horizontal interspersion). These results support the proposal for using the wetlands and waters within the selected Mitigation Area as mitigation for proposed project impacts to wetlands and waters.

3.3.3 Ranch-Wide Management of Preservation Areas

The Mitigation Area will be managed in accordance with best management practices (BMPs) consistent with the Ranchwide Agreement (TRC et al. 2008), including limitations on water use, protection of riparian areas, and other resource stewardship standards. The Ranchwide Agreement BMPs support the goal of maximizing protection of native biodiversity and ecosystem values while preserving the Ranch uses (TRC et al. 2008). Implementation of the BMPs will help protect conservation values of the off-site Mitigation Area.

3.4 Off-Site Enhancement and Restoration

The proposed site location for enhancement and restoration (referred to collectively as the "Restoration and Enhancement Site") is 0.6 acre (978 linear feet) located on a lower reach of Tunis Creek in the off-site Mitigation Area (Figure 9). The proposed Restoration and Enhancement Site is located on an intermittent channel that currently supports a black (Goodding's) willow (*Salix gooddingii*) thicket and disturbed non-native grassland.

3.4.1 Enhancement Approach

The proposed Restoration and Enhancement Site, and the area surrounding it, has been subject to prolonged disturbance from grazing and ranching activities. While the Ranchwide Agreement allows grazing, grazing, in this case, would not be consistent with the restoration and enhancement goals for the proposed Restoration and Enhancement Site described in this CMP. Therefore, grazing exclusion will be a stipulated provision for the proposed Restoration and Enhancement Site, and it will form the basis for enhancement. Grazing exclusion will allow the vegetation within the Restoration and Enhancement Site to recover from repeated disturbance (grazing, trampling, wallowing, compaction) caused by grazing animals. Additional enhancement measures will include invasive species control, planting, and seeding to promote a conversion of a non-native understory and adjacent floodplain margins and stream banks to native habitat.

The existing vegetation communities to be enhanced are dominated by black willow, with occasional mulefat (*Baccharis salicifolia*), in the tree and shrub canopy. The understory is dominated by non-native grasses and forbs, including brome grasses (*Bromus* spp.), wild oat (*Avena* spp.), mustard (*Hirschfeldia incana*), rabbit's-foot grass (*Polypogon monspeliensis*), and tocalote (*Centaurea melitensis*). Enhancement efforts on the Restoration and Enhancement Site (Figure 9) would focus on controlling these non-native species and establishing native understory species appropriate for the site conditions, such as beardless wildrye (*Elymus triticoides*), Douglas' sagewort (*Artemisia douglasiana*), salt grass (*Distichlis spicata*), purple needlegrass (*Stipa pulchra*), Menzies' goldenbush (*Isocoma menziesii*), bladderpod spiderflower (*Isomeris* *arborea*), seep monkeyflower (*Mimulus guttatus*), Baltic wire rush (*Juncus balticus*), and California croton (*Croton californicus*). Specific actions to implement enhancement are provided in Section 4.

3.4.2 Restoration Approach

Wetland and riparian habitat that will be impacted by the proposed project includes mulefat thickets and tamarisk thickets, respectively. Therefore, the Restoration and Enhancement Site was selected as a location where the same functions and values that would be lost by the proposed project could be restored within an area to be preserved. Therefore, the target habitat for the Restoration and Enhancement Site will be mulefat thickets mixed with some willow and cottonwood trees. The understory will be planted with the same species as the adjacent enhancement area described previously.

The restoration area at the proposed Restoration and Enhancement Site is adjacent to, and immediately downstream from, the enhancement area composed of existing black willow thickets (Figure 9). The restoration area is highly disturbed from past ranching operations, with eroded banks and non-native vegetation (Figures 10A–C). The approach to restoring this site will be to stabilize the channel banks and improve floodplain connectivity with some minor contouring, and planting and seeding with native species appropriate for the site. Specific actions to implement restoration are provided in Section 4.

3.4.3 Functions and Values

The impact site classified as "wetland waters of the state (Cattle Creek; CC-2)" consists of mulefat thickets. The mulefat is growing in the bottom of the channel, with the understory and banks composed of non-native vegetation (predominantly grasses and mustards). The channel is highly disturbed from ranching operations, and the mulefat is in a state of decline from the drought conditions in 2013 and 2014 (Figure 7D, Photo 7). The channel provides the typical functions and values expected in vegetated intermittent channels, such as flood storage and flood flow modification, nutrient retention and transformation, groundwater recharge, sediment trapping, toxicant trapping, wildlife habitat, and aquatic habitat. However, these functions and values are expected to be low, particularly for physical and biotic structure components. In the condition assessment, this area received an overall assessment area score of 58, with the lowest scores for physical attributes (50) and biotic attributes (25) (see AA-GV7). This is primarily due to the lack of structural patch richness, low species richness, low plant community interspersion, and predominance of invasive plants.

The impact site classified as "riparian (Grapevine Creek)" supports tamarisk thickets. The section of the channel that will be impacted is sparsely vegetated, but tamarisk is growing intermittently within and along the channel banks. The channel is highly disturbed from ranching operations, particularly immediately upstream and downstream of where it crosses Edmonston Pumping Plant Road. The channel provides the typical functions and values expected in vegetated intermittent channels similar to those described for CC-2 above, but these functions and values are considered to be low, particularly for physical and biotic components. The low physical and biotic functions are due to the sparse vegetation, low species richness, and high plant invasiveness.

The proposed Restoration and Enhancement Site supports a stand of black willow in the enhancement area and non-native grassland in the restoration area. The functions and values of the Restoration and Enhancement Site were evaluated by Dudek during the condition assessment (AA-P3). The assessment area had an overall score of 67, with relatively high scores for Buffer and Landscape Context and Hydrology, and low scores for Physical and Biotic Structure. The low physical and biotic functions are due to low patch richness, low species richness, low plant community interspersion, and predominance of invasive plants (in the understory).

The proposed approach to enhancement and restoration is expected to improve the functions and values at the Restoration and Enhancement Site by restoring floodplain connectivity, improving species richness and plant community interspersion through seeding and planting, and reducing the presence of invasive plant species through weed control.

3.4.4 Existing Land Use and Physical Conditions

Current land uses on the Mitigation Area include cattle grazing and the area is generally reserved under the Ranchwide Agreement as a Designated Use Area (Designated Oil and Gas Area). The Ranchwide Agreement allows certain activities within these Designated Use Areas to continue, as long as the appropriate provisions related to the Designated Use Areas are incorporated. These provisions will include specific BMPs stipulated in the Ranchwide Agreement.

The proposed Restoration and Enhancement Site is at an elevation of approximately 970 feet above mean sea level. It is located within the South Valley Floor watershed (Figure 11). The site is on a lower branch of Tunis Creek that conveys water from the mountains and foothills to the southeast towards the San Joaquin basin. The intermittent channel connects downstream to a small, seasonal reservoir, which is located adjacent to agricultural fields and Laval Road.

3.4.5 Hydrology and Precipitation

The average annual precipitation is 11.68 inches (WRCC 2013). The majority of the rainfall (precipitation over 1 inch/month) during the year occurs between November and April, the typical rainy season for this region. The summer months are virtually rainless with average monthly rainfalls ranging from only 0.10–0.02 inch per month (WRCC 2013).

The Restoration and Enhancement Site is located on an intermittent channel. Based on the presence of black willow trees and rabbit's-foot grass (both facultative wetland species), the channel likely supports surface flows or seasonal ponding during a portion of the year. However, immediately upstream of the black willow thicket, the channel becomes a swale, with no physical evidence of recent surface flow or other fluvial indicators. The bottom of the swale upstream of the site is vegetated with non-native annual grasses. Surface flows may help support establishment of the target vegetation communities, but it is expected that subsurface flows and groundwater will provide the primary water source to support the development and sustainability of the target habitat.

3.4.6 Rationale for Expecting Mitigation Success

The location of the Restoration and Enhancement Site is within the Mitigation Area and will not be subject to development pressures. While the Restoration and Enhancement Site is in a Designated Oil and Gas Area, this area would not be subject to impacts associated with these designated uses. Further, the site will be fenced to exclude cattle and feral pigs to minimize disturbance during the restoration process.

The vegetation communities proposed for the Restoration and Enhancement Site are the same as those that already occur in the vicinity. Where feasible, vegetation communities are designed to occur adjacent to similar or identical vegetation communities already present to provide contiguity of habitat. Planting palettes for each of the vegetation communities will include native species that are adapted to the site conditions. Contiguity of habitats and use of adapted, native species will improve the likelihood of successful vegetation establishment.

The non-native invasive species present on site are ubiquitous in the area and will require a sustained effort to effectively control during the restoration process. Therefore, the design of the Restoration and Enhancement Site includes a 50-foot-wide weed control buffer surrounding the Restoration Site (inside the exclusionary fencing). The Restoration and Enhancement Site will be maintained for a 5-year maintenance and monitoring period, so multiple follow-up visits will occur to address recurrence of invasive plant species. The suppression of invasive weeds over the extended maintenance period will allow native vegetation to become better established throughout the area because there will be less competition for water and nutrients. Improved establishment of native vegetation surrounding the Restoration and Enhancement Site will increase resistance to future pressure from invasive species and will improve the long-term stability of the native communities established on site.

These factors, including exclusionary fencing for cattle and feral pigs, appropriately designed locations of target vegetation communities, the use of regionally appropriate native species, and the invasive species management program, combine to provide sufficient rationale to expect mitigation success.

4 IMPLEMENTATION PLAN FOR OFF-SITE MITIGATION

A final Implementation Plan for the Restoration and Enhancement Site will be developed following the approval of the CMP and will include the following components: schedule, site preparation, grading/contouring, erosion control, exclusionary fencing, container plants, seed mix, and supplemental watering. A generalized summary of implementation components is described below for the Restoration and Enhancement Site.

4.1 Schedule

A preliminary implementation schedule is shown in Table 7. Seeding and planting are targeted for late fall or early winter to take advantage of cooler temperatures and seasonal precipitation.

Table 7
Preliminary Enhancement and Restoration Site Implementation Schedule

Activity	Date
Site preparation	August–September
Grading and contouring, exclusionary fencing, erosion control	September–October
Weed reduction period (i.e., grow and kill cycles)	November
Container plant installation	November–December
Seed application	November–December

4.2 Site Preparation

The Restoration and Enhancement Site will be fenced and posted with signage indicating that habitat restoration is in progress. Orange construction fencing will temporarily identify the limits of restoration. This orange fencing will remain in place and be maintained by the Restoration Contractor through the first growing season.

4.3 Grading and Contouring

The proposed Restoration and Enhancement Site will require some minor grading and contouring in order to restore and stabilize eroded channel side slopes and restore floodplain connectivity. All grading and contouring will occur outside of jurisdictional waters. The goal of the grading and contouring work is to repair banks sloughs and reduce slope steepness in order to stabilize side banks and create a better hydrologic connection between the channel and the floodplain. An additional goal of the contouring will be to improve topographic heterogeneity through the addition of floodplain benching. The established floodplain benches will be contoured to provide a surface for planting appropriate riparian vegetation.

4.4 Erosion Control

Erosion and sediment control materials, such as silt fences, fiber rolls, fiber blankets, or hay bales, will be installed on the graded and contoured channel side slopes to help stabilize the area for planting. The erosion and sediment control materials will be maintained by the Restoration Contractor through the first year, or until they are no longer needed to stabilize the channel side slopes.

4.5 Weed Reduction Period

After the contouring and installation of erosion control materials, initial weed control will be conducted by implementing a weed reduction period (i.e., grow-kill cycles). This will consist of allowing time for weeds to grow, and then killing them (typically with a broad-spectrum herbicide) prior to applying the native seed mix. This will reduce the weed seed bank and reduce weed maintenance efforts after the native seed mix is applied. The weed control period will be conducted during the rainy season, and thus the amount of time to allow the weeds to grow will depend on weather conditions. If there has been adequate rainfall, weeds should begin to grow within 1–2 weeks and could be killed within 2–4 weeks afterward. The timing of the weed control will be evaluated by the Habitat Restoration Specialist to ensure that the treatments are timed appropriately and that native seedlings are recognized by the Restoration Contractor and avoided during implementation.

4.6 Exclusionary Fencing

Exclusionary fencing in the proposed Restoration and Enhancement Site will be designed and trenched in to restrict both cattle and feral pigs from entering the restoration area during the revegetation and restoration process. The fencing will consist of field fencing, such as high-tensile woven wire fence, to exclude livestock and wild pigs. The fencing parameters shall be such that it does not prevent access by wildlife (e.g., contains openings large enough for small mammals and is short enough for deer to jump over). This fencing will be installed as permanent fencing and will be maintained by the Restoration Contractor through the 5-year maintenance and monitoring period.

4.7 Container Plant Installation

Container plants for the Restoration and Enhancement Site are provided in Table 8. This plant palette may be refined during the preparation of final planting plans. The quantity of container plants planted on site will be slightly greater than the quantity necessary to achieve the target habitat types to account for some plant mortality as the habitat develops.

The Habitat Restoration Specialist will check container plants for viability and general health upon their arrival at the Restoration and Enhancement Site. Plant materials not meeting acceptable standards will be rejected. The Habitat Restoration Specialist will confirm plant species and quantities after delivery, and locations for installation will be marked on site temporarily with pin flags.

Standard planting procedures will be employed for installing container plants. Holes will be dug at three times the diameter of the rootball of the plant and the same depth as the container. Holes will be filled with water and allowed to drain immediately prior to planting. Backfill soil containing amendments (as directed by the Habitat Restoration Specialist) will be placed in every planting hole following soaking; container plants will be installed so that the root ball is entirely below grade, except for the oak trees, which will be planted with the rootball about 1 inch above grade. Some woody riparian plant species specified by the Habitat Restoration Specialist will be planted into the soil slightly deeper than standard, approximately 2 to 4 inches above the root collar of the plant. This additional planted depth will help promote deep rooting and ensure sufficient rooting strength during seasonal flows after winter storm events.

Mulch will be applied around container plants. Mulch will be applied in a diameter of 2 feet or 1.5 times the drip line, whichever is greater. Mulch will be 3 to 4 inches deep.

Table 8
Restoration and Enhancement Site Container Plant Palette

Scientific Name	Common Name	Size	Spacing (feet on center)
Baccharis salicifolia	mulefat	1 gallon	5
Populus fremontii	Fremont cottonwood	1 gallon	10
Quercus agrifolia	Coast live oak	1 gallon	12
Salix exigua	narrow-leaf willow	1 gallon	3
Salix gooddingii	black (or Goodding's) willow	1 gallon	6
Salix laevigata	red willow	1 gallon	5
Sambucus nigra ssp. *caerulea*	blue elderberry	1 gallon	5

4.8 Seed Mix Application

After container plant installation, the Restoration and Enhancement Site will be seeded with the specified seed mix. The recommended seed mix for the Restoration and Enhancement Site is provided in Table 9. The seed mix components or application rates may be refined during the preparation of final planting plans.

The Habitat Restoration Specialist will inspect and approve labels for the seed mix prior to application. The method of seed application will be determined during preparation of the final restoration plan but may include hydroseeding or hand seeding. If hydroseeded, the hydromulch shall contain the specified seed mix at the prescribed rate per acre, virgin wood fiber mulch, starter fertilizer, agricultural gypsum, and a commercial guar gum-based soil binder. If seed is applied by hand, it will be raked into the soil with a seed topper applied over the surface. Specific details about the seed mix application will be determined upon completion of the final restoration plan.

Table 9
Restoration and Enhancement Site Seed Mix

Scientific Name	Common Name	Percent PLS	Pounds per Acre
Artemisia douglasiana	Douglas' sagewort	5	2
Artemisia dracunculus	tarragon	3	2
Atriplex canescens	Four-wing saltbush	36	1
Atriplex lentiformis	Quail bush	45	1
Croton californicus	California croton	18	2
Distichlis spicata	Salt grass	48	6
Elymus glaucus	blue wildrye	72	2
Isocoma menziesii	Menzies' goldenbush	12	2
Isomeris arborea	bladderpod spiderflower	60	3
Juncus balticus	Baltic wire rush	60	1
Leymus condensatus	giant wild rye	70	2
Leymus triticoides	beardless wildrye	72	1
Mimulus guttatus	Seep monkeyflower	10	1
Stipa pulchra	Purple needlegrass	42	4
		Total	**30**

4.9 Supplemental Watering

Due to the remote location, no irrigation system is proposed for the Restoration and Enhancement Site. However, because the site is being planted with container plants, supplemental watering after planting will be necessary to help the plants become established. The container plants will be watered by hand, with water from a water truck or portable water tank. The frequency of supplemental watering depends on rainfall, but supplemental watering will likely be necessary through the first year. Additional alternative watering methods may be used to decrease watering trips, such as Dry Water, deep watering tubes, and/or moisture-retention polymers (e.g., Terra-Sorb Hydrogel).

5 MAINTENANCE PROGRAM MITIGATION

Because the goal of the Restoration and Enhancement Site in this CMP is to reestablish natural vegetation communities that can support themselves with little or no maintenance, the primary effort of the maintenance plan is concentrated in the first few seasons of plant growth following the restoration and enhancement efforts, when weeds can easily out-compete native plants. In general, target weed species include those on the California Invasive Plant Council California Invasive Plant Inventory (Cal-IPC 2014). The intensity of the maintenance activity is expected to subside each year as the native plant materials become more established and as local competition from non-native plants for resources is minimized through control of non-native plants.

Maintenance activities will be conducted concurrently with installation of the container plant and seed materials in the restoration areas and will continue throughout the 5-year maintenance and monitoring period. The frequency of maintenance visits is expected to diminish during the 5-year maintenance period but is expected to range from monthly in the first 2 years to quarterly in years 3 through 5.

5.1 Weed Control

Target weed species include those on the California Invasive Plant Council California Invasive Plant Inventory (Cal-IPC 2014). Additional species beyond those listed in the Cal-IPC publication may require control. The Habitat Restoration Specialist will determine any additional species requiring control. Based on the discretion of the Habitat Restoration Specialist, some innocuous, naturalized annual weeds that are common to the area but do not normally out-compete or invade native habitats may be tolerated.

A combination of physical and herbicide control will be used to control weeds. Physical removal of non-native plants includes removing the aboveground portions of the plant (hand pulling, hoeing, weed trimming), preferably with the roots. Physical control is best used for annual species with shallow root systems that do not regenerate from root fragments. If physical control occurs after seed-set, then seed heads will be cut off, bagged, and removed from the site.

Herbicides may be used for the invasive exotic plant species that have root systems that are impractical to remove or that regenerate from small root fragments. Any herbicide use should be conducted using methods that minimize effects to adjacent/desirable native species, such as brush application or spot spraying. Only herbicides registered for aquatic use can legally be used in locations where they might come in contact with open water.

Follow-up control measures will likely be necessary for invasive plant species with extensive root systems that cannot usually be killed with one herbicide application. Follow-up herbicide treatment should be done at the biologically appropriate time when the recovering plants are still relatively small and before they have time to regain strength and vigor.

5.2 Trash Removal

Trash will be removed from the Restoration and Enhancement Site by hand during maintenance visits. Trash consists of all man-made materials, equipment, or debris within the restoration and enhancement. Trash and inorganic debris washed or blown onto the mitigation sites will be removed regularly. Deadwood and leaf litter of native trees and shrubs will not be removed. Downed logs and leaf litter provide valuable micro-habitats for invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of deadwood and leaf litter is essential for the replenishment of soil nutrients and minerals.

5.3 Supplemental Watering

Due to the unpredictable nature of Southern California rainy seasons, and to facilitate container plant establishment, supplemental watering will be conducted. Supplemental watering will only be used during plant establishment since the goal of the restoration effort is to re-establish self-sustaining plant communities. An irrigation system is not proposed to support plant establishment due to the isolated location of the Restoration and Enhancement Site. Supplemental watering will be conducted using a water truck or portable water tank and will be accomplished in a manner that does not cause soil erosion.

As an alternative to, or to augment, supplemental watering, DriWater, deep watering pipes, or moisture retention polymers may be used to support container plant establishment.

5.4 Fence Maintenance

The exclusionary fencing at the Restoration and Enhancement Site will require regular maintenance to ensure that it is intact and effectively restricting access by cattle and feral pigs. Fence breaks will be repaired immediately after discovery. Fencing sections that begin to sag will be tightened during regular maintenance visits. The sections of the fencing that cross the flow path of the channel will be inspected during each site visit. All wracking and debris accumulated at the fence crossings shall be removed during each maintenance visit.

5.5 Pest Management

Invertebrate pests, such as snails, slugs, insects, mites, bores, etc., are not expected to be a problem in the Restoration and Enhancement Site, but may be controlled by the Restoration Contractor, if necessary. Similarly, small vertebrate pests, such as gophers, ground squirrels, rabbits, rats, voles, etc., may become a problem and may require control or deterrence by the

Restoration Contractor, if necessary. Whether or not to implement control or deterrence of invertebrate and/or small vertebrate pests will be determined by the Habitat Restoration Specialist on a case-by-case basis and will be based on an assessment of levels of plant damage and mortality. Vertebrate pests classified as non-game mammals by CDFW may be taken at any time, but game mammals have certain restrictions that must be met before they can be controlled, and a hunting license and/or scientific collecting permit may be required. Plant diseases could become a problem during the plant establishment period but can generally be prevented or controlled by cultural measures.

Pest control will be conducted following all applicable laws, regulations, and safety precautions. Only live trappings and/or in-burrow traps will be used as rodent control if it becomes necessary (no rodenticide poisons shall be used). Should the Restoration Contractor require specific pest control recommendations, he or she shall consult a licensed pest control adviser. The Restoration Contractor shall provide reports of all pest control measures implemented at the site. Copies of any written recommendations shall also be provided.

5.6 Plant Maintenance

Installation of container plants at the Restoration and Enhancement Site will help ensure that the target habitat types are achieved. Therefore, container plants will be maintained by the contractor to aid establishment. Supplemental water will be provided to the container plants during the early establishment period (1–2 years). Dead container plants will be replaced in-kind unless the Habitat Restoration Specialist recommends an alternative species appropriate for the target habitat and site conditions. Establishment of container plants will help meet the performance standards and success criteria outlined in Section 6.1. Therefore, the Restoration Contractor will be required to adhere to plant survivorship requirements. Plant survivorship requirements apply to tree and shrub species that are planted from containers. However, natural recruitment of native tree and shrub species may be used to offset percent survivorship of planted trees and shrubs to achieve standards. Dead container plants shall be replaced at 100% in the first year, 90% in the second year, and 80% in the third through fifth years. In the fourth and fifth years, dead plant replacement will only be required if the annual success criteria (Section 6.1) are not achieved.

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6 MONITORING PROGRAM

To evaluate the success of the mitigation project relative to established success criteria, a minimum 5-year monitoring period will be implemented. Monitoring will consist of construction/installation monitoring and monitoring during the 5-year maintenance period. The mitigation project site will be monitored by the Habitat Restoration Specialist, who will then make recommendations to the Restoration Contractor to perform maintenance tasks necessary to keep the mitigation project site in compliance with performance criteria. Should the mitigation project not meet the final success criteria by the end of year 5, the monitoring period may be extended until final success criteria have been achieved.

6.1 Performance Standards and Success Criteria

Restoration and Enhancement Site performance will be measured based on annual assessments conducted during annual monitoring. Performance standards in years 1 through 4 will be used to help assess the annual progress of the Restoration and Enhancement Site and are regarded as interim mitigation project objectives designed to achieve the final goals. Fulfillment of these standards will indicate that the site is progressing toward the vegetation communities that constitute the long-term goals of this CMP. If restoration efforts fail to meet the performance standards listed in any one year, the Habitat Restoration Specialist may recommend remedial actions to be implemented (e.g., supplemental seeding, planting, changes to cultural practices) that will enhance the habitat to a level in conformance with performance standards. The yearly performance standards and final success criteria for the Restoration and Enhancement Site are identified in Table 10.

Table 10
Yearly Performance Standards and Final Success Criteria

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5 – Final Success Criteria
Species Richness	≥6	≥6	≥8	≥8	≥10
Native Vegetative Cover	≥10%	≥25%	≥40%	≥55%	≥70%*
Invasive Non-Native Plant Species	≤20%	≤15%	≤10%	≤5%	≤5%

* Total native cover, consisting of herb, shrub, and tree layers combined.

6.2 Qualitative Monitoring

Qualitative monitoring will be conducted to assess native plant vigor and development, seedling recruitment from native seed application and natural sources, soil moisture content, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/absence of non-native or invasive plant species, trash or debris accumulation, wildlife presence/absence, and mitigation project fencing. All qualitative monitoring visits to the mitigation areas will be documented with a monitoring report, which will be forwarded to the Restoration Contractor and Tejon Ranch. Any mitigation project deficiencies will be noted in the monitoring report, with accompanying recommendations for maintenance or remedial actions.

6.3 Quantitative Monitoring

Quantitative monitoring will be conducted to determine species richness, native species cover and composition, non-native species cover and composition, and container plant survival.

Quantitative monitoring will be conducted by establishing permanent vegetation transects within the Restoration and Enhancement Site at random locations at the end of year 1. These transects will be used to help determine achievement of the yearly performance standards and compliance with agency standards, and a permanent photo-documentation station will be established along each transect to record the progress of the Restoration and Enhancement Site and graphically record plant establishment over the 5-year period.

Transects will be sampled using the point-intercept method. A transect tape will be run between two posts, and vegetative intercept line will be visually projected above and below the tape at every half-meter mark. Transects may vary in length based on location, and size of the individual restoration or enhancement area. Each herb, shrub, or tree that intercepts the projected line will be recorded by species. In addition, all plant species present within the 5-meter-wide “species richness” portion of each transect will be recorded by species. All data will be used to determine total percent plant cover, percent native cover, percent non-native cover, and overall species richness. Quantitative monitoring will be conducted once annually in the summer or fall beginning in year 1 and extending through year 5 of the mitigation project. Transects will be either 25 or 50 meters long, depending on the location. The Habitat Restoration Specialist will establish transect locations.

7 REPORTING

Annual monitoring reports will be prepared and submitted during the 5-year maintenance and monitoring period. The monitoring reports will describe the existing conditions of the mitigation project areas derived from qualitative field observations and quantitative vegetation data collection. The reports will provide a comparison of annual performance standards with field conditions, identify all shortcomings of the mitigation project, and recommend remedial measures necessary for the successful completion of the restoration project. Each yearly report will provide a summary of the accumulated data. Annual reports also will include:

- A list of names, titles, and companies of persons who prepared the annual report and participated in monitoring activities
- A copy of the resource agency permits, special conditions, and subsequent letters of modification
- Prints of biological monitoring photographs, as appropriate
- Maps identifying monitoring areas, planting zones, and weed removal areas, as appropriate
- Quantitative data from transect measurements in years 1 through 5.

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8 CONTINGENCY MEASURES

If the performance standards are not met in any given year during the 5-year maintenance and monitoring period, the Habitat Restoration Specialist will prepare an analysis of the cause(s) of failure within the appropriate annual report and propose remedial action. Maintenance and monitoring obligations will continue until contingency measures are negotiated and implemented to bring the Restoration and Enhancement Site into compliance with the established performance standards or final success criteria.

Adaptive management will be implemented in the event of unforeseen or unpredictable circumstances. Due to the complexity and dynamic nature of ecosystems, as well as anticipation of unexpected events or outcomes, a flexible resource management plan is desirable. Adaptive management will include the utilization of regular qualitative assessments and rapid qualitative assessment data gathered in the field prior to and during the restoration effort to assess the health and vigor of vegetation communities within the restoration and enhancement areas. It is the intent of the adaptive management strategy in this CMP to intervene only as necessary to help ensure the conservation of the functions and values of the Restoration and Enhancement Site and to ensure that the final goals are achieved.

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9 LONG-TERM MANAGEMENT

Following successful completion of the Restoration Project, the Restoration and Enhancement Site will be managed by a qualified land manager. Long-term management is expected to be minimal but may include inspections of the site signage and fencing, evidence of disturbance, presence of trash and debris, presence of exotic species (plants and animals), and erosion, including maintenance and repair as necessary.

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10 BIOLOGICAL RESOURCES PROTECTION MEASURES

This section analyzes the potential impacts that implementation of this CMP could have on biological resources. Implementation of this CMP will comply with all applicable biological protection measures in the Grapevine Final Environmental Impact Report (EIR), particularly those in the BTR. A summary of the potential biological impacts associated with implementing this CMP is provided in this section.

No short-term or long-term impacts are anticipated in association with preservation of ephemeral and intermittent streams in the off-site Mitigation Area. Implementation of the proposed Restoration and Enhancement Site would result in temporary impacts to approximately 0.3 acre of non-native grassland (Figures 10A–C), and all grading and contouring will occur outside of jurisdictional waters of the United States and/or state. The temporary impacts would result from minor contouring and grading to repair damaged channel banks and restore floodplain functionality and enhance buffer conditions; erosion control materials will be installed, as necessary, on these graded areas. Additionally, installation of permanent exclusionary fencing will result in ground disturbance because the fencing will be trenched into the ground. There will be minor ground disturbance associated with installation of the container plants. Weed control, if herbicides were improperly used, could indirectly affect biological resources. It is not anticipated that seed mix application will impact resources. Additionally, hand-watering container plants is not likely to result in impacts because minimal amounts will be applied by hand and overwatering is unlikely.

The Kern County California Environmental Quality Act (CEQA) Implementation Document and Kern County Environmental Checklist has significance thresholds for impacts to biological resources that are listed and numbered in Section 4.1 of the BTR (Dudek 2015). Potential impacts associated with implementation of the Restoration and Enhancement Site are summarized in Table 11 by these significance thresholds and by impact type (i.e., short-term and long-term). No long-term direct impacts associated the enhancement and restoration activities would occur because the riparian areas will be restored and enhanced and wildlife movement will not be impeded by the exclusionary fencing (Table 11).

Table 11
Impact Summary by Significance Threshold

Threshold Number	Threshold Topic	Short-Term	Long-Term
Threshold Bio-1	Special-Status Species	**Potential Direct** **Potential Indirect**	**No Direct Impact** Functions and values at the Restoration and Enhancement Site will be improved. **Potential Indirect**

Table 11
Impact Summary by Significance Threshold

Threshold Number	Threshold Topic	Short-Term	Long-Term
Threshold Bio-2	Riparian Habitat/Sensitive Natural Community	**Potential Direct** **Potential Indirect**	**No Impact** Functions and values at the Restoration and Enhancement Site will be improved.
Threshold Bio-3	Section 404 Clean Water Act Resources	**No Impact** The Restoration Site does not contain waters, including wetland waters, subject to federal jurisdiction under Section 404 of the Clean Water Act.	**No Impact** The Restoration and Enhancement Site does not contain waters, including wetland waters, subject to federal jurisdiction under Section 404 of the Clean Water Act.
Threshold Bio-4	Wildlife Movement	**No Impact** Exclusionary fencing shall be such that it does not prevent access by wildlife.	**No Impact** Exclusionary fencing shall be such that it does not prevent access by wildlife.
Threshold Bio-5	Local Ordinances (i.e., Oak Trees)	**No Impact** There are no oak trees in the Restoration and Enhancement Site nor within 40 feet of the Restoration and Enhancement Site.	**No Impact** There are no oak trees in the Waters Restoration and Enhancement Site nor within 40 feet of the Restoration and Enhancement Site.
Threshold Bio-6	Habitat Conservation Plans	**No Impact** There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state Habitat Conservation Plans affecting the Restoration and Enhancement Site.	**No Impact** There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state Habitat Conservation Plans affecting the Restoration and Enhancement Site.

There is potential for short-term direct and indirect impacts and long-term indirect impacts to special-status species, such as San Joaquin kit fox (*Vulpes macrotis mutica*), burrowing owl (*Athene cunicularia*), coast horned lizard (*Phrynosoma blainvillii*), blunt-nosed leopard lizard (*Gambelia sila*), western spadefoot (*Spea hammondii*), American badger (*Taxidea taxus*), and San Joaquin whipsnake (*Masticophis flagellum ruddocki*), to occur during implementation of the restoration and enhancement project. Additionally, it is possible that short-term direct and indirect impacts to the adjacent stream channel and riparian vegetation could occur during implementation of the restoration and enhancement project. The short-term impacts associated with implementation of the Restoration and Enhancement Site are similar in nature to the construction-related impacts described in the BTR, but at a much smaller scale due to the type of grading and small area being affected (0.3 acre).

All potential impacts will be mitigated to a less-than-significant level through implementation of the mitigation measures in the BTR, as more specifically discussed below.

Short-Term (Construction-Related) Direct Impacts

Absent the recommended biological resource protection measures, potential construction-related direct impacts to special-status species and adjacent streams and riparian vegetation could also result from unintentional clearing, trampling, or grading outside of the 0.3-acre grading and recontouring area during implementation of restoration/enhancement. Although the chances of this happening are low (given the small work area), accidental clearing, trampling, or grading outside designated grading and recontouring area could occur during restoration activities for various reasons, including incorrect construction grading plans, human error in interpreting grading plans, human error or accidents in operating construction equipment, and misunderstandings or disregard by construction personnel in adhering to construction plan requirements, including avoidance of natural resources. These potential short-term direct impacts could be significant in the absence of biological resources protection measures.

Potential short-term direct impacts to special-status species, streams, and riparian vegetation will be avoided through implementation of MM-BTR-C (general construction-related avoidance and minimization measures), MM-BTR-T (environmental awareness training, biological monitoring, and compliance), and for some wildlife species MM-BTR-PCA (pre-construction surveys and avoidance and minimization measures). Pre-construction surveys for bat roost and Swainson's hawk (*Buteo swainsoni*) are not required due to lack of suitable habitat in and adjacent to the impact area. If applicable, only clearance surveys would be required for blunt-nosed leopard lizard. All recommended biological resource protection measures are described in full in Appendix A of the BTR.

Short-Term (Construction-Related) Indirect Impacts

Potential short-term indirect impacts associated with implementation of the Restoration and Enhancement Site to special-status species and adjacent streams and riparian vegetation that could be significant in the absence of biological resource protection measures include the following: (1) construction-related noise and vibration; (2) an increase in urban-related species that may be attracted to trash and garbage, including urban-related mesopredators (e.g., red fox, raccoons, skunks, opossums) and pets; (3) increased human activity and potential harassment of wildlife by construction workers; (4) increased wildlife/vehicle and/or fence collisions; (5) release of chemical pollutants such as oils and grease from vehicles and pesticides, including herbicides, that can harm individuals or reduce their prey; (6) degradation of water quality; (7) introduction of invasive plant species that may alter the composition of the community; and (8) the generation of fugitive dust. These potential short-term indirect impacts could be significant, depending on their severity and the species affected.

Other potential short-term impacts often associated with large-scale construction projects, such as artificial lighting and human activity effects on the behavior of nocturnal species, will not occur because there will be no nighttime construction. Additionally, future adverse effects associated with leaving bare ground after the temporary removal of vegetation, such as increased dust and erosion, will not occur because areas will be seeded and planted as described in Section 4 of this CMP.

Potential short-term indirect impacts will be less than significant with incorporation of biological resource protection measures. Explanations for how each protection measure generally avoids and minimizes potential construction-related indirect impacts are provided in detail in Sections 4.5.1.2 and 4.5.2.2 of the BTR. Potential short-term indirect impacts will be avoided and minimized through implementation of the following measures:

1. MM-BTR-C (general construction-related avoidance and minimization measures) will minimize the potential effects of construction-related worker and vehicle impacts, including vibration and fence collisions, by limiting work to designated construction areas; requiring any excess materials containing invasive plant species be removed from the site and not included in mulch; requiring animal-resistant trash receptacles to avoid attracting urban-related species; prohibiting litter and pets on construction sites; limiting vehicle speeds to 15 miles per hour (mph) or less to avoid collisions with wildlife during ingress/egress to the work site; and on-site vehicle maintenance restrictions to avoid chemical spills.
2. MM-BTR-PCR (compliance with weed and pest control regulations) will minimize the effects of pesticides on special-status wildlife by following restrictions mandated by the U.S. EPA and California Department of Pesticide Regulation.
3. MM-BTR-WQ (implement measures included in WQTR) will require the implementation of BMPs to protect surface water quality from pollutants, erosion, including wind erosion (dust), and sedimentation that could indirectly affect resources.
4. MM-BTR-T (environmental awareness training, biological monitoring, and compliance) will minimize the potential effects of construction-related impacts by requiring all construction/contractor personnel to attend Worker Environmental Awareness Program (WEAP) training, conduct biological monitoring during construction activities, and require compliance with all environmental documents and permits, including the measures listed above in items 1–3.

Potential short-term, construction-related indirect impacts to special-status species and adjacent streams and riparian habitat associated with the implementation of this CMP would be less than significant with incorporation of MM-BTR-C, MM-BTR-PCR, MM-BTR-WQ, and MM-BTR-T.

Long-Term (Operations-Related) Direct Impacts

There are no known occurrences of special-status plants or wildlife at the Restoration and Enhancement Site (Tejon Ranch Conservancy 2014a, 2014b). The temporary loss of 0.3 acre of non-native grassland would not have a significant effect on special-status wildlife species because it is small disturbed area that will be restored and enhanced. While no focused surveys for special-status plants were conducted, the potential for special-status plant to occur is low due to the level of disturbance on the Restoration and Enhancement Site and the lack of known occurrences (Tejon Ranch Conservancy 2014a, 2014b). Additionally, direct impacts during implementation of the Restoration and Enhancement Site to special-status wildlife will be avoided through MM-BTR-PCA.

Long-Term (Operations-Related) Indirect Impacts

The Argentine ant (*Linepithema humile*) has demonstrated negative impacts on native wildlife, such as Blainville's horned lizard, which predominantly feeds on native harvester ants that are displaced by Argentine ants (Suarez and Case 2002), and may affect seed dispersers and pollinators of native plants due to its impact on the native invertebrate community. Argentine ants may be introduced to a site through the planting on landscape plants. The implementation of the Restoration and Enhancement Site may result in long-term significant indirect impacts to the off-site Mitigation Area through the introduction of Argentine ants.

MM-BTR-LAND (restrictions on landscaping palettes and plants) requires the rejection of any container plants to be installed within 100 feet of open space containing Argentine ants, which may prey on young blunt-nosed leopard lizards and which compete with and prey on native harvester ants—the horned lizard's primary food source—and also attack horned lizards directly. The Habitat Restoration Specialist would inspect the container plants prior to installation and reject them if Argentine Ants are present.

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11 REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetland Delineation Manual.* Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. Accessed September 1, 2010. http://www.fedcenter.gov/Bookmarks/index.cfm?id=6403&pge_id=1606.

ACOE. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. Accessed September 24, 2012. http://el.erdc.usace.army.mil/elpubs/pdf/trel08-28.pdf.

Cal-IPC (California Invasive Plant Council). 2006. *California Invasive Plant Inventory*. Cal-IPC Publication 2006-02. Berkeley, California: California Invasive Plant Council. Accessed November 2014. http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf.

CDFG (California Department of Fish and Game). 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CNDDB).* Wildlife and Habitat Data Analysis Branch, Vegetation Classification and Mapping Program. September 2003 edition.

CDFG. 2010. *List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form.* September 2010. Accessed August 30, 2013. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp.

CDFW (California Department of Fish and Wildlife). 2014. *Rarefind*. Version 5.0. California Natural Diversity Database (CNDDB). July 2014.

Central Valley RWQCB (Regional Water Quality Control Board). 2004. *Water Quality Control Plan for the Tulare Lake Basin*. 2nd ed. Accessed July 2013. http://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/newpages200401.pdf.

CWMW (California Wetlands Monitoring Workgroup). 2013. *California Rapid Assessment Method (CRAM) for Wetlands User's Manual*. Version 6.1. April 2013.

Dudek. 2013. *Request for an Approved Jurisdictional Determination for Grapevine and Pastoria Creeks and Related Tributaries and Isolated Waters in the Grapevine Study Area, Tejon Ranch, Kern County, California.* Prepared for Tejon Ranch. September 4, 2013.

Dudek. 2015. *Biological Technical Report for the Grapevine Project*. Prepared for Tejon Ranch. October 2015.

Suarez, A.V., and T.J. Case. 2002. "Bottom-Up Effects on Persistence of a Specialist Predator: Ant Invasions and Horned Lizards." *Ecological Applications* 12:291–298.

Tejon Ranch Conservancy. 2013a. "Biological resources GIS data, including Ranchwide bird, mammal, and plant point location data" [Shapefiles]. Received from Tejon Ranch Company on January 7, 2014.

Tejon Ranch Conservancy. 2013b. *Ranch-Wide Management Plan, Volume 1: Natural Community Description*. June 2013.

Tejon Ranch Conservancy. 2014. "Tejon Ranch Conservancy San Joaquin Kit Fox Data" [Shapefiles, Excel Spreadsheet]. Received from Tejon Ranch Conservancy May 27, 2014; June 19, 2014; and July 17, 2014.

TRC (Tejon Ranch Company). 2007. Vegetation Composite GIS Data for Tejon Ranch. Ranch-wide vegetation composite based on the 1980 Environmental Impact Report, the 1994 Biotic Assessment, the 1994 Antelope Valley Grassland exhibit, the 1980 Timber Index survey, and Tejon Valley Floor HCP vegetation information. Supplied by Tejon Ranch Company.

TRC. 2013. "5-meter DEM, hillshades, and slope data." [Shapefile]. Received from Tejon Ranch Company January 17, 2013.

TRC, Sierra Club, National Audubon Society Inc., Natural Resources Defense Council, Endangered Habitats League, Planning and Conservation League, and Tejon Ranch Conservancy. 2008. *Tejon Ranch Conservation and Land Use Agreement*. Filed June 23, 2008.

USDA (U.S. Department of Agriculture). 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Accessed February 2013. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Accessed February 2013. http://websoilsurvey.nrcs.usda.gov/.

USGS (U.S. Geological Survey). 2015. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies " [digital GIS data]. National Hydrography Dataset website. Accessed October 23, 2015. http://nhd.usgs.gov/.

USGS (U.S. Geological Survey). No date. 7.5-Minute Series, Grapevine and Pastoria Creek Quadrangles.

WRCC (Western Regional Climate Center). 2013. "Tejon Rancho, California (048839)." Accessed November 2014. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8839.

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SOURCES: McIntosh & Associates (2013); TRC 2013a, 2013b

The Grapevine project site (McIntosh & Associates 2013) and Tejon Ranch (2013a) boundaries appear on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1

Regional Location

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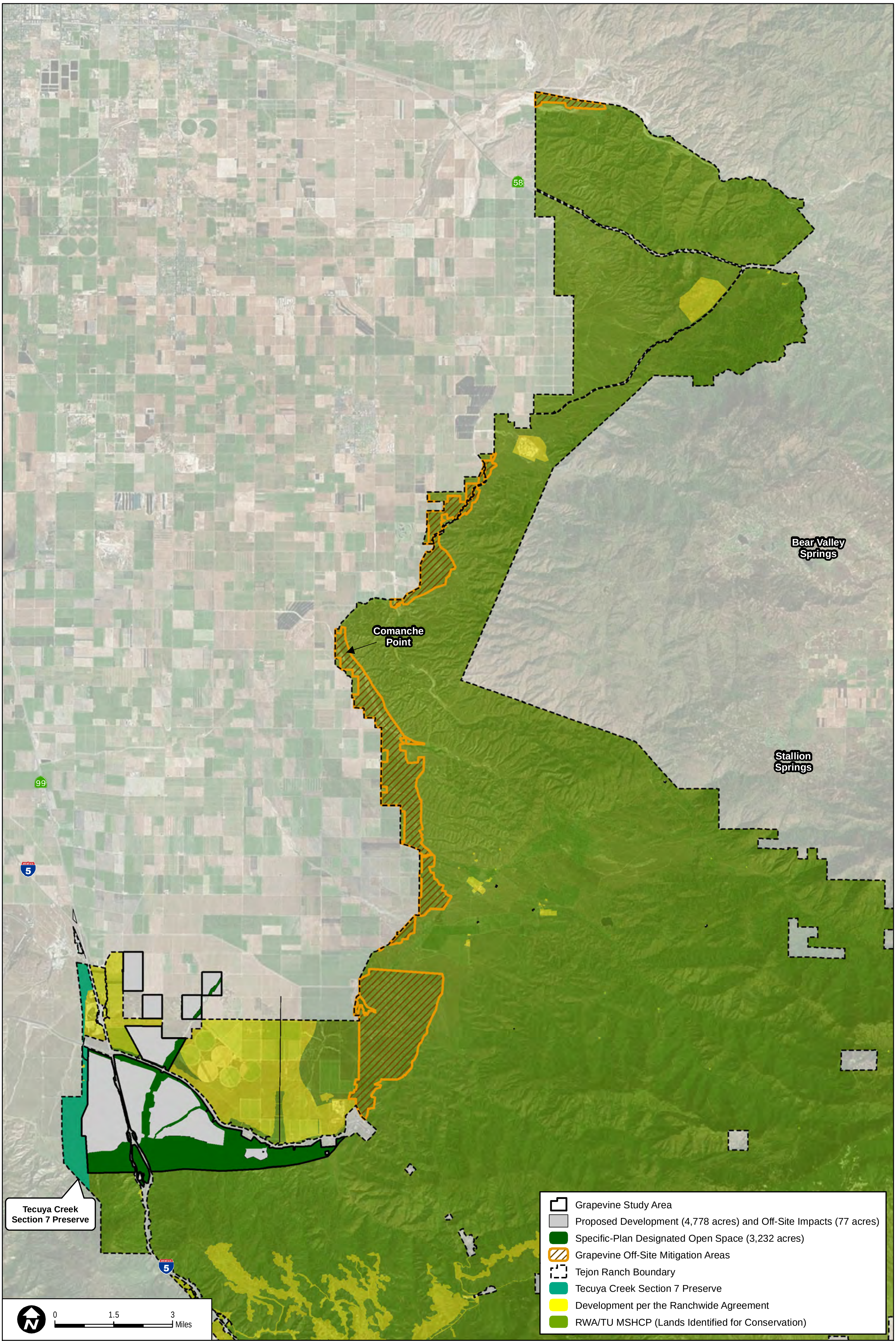

SOURCES: California Resource Agency 2011; TRC 2007; 2014; McIntosh & Associates 2014

FIGURE 2
Vicinity Map

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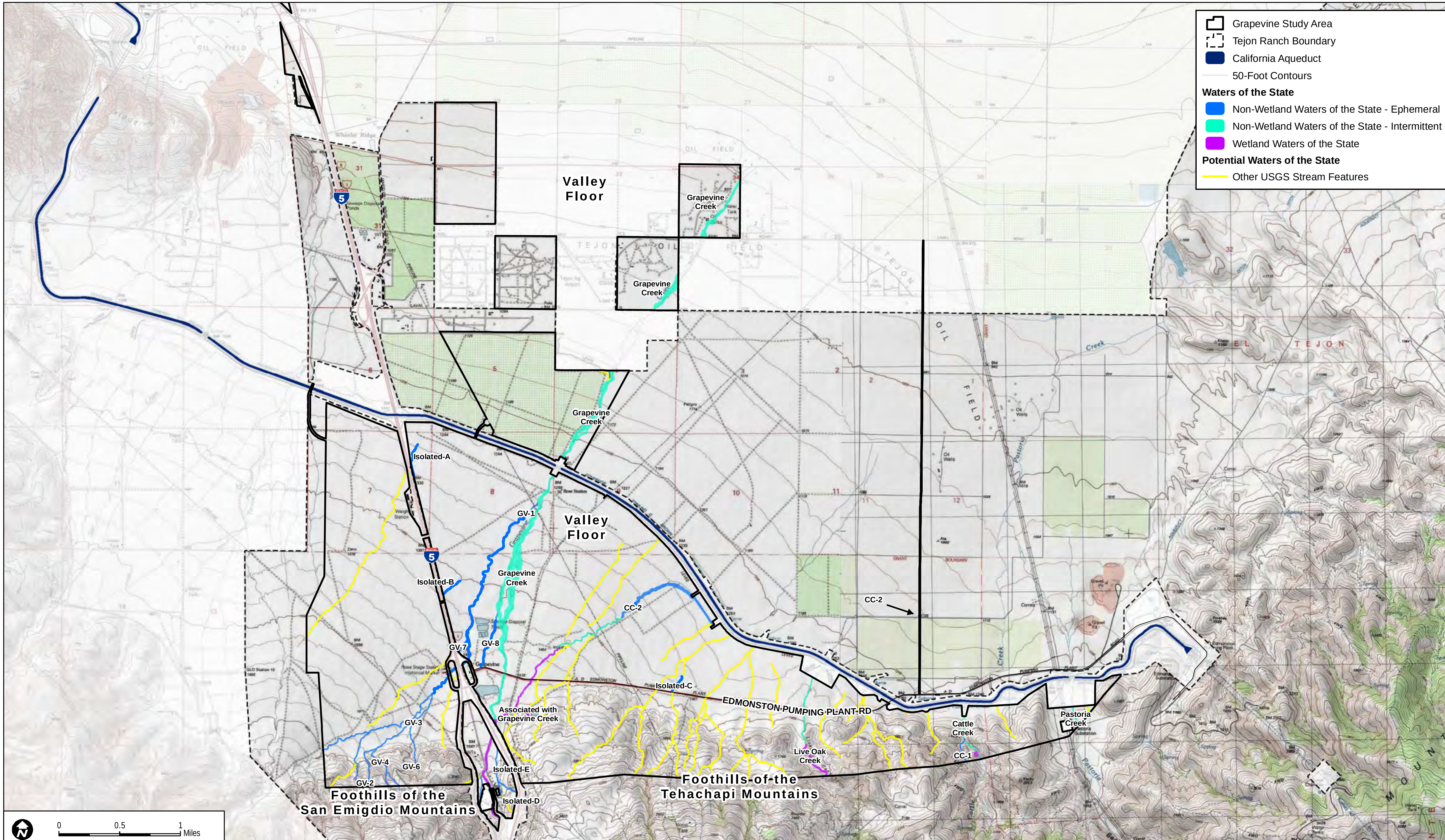

FIGURE 3A

CDFW- and RWQCB- Jurisdictional Areas

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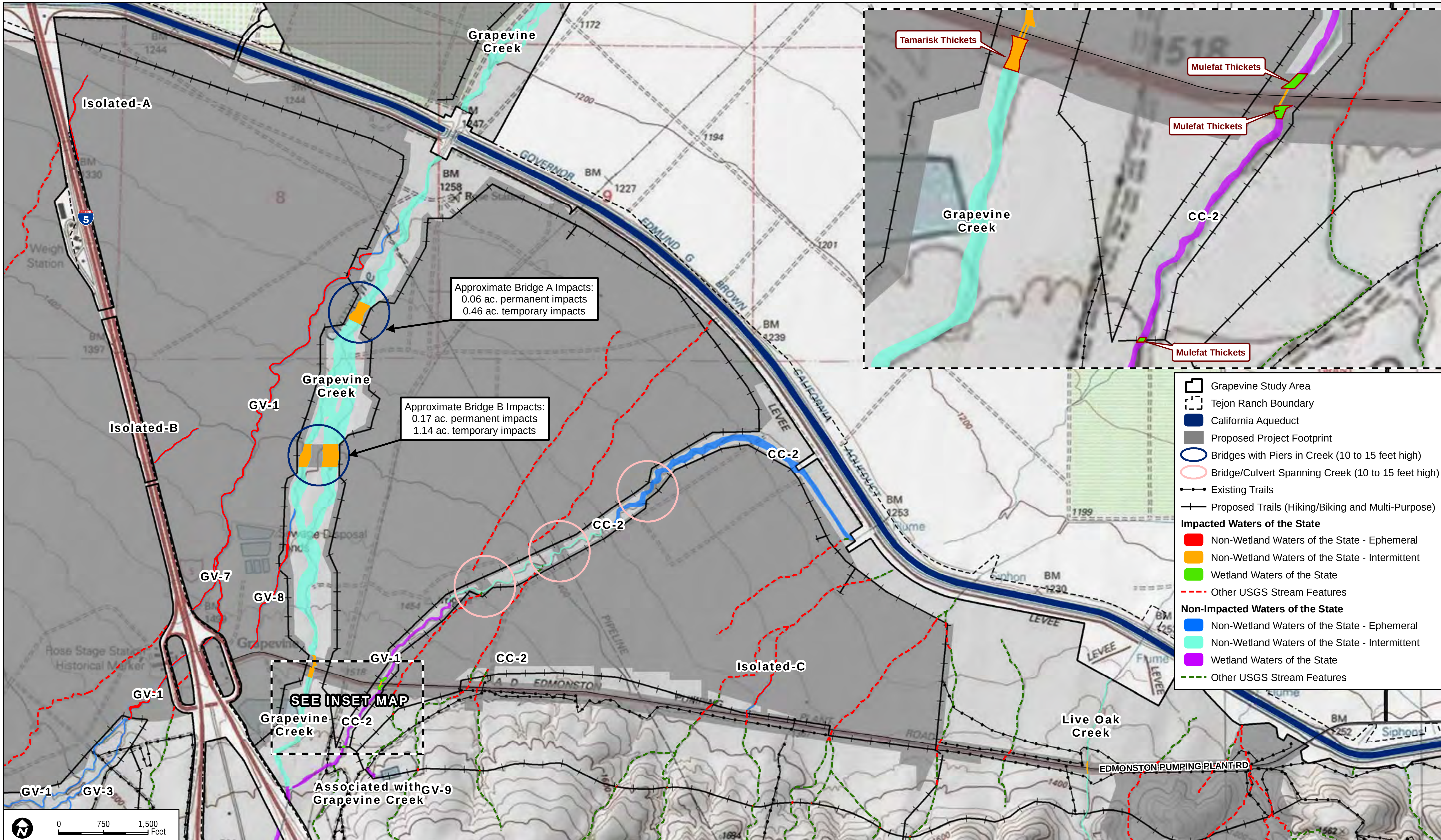

SOURCES: McIntosh & Associated 2014a

FIGURE 3B

Proposed Project Footprint and CDFW- and RWQCB- Jurisdictional Areas

GRAPEVINE PROJECT

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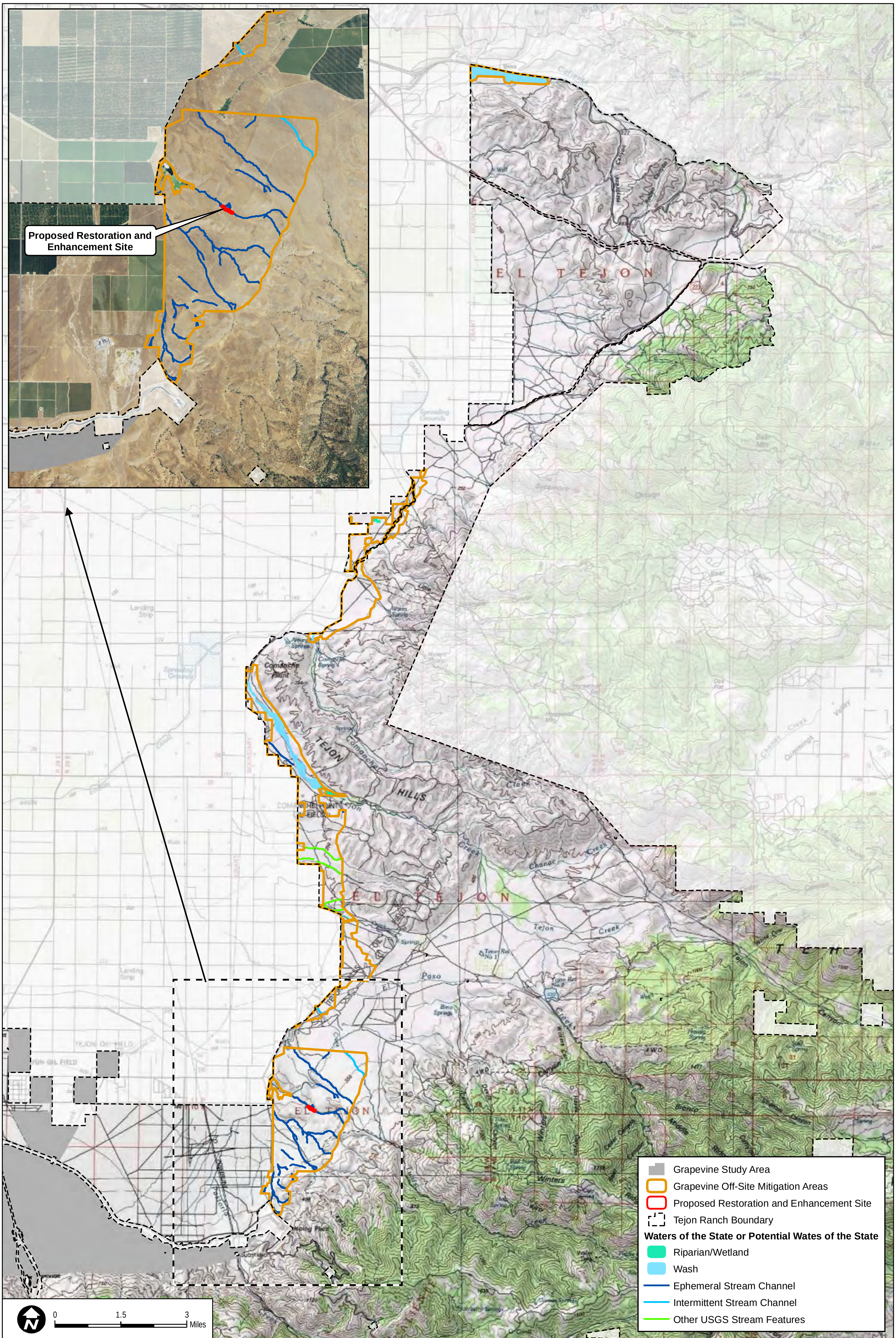

SOURCES: TRC 2007; 2014;Tejon Ranch Conservancy 2014; McIntosh 2014

FIGURE 4
Grapevine Off-Site Waters Mitigation Sites

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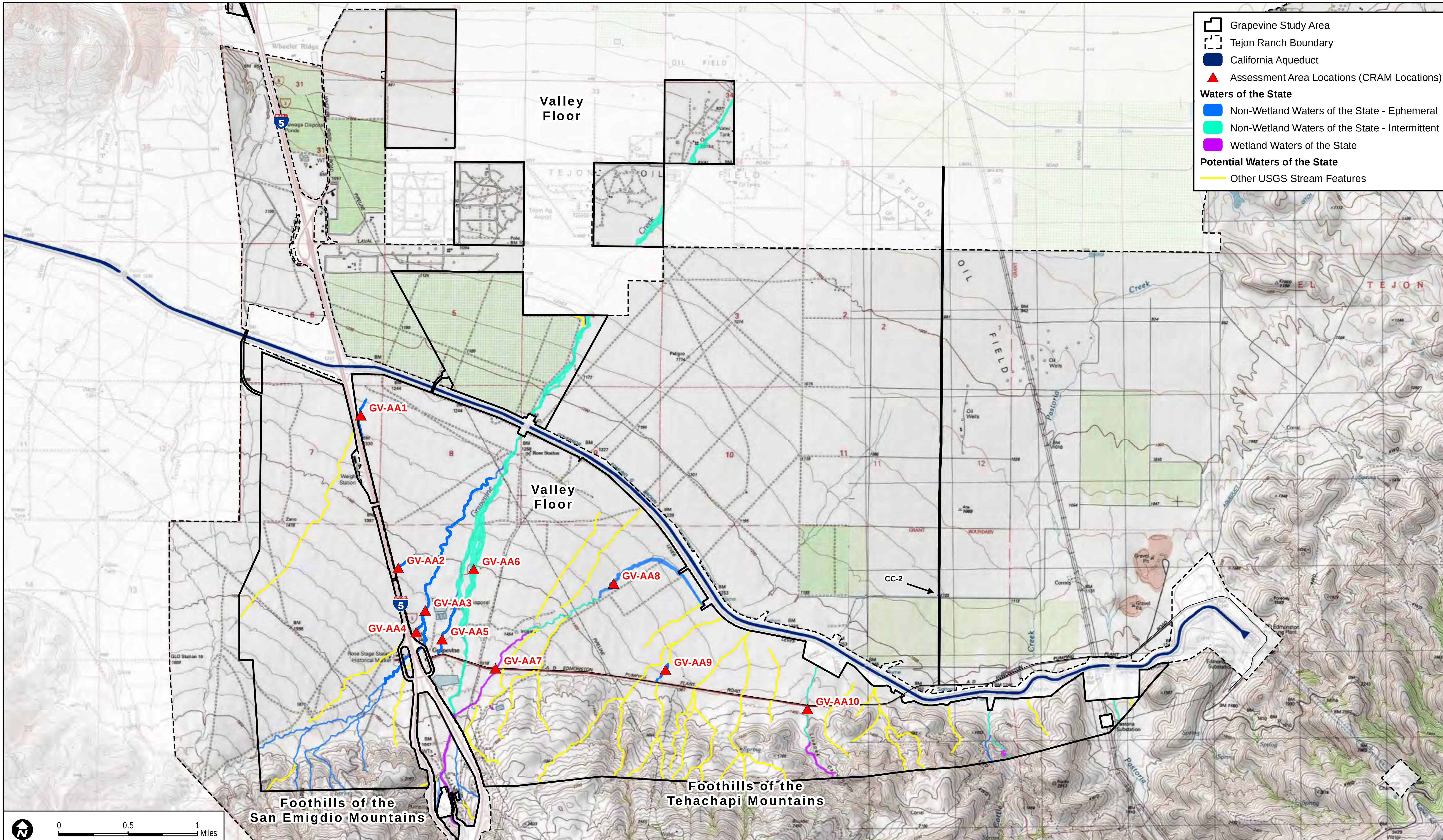

FIGURE 5

Grapevine Project Jurisdictional Waters Conditional Assessment Locations (CRAM Locations)

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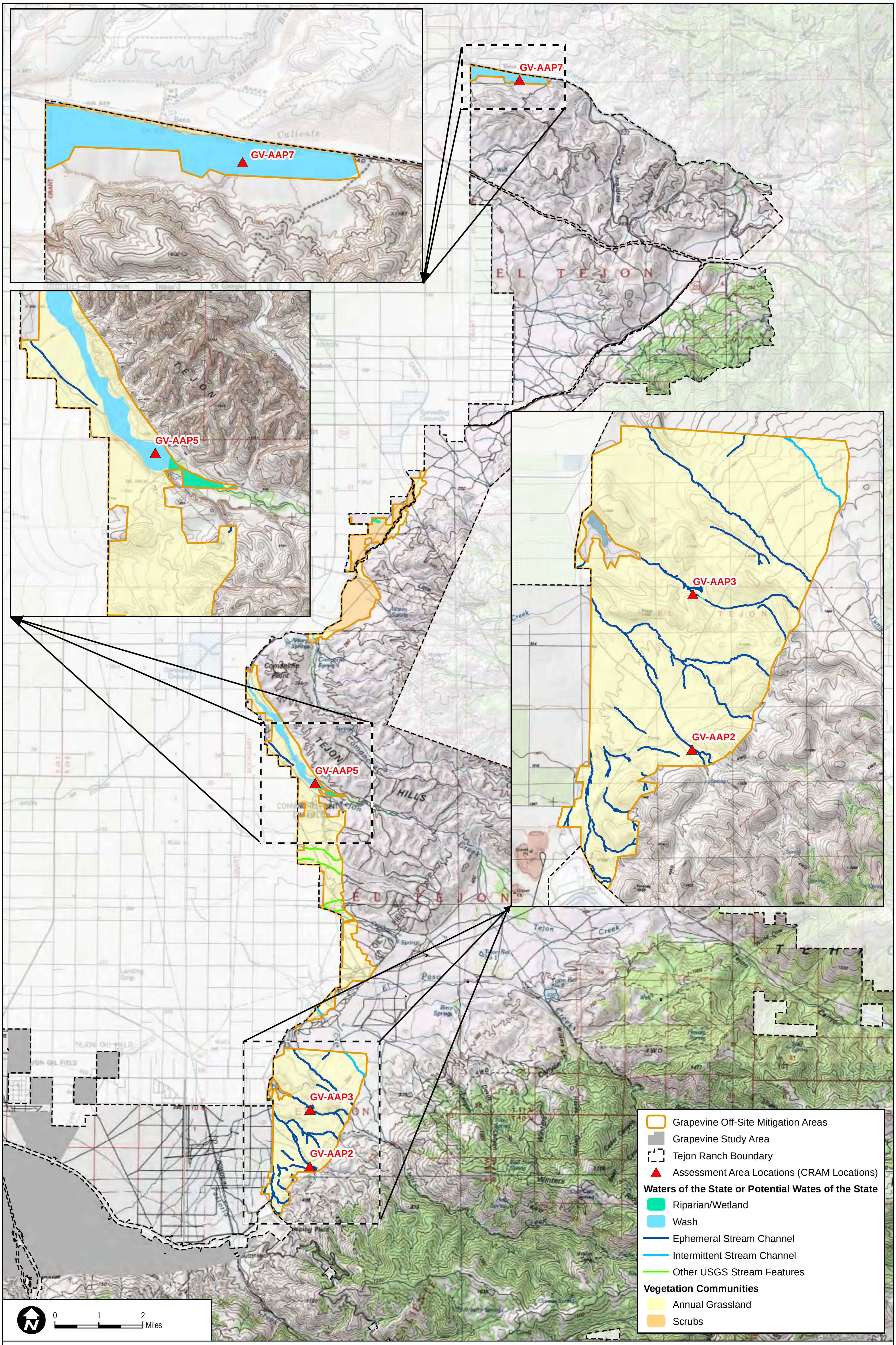

SOURCES: TRC 2007; 2014;Tejon Ranch Conservancy 2014; McIntosh 2014

FIGURE 6

Grapevine Off-Site Jurisdictional Waters Conditional Assessment Locations (CRAM Locations)

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ABOVE:Photo 1. Representative view of Impact Area at Isolated A Drainage; Conditional Assessment Area GV-AA1 (October 10, 2014)

BELOW: Photo 2. Representative view of Impact Area at Isolated B Drainage; Conditional Assessment Area GV-AA2 (October 10, 2014)

FIGURE 7A

Grapevine Project - Jurisdictional Waters Impact Locations Site Photos (GV-AA1, GV-AA2)

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ABOVE: Photo 3. Representative view of Impact Area at GV-1 Drainage; Conditional Assessment Area GV-AA3 (October 10, 2014)

BELOW: Photo 4. Representative view of Impact Area at GV-7 Drainage; Conditional Assessment Area GV-AA4 (October 10, 2014)

FIGURE 7B

Grapevine Project - Jurisdictional Waters Impact Locations Site Photos (GV-AA3, GV-AA4)

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ABOVE: Photo 5. Representative view of Impact Area at GV-8 Drainage; Conditional Assessment Area GV-AA5 (October 10, 2014)

BELOW: Photo 6. Representative view of Impact Area at Grapevine Creek Drainage; Conditional Assessment Area GV-AA6 (October 10, 2014)

FIGURE 7C

Grapevine Project - Jurisdictional Waters Impact Locations Site Photos (GV-AA5, GV-AA6)

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ABOVE: Photo 7. Representative view of Impact Area at Cattle Creek Drainage Upstream; Conditional Assessment Area GV-AA7 (October 10, 2014)

BELOW: Photo 8. Representative view of Impact Area at Cattle Creek Drainage Downstream; Conditional Assessment Area GV-AA8 (October 10, 2014)

FIGURE 7D

Grapevine Project - Jurisdictional Waters Impact Locations Site Photos (GV-AA7, GV-AA8)

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ABOVE: Photo 9. Representative view of Impact Area at Isolated C Drainage; Conditional Assessment Area GV-AA1 (October 10, 2014)

BELOW: Photo 10. Representative view of Impact Area at Live Oak Creek Drainage; Conditional Assessment Area GV-AA10 (October 10, 2014)

FIGURE 7E

Grapevine Project - Jurisdictional Waters Impact Locations Site Photos (GV-AA9, GV-AA10)

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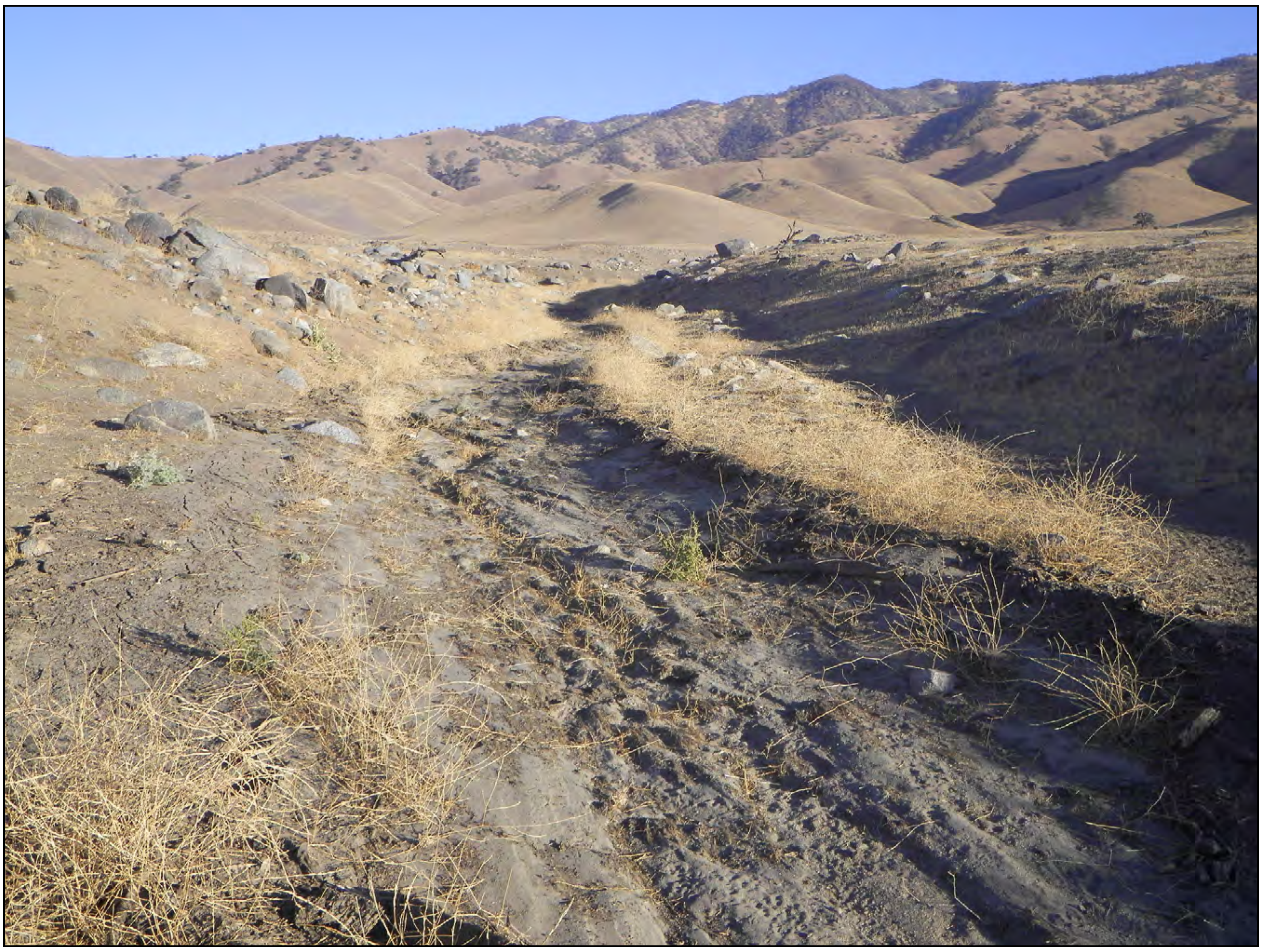

ABOVE: Photo 1. Representative view of Conditional Assessment Area GV-AAP2 (October 10, 2014)

BELOW: Photo 2. Representative view of Conditional Assessment Area GV-AAP3 (October 11, 2014)

FIGURE 8A

Grapevine Off-Site Mitigation Areas - Conditional Assessment Location Site Photos (GV-AAP2, GV-AAP3)

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ABOVE: Photo 3. Representative view of Conditional Assessment Area GV-AAP5 (October 11, 2014)

BELOW: Photo 4. Representative view of Conditional Assessment Area GV-AAP7 (October 11, 2014)

FIGURE 8B

Grapevine Off-Site Mitigation Areas - Conditional Assessment Location Site Photos (GV-AAP5, GV-AAP7)

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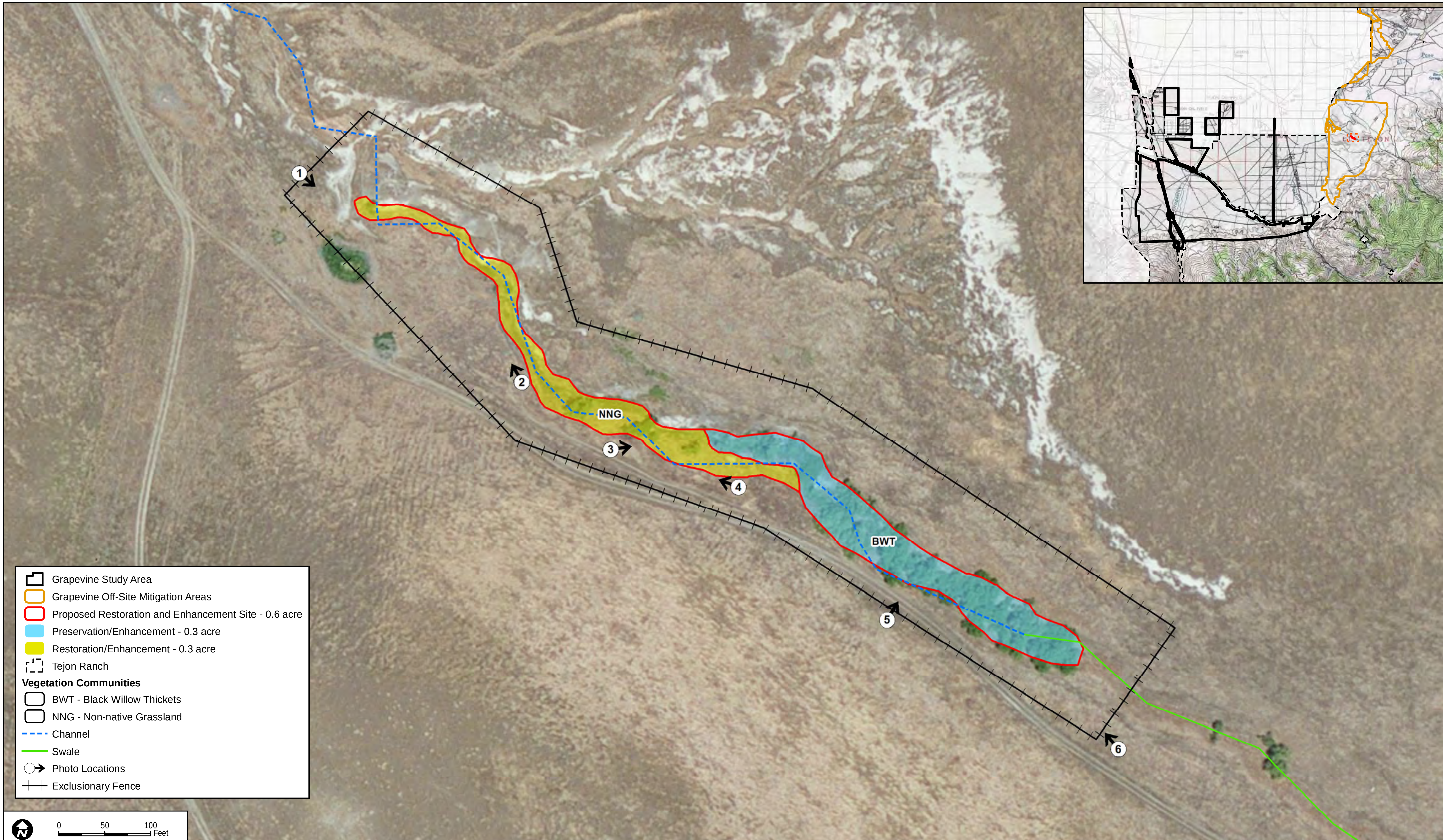

FIGURE 9

Grapevine Project - Proposed Restoration Site

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ABOVE: Photo 1. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

BELOW: Photo 2. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

FIGURE 10A

Grapevine Project - Proposed Restoration Site Representative Photos

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ABOVE: Photo 3. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

BELOW: Photo 4. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

FIGURE 10B

Grapevine Project - Proposed Restoration Site Representative Photos

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ABOVE: Photo 5. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

BELOW: Photo 6. Representative view of Existing Conditions at the Proposed Restoration Site (October 11, 2014)

FIGURE 10C

Grapevine Project - Proposed Restoration Site Representative Photos

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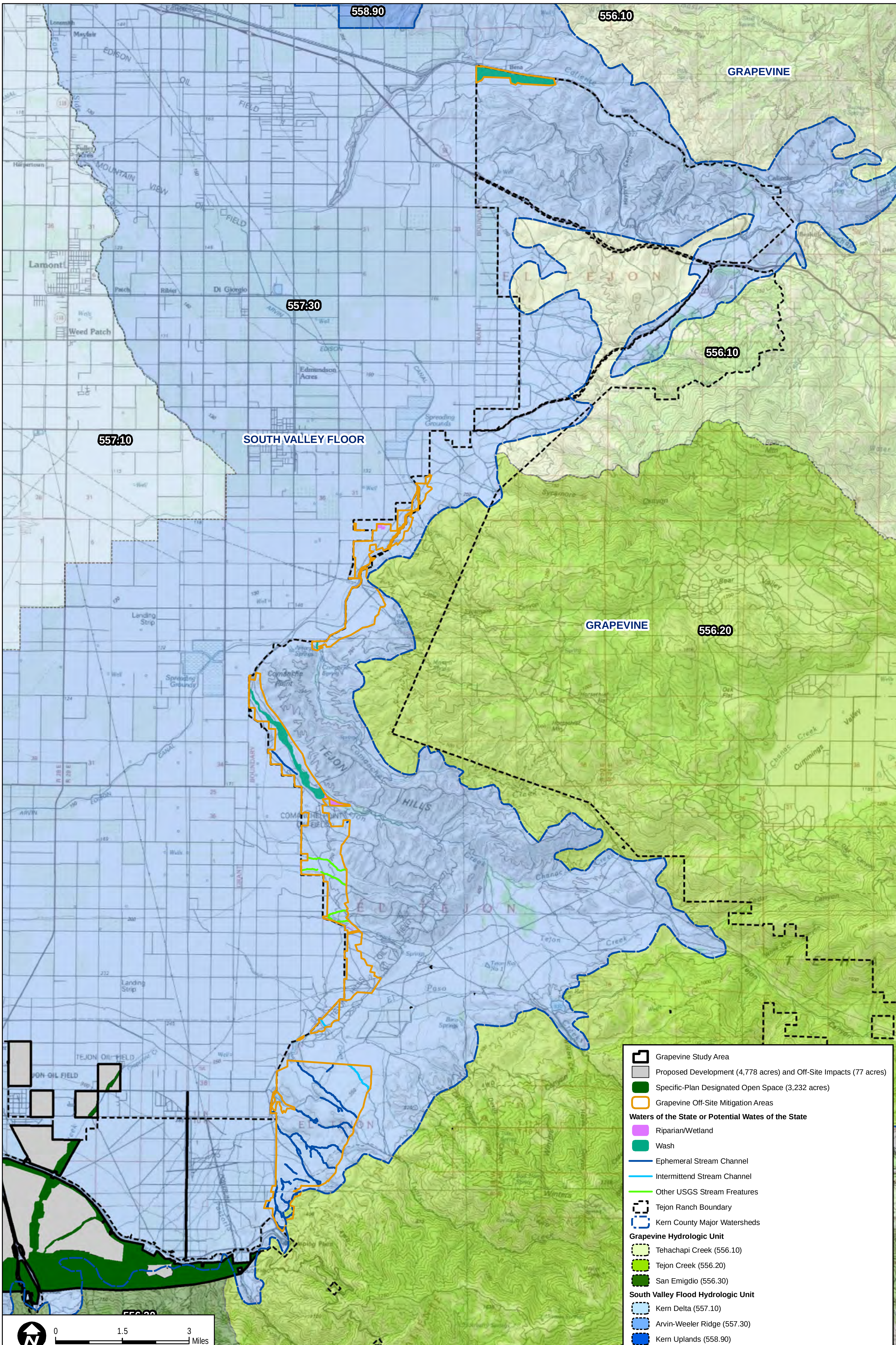

SOURCES: TRC 2007; 2014; McIntosh 2014; CA Department of Water Resources 2012

FIGURE 11
Watershed Map

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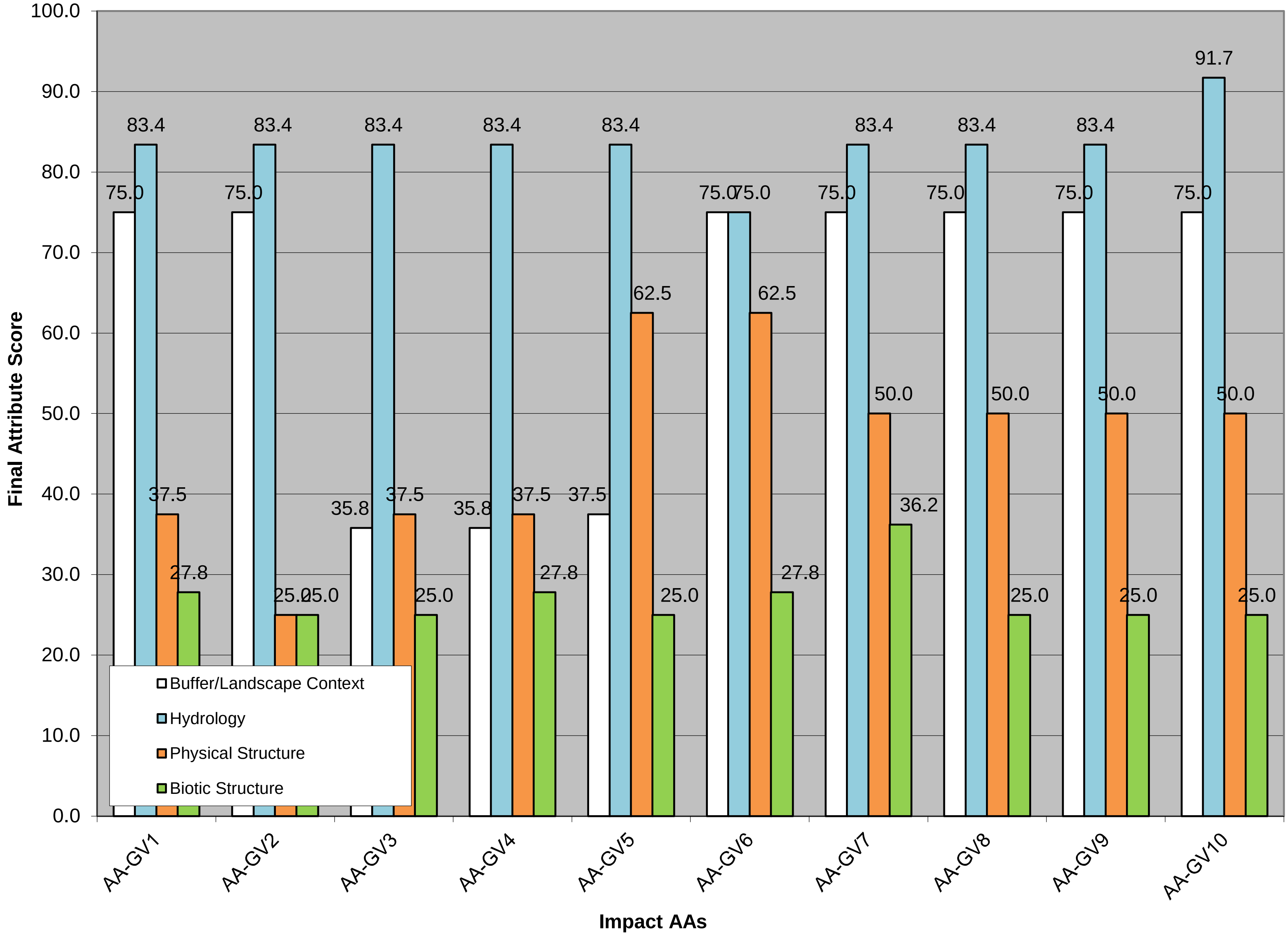
APPENDIX A

CRAM Results

Grapvine Project - Impact Sites	AA-GV1	AA-GV2	AA-GV3	AA-GV4	AA-GV5	AA-GV6	AA-GV7	AA-GV8	AA-GV9	AA-GV10
Buffer & Landscape Context										
Stream Corridor Continuity	12	12	3	3	3	12	12	12	12	12
Percent AA with Buffer	12	12	12	12	12	12	12	12	12	12
Average Buffer Width	12	12	9	9	12	12	12	12	12	12
Buffer Condition	3	3	3	3	3	3	3	3	3	3
Raw Score	**18.0**	**18.0**	**8.6**	**8.6**	**9.0**	**18.0**	**18.0**	**18.0**	**18.0**	**18.0**
Final Score	**75.0**	**75.0**	**35.8**	**35.8**	**37.5**	**75.0**	**75.0**	**75.0**	**75.0**	**75.0**
Hydrology										
Water Source	9	9	9	9	9	9	9	9	12	12
Hydroperiod/Stability	9	9	9	9	9	6	9	9	9	9
Hydrologic Connectivity	12	12	12	12	12	12	12	12	9	12
Raw Score	**30.0**	**30.0**	**30.0**	**30.0**	**30.0**	**27.0**	**30.0**	**30.0**	**30.0**	**33.0**
Final Score	**83.4**	**83.4**	**83.4**	**83.4**	**83.4**	**75.0**	**83.4**	**83.4**	**83.4**	**91.7**
Physical Structure										
Patch Richness	3	3	3	3	6	6	3	3	3	3
Topographic Complexity	6	3	6	6	9	9	9	9	9	9
Raw Score	**9.0**	**6.0**	**9.0**	**9.0**	**15.0**	**15.0**	**12.0**	**12.0**	**12.0**	**12.0**
Final Score	**37.5**	**25.0**	**37.5**	**37.5**	**62.5**	**62.5**	**50.0**	**50.0**	**50.0**	**50.0**
Biotic Structure										
Number of Plant Layers	6	3	3	6	3	6	6	3	3	3
Co-Dominant Species	3	3	3	3	3	3	3	3	3	3
Percent Invasion	3	3	3	3	3	3	3	3	3	3
Plant Community Metric	4.0	3.0	3.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0
Interspersion/Zonation	3	3	3	3	3	3	3	3	3	3
Vertical Structure	3	3	3	3	3	3	6	3	3	3
Raw Score	**10.0**	**9.0**	**9.0**	**10.0**	**9.0**	**10.0**	**13.0**	**9.0**	**9.0**	**9.0**
Final Score	**27.8**	**25.0**	**25.0**	**27.8**	**25.0**	**27.8**	**36.2**	**25.0**	**25.0**	**25.0**
Overall AA Score	**56**	**52**	**45**	**46**	**52**	**60**	**61**	**58**	**58**	**60**

Grapevine Mitigation Areas	AA-P1	AA-P2	AA-P3	AA-P4	AA-P5	AA-P6	AA-P7	AA-P8	Average
Buffer & Landscape Context									
Stream Corridor Continuity	12	12	12	12	12	12	12	12	**12.0**
Percent AA with Buffer	12	12	12	12	12	12	12	12	**12.0**
Average Buffer Width	12	12	12	12	12	12	12	12	**12.0**
Buffer Condition	6	9	6	6	6	3	3	6	**5.6**
Raw Score	**20.5**	**22.4**	**20.5**	**20.5**	**20.5**	**18.0**	**18.0**	**20.5**	**20.1**
Final Score	**85.4**	**93.4**	**85.4**	**85.4**	**85.4**	**75.0**	**75.0**	**85.4**	**83.8**
Hydrology									
Water Source	12	12	12	12	12	12	12	12	**12.0**
Hydroperiod/Stability	9	9	9	9	9	12	9	9	**9.4**
Hydrologic Connectivity	9	12	12	12	12	12	12	12	**11.6**
Raw Score	**30.0**	**33.0**	**33.0**	**33.0**	**33.0**	**36.0**	**33.0**	**33.0**	**33.0**
Final Score	**83.4**	**91.7**	**91.7**	**91.7**	**91.7**	**100.0**	**91.7**	**91.7**	**91.7**
Physical Structure									
Patch Richness	6	6	3	6	6	3	3	9	**5.3**
Topographic Complexity	9	9	9	9	9	3	6	9	**7.9**
Raw Score	**15.0**	**15.0**	**12.0**	**15.0**	**15.0**	**6.0**	**9.0**	**18.0**	**13.1**
Final Score	**62.5**	**62.5**	**50.0**	**62.5**	**62.5**	**25.0**	**37.5**	**75.0**	**54.7**
Biotic Structure									
Number of Plant Layers	6	3	9	6	6	3	6	9	**6.0**
Co-Dominant Species	3	3	3	3	3	3	3	6	**3.4**
Percent Invasion	3	3	3	3	3	6	3	3	**3.4**
Plant Community Metric	4.0	3.0	5.0	4.0	4.0	4.0	4.0	6.0	**4.3**
Interspersion/Zonation	3	3	3	3	3	3	3	6	**3.4**
Vertical Structure	3	3	6	6	6	3	3	6	**4.5**
Raw Score	**10.0**	**9.0**	**14.0**	**13.0**	**13.0**	**10.0**	**10.0**	**18.0**	**12.1**
Final Score	**27.8**	**25.0**	**38.9**	**36.2**	**36.2**	**27.8**	**27.8**	**50.0**	**33.7**
Overall AA Score	**65**	**68**	**67**	**69**	**69**	**57**	**58**	**76**	**66**



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25.0
Buffer/Landscape Context
Hydrology
Physical Structure
Biotic Structure
AA-GV1
AA-GV2
AA-GV3
AA-GV4
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AA-GV7
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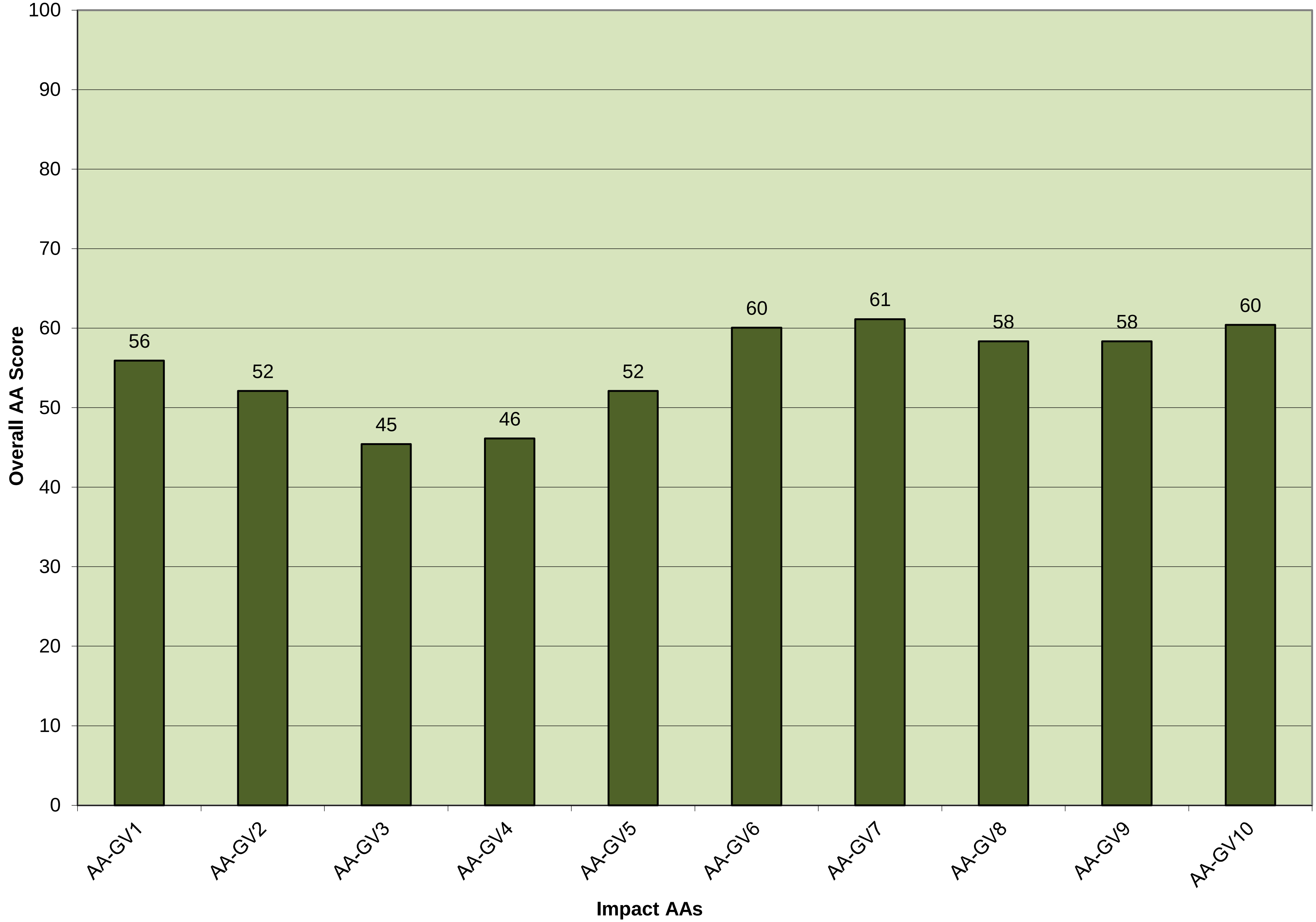
Impact AAs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AA-GV1
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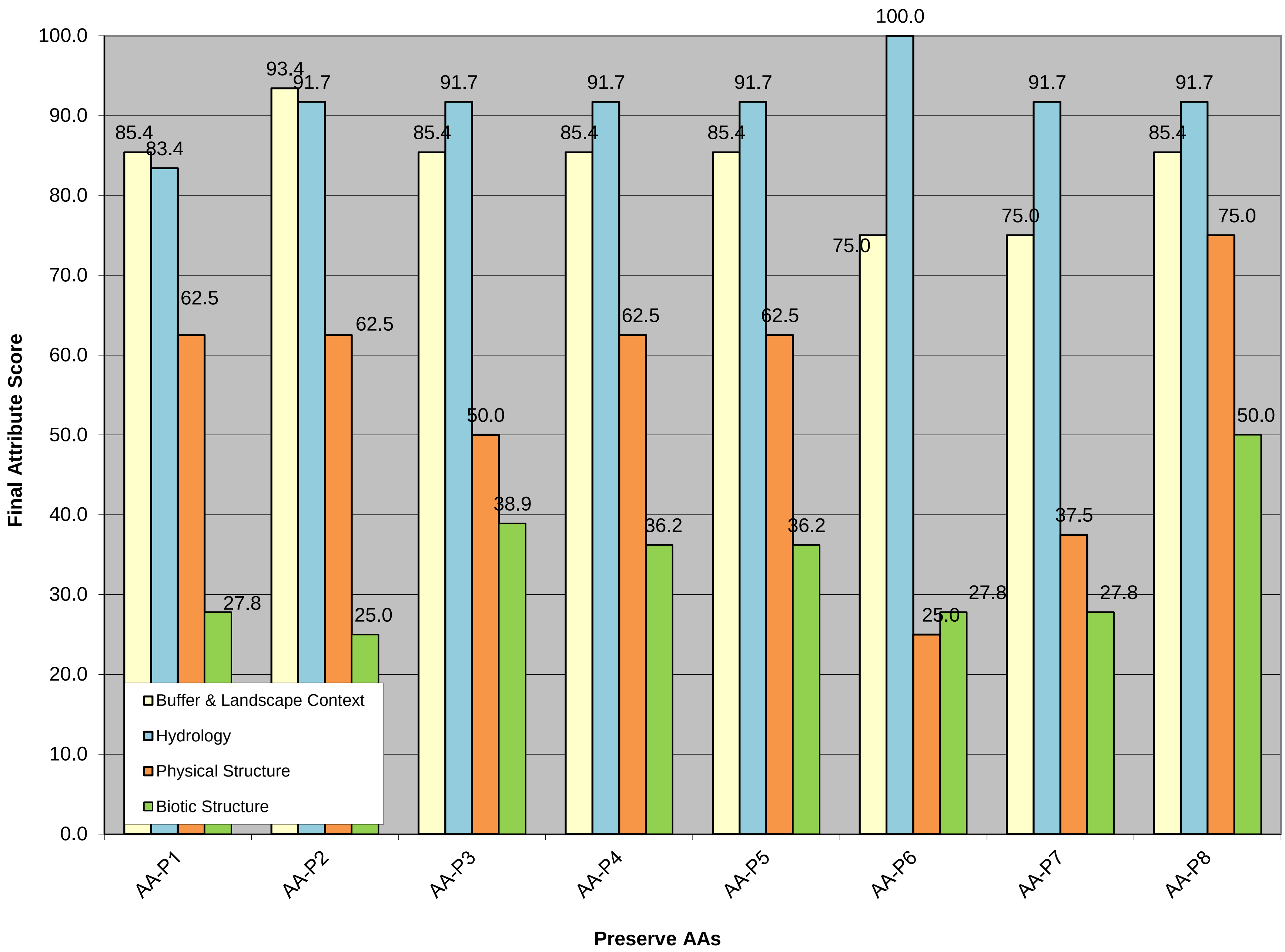
Impact AAs



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36.2
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85.4
91.7
75.0
50.0
Buffer & Landscape Context
Hydrology
Physical Structure
Biotic Structure
AA-P1
AA-P2
AA-P3
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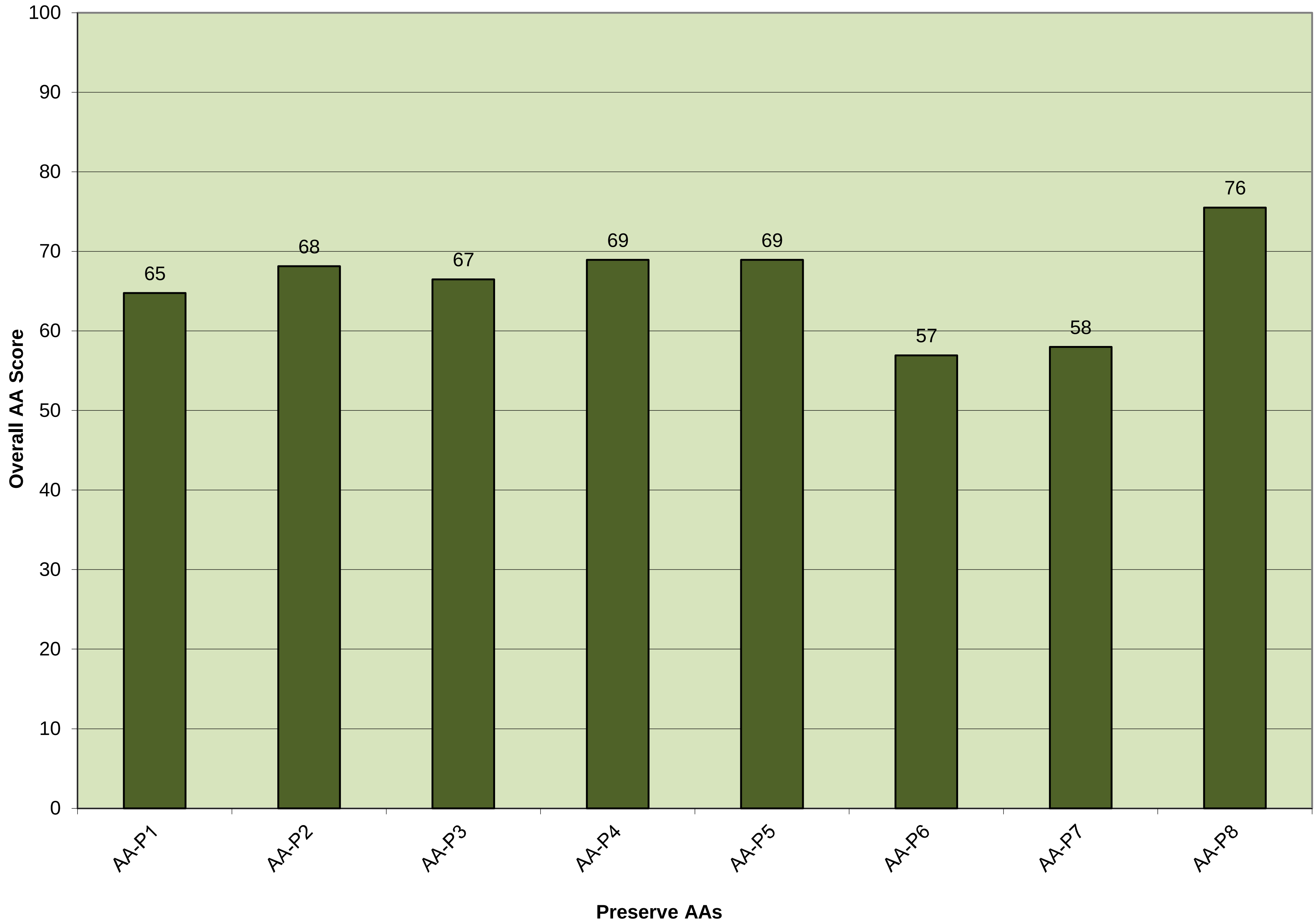
AA-P5
AA-P6
AA-P7
AA-P8
Preserve AAs



100
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Overall AA Score
65
68
67
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69
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58
76
AA-P1
AA-P2
AA-P3
AA-P4
AA-P5
AA-P6
AA-P7
AA-P8
Preserve AAs

Preserve Areas	AA-P1	AA-P2	AA-P3	AA-P4	AA-P5	AA-P6	AA-P7	AA-P8	Max	Min	Range	Average
Buffer & Landscape Context	85.4	93.4	85.4	85.4	85.4	75.0	75.0	85.4	93	75	18	84
Hydrology	83.4	91.7	91.7	91.7	91.7	100.0	91.7	91.7	100	83	17	92
Physical Structure	62.5	62.5	50.0	62.5	62.5	25.0	37.5	75.0	75	25	50	55
Biotic Structure	27.8	25.0	38.9	36.2	36.2	27.8	27.8	50.0	50	25	25	34
Overall AA Score	65	68	67	69	69	57	58	76	76	57	19	66

Impact Areas	AA-GV1	AA-GV2	AA-GV3	AA-GV4	AA-GV5	AA-GV6	AA-GV7	AA-GV8	AA-GV9	AA-GV10	Max	Min	Range	Average
Buffer & Landscape Context	75.0	75.0	35.8	35.8	37.5	75.0	75.0	75.0	75.0	75.0	75	36	39	63
Hydrology	83.4	83.4	83.4	83.4	83.4	75.0	83.4	83.4	83.4	91.7	92	75	17	83
Physical Structure	37.5	25.0	37.5	37.5	62.5	62.5	50.0	50.0	50.0	50.0	63	25	38	46
Biotic Structure	27.8	25.0	25.0	27.8	25.0	27.8	36.2	25.0	25.0	25.0	36	25	11	25
Overall AA Score	56	52	45	46	52	60	61	58	58	60	61	45	16	55

ATTACHMENT A-4

San Joaquin Kit Fox Escape Dens and Fencing Plan

ATTACHMENT A-4
San Joaquin Kit Fox Escape Dens and Fencing Plan

INTRODUCTION

Purpose and Overview

This document expands on the biological resource protection measure MM-BTR-RMP (preparation of a Resource Management Plan) in Appendix A of the biological resources technical report (BTR) for the Grapevine proposed project by providing a detailed description of the proposed habitat enhancement activities for San Joaquin kit fox (*Vulpes macrotis mutica*).

This document outlines an effective strategy for enhancing proposed project open space for San Joaquin kit fox within portions of the Grapevine Specific Plan Area and the proposed project open space north of the California Aqueduct. In particular, because habitat degradation and fragmentation in the San Joaquin Valley has substantially constricted the natural movement patterns of this species (Cypher and Van Horn Job 2009), and because the maintenance of suitable corridor habitat for kit foxes is identified as an essential goal in the recovery plan for the San Joaquin kit fox (USFWS 1998), the focus of the proposed habitat enhancement plan is on providing opportunities for San Joaquin kit fox to safely move around, and in some cases through, proposed project development within the Grapevine Specific Plan Area. The enhancement of habitat includes strategic placement of escape dens within potential habitat corridors, as well as use of fencing and wall construction that is passable by San Joaquin kit fox where appropriate. The enhancement parameters provided below are based on results of an evaluation conducted on Tejon Ranch (the Ranch) by Cypher (2005), as well as on several scientific studies conducted on San Joaquin kit fox for the proposed project. These activities will be incorporated as proposed habitat enhancement strategies for inclusion within the Resource Management Plan.

PROJECT BACKGROUND

The 8,087-acre study area includes the 8,010-acre Grapevine Specific Plan Area and 77 acres of off-site impact areas located primarily on the Ranch. Development of the proposed project would be built on a portion of the study area located on the east and west side of Interstate 5 (I-5), in the west-central portion of the Ranch in Kern County, California. The remaining areas are designated as proposed project open space (proposed open space). In addition to the proposed open space designated in the Grapevine Specific Plan Area, an additional 85 acres of land is proposed as part of mitigation measure MM-BTR-WLM to be designated as open space north of the California Aqueduct for wildlife movement. The proposed project would concentrate development along existing infrastructure, such as I-5, and incorporates open space areas within the riparian corridors in the valley floor and the adjacent foothills, consistent with the Tejon Ranch Conservation Land Use Agreement (Ranchwide Agreement) open space strategy. The

Ranchwide Agreement is a landmark agreement reached in 2008 with leading environmental organizations to permanently preserve over 90% of the Ranch as open space and limit development to designated areas near existing infrastructure, such as I-5.

Even though the Grapevine study area does not appear to support a persistent on-site kit fox population, it has some suitable habitat for kit fox and provides an east–west habitat linkage in the southern portion of the species' range. The proposed project land plan has been designed to avoid sensitive biological resources, such as the Tehachapi and San Emigdio Foothills and the valley floor riparian areas, and to preserve key regional biological resource values such as the east–west wildlife habitat linkage along the valley floor/foothill transition zone. This enhancement plan focuses on the proposed open space areas in the valley floor: (1) open space along Grapevine Creek, the tributary to Cattle Creek, and areas south of the California Aqueduct right-of-way; and (2) an additional 85 acres of proposed open space north of the California Aqueduct right-of-way (see MM-BTR-WLM in Appendix A).

The open space designated along Grapevine Creek, the tributary to Cattle Creek, areas north and south of the California Aqueduct right-of-way, and areas along the northern portion of the project site west of I-5, will continue to serve as habitat linkages and corridors that will allow San Joaquin kit fox to move east–west or north–south across this portion of the San Joaquin Valley floor. Because these open space areas are linear features that kit fox would be expected to use during wildlife movement events and have varying widths with some "pinch points," these areas will serve as the focus for habitat enhancement for kit fox. The vineyards in between the north- and south-bound lanes of I-5 represent habitat that is generally not used by kit fox except for infrequent foraging events. Therefore, these areas are not included as suitable enhancement habitat within the discussion below.

RELEVANT LIFE HISTORY AND OCCURRENCE ON SITE

The kit fox's range includes the San Joaquin Valley floor, lower elevations of surrounding foothills, and smaller adjacent valleys (USFWS 2010). In general, the kit fox inhabits large tracts of relatively level terrain in the San Joaquin Valley and vicinity, particularly in well-drained habitats with scattered shrubs and grass and forb-dominated habitats. Kit fox abundance is generally lower in areas where average slopes exceed 15% due to increased risk of predation (Cypher et al. 2012). The study area is located in the southern portion of its range, where kit foxes are associated with valley sink scrub, valley saltbush scrub, upper Sonoran subshrub scrub, and annual grassland (USFWS 1998). San Joaquin kit foxes are quite mobile and have relatively large home-ranges. Cypher et al. (2001) determined a mean adult home-range size of approximately 1,072 acres and a mean pup home-range size of 325 acres on the Naval Petroleum Reserves in western Kern County. Briden et al. (1992, as cited in USFWS 2010) found that denning ranges (the area encompassing all known dens for an individual) for San Joaquin kit fox averaged approximately 1,169 acres in western Merced County. White and Ralls (1993) estimated a mean home-range for San Joaquin kit fox of approximately 2,866 acres at the Carrizo Plain in 1990 and 1991, but noted these home-ranges were large and likely reflected drought conditions and prey scarcity. Home-ranges during this study were also relatively exclusive, with little overlap between individuals of the same sex (White and Ralls 1993). At the Camp Roberts Army National Guard Training Site in northern San Luis Obispo County, radio-telemetry documented mean home-ranges for San Joaquin kit fox of approximately 5,782 acres (Root and Eliason 2001, as cited in USFWS 2010). White and Ralls (1993) suggested that large, exclusive home-ranges during periods of drought may be an adaptation to episodic prey scarcity and a means to maintain their own body mass and condition.

On the Ranch, suitable habitat for kit foxes consists of arid grassland and shrubland habitats occurring in less rugged terrain below about 2,000 feet in elevation. This habitat extends from just west of (I-5 to just north of State Route 58 (SR-58) and known kit fox populations occur both west and north of Ranch property (Cypher 2005). Task 5.3.8 in the *Recovery Plan for Upland Species in the San Joaquin Valley, California* (USFWS 1998) calls for the maintenance of a habitat "linkage" or movement corridor for San Joaquin kit fox around the southern edge of the San Joaquin Valley, which is considered crucial for maintaining connectivity between kit fox populations on the eastern and western sides of the valley. Thus, maintaining the potential for kit fox movement across Ranch lands will contribute significantly to achieving habitat connectivity and recovery goals for this species (Cypher 2005).

San Joaquin kit fox have historically been documented in the study area (Grinnell et al. 1937; USFWS 1998). Additionally, there are several California Natural Diversity Database (CNDDB) records within or immediately adjacent to the study area (CDFW 2013). The habitat suitability model provided in the *Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications* (Cypher et al. 2013) identifies 4,045 acres[1] of moderately suitable habitat and 1,278 acres[1] of suitable habitat within the study area, and 49 acres of moderately suitable habitat and 23 acres of suitable habitat in the open space north of the California Aqueduct right-of-way. Despite the lack of kit fox detections during wildlife camera studies, the study area and open space north of the California Aqueduct right-of-way is considered suitable for dispersal and east–west movement through this portion of the San Joaquin Valley.

I-5 creates a significant barrier to east–west movement by kit foxes at the southern end of the San Joaquin Valley. However, several potential crossing structures exist, which may allow passage of San Joaquin kit fox, as well as other wildlife movement, in this area. These structures

1 Some of the areas identified in the habitat suitability model have since been developed or consist of orchards and vineyards that are not considered suitable for kit fox; therefore, this acreage is an overestimate of the actual suitable habitat on site.

include a number of ledges, larger culverts, and overpasses along the California Aqueduct (which crosses under I-5); the Laval Road overcrossing; a cement culvert crossing under I-5 located in the center of the interchange (Grapevine Commercial Center); the Edmonston Pumping Plant Road undercrossing; and cement-lined underpasses that occur under the south- and north-bound lanes of I-5 (Cypher 2005). Providing habitat enhancements (i.e., creating artificial dens to provide kit foxes temporary cover) adjacent to or within these structures may facilitate greater kit fox use of the crossing structures (Cypher 2005). Smaller culverts are used less frequently (Cypher et al. 2012) and are not a focus for habitat enhancements.

PROPOSED HABITAT ENHANCEMENTS

San Joaquin Kit Fox Escape Dens

Background Information

Dens are a critical habitat component for kit foxes, with each kit fox using an average of 11 different types of dens per year, including burrows, crevices, cavities, rock piles, and pipes (Koopman et al. 1998). Kit foxes use dens on a daily basis for daytime resting, avoiding temperature extremes, conserving body water, avoiding predators, and bearing and rearing young during the breeding season (Harrison et al. 2011).

Kit fox readily use artificial (man-made) dens when natural dens are absent or rare (e.g., in areas where kit foxes occur intermittently or in low densities), hence artificial dens can be particularly important within habitat linkage areas used during dispersal events and within satellite areas where kit foxes are extirpated (Harrison et al. 2011). Artificial dens provide cover for kit foxes that may be reluctant to immediately use highway underpass structures or as escape cover when being pursued by predators (e.g., coyotes (*Canis latrans*)) in or near such structures (Cypher 2005). Research conducted by the California State University, Stanislaus, Endangered Species Recovery Program (ESRP), found that kit foxes readily use artificial dens, including for rearing young (Bjurlin et al. 2005). Thus, the installation of artificial dens can increase survival, movement, and colonization potential in satellite and linkage areas, which will reduce extinction potential for kit foxes and contribute significantly to recovery and long-term conservation (Harrison et al. 2011).

According to an evaluation of the Ranch conducted by Cypher (2005), habitat corridors identified within proposed project open space were recommended for enhancement with the addition of occasional refugia for kit fox, which would consist of 0.25–1.0-acre habitat blocks within narrow habitat corridors. Cypher (2005) also recommended that artificial dens be installed within these refugia areas, as well as other locations along the corridors to provide protective and resting cover for kit foxes moving along the corridors. Small refugia areas with artificial dens in a variety of locations throughout the study area would further enhance habitat for kit foxes.

Location and Design Parameters

Surface escape dens are designed to provide kit fox with a temporary refuge when pursued by larger predators, such as coyotes, feral dogs, bobcats (*Lynx rufus*), and non-native red foxes (*Vulpes vulpes*) (Cypher 2005; Harrison et al. 2011), and provide shelter and rest areas during movement through habitat corridors. Cypher (pers. comm. 2015) recommended that one surface escape den be installed approximately every 0.25 mile along suitable movement corridors for kit fox within proposed project open space along Grapevine Creek, the tributary to Cattle Creek, and areas north and south along the California Aqueduct right-of-way. The following location and design parameters shall be followed with respect to San Joaquin kit fox escape dens:

- Escape dens shall be located in areas that will ultimately facilitate the safe dispersal of individual kit foxes through the conserved wildlife movement corridors within the study area into more desirable habitat areas (e.g., off-site undeveloped lands and off-site mitigation areas provided for conservation). Proposed locations of kit fox surface escape den locations shall be identified by the designated biologist (described below) and approved by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) prior to installation. Identification of exact locations shall be conducted after construction for each phase of the project has begun so that each den can be sited in locations that will be most beneficial to kit foxes moving within habitat corridors. In addition to habitat corridors, artificial dens shall also be installed at essential crossing structures (identified above) to facilitate passage of San Joaquin kit fox under I-5. As noted by Cypher (2005), artificial dens situated near the entrance of underpasses and other crossing structures serve to provide cover for kit foxes that may be reluctant to immediately use the structures and/or for foxes that may encounter predators in or near the structures. Appropriate signs shall be installed at identified locations in accordance with MM-BTR-TRAIL and MM-BTR-RMP.
- Surface escape dens will be designed to provide easy access to kit fox and temporary refuge when pursued by larger predators. Escape dens shall consist of pipes (e.g., plastic, PVC, cement, metal) 10–20 feet long and 8–10 inches in diameter, and that are covered with a minimum of 3 feet of dirt to provide thermal insulation. Escape dens shall be installed in areas that contain soil types that allow easy excavation, are not subject to seasonal flooding, and where prey is evident (Harrison et al. 2011). To discourage entry by kit fox predators–particularly coyotes, bobcats, and red foxes–sections of rebar, metal, or wood stakes shall be placed vertically in front of the entrances of dens such that the

entrances are reduced to a width of 10–12 centimeters to still allow entry by kit foxes, but inhibit entry by larger predators.

- To facilitate kit fox movement in the area, one surface escape den shall be installed per 0.25 mile along suitable corridor habitats for kit fox within the proposed open space areas described above and at appropriate I-5 undercrossing structures.

Post-Installation Monitoring

Artificial kit fox dens shall be assessed annually to determine if the dens require repairs or debris removal. Artificial dens shall be repaired and/or replaced as needed.

Reporting

Results of post-installation monitoring, along with any sightings of kit fox during the 5-year post-installation monitoring phases, will be reported annually to the CDFW and USFWS. New sightings of San Joaquin kit fox shall be reported to the CNDDB.

San Joaquin Kit Fox-Friendly Fencing

Background Information

As mentioned above, habitat fragmentation resulting from various man-made barriers continues to impede kit fox movement within the San Joaquin Valley. Barriers include fences and walls constructed for various purposes, including in association with residential and commercial development; however, these types of barriers can be avoided by installing fence and wall designs that are kit fox-friendly (i.e., permeable fences that allow passage by kit fox). Permeable fence and wall designs help to maintain connectivity between areas, making more habitats available for use by kit foxes (Cypher and Van Horn Job 2009).

Based on observations by Cypher and Van Horn Job (2009), kit fox are able to negotiate many fence designs by either passing directly through spaces in the fencing or passing under the fence. According to Cypher and Van Horn Job (2009), San Joaquin kit fox are able to get through gaps measuring 3 to 3.5 inches (7.5 to 9 centimeters) in width given their relatively small size and flexibility. Additionally, smaller openings that inhibit kit fox passage can result in foxes being vulnerable to capture when being pursued by larger predators (Cypher and Van Horn Job 2009).

In Bakersfield, fences determined to be passable for kit fox include the following: cattle fences consisting of strands of barbed wire, “hog-wire” fences commonly used to keep sheep out with mesh openings measuring 6 inches (15 centimeters) on each side, decorative fencing with suitable gaps (minimum of approximately 3.5 inches in width), and raised fences a few inches off the ground (Cypher and Van Horn Job 2009). Standard chain-link fence is not recommended as the openings are generally too small for passage by kit foxes and increase the risk of kit foxes potentially getting stuck in the fence or leaving them vulnerable to being pursued by larger predators (Cypher and Van Horn Job 2009).

Walls also present a significant challenge to kit foxes given that the foundation of the wall extends well into the ground making it difficult for foxes to excavate passageways under these structures. However, observations by Cypher and Van Horn Job (2009) found that walls constructed with periodic cut openings of sufficient size for passage of kit foxes were successfully used by kit foxes. As long as any fences and walls are constructed using methods that render them passable for kit foxes (e.g., installing small tunnels or passage holes and leaving 4- to 6-inch gaps under fences), kit foxes may be able to move through the proposed project open space areas near where commercial and light industrial development is planned (Cypher 2005).

Design Parameters

Prior to construction of fences and walls associated with the proposed project, the fencing plan shall be reviewed by the designated biologist (defined below) to confirm that the design enables San Joaquin kit fox to easily pass through the fences and walls yet inhibits the passage of kit fox predators. The following location and design parameters shall be followed:

- Kit fox-friendly fences and walls shall be located in areas that provide easy access to habitat corridors and other open space areas (e.g., Grapevine Creek, north and south sides of the California Aqueduct, tributary to Cattle Creek, and northern border of the proposed project site west of I-5). Examples of areas where kit fox fencing shall be used is around the fenced detention basins within proposed project open space just south of the aqueduct, as kit fox often use the upper edges of basins as refugia (Cypher pers.comm. 2015).
- In locations where exclusion of passage of large predators is desirable, fence openings shall be approximately 4 to 6 inches wide and at least 12 inches tall or raised 4 to 5 inches off of the ground. Fence/wall openings of 6 inches or less are considered impassable to coyotes (Wade 1982; Huot and Bergman 2007). Due to coyotes' excellent jumping and climbing ability, fences or walls need to be at least 6 feet (2 meters) tall to effectively inhibit coyotes. Also, a buried "apron" of fencing material extending up to 3 feet (1 meter) out from the fence is recommended to prevent coyotes from digging under fences (Timm et al. 2007). Passageways that are narrow in width (4 to 6 inches; 10 to 15 centimeters) and sufficiently tall (at least 12 inches; 30 centimeters) should allow kit foxes to rapidly pass through and significantly impede if not completely prevent passage by a larger predator (Cypher and Van Horn Job 2009). Chain-link fences shall be restricted along San Joaquin kit fox movement corridors and linkages.

- Existing fencing will be evaluated to determine whether any fence modifications can be made to allow for passage of kit foxes through open space areas.

Designated Biologist

A designated biologist will identify the locations of escape dens and oversee and conduct all escape den installations. The designated biologist will be knowledgeable and experienced in the biology, natural history, and survey techniques of kit fox. Additionally, the designated biologist will oversee any fencing proposed along the proposed project open space areas that is connected to other open space or movement areas to ensure that they are passable by kit fox and meet the requirements described above.

REFERENCES

Bjurlin, D., B.L. Cypher, C.M. Wingert, and C.L. Van Horn Job. 2005. *Urban Roads and the Endangered San Joaquin Kit Fox*. Prepared for the California Department of Transportation Contract No. 65A0136. Turlock, California: California State University, Stanislaus, Endangered Species Recovery Program.

CDFW (California Department of Fish and Wildlife). 2013. California Natural Diversity Database (CNDDB) GIS layer. March 2013.

Cypher, B. 2005. *Observations and Recommendations for Conservation of San Joaquin Kit Foxes on Tejon Ranch*. California State University, Stanislaus. April 6, 2005.

Cypher, B., M. Koopman, and D. McCullough. 2001. "Space Use and Movements by Kit Fox Family Members." *Transactions of the Western Section of the Wildlife Society* 37:84-87.

Cypher, B.L. and C.L. Van Horn Job. 2009. *Permeable Fence and Wall Designs that Facilitate Passage by Endangered San Joaquin Kit Foxes*. California State University, Stanislaus, Endangered Species Recovery Program. March 2009.

Cypher, B., C. Van Horn Job, and S. Phillips. 2012. *Conservation Strategies for San Joaquin Kit Foxes in Urban Environments*. Prepared for The U.S. Bureau of Reclamation, Agreement No. R11AP20502. California State University, Stanislaus. January 16, 2012.

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. "Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications." *Canid Biology & Conservation* 16(7):25-31.

Cypher, B.L. 2015. Personal communication (email) between Brian Cypher (ESRP) and Callie Ford (Dudek). August 11, 2015.

Grinnell, J., J.S. Dixon, and J.M. Linsdale. 1937. *Fur-Bearing Mammals of California*. Volume 2. Berkeley, California: University California Press.

Harrison, S.W., B.L. Cypher, and S.E. Phillips. 2011. *Enhancement of Satellite and Linkage Habitats to Promote Survival, Movement, and Colonization by San Joaquin Kit Foxes*. Prepared for the U.S. Bureau of Reclamation. Turlock, California: California State University Stanislaus, Endangered Species Recovery Program. January 18, 2011.

Huot, A.A., and D.L. Bergman. 2007. “Suitable and effective coyote control tools for the urban/suburban setting.” Proceedings of the Wildlife Damage Management Conference 12:312-322.

Koopman, M.E., J.H. Scrivner, and T.T. Kato. 1998. “Patterns of den use by San Joaquin kit foxes.” *Journal of Wildlife Management* 62:373-379.

Timm, R.M., C.C. Coolahan, R.O. Baker, and S.F. Beckerman. 2007. “Coyotes.” *Pest Notes*, Publication 74135. Berkeley, California: University of Californi Press.

USFWS (U.S. Fish and Wildlife Service). 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2010. *San Joaquin Kit Fox (*Vulpes macrotis mutica*), 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

Wade, D.A. 1982. “Use of fences for predator damage control.” *Vertebrate Pest Conference Proceedings* 10:24-33.

White, P.J., and K. Ralls. 1993. “Reproduction and Spacing Patterns of Kit Foxes Relative to Changing Prey Availability.” *Journal of Wildlife Management* 57(4): 861–867.

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APPENDIX B

Biological Resources Survey Methods

APPENDIX B
Biological Resources Survey Methods

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TABLES

1 INTRODUCTION

The methods used to map biological resources within the study area are provided in this appendix to the Biological Resources Technical Report (BTR). This appendix is organized by resource type.

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2 VEGETATION COMMUNITIES MAPPING

In September 2010, the California Department of Fish and Game (CDFG)[1] published the *List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form* (Natural Communities List; CDFG 2010) based on the *Manual of California Vegetation*, Second Edition (Sawyer et al. 2009), which is the California expression of the National Vegetation Classification Standard, Version 2 (FGDC 2008). These classification systems focus on a quantified, hierarchical approach that includes both floristic (plant species) and physiognomic (community structure and form) factors as currently observed (as opposed to predicting climax or successional stages). The nomenclature for vegetation communities in the study area follows the *Manual of California Vegetation* and the Natural Communities List (CDFG 2010). Natural vegetation communities were mapped in the field using the *Manual of California Vegetation* and Natural Communities List. Each natural community was mapped to the association level, with a few exceptions. The fiddleneck fields and the popcorn fields alliances were only mapped to the alliance level because none of their associations are considered special status. Purple needle grass grassland also was only mapped to the alliance level because all of its associations are considered special status. Non-native grasslands were not mapped by semi-natural stand type because none of these stand types are considered high priority for inventory, or special status, by the California Department of Fish and Wildlife (CDFW) (CDFG 2010). Non-natural land covers (including roadway and infrastructure, orchards and vineyards, and urban/developed) and unvegetated channel were classified as described in Sections 2.2.8, Non-Natural Land Covers, and 2.2.5.1, Unvegetated Channel, of the BTR.

Vegetation mapping was conducted on the 8,010-acre Grapevine Specific Plan Area during April through June 2013. During this time, vegetation communities were also mapped on adjacent lands covering approximately 7,300 acres of Tejon Ranch. Subsequent vegetation mapping was conducted in proposed off-site impact areas in October 2013, February 2014, October 2014, and July 2015.

All vegetation mapping was performed by biologists in the field (Table B-1). Vegetation communities were either mapped using a Trimble Geo XT Global Positioning System (GPS) unit with sub-meter accuracy or delineated on field maps with an orthorectified aerial photographic base (USDA 2012a) with a 5-foot topographic contour overlay (Intermap 2004, 2005a, 2005b). The maximum scale of the field maps was 500-scale (1 inch = 500 feet). In combination with the

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1 The California Department of Fish and Game (CDFG) was officially renamed the California Department of Fish and Wildlife (CDFW) as of January 1, 2013. Where references in this document are made to the department for background information, documents, permits, consultations, etc. (guidance) prior to January 1, 2013, the title CDFG is used and for references to guidance after January 1, 2013, CDFW is used.

GPS data, geographic information system (GIS) analysts digitized the delineated vegetation community boundaries from field maps to create a base vegetation layer using ArcGIS.

The minimum mapping unit was 1 acre or less for riparian communities or communities that are considered high priority for inventory in the Natural Communities List (CDFG 2010). Data were collected for representative vegetation communities and land covers, including aspect, dominant layer, structure of dominant layer, associated species and estimated absolute cover, total vegetative cover of each strata, approximate stand size, disturbance information, other observations, and photographs.

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
Reconnaissance Survey				
2/11/2013	Keith Babcock, Brock Ortega, Callie Ford	Reconnaissance survey	10:30 AM–5:30 PM	40°F–48°F, 0% cc; 0–2 mph winds
2/12/2013	Keith Babcock, Brock Ortega, Callie Ford	Reconnaissance survey	8:00 AM–11:45 AM	40°F–48°F, 0% cc; 0–2 mph winds
3/1/2013	Keith Babcock, Brock Ortega, David Germano (CSUB)	Reconnaissance survey	9:30 AM–2:00 PM	55°F–56°F, 0% cc; 0–2 mph winds
10/28/2014	Randall McInvale	Reconnaissance survey	8:00 AM–1:15 PM	68°F–82°F; 0% cc; 0–5 mph winds
Vegetation Mapping				
4/1/2013	Onkar Singh, Randall McInvale	Vegetation mapping	9:30 AM–5:15 PM	66°F–69°F; 40%–20% cc; 2 mph winds
4/2/2013	Onkar Singh, Randall McInvale	Vegetation mapping	7:30 AM–5:30 PM	50°F–73°F; 70%–30% cc; 2 mph winds
4/3/2013	Onkar Singh, Randall McInvale	Vegetation mapping	7:00 AM–4:15 PM	50°F–74°F; 20%–20% cc; 3 mph winds
4/16/2013	Callie Ford, Tish Schuyler	Vegetation mapping	6:30 PM–5:30 PM	46°F–70°F; 100%–30% cc; 0 mph winds
4/17/2013	Callie Ford, Tish Schuyler	Vegetation mapping	7:15 AM–4:20 PM	54°F–69°F; 0%–0% cc; 3 mph winds
4/18/2013	Callie Ford, Heather Moine, Tish Schuyler	Vegetation mapping	7:45 AM–4:30 PM	57°F–65°F; 0%–0% cc; 7 mph winds
5/22/2013	Britney Strittmater, Danielle Mullen	Vegetation mapping	9:00 AM–3:35 PM	59°F–75°F; 10%–0% cc; 0 mph winds
5/22/2013	Chris Kallstrand, Heather Moine	Vegetation mapping	8:35 AM–3:35 PM	61°F–70°F; 0%–10% cc; 8 mph winds
5/23/2013	Britney Strittmater, Danielle Mullen	Vegetation mapping	7:35 AM–4:15 PM	58°F–73°F; 0%–0% cc; 4 mph winds
5/23/2013	Chris Kallstrand, Heather Moine	Vegetation mapping	7:15 AM–4:05 PM	60°F–67°F; 0%–0% cc; 6 mph winds
5/24/2013	Britney Strittmater, Danielle Mullen	Vegetation mapping	7:25 AM–4:45 PM	59°F–73°F; 0%–10% cc; 4 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
5/24/2013	Chris Kallstrand, Heather Moine	Vegetation mapping	7:25 AM–4:05 PM	62°F–72°F; 0%–0% cc; 5 mph winds
6/18/2013	Callie Ford, Heather Moine	Vegetation mapping	8:00 AM–5:00 PM	70°F–79°F; 0%–0% cc; 0–3 mph winds
6/19/2013	Callie Ford	Vegetation mapping	7:15 AM–2:00 PM	59°F–73°F; 0%–0% cc; 0–4 mph winds
6/25/2013	Heather Moine, Kyle Matthews	Vegetation mapping	7:15 AM–4:10 PM	65°F–85°F; 0%–0% cc; 5 mph winds
6/26/2013	Britney Strittmater, Heather Moine, Kyle Matthews	Vegetation mapping	8:35 AM–2:30 PM	72°F–92°F; 0%–0% cc; 4 mph winds
6/27/2013	Britney Strittmater, Callie Ford	Vegetation mapping	8:00 AM–2:30 PM	77°F–91°F; 0%–0% cc; 1 mph winds
10/22/2013	Callie Ford	Vegetation mapping (in proposed off-site impact areas)	10:30 PM–2:30 PM	78°F–82°F; 10%–60% cc; 0–2 mph winds
2/20/2014	Patricia Schuyler	Vegetation mapping (in proposed off-site impact areas)	12:20 PM–1:20 PM	61°F; 30%–40% cc; 0–4 mph winds
10/28/2014	Randall McInvale	Vegetation mapping (in proposed off-site impact areas)	8:00 AM–1:15 PM	68°F–82°F; 0% cc; 0–5 mph winds
7/29/2015	Danielle Mullen, Heather Moine	Vegetation mapping (in proposed off-site impact areas)	8:00 AM–3:20 PM	78°F–99°F; 0%–50% cc; 0–5 mph winds
Jurisdictional Delineation				
4/16/2013	Callie Ford, Tish Schuyler	Jurisdictional delineation	9:30 AM–5:30 PM	48°F–64°F; 50%–30% cc; 5 mph winds
4/17/2013	Callie Ford, Tish Schuyler	Jurisdictional delineation	8:00 AM–5:40 PM	54°F–68°F; 0%–0% cc; 3 mph winds
4/18/2013	Callie Ford, Heather Moine, Tish Schuyler	Jurisdictional delineation	7:35 AM–2:55 PM	57°F–75°F; 0%–0% cc; 7 mph winds
5/14/2013	Tish Schuyler, Emily Weir	Jurisdictional delineation	Not Recorded	Not Recorded
6/18/2013	Callie Ford, Heather Moine	Jurisdictional delineation	8:00 AM–5:00 PM	70°F–79°F; 0%–0% cc; 0–3 mph winds
6/19/2013	Callie Ford, Heather Moine	Jurisdictional delineation	7:15 AM–2:00 PM	59°F–73°F; 0%–0% cc; 0–4 mph winds
6/26/2013	Britney Strittmater, Callie Ford	Jurisdictional delineation	8:15 AM–6:30 PM	77°F–93°F; 0%–0% cc; 0 mph winds
6/27/2013	Britney Strittmater, Callie Ford	Jurisdictional delineation	8:00 AM–2:30 PM	77°F–91°F; 0%–0% cc; 1 mph winds
7/9/2013	Callie Ford, Linda Archer, Tish Schuyler	Jurisdictional delineation	8:00 AM–5:30 PM	75°F–90°F; 0%–0% cc; 2 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
7/16/2013	Britney Strittmater, Heather Moine	Jurisdictional delineation	5:50 AM–2:25 PM	69°F–91°F; 0%–0% cc; 3 mph winds
7/18/2013	Callie Ford, Randall McInvale	Jurisdictional delineation	11:00 AM–6:50 PM	81°F–88°F; 0%–30% cc; 2 mph winds
10/28/2014	Randall McInvale	Jurisdictional delineation (proposed off-site impact areas)	8:00 AM–1:15 PM	68°F–82°F; 0% cc; 0–5 mph winds
7/29/2015	Danielle Mullen, Heather Moine	Jurisdictional delineation (proposed off-site impact areas)	8:00 AM–3:20 PM	78°F–99°F; 0%–50% cc; 0–5 mph winds
Plant Resources				
4/1/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	9:45 AM–5:30 PM	65°F–70°F; 70%–20% cc; 5 mph winds
4/1/2013	Britney Strittmater, Callie Ford, Karen Mullen	Rare plant survey pass 1	10:15 AM–5:45 PM	60°F–65°F; 80%–30% cc; 2.5 mph winds
4/1/2013	Chris Kallstrand, Danielle Mullen, Katie Dayton	Rare plant survey pass 1	10:15 AM–3:50 PM	57°F–72°F; 60%–20% cc; 2 mph winds
4/1/2013	Emily Wier, Heather Moine	Rare plant survey pass 1	9:40 AM–4:45 PM	52°F–50°F; 30%–60% cc; 6 mph winds
4/1/2013	Onkar Singh, Randall McInvale	Rare plant survey pass 1	9:30 AM–5:15 PM	66°F–69°F; 40%–20% cc; 2 mph winds
4/2/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–5:30 PM	55°F–73°F; 80%–20% cc; 5 mph winds
4/2/2013	Britney Strittmater, Callie Ford, Karen Mullen	Rare plant survey pass 1	8:20 AM–4:20 PM	60°F–74°F; 40%–20% cc; 2.3 mph winds
4/2/2013	Chris Kallstrand, Danielle Mullen, Katie Dayton	Rare plant survey pass 1	7:15 AM–3:50 PM	51°F–72°F; 80%–30% cc; 4 mph winds
4/2/2013	Emily Wier, Heather Moine	Rare plant survey pass 1	7:35 AM–4:35 PM	50°F–72°F; 60%–30% cc; 6 mph winds
4/2/2013	Onkar Singh, Randall McInvale	Rare plant survey pass 1	7:30 AM–5:30 PM	50°F–73°F; 70%–30% cc; 2 mph winds
4/3/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–3:30 PM	55°F–80°F; 0%–20% cc; 3 mph winds
4/3/2013	Britney Strittmater, Callie Ford, Karen Mullen	Rare plant survey pass 1	8:30 AM–4:15 PM	66°F–74°F; 10%–30% cc; 2 mph winds
4/3/2013	Chris Kallstrand, Danielle Mullen, Katie Dayton	Rare plant survey pass 1	7:20 AM–3:35 PM	53°F–72°F; 0%–20% cc; 2 mph winds
4/3/2013	Emily Wier, Heather Moine	Rare plant survey pass 1	7:25 AM–3:15 PM	52°F–75°F; 10%–40% cc; 6 mph winds
4/3/2013	Onkar Singh, Randall McInvale	Rare plant survey pass 1	7:00 AM–4:15 PM	50°F–74°F; 20%–20% cc; 3 mph winds
4/4/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–5:15 PM	62°F–75°F; 100%–50% cc; 2 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
4/4/2013	Danielle Mullen, Katie Dayton, Onkar Singh	Rare plant survey pass 1	7:00 AM–2:10 PM	54°F–65°F; 80%–50% cc; 2 mph winds
4/4/2013	Emily Wier, Heather Moine	Rare plant survey pass 1	7:35 AM–2:00 PM	52°F–72°F; 100%–60% cc; 3 mph winds
4/5/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:45 AM–5:30 PM	60°F–70°F; 100%–70% cc; 5 mph winds
4/5/2013	Onkar Singh, Randall McInvale	Rare plant survey pass 1	7:15 AM–3:30 PM	49°F–70°F; 100%–10% cc; 5 mph winds
4/6/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–5:30 PM	55°F–70°F; 100%–10% cc; 5 mph winds
4/7/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–4:00 PM	55°F–70°F; 100%–10% cc; 10 mph winds
4/8/2013	Callie Ford, Michelle Balk	Rare plant survey pass 1	9:30 AM–4:35 PM	47°F–54°F; 100%–100% cc; 12 mph winds
4/8/2013	Onkar Singh, Randall McInvale	Rare plant survey pass 1	8:15 AM–5:00 PM	53°F–55°F; 100%–80% cc; 20 mph winds
4/9/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	8:15 AM–4:00 PM	55°F–70°F; 0%–0% cc; 10 mph winds
4/9/2013	Callie Ford, Michelle Balk	Rare plant survey pass 1	8:15 AM–4:45 PM	54°F–66°F; 0%–0% cc; 1 mph winds
4/9/2013	Heather Moine, Onkar Singh, Randall McInvale	Rare plant survey pass 1	7:20 AM–3:30 PM	44°F–60°F; 0%–0% cc; 11 mph winds
4/10/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:25 AM–5:15 PM	55°F–80°F; 0%–0% cc; 2 mph winds
4/10/2013	Callie Ford, Chris Kallstrand, Michelle Balk	Rare plant survey pass 1	8:30 AM–3:40 PM	63°F–73°F; 0%–0% cc; 1 mph winds
4/10/2013	Heather Moine, Onkar Singh, Randall McInvale	Rare plant survey pass 1	7:20 AM–5:15 PM	44°F–73°F; 0%–0% cc; 8 mph winds
4/11/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	8:00 AM–5:45 PM	60°F–75°F; 10%–40% cc; 1 mph winds
4/11/2013	Chris Kallstrand, Michelle Balk	Rare plant survey pass 1	7:50 AM–3:00 PM	64°F–76°F; 0%–0% cc; 0 mph winds
4/11/2013	Heather Moine, Onkar Singh	Rare plant survey pass 1	7:20 AM–4:45 PM	55°F–70°F; 0%–30% cc; 5 mph winds
4/12/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:35 AM–4:30 PM	60°F–80°F; 0%–0% cc; 3 mph winds
4/12/2013	Chris Kallstrand, Michelle Balk	Rare plant survey pass 1	7:00 AM–11:30 AM	58°F–74°F; 0%–0% cc; 3 mph winds
4/12/2013	Heather Moine, Onkar Singh	Rare plant survey pass 1	7:20 AM–3:00 PM	45°F–79°F; 0%–0% cc; 10 mph winds
4/13/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	8:00 AM–1:00 PM	60°F–80°F; 20%–30% cc; 2 mph winds
4/15/2013	Chris Kallstrand, Doug Gettinger	Rare plant survey pass 1	9:05 AM–3:15 PM	54°F–66°F; 100%–30% cc; 2.5 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
4/15/2013	Dave Compton, Heather Moine, Melissa Blundell	Rare plant survey pass 1	8:55 AM–4:50 PM	57°F–56°F; 100%–20% cc; 18 mph winds
4/16/2013	Chris Kallstrand, Doug Gettinger, Karen Mullen	Rare plant survey pass 1	6:30 PM–5:30 PM	46°F–70°F; 100%–30% cc; 0 mph winds
4/16/2013	Dave Compton, Heather Moine, Melissa Blundell	Rare plant survey pass 1	8:35 AM–5:00 PM	41°F–52°F; 100%–60% cc; 19 mph winds
4/17/2013	Chris Kallstrand, Doug Gettinger, Karen Mullen	Rare plant survey pass 1	7:15 AM–4:20 PM	54°F–69°F; 0%–0% cc; 3 mph winds
4/17/2013	Heather Moine, Melissa Blundell	Rare plant survey pass 1	6:40 AM–4:45 PM	42°F–59°F; 0%–0% cc; 2 mph winds
4/18/2013	Callie Ford, Heather Moine, Tish Schuyler	Rare plant survey pass 1	7:45 AM–4:30 PM	57°F–65°F; 0%–0% cc; 7 mph winds
5/11/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	2:00 PM–6:30 PM	100°F–90°F; 10%–20% cc; 5 mph winds
5/17/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–7:00 PM	65°F–75°F; 0%–0% cc; 3 mph winds
5/18/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:00 AM–6:30 PM	60°F–75°F; 0%–0% cc; 2 mph winds
5/25/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:50 AM–5:45 PM	65°F–80°F; 10%–0% cc; 5 mph winds
5/26/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:45 AM–5:45 PM	65°F–80°F; 10%–0% cc; 5 mph winds
5/27/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	8:00 AM–6:00 PM	65°F–75°F; 0%–70% cc; 7 mph winds
5/28/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 1	7:30 AM–4:45 PM	60°F–75°F; 100%–50% cc; 10 mph winds
6/21/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	12:30 PM–6:30 PM	80°F–82°F; 10%–10% cc; 7 mph winds
6/22/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–5:30 PM	67°F–85°F; 10%–0% cc; 5 mph winds
6/23/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–5:30 PM	65°F–80°F; 10%–90% cc; 3 mph winds
6/24/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:30 AM–5:30 PM	67°F–77°F; 50%–80% cc; 4 mph winds
6/25/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:30 AM–5:30 PM	70°F–85°F; 20%–10% cc; 7 mph winds
6/26/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:30 AM–5:30 PM	70°F–85°F; 0%–0% cc; 3 mph winds
6/27/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–4:00 PM	70°F–95°F; 0%–0% cc; 3 mph winds
6/28/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	10:30 AM–6:30 PM	90°F–95°F; 0%–0% cc; 4 mph winds
6/29/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:00 AM–3:00 PM	75°F–100°F; 0%–0% cc; 3 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
6/30/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:00 AM–3:00 PM	75°F–100°F; 0%–50% cc; 3 mph winds
7/1/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:30 AM–3:30 PM	75°F–100°F; 10%–50% cc; 4 mph winds
7/1/2013	Chris Kallstrand, Heather Moine, Ryan Gilmore	Rare plant survey pass 2	9:10 AM–2:00 PM	83°F–95°F; 20%–60% cc; 2 mph winds
7/2/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:30 AM–3:30 PM	75°F–105°F; 10%–20% cc; 3 mph winds
7/2/2013	Chris Kallstrand, Heather Moine, Ryan Gilmore	Rare plant survey pass 2	5:50 AM–11:45 AM	75°F–93°F; 0%–0% cc; 6 mph winds
7/3/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:00 AM–3:00 PM	75°F–100°F; 20%–40% cc; 4 mph winds
7/3/2013	Chris Kallstrand, Heather Moine, Ryan Gilmore	Rare plant survey pass 2	5:55 AM–11:10 AM	73°F–92°F; 10%–0% cc; 5 mph winds
7/4/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:00 AM–1:00 PM	75°F–100°F; 10%–10% cc; 3 mph winds
7/6/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–3:00 PM	72°F–97°F; 30%–10% cc; 2 mph winds
7/7/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–3:00 PM	75°F–100°F; 10%–0% cc; 3 mph winds
7/8/2013	Heather Moine, Lee Ripma, Onkar Singh	Rare plant survey pass 2	8:50 AM–3:20 PM	69°F–94°F; 0%–0% cc; 4 mph winds
7/9/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	6:00 AM–3:00 PM	70°F–100°F; 0%–0% cc; 3 mph winds
7/9/2013	Heather Moine, Melissa Blundell	Rare plant survey pass 2	8:10 AM–3:25 PM	73°F–98°F; 0%–0% cc; 4 mph winds
7/9/2013	Lee Ripma, Onkar Singh, Ryan Gilmore	Rare plant survey pass 2	5:50 AM–2:00 PM	71°F–103°F; 0%–0% cc; 8 mph winds
7/10/2013	Anuja Parikh, Nathan Gale (Flx)	Rare plant survey pass 2	7:00 AM–12:00 PM	75°F–95°F; 80%–90% cc; 3 mph winds
7/10/2013	Britney Strittmater, Emily Wier, Johanna Page	Rare plant survey pass 2	9:15 AM–4:00 PM	82°F–91°F; 90%–80% cc; 4 mph winds
7/10/2013	Chris Kallstrand, Ryan Gilmore	Rare plant survey pass 2	5:45 AM–2:15 PM	87°F–93°F; 60%–70% cc; 2 mph winds
7/10/2013	Heather Moine, Melissa Blundell	Rare plant survey pass 2	5:45 AM–1:25 PM	70°F–85°F; 80%–100% cc; 4 mph winds
7/10/2013	Lee Ripma, Onkar Singh	Rare plant survey pass 2	5:45 AM–2:15 PM	86°F–93°F; 70%–70% cc; 1 mph winds
7/11/2013	Britney Strittmater, Emily Wier, Johanna Page	Rare plant survey pass 2	6:35 AM–3:55 PM	75°F–83°F; 100%–90% cc; 1 mph winds
7/11/2013	Heather Moine, Melissa Blundell	Rare plant survey pass 2	5:30 AM–3:30 PM	66°F–84°F; 100%–100% cc; 3 mph winds
7/11/2013	Lee Ripma, Onkar Singh, Ryan Gilmore	Rare plant survey pass 2	6:00 AM–12:40 PM	68°F–97°F; 100%–100% cc; 3 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
7/12/2013	Britney Strittmater, Emily Wier, Johanna Page	Rare plant survey pass 2	5:50 AM–1:45 PM	73°F–86°F; 30%–0% cc; 4 mph winds
7/12/2013	Lee Ripma, Onkar Singh	Rare plant survey pass 2	5:45 AM–12:15 PM	72°F–94°F; 20%–30% cc; 5 mph winds
7/13/2013	Onkar Singh	Rare plant survey pass 2	5:45 AM–1:25 PM	71°F–97°F; 0%–30% cc; 1 mph winds
7/14/2013	Onkar Singh	Rare plant survey pass 2	7:55 AM–1:40 PM	76°F–92°F; 10%–10% cc; 3 mph winds
7/15/2013	Britney Strittmater, Doug Gettinger, Heather Moine	Rare plant survey pass 2	9:55 AM–3:00 PM	79°F–86°F; 0%–0% cc; 2 mph winds
7/15/2013	Chris Kallstrand, Ryan Gilmore	Rare plant survey pass 2	7:45 AM–3:00 PM	78°F–86°F; 0%–0% cc; 2 mph winds
7/15/2013	Lee Ripma, Onkar Singh	Rare plant survey pass 2	7:50 AM–2:45 PM	79°F–98°F; 0%–0% cc; 5 mph winds
10/9/2013	Heather Moine	Additional plant survey	11:05 AM–1:20 PM	64°F–63°F; 100%–100% cc; 7 mph winds
4/2/2015	Heather Moine, Johanna Page, Melissa Blundell	Rare plant survey (proposed off-site impact areas)	8:30 AM–3:48 PM	58°F–69°F; 10%–0% cc; 4–7 mph winds
4/9/2015	Heather Moine	Rare plant survey (proposed off-site impact areas)	10:55 AM–2:29 PM	63°F–87°F; 0% cc; 3–4 mph winds
7/29/2015	Danielle Mullen, Heather Moine	Rare plant survey (proposed off-site impact areas)	8:00 AM–3:20 PM	78°F–99°F; 0%–50% cc; 0–5 mph winds
Wildlife Resources				
Birds				
5/7/2013	Callie Ford	LBVI/WIFL	9:30 AM–5:55 PM	56°F–62°F; 70%–50% cc; 1 mph winds
5/8/2013	Callie Ford	LBVI/WIFL	6:35 AM–12:35 PM	58°F–62°F; 90% cc; 0 mph winds
5/8/2013	Traci Caddy	Marsh nesting bird survey	9:10 AM–9:55 AM	57°F–59°F; 70% cc; 0 mph winds
5/16/2013	Karen Mullen, Traci Caddy	Nesting raptors	8:55 AM–5:45 PM	59°F–68°F; 40%–100% cc; 1–3 mph winds
5/17/2013	Callie Ford, Danielle Mullen	LBVI/WIFL	6:25 AM–12:40 PM	57°F–64°F; 80%–10% cc; 6–5 mph winds
5/17/2013	Karen Mullen, Traci Caddy	Nesting raptors	7:35 AM–3:25 PM	50°F–63°F; 100%–10% cc; 1 mph winds
5/28/2013	Danielle Mullen, Paul Lemons	LBVI/WIFL	6:30 AM–10:50 AM	56°F–63°F; 100% cc; 6–7 mph winds
6/10/2013	Danielle Mullen, Paul Lemons	LBVI/WIFL	6:00 AM–10:55 AM	66°F–76°F; 0% cc; 3–6 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
6/20/2013	Danielle Mullen, Paul Lemons	LBVI/WIFL	6:00 AM–11:45 AM	58°F–72°F; 0% cc; 5–7 mph winds
7/1/2013	Paul Lemons	LBVI/WIFL; Marsh nesting bird survey	6:25 AM–12:20 PM	65°F–93°F; 100%–80% cc; 1–5 mph winds
7/2/2013	Paul Lemons	LBVI/WIFL; Marsh nesting bird survey	5:45 AM–10:45 AM	65°F–91°F; 30%–60% cc; 1–10 mph winds
7/14/2013	Brock Ortega	LBVI/WIFL	4:00 AM–11:30 AM	70°F–90°F; 0% cc; 0–3 mph winds
7/15/2013	Brock Ortega	LBVI/WIFL	4:45 AM–10:40 AM	70°F–88°F; 0% cc; 3–5 mph winds
7/17/2013	Dave Compton, Traci Caddy	Nesting raptors	9:20 AM–5:30 PM	81°F–90°F; 0% cc; 1–1.6 mph winds
7/18/2013	Dave Compton, Traci Caddy	Nesting raptors	8:10 PM–1:00 PM	89°F–98°F; 0% cc; 3.6–1 mph winds
7/30/2013	Paul Lemons	LBVI/WIFL	6:40 AM–11:15 AM	64°F–92°F; 0%–10% cc; 2–7 mph winds
7/31/2013	Paul Lemons	LBVI/WIFL	5:35 AM–10:40 AM	63°F–94°F; 0% cc; 1–10 mph winds
11/13/2013	Dave Compton, Traci Caddy	Winter raptor survey	8:30 AM–4:00 PM	67°F–70°F; 0% cc; 2–2 mph winds
11/14/2013	Dave Compton, Traci Caddy	Winter raptor survey	8:50 AM–3:00 PM	32°F–59°F; 0% cc; 1–12 mph winds
12/11/2013	Dave Compton, Traci Caddy	Winter raptor survey	8:10 AM–2:15 PM	39°F–45°F; 10% cc; 1–1 mph winds
12/12/2013	Dave Compton, Traci Caddy, Keith Babcock	Winter raptor survey	8:15 AM–3:45 PM	42°F–50°F; 100% cc; 1–2 mph winds
1/9/2014	Dave Compton, Traci Caddy	Winter raptor survey	8:10 AM–4:25 PM	47°F–64°F; 10% cc; 2–1 mph winds
1/10/2014	Dave Compton, Traci Caddy	Winter raptor survey	8:05 AM–2:25 PM	61°F–52°F; 70% cc; 1–10 mph winds
2/10/2014	Dave Compton, Traci Caddy	Winter raptor survey	8:10 AM–2:10 PM	48°F–63°F; 100% cc; 0–2 mph winds
2/11/2014	Dave Compton, Traci Caddy	Winter raptor survey	8:00 AM–3:35 PM	48°F–63°F; 50%–100% cc; 0–2 mph winds
4/23/2014	Dave Compton, Traci Caddy	Golden eagle nest survey	8:30 AM–5:30 PM	45°F–60°F; 30%–50% cc; 2–8 mph winds
4/24/2014	Dave Compton, Traci Caddy	Golden eagle nest survey	7:15 AM–3:30 PM	54°F–70°F; 0% cc; 0–7 mph winds
4/25/2014	Dave Compton, Traci Caddy	Golden eagle nest survey	7:00 AM–1:15 PM	58°F–70°F; 50%–100% cc; 0–2 mph winds
		Amphibians		
5/8/2013	Traci Caddy	California red-legged frog	9:10 AM–11:05 AM	57°F–62°F; 70%–80% cc; 0–1 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
5/16/2013	Karen Mullen, Traci Caddy	California red-legged frog	9:30 PM–10:40 PM	52°F–49°F; 0% cc; 0 mph winds
5/27/2013	Danielle Mullen, Paul Lemons	California red-legged frog	8:00 PM–9:40 PM	68°F–67°F; 70% cc; 6–3 mph winds
6/9/2013	Danielle Mullen, Paul Lemons	California red-legged frog	8:15 PM–10:00 PM	85°F–82°F; 10% cc; 12–15 mph winds
6/19/2013	Danielle Mullen, Paul Lemons	California red-legged frog	8:10 PM–10:15 PM	64°F–61°F; 0% cc; 1–2 mph winds
7/1/2013	Paul Lemons	California red-legged frog	8:30 PM–10:15 PM	85°F–74°F; 60%–50% cc; 2–1 mph winds
12/9/2013	Chris Evelyn (UCSB), Callie Ford	Tehachapi slender salamander habitat assessment	8:10 AM–4:25 PM	30°F–40°F; 0% cc; 4–10 mph winds
		Mammals		
7/15/2013	Karen Mullen, Traci Caddy	Passive acoustic bat survey (Stations 1–6)	8:30 AM–2:30 PM	74°F–89°F; 0% cc; 20 mph winds
7/22/2013	Karen Mullen, Traci Caddy	Passive acoustic bat survey (Stations 7–12)	8:30 AM–2:30 PM	75°F–85°F;0 % cc; 10–12 mph winds
7/29/2013	Karen Mullen, Traci Caddy	Passive acoustic bat survey (Stations 13–18)	8:30 AM–2:30 PM	76°F–86°F;0 % cc; 13–15 mph winds
8/30/2013	Johanna Page, Traci Caddy, Brock Ortega	Wildlife camera survey–corridor	8:30 AM–3:30 PM	73°F–90°F; 0% cc; 10–12 mph winds
9/27/2013	Johanna Page, Karen Mullen, Traci Caddy	Wildlife camera survey–corridor	8:53 AM–2:30 PM	62°F–71°F; 0% cc; 9–11 mph winds
10/25/2013	Johanna Page, Traci Caddy	Wildlife camera survey–ringtail	8:30 AM–2:53 PM	71°F–82°F; 0% cc; 7–8 mph winds
11/20/2013	Noelle Ronan, Karen Mullen	Bat roosting habitat assessment	3:00 PM–6:00 PM	57°F; 100% cc; 0–3 mph winds
11/21/2013	Noelle Ronan, Karen Mullen	Bat roosting habitat assessment	8:00 AM–2:00 PM	54°F; 100% cc; 0–3 mph winds
12/2/2013	Brian Cypher (ESRP), Tory Westall (ESRP), Callie Ford	Buena Vista Lake shrew habitat assessment	9:00 AM–1:20 PM	50°F–64°F; 10% cc; 0–1 mph winds
1/14/2014	Johanna Page, Brock Ortega, Traci Caddy	Wildlife camera survey–kit fox	9:00 AM–3:00 PM	55°F–61°F; % cc; 15–17 mph winds
4/15/2014	Johanna Page, Melissa Blundell, Traci Caddy	Wildlife camera survey–kit fox	9:00 AM–3:45 PM	61°F–70°F; 0–20% cc; 3–5 mph winds
4/16/2014	Johanna Page, Melissa Blundell, Traci Caddy	Wildlife camera survey–kit fox	7:45 AM–1:30 PM	56°F–81°F; 0% cc; 0–5 mph winds
4/18/2014	Dr. David Germano (CSUB), Melissa Blundell	Small mammal trapping habitat assessment	9:00 AM–5:00 PM	64°F–75°F; 50% cc; 0–5 mph winds
5/1/2014	Noelle Ronan	Maternity bat roost survey	2:00 PM–3:00 PM	83°F–91°F; 80% cc; 1–2 mph winds
5/2/2014	Noelle Ronan	Maternity bat roost survey	12:15 PM–12:40 PM	89°F; 10% cc; 2 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
5/19/2014 – 5/25/2014	Dr. David Germano (CSUB)	Focused small mammal trapping	Varied	Varied
6/5/2014	Noelle Ronan	Maternity bat roost survey	4:20 PM–6:00 PM	86°F–91°F; 0% cc; 1–2 mph winds
6/6/2014	Noelle Ronan	Maternity bat roost survey	11:00 AM–12:00 PM	87°F; 0% cc; 1–2 mph winds
7/15/2014	Noelle Ronan	Maternity bat roost survey	4:30 PM–6:00 PM	95°F; 40% cc; 3-5 mph winds; no water flowing in creek
7/16/2014	Noelle Ronan	Maternity bat roost survey	11:00 AM–11:15 AM	91°F; 20% cc; 0-2 mph winds; no water flowing in creek
9/4/2014	Noelle Ronan	Maternity bat roost survey	5:00 PM–6:00 PM	94°F; 0% cc; 0 mph winds; no water flowing in creek
9/5/2014	Noelle Ronan	Maternity bat roost survey	11:30 AM–12:00 PM	86.5°F; 0% cc; 1-2 mph winds; no water flowing in creek
Burrow and Den Habitat Assessment				
10/22/2013	Callie Ford	Burrow habitat assessment	3:45 PM–5:45 PM	71°F–71°F; 10% cc; 0–0 mph winds
10/22/2013	Chris Kallstrand	Burrow habitat assessment	11:30 AM–5:45 PM	82°F–71°F; 60% cc; 2–0 mph winds
10/22/2013	Johanna Page	Burrow habitat assessment	11:30 AM–5:45 PM	82°F–71°F; 60% cc; 2–0 mph winds
10/22/2013	Melissa Blundell	Burrow habitat assessment	11:30 AM–5:45 PM	82°F–71°F; 60% cc; 2–0 mph winds
10/22/2013	Traci Caddy	Burrow habitat assessment	11:30 AM–5:55 PM	82°F–71°F; 60% cc; 1–2 mph winds
10/23/2013	Callie Ford	Burrow habitat assessment	9:35 AM–12:50 PM	74°F–84°F; 30% cc; 0– mph winds
10/23/2013	Chris Kallstrand	Burrow habitat assessment	9:00 AM–5:05 PM	66°F–78°F; 30% cc; 2–2 mph winds
10/23/2013	Danielle Mullen	Burrow habitat assessment	9:55 AM–5:05 PM	75°F–75°F; 30% cc; 2–3 mph winds
10/23/2013	Emily Wier	Burrow habitat assessment	9:15 AM–1:00 PM	76°F–°F; 40% cc; 2– mph winds
10/23/2013	Johanna Page	Burrow habitat assessment	8:50 AM–3:15 PM	66°F–79°F; 40% cc; 2–0 mph winds
10/23/2013	Randall McInvale	Burrow habitat assessment	9:00 AM–5:05 PM	67°F–78°F; 50% cc; 0–2 mph winds
10/23/2013	Scott Gressard	Burrow habitat assessment	10:10 AM–12:45 PM	74°F–84°F; 30% cc; 0–5 mph winds
10/24/2013	Chris Kallstrand	Burrow habitat assessment	7:25 AM–3:45 PM	60°F–82°F; 0% cc; 3–2 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
10/24/2013	Danielle Mullen	Burrow habitat assessment	7:30 AM–4:10 PM	54°F–76°F; 0% cc; 4–3 mph winds
10/24/2013	Dave Compton	Burrow habitat assessment	7:40 AM–3:30 AM	60°F–75°F; 0% cc; 1–3 mph winds
10/24/2013	Melissa Blundell	Burrow habitat assessment	7:40 AM–3:20 PM	60°F–74°F; 0% cc; 2–2 mph winds
10/24/2013	Randall McInvale	Burrow habitat assessment	7:40 AM–4:15 PM	60°F–82°F; 0% cc; 2–2 mph winds
10/25/2013	Chris Kallstrand	Burrow habitat assessment	7:05 AM–12:30 PM	58°F–72°F; 0% cc; 3–2 mph winds
10/25/2013	Danielle Mullen	Burrow habitat assessment	7:40 AM–12:30 PM	54°F–72°F; 0% cc; 2–0 mph winds
10/25/2013	Dave Compton	Burrow habitat assessment	7:05 AM–3:40 PM	58°F–74°F; 0% cc; 3–2 mph winds
10/25/2013	Melissa Blundell	Burrow habitat assessment	7:05 AM–3:35 PM	58°F–74°F; 0% cc; 3–2 mph winds
10/25/2013	Randall McInvale	Burrow habitat assessment	7:05 AM–3:35 PM	58°F–74°F; 0% cc; 3–2 mph winds
10/28/2013	Britney Strittmater	Burrow habitat assessment	9:40 AM–4:45 PM	65°F–62°F; 60% cc; 2–2 mph winds
10/28/2013	Chris Kallstrand	Burrow habitat assessment	7:10 AM–4:00 PM	54°F–63°F; 100% cc; 4–5 mph winds
10/28/2013	Dave Compton	Burrow habitat assessment	7:45 AM–3:50 PM	50°F–62°F; 100% cc; 3–5 mph winds
10/28/2013	Emily Wier	Burrow habitat assessment	7:40 AM–4:30 PM	50°F–62°F; 100% cc; 3–4 mph winds
10/28/2013	Johanna Page	Burrow habitat assessment	8:40 AM–4:45 PM	39°F–51°F; 100% cc; 4–3 mph winds
10/28/2013	Melissa Blundell	Burrow habitat assessment	7:10 AM–4:00 PM	54°F–63°F; 0%–90% cc; 2 mph winds
10/28/2013	Randall McInvale	Burrow habitat assessment	7:10 AM–4:05 PM	54°F–64°F; 50%–90% cc; 4–5 mph winds
10/28/2013	Scott Gressard	Burrow habitat assessment	8:00 AM–4:25 PM	55°F–71°F; 90% cc; 4–5 mph winds
10/28/2013	Traci Caddy	Burrow habitat assessment	9:45 AM–4:50 PM	65°F–51°F; 50% cc; 2–4 mph winds
10/29/2013	Britney Strittmater	Burrow habitat assessment	6:50 AM–1:30 PM	53°F–61°F; 100% cc; 1–2 mph winds
10/29/2013	Chris Kallstrand	Burrow habitat assessment	6:45 AM–4:00 PM	53°F–64°F; 100% cc; 0–5 mph winds
10/29/2013	Dave Compton	Burrow habitat assessment	7:55 AM–4:10 PM	52°F–54°F; 90% cc; 0–5 mph winds
10/29/2013	Emily Wier	Burrow habitat assessment	7:10 AM–3:45 PM	50°F–53°F; 90% cc; 2–2 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
10/29/2013	Heather Moine	Burrow habitat assessment	7:55 AM–3:55 PM	45°F–50°F; 90% cc; 1–3 mph winds
10/29/2013	Johanna Page	Burrow habitat assessment	7:55 AM–3:55 PM	45°F–50°F; 90% cc; 1–3 mph winds
10/29/2013	Melissa Blundell	Burrow habitat assessment	6:50 AM–4:00 PM	54°F–64°F; 90% cc; 0–4 mph winds
10/29/2013	Randall McInvale	Burrow habitat assessment	6:50 AM–4:00 PM	52°F–64°F; 100% cc; 0–5 mph winds
10/29/2013	Scott Gressard	Burrow habitat assessment	7:55 AM–4:00 PM	50°F–59°F; 80% cc; 1–3 mph winds
10/29/2013	Traci Caddy	Burrow habitat assessment	7:55 AM–3:55 PM	50°F–49°F; 80% cc; 1–2 mph winds
10/30/2013	Chris Kallstrand	Burrow habitat assessment	6:55 AM–4:00 PM	52°F–73°F; 0% cc; 0–1 mph winds
10/30/2013	Dave Compton	Burrow habitat assessment	7:15 AM–4:10 PM	45°F–67°F; 10% cc; 0–6 mph winds
10/30/2013	Emily Wier	Burrow habitat assessment	7:10 AM–4:30 PM	45°F–68°F; 10% cc; 3–2 mph winds
10/30/2013	Heather Moine	Burrow habitat assessment	7:15 AM–4:00 PM	35°F–58°F; 10% cc; 1–4 mph winds
10/30/2013	Johanna Page	Burrow habitat assessment	7:15 AM–4:05 PM	35°F–58°F; 10% cc; 1–4 mph winds
10/30/2013	Melissa Blundell	Burrow habitat assessment	6:55 AM–2:50 PM	52°F–68°F; 10% cc; 3– mph winds
10/30/2013	Randall McInvale	Burrow habitat assessment	6:55 AM–4:00 PM	52°F–73°F; 0% cc; 1–1 mph winds
10/30/2013	Scott Gressard	Burrow habitat assessment	7:10 AM–7:45 AM	53°F–72°F; 10% cc; 3–0 mph winds
10/31/2013	Chris Kallstrand	Burrow habitat assessment	6:55 AM–12:05 PM	51°F–64°F; 0% cc; –1 mph winds
10/31/2013	Scott Gressard	Burrow habitat assessment	8:10 AM–11:55 AM	50°F–65°F; 0% cc; 1–0 mph winds
10/31/2013	Traci Caddy	Burrow habitat assessment	6:40 AM–12:55 PM	34°F–61°F; 0% cc; 3–1 mph winds
11/1/2013	Callie Ford	Burrow habitat assessment	2:50 PM–2:50 PM	0°F–°F; % cc; – mph winds
11/1/2013	Johanna Page	Burrow habitat assessment	7:00 AM–3:45 PM	54°F–72°F; 0% cc; 1–0 mph winds
11/1/2013	Melissa Blundell	Burrow habitat assessment	7:40 AM–3:45 PM	53°F–73°F; 0% cc; 0–0 mph winds
11/1/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–3:45 PM	54°F–74°F; 0% cc; 1–1 mph winds
11/1/2013	Traci Caddy	Burrow habitat assessment	7:00 AM–3:45 PM	54°F–72°F; 0% cc; 1–0 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
11/4/2013	Danielle Mullen	Burrow habitat assessment	8:40 AM–4:50 PM	58°F–46°F; 0% cc; 2–0 mph winds
11/4/2013	Dave Compton	Burrow habitat assessment	8:40 AM–4:55 PM	55°F–49°F; 10% cc; 0–3 mph winds
11/4/2013	Johanna Page	Burrow habitat assessment	8:35 AM–4:55 PM	64°F–57°F; 10% cc; 2–4 mph winds
11/4/2013	Heather Moine	Burrow habitat assessment	8:25 AM–5:05 PM	55°F–57°F; 0% cc; 1–4 mph winds
11/4/2013	Marshall Paymard	Burrow habitat assessment	9:15 AM–5:15 PM	67°F–70°F; 0% cc; 2– mph winds
11/4/2013	Randall McInvale	Burrow habitat assessment	8:30 AM–5:05 PM	66°F–58°F; 10% cc; 1–5 mph winds
11/4/2013	Traci Caddy	Burrow habitat assessment	7:25 AM–5:00 PM	58°F–49°F; 30% cc; 1–3 mph winds
11/5/2013	Danielle Mullen	Burrow habitat assessment	6:55 AM–4:45 PM	45°F–47°F; 0% cc; 3–0 mph winds
11/5/2013	Dave Compton	Burrow habitat assessment	7:00 AM–4:35 PM	48°F–54°F; 0% cc; 2–0 mph winds
11/5/2013	Heather Moine	Burrow habitat assessment	7:00 AM–4:50 PM	48°F–47°F; 0% cc; 2–0 mph winds
11/5/2013	Marshall Paymard	Burrow habitat assessment	6:50 AM–4:45 PM	48°F–55°F; 0% cc; 1–2 mph winds
11/5/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–7:40 AM	48°F–50°F; 0% cc; 1–1 mph winds
11/6/2013	Callie Ford	Burrow habitat assessment	9:30 AM–12:00 PM	55°F–68°F; 0% cc; 2–1 mph winds
11/6/2013	Danielle Mullen	Burrow habitat assessment	7:10 AM–4:15 PM	49°F–54°F; 10% cc; 2–2 mph winds
11/6/2013	Dave Compton	Burrow habitat assessment	7:20 AM–4:00 PM	50°F–60°F; 10% cc; 2–3 mph winds
11/6/2013	Heather Moine	Burrow habitat assessment	7:15 AM–4:30 PM	54°F–61°F; 0% cc; 2–3 mph winds
11/6/2013	Marshall Paymard	Burrow habitat assessment	7:15 AM–4:15 PM	50°F–60°F; 0% cc; 2–3 mph winds
11/6/2013	Melissa Blundell	Burrow habitat assessment	7:15 AM–4:10 PM	50°F–62°F; 10% cc; 3–4 mph winds
11/6/2013	Randall McInvale	Burrow habitat assessment	7:30 AM–4:05 AM	53°F–60°F; 0% cc; 2–3 mph winds
11/7/2013	Britney Strittmater	Burrow habitat assessment	7:30 AM–2:45 PM	55°F–69°F; 10% cc; 2–2 mph winds
11/7/2013	Danielle Mullen	Burrow habitat assessment	7:05 AM–12:00 PM	51°F–64°F; 20% cc; 0–0 mph winds
11/7/2013	Johanna Page	Burrow habitat assessment	7:30 AM–2:40 PM	63°F–72°F; 30% cc; 0–1 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
11/7/2013	Marshall Paymard	Burrow habitat assessment	7:15 AM–12:00 PM	57°F–64°F; 40% cc; 1–2 mph winds
11/7/2013	Melissa Blundell	Burrow habitat assessment	7:20 AM–2:40 PM	48°F–71°F; 20% cc; 0–0 mph winds
11/7/2013	Randall McInvale	Burrow habitat assessment	7:40 AM–2:15 PM	53°F–77°F; 10% cc; 3–3 mph winds
11/8/2013	Britney Strittmater	Burrow habitat assessment	7:00 AM–2:05 PM	59°F–69°F; 0% cc; 2–2 mph winds
11/8/2013	Johanna Page	Burrow habitat assessment	7:00 AM–3:40 PM	59°F–76°F; 0% cc; 2–0 mph winds
11/8/2013	Traci Caddy	Burrow habitat assessment	7:00 AM–3:40 PM	59°F–76°F; 0% cc; 2–0 mph winds
11/11/2013	Britney Strittmater	Burrow habitat assessment	7:35 AM–4:05 PM	58°F–71°F; 0% cc; 0–1 mph winds
11/11/2013	Heather Moine	Burrow habitat assessment	7:40 AM–4:10 PM	58°F–71°F; 0% cc; 1–0 mph winds
11/11/2013	Johanna Page	Burrow habitat assessment	7:40 AM–4:05 PM	58°F–71°F; 0% cc; 0–0 mph winds
11/11/2013	Traci Caddy	Burrow habitat assessment	7:35 AM–3:40 PM	64°F–74°F; 0% cc; 0–0 mph winds
11/12/2013	Britney Strittmater	Burrow habitat assessment	7:10 AM–4:00 PM	62°F–66°F; 100% cc; 0–1 mph winds
11/12/2013	Heather Moine	Burrow habitat assessment	7:15 AM–3:55 PM	62°F–66°F; 100% cc; 0–1 mph winds
11/13/2013	Britney Strittmater	Burrow habitat assessment	7:05 AM–4:05 PM	55°F–58°F; 0% cc; 1–1 mph winds
11/13/2013	Danielle Mullen	Burrow habitat assessment	6:55 AM–4:05 PM	49°F–58°F; 0% cc; 4–0 mph winds
11/13/2013	Heather Moine	Burrow habitat assessment	7:05 AM–4:20 PM	58–60°F; 0% cc; 1–3 mph winds
11/13/2013	Marshall Paymard	Burrow habitat assessment	7:15 AM–4:10 PM	55°F–67°F; 0% cc; 1–1 mph winds
11/13/2013	Melissa Blundell	Burrow habitat assessment	7:20 AM–4:10 PM	55°F–67°F; 0% cc; 2–0 mph winds
11/13/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–4:15 PM	53°F–68°F; 0% cc; 1–3 mph winds
11/14/2013	Britney Strittmater	Burrow habitat assessment	7:10 AM–4:00 PM	56°F–74°F; 0% cc; 0–1 mph winds
11/14/2013	Danielle Mullen	Burrow habitat assessment	7:25 AM–4:20 PM	58°F–62°F; 0% cc; 4–0 mph winds
11/14/2013	Johanna Page	Burrow habitat assessment	7:15 AM–4:30 PM	62°F–68°F; 0% cc; 3–4 mph winds
11/14/2013	Marshall Paymard	Burrow habitat assessment	7:15 AM–4:10 PM	50°F–62°F; 0% cc; 1–3 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
11/14/2013	Melissa Blundell	Burrow habitat assessment	7:20 AM–4:00 PM	55°F–73°F; 0% cc; 0–0 mph winds
11/14/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–4:00 PM	55°F–67°F; 0% cc; 3–4 mph winds
11/15/2013	Britney Strittmater	Burrow habitat assessment	7:20 AM–12:55 PM	55°F–62°F; 30% cc; 0–3 mph winds
11/15/2013	Johanna Page	Burrow habitat assessment	7:20 AM–4:00 PM	56°F–58°F; 80% cc; 1–5 mph winds
11/15/2013	Marshall Paymard	Burrow habitat assessment	7:20 AM–4:25 PM	50°F–61°F; 0% cc; 1–1 mph winds
11/15/2013	Randall McInvale	Burrow habitat assessment	7:20 AM–4:25 PM	50°F–61°F; 40% cc; 1–1 mph winds
11/18/2013	Britney Strittmater	Burrow habitat assessment	8:15 AM–5:00 PM	59°F–65°F; 10% cc; 0–0 mph winds
11/18/2013	Danielle Mullen	Burrow habitat assessment	8:25 AM–5:10 PM	54°F–61°F; 20% cc; 3–0 mph winds
11/18/2013	Randall McInvale	Burrow habitat assessment	8:20 AM–4:40 PM	59°F–59°F; 20% cc; 3–1 mph winds
11/19/2013	Heather Moine	Burrow habitat assessment	7:00 AM–4:35 PM	47°F–54°F; 20% cc; 1–0 mph winds
11/19/2013	Johanna Page	Burrow habitat assessment	7:20 AM–4:05 PM	56°F–58°F; 50% cc; 2–3 mph winds
11/19/2013	Danielle Mullen	Burrow habitat assessment	7:00 AM–4:35 PM	49°F–53°F; 30% cc; 0–0 mph winds
11/19/2013	Britney Strittmater	Burrow habitat assessment	7:00 AM–4:45 PM	46°F–54°F; 10% cc; 1–0 mph winds
11/19/2013	Karen Mullen	Burrow habitat assessment	9:00 AM–6:45 PM	58°F–58°F; 40% cc; 0–3 mph winds
11/20/2013	Karen Mullen	Burrow habitat assessment	7:25 AM–1:15 PM	55–68°F; 90% cc; 0–1 mph winds
11/20/2013	Danielle Mullen	Burrow habitat assessment	7:15 AM–4:05 PM	52°F–51°F; 90% cc; 3–4 mph winds
11/20/2013	Heather Moine	Burrow habitat assessment	7:15 AM–4:10 PM	54°F–54°F; 90% cc; 3–3 mph winds
11/20/2013	Johanna Page	Burrow habitat assessment	7:20 AM–4:15 PM	61°F–61°F; 90% cc; 2–3 mph winds
11/20/2013	Chris Kallstrand	Burrow habitat assessment	7:20 AM–4:10 PM	54°F–72°F; 90% cc; 2–3 mph winds
11/20/2013	Britney Strittmater	Burrow habitat assessment	7:15 AM–4:00 PM	53°F–60°F; 60% cc; 0–0 mph winds
11/20/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–4:00 AM	56°F–63°F; 60% cc; 0–2 mph winds
11/21/2013	Heather Moine	Burrow habitat assessment	7:10 AM–2:45 PM	55°F–51°F; 100% cc; 2–4 mph winds

Table B-1
Schedule of Field Surveys

Date	Personnel[1]	Survey Type	Field Hours	Weather
11/21/2013	Randall McInvale	Burrow habitat assessment	7:00 AM–8:00 AM	50°F–50°F; 100% cc; 2–4 mph winds
11/21/2013	Chris Kallstrand	Burrow habitat assessment	7:10 AM–3:30 PM	55°F–55°F; 100% cc; 4–4 mph winds
11/21/2013	Melissa Blundell	Burrow habitat assessment	7:15 AM–3:50 PM	55°F–57°F; 100% cc; 0–0 mph winds
11/22/2013	Chris Kallstrand	Burrow habitat assessment	6:20 AM–10:45 AM	52°F–58°F; 100% cc; 0–3 mph winds
11/25/2013	Heather Moine	Burrow habitat assessment	6:50 AM–5:25 PM	52°F–48°F; 0% cc; 0–0 mph winds
11/25/2013	Marshall Paymard	Burrow habitat assessment	6:50 AM–5:25 PM	50°F–48°F; 0% cc; 3–0 mph winds
11/25/2013	Chris Kallstrand	Burrow habitat assessment	6:40 AM–1:55 AM	44°F–64°F; 0% cc; 1–1 mph winds
11/26/2013	Marshall Paymard	Burrow habitat assessment	6:50 AM–11:45 AM	50°F–65°F; 20% cc; 1–6 mph winds
4/2/2015	Heather Moine, Johanna Page, Melissa Blundell	Burrow habitat assessment (proposed off-site impact areas)	9:20 AM–3:45 PM	55°F–69°F; 0%–10% cc; 2–4 mph winds
4/9/2015	Heather Moine	Burrow habitat assessment (proposed off-site impact areas)	11:00 AM–4:30 PM	63°F–69°F; 20%–90% cc; 4 mph winds
7/29/2015	Danielle Mullen, Heather Moine	Burrow habitat assessment (proposed off-site impact areas)	8:00 AM–3:20 PM	78°F–99°F; 0%–50% cc; 0–5 mph winds
Blunt-Nosed Leopard Lizard Habitat Assessment				
10/8/2013	Callie Ford, Dave Compton	BNLL site assessment	10:30 AM–6:40 PM	55°F–81°F; 0% cc; 0–0 mph winds
10/18/2013	Callie Ford, Megan Enright, Dave Compton, Steve Letterly (DMB Pacific Ventures), Julie Vance (CDFW), Lori Bono (CDFW), Derek Abbot (Tejon Ranch)	BNLL site visit with CDFW	10:00 AM–3:00 PM	60°F–80°F; 0% cc; 0–0 mph winds

1 All personnel listed are Dudek biologists except where noted in parentheses.

Legend

°F = degrees Fahrenheit; cc = cloud cover; mph = miles per hour; CSUB = California State University, Bakersfield; UCSB = University of California, Santa Barbara; ESRP = Endangered Species Recovery Program; LBVI = least Bell's vireo; WIFL = southwestern willow flycatcher; BNLL = blunt-nosed leopard lizard; CDFW = California Department of Fish and Wildlife.

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3 JURISDICTIONAL DELINEATION

3.1 Federal Jurisdiction

A U.S. Army Corps of Engineers (ACOE) jurisdictional delineation of waters, including wetlands, was conducted in April, May, June, and July 2013 by Dudek biologists within the 8,010-acre Specific Plan Area and adjacent lands on Tejon Ranch, and the methods are described in detail in a jurisdictional delineation report (Appendix E-2 of the BTR). Subsequent jurisdictional delineation field surveys were conducted by Dudek in October 2014 and July 2015 for the proposed off-site impact areas outside of the 2013 survey area.

A formal (routine) jurisdictional wetlands delineation was conducted within the study area by Dudek biologists on April 16–18, 2013; May 13 and 14, 2013; June 18, 19, 26, and 27, 2013; July 9, 16, and 18, 2013; October 28, 2014; and July 29, 2015. All of the study area was surveyed on foot for waters of the United States, including wetlands, under the jurisdiction of ACOE, pursuant to Section 404 of the federal Clean Water Act (CWA). Non-wetland waters of the United States are delineated based on the presence of an ordinary high-water mark (OHWM), as determined using the methodology in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (ACOE 2008d). Wetland waters of the United States are delineated based on methodology described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c). The ACOE and U.S. Environmental Protection Agency (EPA) Rapanos Guidance states that the ACOE will regulate: (i) traditional navigable waters of the United States and (ii) their adjacent wetlands as well as (iii) non-navigable tributaries to traditional navigable waters that are relatively permanent and (iv) wetlands that directly abut such tributaries (ACOE and EPA 2008). In addition, if a significant nexus has been determined, the ACOE may also assert jurisdiction over (i) non-navigable tributaries that are not relatively permanent and (ii) their adjacent wetlands, as well as (iii) wetlands that are adjacent to but that do not directly abut a relatively permanent non-navigable tributary (ACOE and EPA 2008). The Rapanos Guidance was used to conduct the delineation.

With respect to federal waters, the study area does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the CWA. More specifically, the ACOE determined that the following are not waters of the U.S., pursuant to Section 33 of the Code of Federal Regulations (CFR), Part 325.9: Grapevine Creek and its tributaries (GV-1 through GV-9), Pastoria Creek and its tributaries, Cattle and Live Oak Creeks, tributaries to Cattle Creek (CC-1 and CC-2), and five unnamed drainages (Isolated Drainages A–E) that are isolated and wholly contained in the study area (meaning they originate and terminate within the study area) (see Appendix E-1 of the BTR). After the jurisdictional delineation was approved by the ACOE, additional off-site impact areas were evaluated for potentially jurisdictional features. The only drainage feature located in the 77-acre off-site impact areas not delineated in 2013 is Tecuya Creek, but like the features listed above, it dissipates into the valley floor and therefore would not be subject to federal jurisdiction under Section 404 of the CWA.

3.2 State Jurisdiction

This section describes the methods used to delineate resources subject to the jurisdiction of the CDFW pursuant to Section 1602 of the California Fish and Game Code and subject to the jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

For the 2013 jurisdictional delineation, Dudek reviewed aerial maps from the Kern Council of Governments (2010), the U.S. Department of Agriculture (USDA 2012a), AirPhoto USA (2006), and Bing Aerial Imagery (2013); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (USFWS 2013a); the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS 2013); USGS 7.5-minute quadrangle topographical maps (USGS, n.d.); the National List of Hydric Soils (USDA 2012b); the *Jurisdictional Delineation Report for Tejon Mountain Village* (Impact Sciences Inc. 2008); intermittent stream and topographical data from Tejon Ranch Company (TRC) (TRC 2013a; Intermap 2005a, 2005b, 2013); basins, ponds, and reservoirs data from TRC (2013b); and historical aerials and topographic maps (Google Earth 2013; Historic Aerials Online 2013). Additionally, the project-specific vegetation map, located in Section 2.2 of the BTR, was reviewed in conjunction with the jurisdictional delineation field data.

The USGS National Hydrography Dataset is the baseline reference source. It maps potential water features, such as lakes, ponds, streams, rivers, canals, dams, and stream gauges (USGS 2013). The USFWS created the National Wetlands Inventory to "provide biologists and others with information on the distribution and type of wetlands to aid in conservation efforts" (USFWS 2013b). Potential wetlands and waters are mapped by the USFWS based on aerial images and these data are provided to the public. Because the National Hydrography Dataset provides general mapping of water features, it requires in-field verification (USGS 2015). However, this compilation of data was reviewed to gain a better understanding of the hydrologic setting of the study area and identify areas potentially under the jurisdiction of the CDFW or RWQCB.

The delineation field visits noted in Section 3.1 were conducted to assess both ACOE-, RWQCB-, and CDFW-jurisdictional resources.

RWQCB typically asserts jurisdiction over the same areas as ACOE. Guidance from the ACOE was used to determine the extent of resources regulated by the RWQCB under the Porter-

Cologne Act, and are described as follows. Non-wetland waters subject to RWQCB jurisdiction were delineated based on the presence of an OHWM, as determined by ACOE guidance, or any other surface water regulated under the Porter-Cologne Act. Wetland waters subject to RWQCB jurisdiction were mapped based on methods described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008a). *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2008b) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar 2010) were reviewed to assist in determining the limits of non-wetland waters under the jurisdiction of the RWQCB.

CDFW asserts jurisdiction over rivers, streams, lakes, and riparian vegetation associated with these features. Waters of the state were delineated based on watercourse characteristics present in the field, which include surface flow, sediment transportation and sorting, physical indicators of channel forms, channel morphology, and riparian habitat associated with a streambed. These characteristics are based on the CDFW guidance document, *A Review of Stream Processes and Forms in Dryland Watersheds* (Vyverberg 2010). These characteristics are further described in the *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which were not published at the time of the 2013 delineation. However, in subsequent review of this document, the 2013, 2014, and 2015 delineations were consistent with the methods described in the Brady and Vyverberg (2013) report, including mapping areas consistent with the fluvial/watercourse and upland indicators defined in the report.

Drainage features were delineated using either a Trimble GeoXT handheld GPS unit with sub-meter accuracy or directly onto a 500-scale (1 inch = 500 feet) topographic base with 5-foot contours overlaid onto an aerial photographic base (USDA 2012a; Intermap 2013). All of the drainage features were surveyed on foot and the OHWM width was recorded where changes in the width occurred.

To assist in the determination of jurisdictional areas on site, data were collected at 38 locations (i.e., data stations) in 2013 using wetland determination data forms and two locations in 2014. Data on hydrology, vegetation, and soils were assessed and collected (see Appendix E-2). Additionally, representative photos; width of the streambed; evidence of surface flow, sediment sorting, swales, wildlife burrows, and other fluvial and upland indicators; and potential connectivity to watercourses were documented. The data station locations were recorded either using a Trimble GeoXT handheld GPS unit with sub-meter accuracy or recorded directly onto a 500-scale topographic base with 5-foot contours overlaid onto an aerial photographic base (USDA 2012a). Jurisdictional areas were digitized in GIS based on the GPS data collected in the field and data collected directly onto field maps were digitized into a project-specific GIS using ArcGIS software.

Within the study area, approximately 59 creeks and unnamed streams are shown on the USGS 7.5-minute quadrangle topographical maps and were visited during the jurisdictional delineation. Of these, 38 lacked field indicators for a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, hydrophytic vegetation, or other watercourse features/fluvial indicators, as defined by Vyverberg (2010) and Brady and Vyverberg (2013). The majority of the 38 non-jurisdictional areas mapped on the USGS maps as streams had some type of topographical relief, such as a swale, canyon, or low point. In some cases, there were areas that were relatively flat with no change in topography, but were mapped on USGS maps as streams.

To ensure a conservative analysis with respect to impacts to waters of the state under the jurisdiction of CDFW and RWQCB, the BTR analyzes impacts to all of the features identified on the USGS maps, including the remaining 38 unnamed USGS features that Dudek determined were not jurisdictional, as impacts to waters of the state. In order to estimate the impacts to the remaining 38 non-jurisdictional features, the approximate area of USGS streams in the proposed project footprint were manually digitized by tracing a mouse over features displayed on a computer monitor (i.e., heads-up digitizing). In brief, USGS line features that overlaid areas with the following features were digitized: (1) topographical relief, such as a swale, canyon, or low point indicating that a drainage is present; (2) a photo signature indicative of a drainage; or (3) riparian scrub/marsh or riparian woodland vegetation. Features that lacked the aforementioned features were mapped as a 1-foot-wide drainage. For areas outside of the proposed project footprint, linear feet of these USGS streams was calculated using the USGS 7.5-minute quadrangle topographical maps.

4 SPECIAL-STATUS PLANT SURVEYS

Special-status plant surveys were conducted to determine the presence or absence of plant species that are considered endangered, rare, or threatened under California Environmental Quality Act (CEQA) Guidelines, Section 15380 (14 CCR 15000 et seq.). See Section 3 of the BTR for a description of species covered under CEQA.

4.1 Literature Review

Dudek identified special-status botanical resources potentially present in the study area through a literature review using print and digital sources and through consultation between Dudek botanists and TRC staff.

Dudek reviewed a variety of resources and documents to determine the potential for special-status species to occur within the study area. Dudek reviewed the *Tejon Mountain Village Biological Resources Technical Report* (TMV BTR; Dudek 2009), *Tehachapi Uplands Multiple Species Habitat Conservation Plan* (TU MSHCP; Dudek 2013), *Tejon Industrial Complex West Final Environmental Impact Report* (TIC West FEIR; Kern County 2000), *Tejon Industrial Complex East Specific Plan Final Environmental Impact Report* (TIC East FEIR; Kern County 2002), *Kern County Draft Valley Floor Habitat Conservation Plan* (VFHCP; Kern County 2006), and *Resource Management and Monitoring Plan: Tejon Industrial Complex Habitat Preserve*[2] (TIC Habitat Preserve RMP; Impact Sciences Inc. 2000).

A search of the records in the California Natural Diversity Database (CNDDB) (CDFW 2013a, 2013b, 2015) was conducted for Kern County. The USFWS occurrence data and designated critical habitat for federally listed species in Kern County was also reviewed (USFWS 2013c). Additionally, the following environmental documents for projects that are located near the study area were reviewed:

- Recirculated Draft EIR for Frazier Park Estates (Kern County 2009)
- Draft EIR for FRV Orion Solar Project (Kern County 2012a)
- Draft EIR for the Greater Tehachapi Area Specific Plan (Kern County 2010)
- Draft EIR for RE Old River One and RE Old River Two Valley Solar Project (Kern County 2012b)
- Draft EIR for the FRV Valley Solar Project (Kern County 2012c)
- Draft EIR for the Valley Solar Project (Kern County 2011).

[2] This preserve is also referred to as the Tecuya Creek Section 7 Preserve.

Dudek also reviewed the online version of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants in California* (CNPS 2013a) and conducted a CNPS search for Kern County to evaluate special-status plant species. Only California Rare Plant Rank (CRPR) 1, 2, and 3 plant species are included in this search. Dudek also reviewed the flora data provided by TRC (2013c), the *Flora of the Tejon Ranch Conservancy Acquisition Areas* (David Magney Environmental Consulting 2010), the Calflora inventory for plants within Kern County (Calflora 2013), and special-status plants in Kern County from the Consortium of California Herbaria (2013).

Dudek reviewed Jepson eFlora (Jepson Flora Project 2013a), Twisselmann (1967), and CNPS (2013a), and relevant scientific articles about the special-status plant species potentially occurring in the study area to better understand their vegetation, soil, microhabitat (e.g., slope and aspect), and elevation range requirements. Dudek determined the potential for an individual species to occur in the study area based on a review of habitat, soils, and elevation preferences, as well as geographic distribution of the species. The USDA Soil Survey Geographic database was reviewed to determine the location of soils that indicate potential habitat for some special-status plant species, particularly those that are edaphically restricted (USDA 2009, 2007). Elevation ranges in the study area were based on the 5-foot topographic contour overlay (Intermap 2013) and were compared to known elevation ranges for the potentially occurring special-status plant species based on range distributions.

4.2 Survey Preparation

Because the special-status plant surveys involved a concerted effort by a large team of botanists over a 2-month survey period, Dudek created detailed documentation on the survey protocol for field staff to use during surveys. Information in the protocol packet included the following:

- Special-status species information (e.g., plant lists, photos, Jepson pages)
- Survey protocols (e.g., digital form instructions for data collection, GPS procedures, population sampling methods)
- Species lists from prior surveys
- Maps showing soils, geology, slopes, roads, and potential suitable habitat for potentially occurring plant species to provide botanists with appropriate environmental information that could affect species abundance and distribution.

4.3 Reference Population Checks

Plant species bloom at slightly different times each year depending on temperature, rainfall patterns, elevation, and other environmental factors. Reference population checks involve locating known special-status plant species populations during a time frame when they are known to be blooming or exhibit other phenological characteristics that allow for species identification. Observations of reference populations during peak phenology provide assurance that these species would be identifiable if they were present in the study area.

In early April 2013, Dudek conducted a reference population check for Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*) that was documented in the study area (TRC 2013c), but no Tejon poppies were observed in or around the mapped location. In mid-April, Dudek staff conducted reference population checks for many of the other special-status plants that could occur on the site. Data gathered from the reference population checks were used to confirm the appropriate time to begin field surveys. Table B-2 includes a list of the focal special-status plants from Appendix G that were observed at the reference sites, as well as the observation date. With the exception of slender mariposa lily (*Calochortus clavatus* var. *gracilis*), all of the species were observed on Tejon Ranch. Slender mariposa lily was observed in Santa Clarita in Los Angeles County approximately 40 miles south of the study area.

Table B-2
Summary of Special-Status Reference Site Checks

Common Name	Scientific Name	Status (Federal/State/CRPR)	Date Observed at Reference Site
round-leaved filaree	*California macrophylla*	None/None/1B.1	April 20, 2103
slender mariposa lily	*Calochortus clavatus* var. *gracilis*	None/None/1B.2	April 30, 2013
alkali mariposa lily	*Calochortus striatus*	None/None/1B.2	April 21, 2103
Vasek's clarkia	*Clarkia tembloriensis* ssp. *calientensis*	None/None/1B.1	March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
Tehachapi buckwheat	*Eriogonum callistum*	None/None/1B.1	April 21, 2103
Tejon poppy	*Eschscholzia lemmonii* ssp. *kernensis*	None/None/1B.1	April 20, 2103 March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
striped adobe-lily	*Fritillaria striata*	None/ST/1B.1	April 20, 2103
sylvan microseris	*Microseris sylvatica*	None/None/4.2	March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)
calico monkeyflower	*Mimulus pictus*	None/None/1B.2	April 19, 2103
Piute Mountains navarretia	*Navarretia setiloba*	None/None/1B.1	April 21, 2103 March 20 to March 30 and April 15 to April 26, 2013 (California High-Speed Rail Authority 2013)

Table B-2
Summary of Special-Status Reference Site Checks

Common Name	Scientific Name	Status (Federal/State/CRPR)	Date Observed at Reference Site
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE/SE/1B.1	April 21, 2103
San Bernardino aster	*Symphyotrichum defoliatum*	None/None/1B.2	June 20, 2013

FE = federally endangered; SE = state endangered

In preparation for the 2015 special-status plant surveys conducted in the off-site impact areas, known occurrences of Tejon poppy and calico monkeyflower were visited on March 30, 2015, but were not observed. Calico monkeyflower is not expected to occur in the proposed off-site impact areas because these areas lack suitable habitat for the species, including broadleafed upland forest, cismontane woodland, and granitic soils. Additionally, based on CNDDB records, calico monkeyflower is known to occur in the foothills and mountain areas adjacent to the valley, but not in the valley floor proper. Additionally, Tejon poppy has a low potential to occur in the proposed off-site impact areas because this species is typically found on clay soils (ESRP 2015), which are not present in the proposed off-site impact areas, and the area is disturbed, as described above. Thus, while Tejon poppy and calico monkeyflower were not visible (based upon reference site checks), these species are not expected to occur in the proposed off-site impact areas. Known occurrences of Piute Mountains navarretia were visited on March 30, 2015, and were observable, and known occurrences of San Bernardino aster were visited on July 21, 2015, and were observable. However, in the proposed off-site impact areas, the potential for special-status plants to occur is either low or not expected, as described in detail in Appendix D.

4.4 Field Survey

Focused plant surveys were floristic in nature and conformed to the CNPS Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special Status Native Populations and Natural Communities (CDFG 2009), and the General Rare Plant Survey Guidelines (Cypher 2002). The plant species detected during the field surveys were identified to subspecies or variety, if applicable and feasible, to determine sensitivity status. Detected species that could not be identified to subspecies or variety were limited to species that do not have a subspecies or variety that is special status. Scientific and common names for plant species with a CRPR (formerly "CNPS List") follow the CNPS on-line *Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2013b). For plant species without a CRPR, scientific names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2013b) and common names follow the USDA Natural Resources Conservation Service PLANTS Database (USDA 2013).

To ensure consistency among the field botanists, Dudek organized and conducted an orientation meeting for the individuals conducting special-status plant surveys. Botanists from FL*x* and Dudek formed the botanical team (see Table B-1). Generally, teams were divided into field groups of two, with one lead botanist and one support botanist working together.

Each field group was assigned survey areas to cover. For plant populations less than 100, individuals were counted to the extent feasible to provide absolute counts. Plant populations clearly greater than 100 were estimated and assigned to one of the following groupings: 101 to 200, 201 to 500, 501 to 1,000, and 1,001 to 5,000.

In 2013, the botanical team conducted two passes of field surveys within the 8,010-acre Specific Plan Area and approximately 7,300 acres of adjacent lands on Tejon Ranch. Prior to gathering field survey data, the special-status plant species with some potential to occur on site were grouped according to their blooming period to determine which groups of plants could be observed at the same time. Pass 1 was conducted in April 2013 and Pass 2 was conducted in July 2013. Another site visit was conducted in October 2013 to review mapping of an occurrence of Piute Mountains navarretia (*Navarretia setiloba*). Additional surveys were completed in April and July 2015 on the proposed off-site impact areas. The botanical survey team spent a total of 206 person-days (approximately 2,000 hours) conducting focused surveys for special-status plants. Table B-1 lists all field survey dates, personnel, times, and weather conditions.

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5 WILDLIFE RESOURCES

This section includes a summary of the key literature reviewed regarding wildlife use of the project vicinity and describes the methods used to assess the absence, presence, or potential presence of special-status wildlife in the study area.

5.1 Literature Review

Dudek reviewed a variety of resources and documents to determine the potential for special-status species occurrence in the study area. Dudek reviewed the TMV BTR (Dudek 2009), TU MSHCP (Dudek 2013), TIC West FEIR (Kern County 2000), TIC East FEIR (Kern County 2002), VFHCP (Kern County 2006), and TIC Habitat Preserve RMP (Impact Sciences Inc. 2000).

Dudek also reviewed wildlife occurrence locations provided by TRC (2013c) and special-status species records in the CNDDB (CDFW 2013a, 2013b) for Kern County. The USFWS occurrence data and designated critical habitat for federally listed species in Kern County was also reviewed (USFWS 2013c). Additionally, the following environmental documents for projects that are located near the study area were reviewed:

- Recirculated Draft EIR for Frazier Park Estates (Kern County 2009)
- Draft EIR for the FRV Orion Solar Project (Kern County 2012a)
- Draft EIR for the Greater Tehachapi Area Specific Plan (Kern County 2010)
- Draft EIR for the RE Old River One and RE Old River Two Valley Solar Project (Kern County 2012b)
- Draft EIR for the FRV Valley Solar Project (Kern County 2012c)
- Draft EIR for the Valley Solar Project (Kern County 2011).

5.2 Field Reconnaissance and Habitat Assessments

All reconnaissance surveys, habitat assessments, and focused biological surveys are described in this section. Scientific and common names of animals follow Crother (2008) for reptiles and amphibians, American Ornithologists' Union (AOU 1998, 2013a, 2013b) for birds, Wilson and Reeder (2005) for mammals, North American Butterfly Association (NABA 2001, 2003, 2004) for butterflies, and Moyle (2002) for fish. Table B-1 summarizes the survey schedule.

5.2.1 Reconnaissance Survey and Habitat Assessments

Dudek biologists Keith Babcock, Callie Ford, and Brock Ortega conducted a reconnaissance-level site visit in February 2013 to gain an on-the-ground understanding of the biological resources in the study area. An additional reconnaissance survey and habitat assessment was conducted in March 2013 by Dudek biologists Keith Babcock and Brock Ortega and Dudek's subconsultant David J. Germano, PhD, a professor of terrestrial ecology and zoology at California State University, Bakersfield, and a recognized expert on several Central Valley special-status wildlife species such as blunt-nosed leopard lizard (*Gambelia sila*) and various kangaroo rats (*Dipodomys* spp.). During the vegetation mapping and jurisdictional delineation for the proposed weigh station, haul road, and other proposed off-site impact areas in October 2014 and July 2015, a habitat assessment was conducted for potentially occurring plant and wildlife species. Based on the resources present in these off-site impact areas, rare plant and burrow and den surveys were conducted. No other species-specific surveys were required, and the results of the habitat assessment and burrow and den survey were sufficient to assess potential for valley floor wildlife species.

During these reconnaissance surveys, as well as during vegetation mapping, jurisdictional delineations, and other surveys conducted in 2013, 2014, and 2015, habitat characteristics were recorded and used to determine the suite of special-status wildlife species identified in the literature review that have the potential to occur on site. Each special-status wildlife species with a geographic range that includes the study area or vicinity was evaluated to determine its potential to occur on site based on existing habitat conditions.

5.2.2 Blunt-Nosed Leopard Lizard Habitat Assessment

In March 1, 2013, Dudek wildlife biologists and Dr. Germano conducted a site visit and preliminary habitat assessment for blunt-nosed leopard lizard and other San Joaquin Valley floor special-status wildlife species. Following this reconnaissance survey, Dudek biologists Callie Ford and Dave Compton conducted a site visit on October 8, 2013, to assess the study area in greater detail for potential to support blunt-nosed leopard lizard, based on the species' known habitat preferences, including slopes, vegetation, and soils. The assessment focused on areas with 0% to 15% slopes, given the species' association with terrain with gentle relief (USFWS 2010a). Data collected at representative areas throughout the study area included land use (e.g., oil lease, grazing, or agriculture), vegetation community type and absolute cover of vegetation, disturbance (e.g., roads), soil characteristics, and presence of small mammal burrows. These factors were used to make a general assessment of suitability for blunt-nosed leopard lizard at each of the sampled areas.

5.2.3 Tehachapi Slender Salamander Habitat Assessment

On December 9, 2013, Christopher Evelyn, University of California, Santa Barbara (UCSB) (working on call for Dudek), and Dudek biologist Callie Ford conducted a site visit to assess the habitat for Tehachapi slender salamander (*Batrachoseps stebbinsi*) in the Specific Plan Area. Mr. Evelyn is a graduate student at UCSB, supervised by Dr. Sam Sweet. Mr. Evelyn is the current expert on Tehachapi slender salamander and has substantial field experience with the salamander. The data he has collected on this species has expanded the understanding of the ecology of Tehachapi slender salamander. No focused presence/absence surveys for the salamander were conducted.

Prior to the site visit, Mr. Evelyn reviewed a map of the Specific Plan Area that included aerial photography, topography, vegetation communities, and drainages (noting the locations of ephemeral, intermittent, and perennial features and seeps). Additionally, Mr. Evelyn reviewed Google Earth aerial imagery of the study area. Based on this literature review, the areas within the study area that warranted further field investigation included the foothills of the Tehachapi Mountains south of Edmonston Pumping Plant Road. While the off-site impact areas were added to the study area following Mr. Evelyn's 2013 evaluation and site visit, Mr. Evelyn determined that there was not suitable habitat for Tehachapi slender salamander in the valley floor, which is where the off-site impacts are located. However, in 2014 and 2015, Dudek conducted a habitat assessment for Tehachapi slender salamander in the proposed off-site impact areas to confirm there was no suitable habitat for the species present.

The potential for Tehachapi slender salamander to occur was assessed based on the similarity and proximity to known Tehachapi slender salamander localities. Specific factors evaluated at each assessment site included overstory and understory vegetation, slope and aspect, and substrate moisture and other physical soil characteristics (Evelyn, pers. comm. 2014).

5.2.4 Focused Habitat Assessment for Buena Vista Lake Shrew

A habitat evaluation was conducted for Buena Vista Lake shrew (*Sorex ornatus relictus*) in the Specific Plan Area by Bryan Cypher, PhD, of the California State University, Stanislaus, Endangered Species Recovery Program (ESRP) (Cypher and Westall 2014). Dudek provided Dr. Cypher with maps that included aerial photography, vegetation communities (see Section 2.2 of the BTR), and jurisdictional delineations of waters, including wetlands (see Section 2.3 of the BTR). The maps were examined prior to the field visit for sites that might support wetland or riparian communities. On December 2, 2013, Dr. Cypher and Tory Westall (also of ESRP), accompanied by Dudek biologist Callie Ford, conducted a field visit to areas identified in the map review as having potential habitat for Buena Vista Lake shrew (Cypher and Westall 2014). In particular, the field evaluation focused on identified areas with water present, or areas that had vegetation indicative of wetland or riparian plant communities. Such vegetation included cottonwoods (*Populus fremontii*), willows (*Salix* spp.), mulefat (*Baccharis salicifolia*), or cattails (*Typha* spp.). Each site was quantitatively assessed and ranked in order to determine which areas were suitable for a shrew species (*Sorex ornatus*) that could be the federally endangered Buena Vista Lake shrew subspecies, the common subspecies *S. o. ornatus* that occurs in the foothills bordering the study area, or even a hybrid of the two subspecies.

A variety of sites were evaluated based on four habitat conditions, listed below, that are considered to be important for Buena Vista Lake shrew based on published literature and Dr. Cypher's field experience surveying and trapping for the subspecies in the San Joaquin Valley.

Presence of Riparian or Wetland Vegetation. Characteristic riparian and wetland vegetation communities in areas occupied by Buena Vista Lake shrew typically are dominated by cottonwoods, willows, mulefat, cattails, or rushes and sedges (*Juncus* spp., *Carex* spp., etc.).

Presence of Dense Ground Cover. Ground cover that provides suitable habitat for the Buena Vista Lake shrew can include leaf and other vegetation litter, or dense herbaceous vegetation such as rushes, sedges, glasswort (*Salicornia* spp.), and grasses such as saltgrass (*Distichlis spicata*).

Presence of Moist Soil. Moist soils appear to be beneficial for Buena Vista Lake shrew, possibly because they may support higher invertebrate populations or may reduce water loss by shrews.

Presence of Open Water. Open water includes both flowing and standing water. The presence of open water can be intermittent/seasonal or permanent.

In 2014 and 2015, using the methods described above and in Cypher and Westall (2014), Dudek conducted a habitat evaluation for Buena Vista Lake shrew in the proposed off-site impact areas to confirm there was no suitable habitat for the species present.

5.2.5 Focused Habitat Assessment for Bat Roosts

Prior to conducting the fieldwork, existing site information was reviewed, including project-level vegetation mapping and jurisdictional delineations of waters, including wetlands, which are favored bat foraging habitats due to high prey densities (see Sections 2.2 and 2.3 of the BTR); USGS 7.5-minute series topographic maps; and aerial photographs. The natural history and habitat requirements of bat species documented in the study area were reviewed through various literature sources, including Bat Conservation International Inc. (2013), Bogen et al. (2003), Best et al. (1996), CDFW (2013c), Hirshfeld et al. (1977), Harvey et al. (1999), Keeley and Tuttle (1999), and Kunz and Lumsden (2003). The assessment included reviewing passive acoustic bat survey results (see Section 5.6.3, Focused Bat Surveys) to determine the bat species documented using the study area and/or adjacent lands during summer 2013 surveys, and to evaluate the bat activity levels at each survey station.

The bat roost habitat assessment was conducted for the study area on November 20 and 21, 2013, by Dudek wildlife biologists and bat specialists Noelle Ronan, MS, and Karen Mullen, PhD. These surveys identified and evaluated features associated with habitats that could be used by bats for either day or night roosting. The surveys included examining potential roosts in the study area and approximately 7,300 acres of adjacent lands on Tejon Ranch (including portions of the proposed off-site impact areas). A total of 14 out of the 18 passive acoustic stations (and/or areas in close proximity to the stations) were assessed for bat roost potential, which provided a representative sample of the habitat types and potential bat roosts present within the study area.

Selected areas were surveyed on foot, including the following: the valley oak woodlands south of Edmonston Pumping Plant Road, riparian communities along Grapevine Creek, rock outcrops, orchards and vineyards, two abandoned buildings south of Edmonston Pumping Plant Road, bridges and aqueduct underpasses, a large Interstate 5 (I-5) underpass for Grapevine Creek, and the developed area at the I-5 Grapevine exit. The rugged, steep canyon and rock face habitat in the southern portion of the study area was assessed using binoculars from a nearby lower slope location. Binoculars were used to scan more distant features such as boulders, broken tree limbs, and exfoliating tree bark.

In addition to visual assessments, an Anabat SD2 ultrasonic detector (Titley Electronics, Ballina, Australia) was used to acoustically monitor for bat activity during one survey evening to document resident bats.

5.3 Methodology, Special-Status Birds

5.3.1 Federally Listed, State-Listed, and/or Fully Protected Birds

Focused surveys for federally listed, state-listed, and/or fully protected birds were conducted by Dudek biologists in spring/summer 2013 in accordance with wildlife agency-established or accepted survey protocols. Specifically, USFWS protocol surveys for least Bell's vireo (*Vireo bellii pusillus*; federally and state-listed endangered, Migratory Bird Treaty Act (MBTA)) and southwestern willow flycatcher (*Empidonax traillii extimus*; federally and state-listed endangered, MBTA), were conducted. The 2013 Focused Survey Report describing the survey methods and results is included as Appendix J of the BTR.

White-tailed kite (*Elanus leucurus*; MBTA, fully protected) does not have established USFWS or CDFW survey protocols, but the presence or absence of this species can be determined using accepted survey practices for raptors (see Section 5.3.2, Raptor Surveys). Technical reports addressing California condor (*Gymnogyps californianus*; a federally and state-listed endangered species, MBTA) and golden eagle (*Aquila chrysaetos*; USFWS Birds of Conservation Concern (BCC), MBTA, and CDFW fully protected) are included as BTR Appendices K and L, respectively.

5.3.2 Raptor Surveys

Both nesting and wintering raptor surveys were conducted in 2013/2014, as described in Sections 5.3.2.1 and 5.3.2.2. Focused surveys for burrowing owl (*Athene cunicularia*) dens were also conducted as part of the general burrow and den assessment described separately in Section 5.7.

5.3.2.1 Nesting Raptor Surveys

Nesting raptor surveys were conducted with a focus on special-status raptors, including white-tailed kite, short-eared owl (*Asio flammeus*), northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), and golden eagle. A technical report specifically addressing golden eagle is included Appendix L of the BTR.

There are no established agency survey methods for raptors. Raptor surveys were therefore conducted following methods described by Fuller and Mosher (1987), including (1) early season driving and road surveys to identify nest locations and (2) follow-up driving and pedestrian surveys to identify additional locations and provide nesting success information.

Nesting raptor surveys were conducted within the 8,010-acre Grapevine Specific Plan Area and approximately 7,300 acres of adjacent lands on Tejon Ranch (including portions of the proposed off-site impact areas). The surveys focused on oak woodland habitats and planted trees occurring singly or in groves that could be used as nesting sites, and grassland habitat in the foothills that provide nesting habitat for ground-nesting raptors or potential foraging habitat near nesting sites. In addition, incidental raptor observations were recorded during other biological surveys, particularly during least Bell's vireo and southwestern willow flycatcher surveys.

Dudek conducted two driving/road surveys on May 15 and 16, 2013, and two walking surveys on July 17 and 18, 2013, which coincide with the nesting season for the focal special-status raptors (see Table B-1). Teams of two biologists conducted both the spring and summer surveys. During the first set of surveys, Dudek biologists drove throughout the Grapevine Specific Plan Area and adjacent lands (including portions of the proposed off-site impact areas), stopping at areas with trees that were suitable for raptor nesting. Sites where raptor observations were made during the least Bell's vireo and southwestern willow flycatcher surveys were also visited to determine whether nesting was occurring at these sites.

Potential nesting habitat was scanned from roads or surveyors walked to nesting habitat that could not be directly surveyed from roads. Observers used spotting scopes and high-quality binoculars (10×42) to search for nests. Biologists also searched for whitewash, feathers, and prey debris in nesting habitat as evidence of raptor presence. The surveys were conducted during periods without persistent precipitation or fog and when wind speeds were less than 15 miles per hour (mph).

The second set of surveys (July 2013) targeted suitable nesting habitat identified during the May 2013 survey, particularly in areas where less focus was directed during the initial survey. All areas in woodlands and savannahs were visited or visually scanned with binoculars during surveys. Biologists walked through wooded areas, inspecting trees for active nests and suitable nest structures. All raptors and raptor sign observed were recorded, and any behaviors indicative of nesting, such as presence of juveniles or carrying prey over long distances, were noted.

During the habitat assessments in the proposed off-site impact areas, Dudek biologists evaluated the areas' potential to provide suitable habitat for nesting or foraging raptors, including golden eagle.

5.3.2.2 Wintering Raptor Surveys

The focus of the winter raptor surveys was to determine the use of the study area by special-status wintering raptors. Winter raptor surveys were conducted with a focus on special-status raptors, including American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), golden eagle, ferruginous hawk (*Buteo regalis*), merlin (*Falco columbarius*), and prairie falcon (*Falco mexicanus*). A technical report specifically addressing golden and bald eagle is included Appendix L of the BTR.

Dudek biologists Keith Babcock, Traci Caddy, and Dave Compton conducted winter raptor surveys following methods described by the Hawk Migration Association of North America (HMANA, n.d.). Per HMANA suggested methods, the Grapevine Specific Plan Area was visited once each month during the winter season (November through February) for a total of four visits (2 days for each visit). Dudek conducted these surveys on November 13 and 14 and December 11 and 12, 2013, and January 9 and 10 and February 10 and 11, 2014. At least 3 weeks elapsed between the 2-day surveys.

The surveys were conducted throughout the Grapevine Specific Plan Area. At least two biologists (driver and data recorder) conducted road surveys along pre-established routes within the woodland habitat, non-native grassland, and agricultural lands, with periodic stops to scan the larger landscape for raptors. The survey route was established primarily in open country that allowed views over a large area. Roads chosen for the survey routes were widely spaced to avoid double counting of raptors, but extended to all parts of the Grapevine Specific Plan Area. All surveyors used high-quality binoculars (10×42) and at least one spotting scope was available for each survey. Surveys were conducted during daylight hours, beginning no earlier than 8 a.m. and ending no later than 4:30 p.m. No surveys were conducted during periods of heavy fog, heavy rain, snow, or winds of 18 mph or greater that would reduce or preclude raptor activity. Surveyors followed the route in the same direction (i.e., same start and endpoint) during each survey. Surveyors stopped approximately every 1 mile for approximately 10 minutes per stop, in locations providing good views of raptor habitat. Biologists walked or drove slowly (5 mph or less) in wooded habitats where necessary for complete coverage of the Grapevine Specific Plan Area. Additional stops were made to identify raptors observed while driving between pre-selected survey routes (i.e., in-transit observations). For each raptor observed, surveyors recorded location, species, age, sex (if identifiable), morph (if applicable), and perching or flying behaviors. Other recorded notes on behavior, as applicable, included direction of flight, height at which perched, species or object on which the individual was perched, and capture or consumption of prey.

During the habitat assessments in the proposed off-site impact areas, Dudek biologists evaluated the areas' potential to provide suitable foraging habitat for wintering raptors, including bald eagle.

5.3.2.3 Golden Eagle Aerial Surveys

Aerial surveys for potential golden eagle nest sites were conducted in February 2014 by Bloom Biological Inc. both within and adjacent to the Grapevine Specific Plan Area. No suitable nesting habitat for golden eagle is located within the proposed off-site impact areas. A technical report addressing golden eagle is included as Appendix L of the BTR.

5.3.2.4 Golden Eagle Nest Surveys

In April 2014, Dudek biologists Dave Compton and Traci Caddy surveyed each of the nests mapped during the golden eagle aerial surveys in order to determine their status (i.e., active or inactive) and to document active eagle territories. Each nest previously identified by Bloom Biological Inc. was visited from an appropriate distance so as not to harass any actively nesting eagles but close enough to be able to determine nest status. Several criteria, including nest structure integrity, presence/absence of adult eagles, and behavior of any adult eagles observed were evaluated prior to making a determination on nest status. The locations of active versus non-active nests were incorporated into the GIS database.

The proposed off-site impact areas are located in the valley floor where there is no suitable nesting habitat for golden eagle; therefore, no golden eagle nest surveys were conducted in these areas.

A technical report addressing golden eagle is included as Appendix L of the BTR.

5.3.3 Other Non-Listed Special-Status Birds

A focused survey for special-status aquatic and marsh-dwelling bird species was conducted in May and July 2013. The survey focused on special-status species that nest in marsh areas, including tricolored blackbird (*Agelaius tricolor*) and least bittern (*Ixobrychus exilis*). No suitable habitat for aquatic and marsh-dwelling bird species is located within the proposed off-site impact areas.

During these surveys and the least Bell's vireo and southwestern willow flycatcher surveys (see Section 5.3.1), biologists also surveyed for other special-status birds that could occur within riparian habitat, including the yellow warbler (*Setophaga petechia*), Lawrence's goldfinch (*Spinus lawrencei*), and yellow-breasted chat (*Icteria virens*). No suitable habitat for riparian bird species is located within the proposed off-site impact areas.

5.4 Methodology, Special-Status Amphibians and Reptiles

A burrow and den assessment focused on specific special-status species was conducted and included the federally and state-listed endangered and fully protected blunt-nosed leopard lizard. The burrow and den assessment methods are described in Section 5.7. Focused surveys for California red-legged frog (*Rana draytonii*) are described in Section 5.4.1.

Anecdotal observations of special-status reptiles were recorded and mapped (no special-status amphibians were detected).

California Red-Legged Frog Surveys

Dudek conducted focused California red-legged frog surveys within suitable habitat in the Specific Plan Area in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005). Although a written habitat evaluation report is normally included in the USFWS guidance document as an element of site assessments and field surveys, the USFWS agreed that a formal written report was unnecessary for this project (Sloan, pers. comm. 2013). Three areas, which were surveyed in accordance with the USFWS survey protocol, were considered potentially suitable for California red-legged frog, including two areas in Grapevine Creek and a detention basin (Figure B-1). No suitable red-legged frog habitat is located within the proposed off-site impact areas. Additionally, it is important to note that the majority of Grapevine Creek is not suitable habitat for California red-legged frog, and does not support the deep, slow-moving ponds or permanent water sources that are required for breeding.

Focused surveys for California red-legged frog were conducted by Dudek biologists Brock Ortega, Paul Lemons, and Traci Caddy. Dudek conducted eight surveys in accordance with the USFWS survey protocol at the locations described above (Figure B-1). Two diurnal and four nocturnal surveys occurred during the breeding season (April 15 through June 30) and one diurnal and one nocturnal survey occurred during the non-breeding season (July 1 through September 30). The paired surveys occurred at least 7 days apart and over a minimum period of 6 weeks. Diurnal surveys consisted of walking along suitable habitat while looking for adult frogs, egg clutches, and larvae in and near the water body. Nocturnal surveys consisted of walking through the same areas looking for eye-shine and listening for calls. Surveys only occurred when weather and visibility were appropriate for frog activity and detectability (i.e., 50°F or greater, breezes of 5 mph or less, and clear or partly cloudy skies). Surveys were not conducted during foggy evenings or heavy rains, but light rains were considered appropriate survey conditions. Table B-1 summarizes the survey schedule, personnel, and conditions for the California red-legged frog surveys.

5.5 Methodology, Special-Status Invertebrates

Dudek conducted a habitat assessment and focused surveys (as needed where elderberry shrubs were found) for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) on all areas of the study area. Surveys for valley elderberry longhorn beetle were conducted in accordance with the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999).

All elderberry plants within the survey area were mapped using a mobile GIS device. The elderberry shrub surveys were conducted by Dudek biologists in October and November 2013 in conjunction with the burrow and den surveys (see Section 5.7). No elderberry shrubs were observed in the proposed off-site impact areas. All elderberry shrubs within the study area having one or more stems measuring 1 inch or greater in diameter at ground level were mapped and the diameter size class of the elderberry was recorded. Four shrubs were mapped on the study area and thoroughly searched for beetle exit holes in accordance with the USFWS guidelines.

Anecdotal observations of invertebrates were recorded, but no special-status invertebrates were detected.

5.6 Methodology, Special-Status Mammals

Dudek conducted ringtail camera surveys, San Joaquin kit fox camera surveys, and focused bat surveys. Small mammal trapping was conducted by Dr. David Germano. In addition, Dudek conducted a burrow and den assessment, with a focus on the following special-status mammals: American badger (*Taxidea taxus*, CDFW Species of Special Concern (SSC)), short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*, CDFW SSC), Tulare grasshopper mouse (*Onychomys torridus tularensis*, CDFW SSC), and San Joaquin kit fox (*Vulpes macrotis mutica*, federally listed endangered, state-listed threatened). The burrow and den assessment methods are described in Section 5.7.

5.6.1 Ringtail Camera Surveys

Dudek conducted ringtail camera surveys within suitable habitat in the study area. There is no wildlife agency-established or required protocol for conducting ringtail (*Bassariscus astutus*) surveys. However, camera stations in suitable habitat or microhabitats (e.g., water sources) are a standard and effective method of determining presence or absence. The ringtail camera survey was conducted in October and November 2013 (see Table B-1).

The perennial waterways and permanent water sources within the study area generally flow in a south to north direction. Fourteen camera stations (GV-SP1 through GV-SP14) were strategically deployed at the southern end of identified water sources or riparian habitat present within the study area (see Figures B-2A and B-2B). Of the 14 camera stations, 7 (GV-SP1 through GV-SP7) were situated within riparian woodland and riparian scrub habitats associated with Grapevine Creek, while the 7 other camera stations (GV-SP8 through GV-SP14) were situated within riparian woodland, riparian scrub, and oak woodland habitats associated with various riparian strips and water sources (e.g., the Grapevine detention basin) throughout the study area. No suitable habitat for ringtail is located within the proposed off-site impact areas.

Cameras were maintained in place for a period of 18 consecutive days. The camera stations were checked on the 11th day and again on the 18th day upon removal from the site. Camera stations included one digital Reconyx infrared camera, allowing nighttime photographs to be taken, with a 2+ gigabyte (GB) disk. To lure any ringtails present to within camera shot, each station was baited with the commercial lure Gusto (Minnesota Trapline Products, Pennock, Minnesota) and an associated food bait (a combination of chicken, berries, and wet cat food placed in a sock) during installation of the camera stations. Gusto was reapplied during the first camera check on the 11th day of the camera trapping session and food bait was replaced if missing from the site during the first camera check. Where possible, the bait was applied near a natural crevice and secured by chicken wire and metal bracings, which also acted as a unique lure to further attract ringtails' attention because they are curious animals.

Photographs were downloaded during both camera checks. Camera stations were also assessed for any camera malfunctions or corrections that needed to be made in the field to maximize detection of species (e.g., low batteries, faulty SD cards, numerous photos due to swaying vegetation, human error). All photographs were reviewed three times to determine the species present in the photograph and the direction of movement, where possible. The first was by the field biologists maintaining the camera stations, next by a biologist who pulled wildlife photographs from the larger set of photographs, and then a third quality-control check by Dudek senior wildlife biologist Brock Ortega.

5.6.2 San Joaquin Kit Fox Camera Surveys

Dudek conducted San Joaquin kit fox camera surveys within the Grapevine Specific Plan Area to determine whether (1) the kit fox uses the study area, and (2) if so, what areas are used. The first survey began in January 2014 and was completed in February 2014, and the second survey began in April 2014 and was completed in May 2014 (see Table B-1). During the first camera study, camera stations were placed strategically within the Grapevine Specific Plan Area and adjacent areas, including I-5 road crossings, non-native grassland areas, oil fields, dirt roads, aqueduct under-crossings, and potential denning locations. The second survey focused on setting up cameras at den locations mapped during the burrow and den habitat assessment transect surveys (as described in Section 5.7). While cameras were not placed in the proposed off-site impact areas, most of the baited camera stations were close enough to attract kit fox within the area. Additional camera surveys were conducted for general wildlife movement, as described in Appendix N to the BTR.

During January 2014, a total of 18 camera stations were deployed throughout and immediately adjacent to the Grapevine Specific Plan. The camera stations were baited with Gusto and canned cat food. Of these, 11 of the camera stations (GV-SP15 through GV-SP25) were scattered throughout the non-native grassland areas east of I-5, south of the California Aqueduct, and north of Edmonston Pumping Plant Road; and 4 camera stations (GV-AQ27, GV-SP26, GV-SP27, and GV-SP28) were distributed east of I-5 and north of the California Aqueduct. The remaining 3 camera stations (GV-RC1A, GV-RC2A, and GV-AQ26) were positioned along the California Aqueduct and I-5 underpass and overpass (see Figures B-2A and B-2B). Cameras were maintained in place for 23 consecutive days. Camera station checks generally occurred on the 7th and 13th day, and upon removal of the cameras on the 23rd day.[3]

During May 2014, a total of 26 camera stations (GV-SP29 through GV-SP54) were deployed at potential canid dens previously identified during the burrow and den surveys (described in Section 5.7). The camera stations were baited with Gusto and canned cat food. Cameras were maintained in place for 30 consecutive days. Camera checks occurred weekly and were removed on day 30.

Camera stations included one digital Bushnell or Reconyx infrared camera, allowing nighttime photographs to be taken, with a 2+ GB disk. During installation of the camera stations, each camera station was baited with commercial lure Gusto (Minnesota Trapline Products, Pennock,

[3] Some of the cameras were checked more frequently due to disturbance by cows.

Minnesota) and an associated food bait (canned wet cat food) to lure any San Joaquin kit foxes present to the camera field of view. Gusto was reapplied and food bait was replaced if removed from the site during weekly camera checks. When feasible, the bait was secured to the site.

Photographs were downloaded during the camera checks, and camera stations were assessed for any camera malfunctions or adjustments that needed to be made in the field to maximize detection of species (including camera stations tipped over by cattle, moved cameras, low batteries, swaying vegetation, human error, etc.). All photographs were reviewed to determine the species present in the photograph and the direction of movement, where possible. The first was by the field biologists maintaining the camera stations, next by a biologist who pulled wildlife photographs from the larger set of photographs, and then a third quality-control check by Dudek senior wildlife biologist Brock Ortega.

5.6.3 Focused Bat Surveys

5.6.3.1 Passive Acoustic Bat Surveys

Prior to conducting passive acoustic surveys, Dudek conducted a review of the literature of bats in California to identify special-status species with potential to occur in the study area. Passive bat surveys generally record all bat activity in an area, but the main focus of the surveys was to determine use of the site by several special-status species, including pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*) and spotted bat (*Euderma maculata*) across the study area. The goals of the bat surveys therefore were to (1) determine the likely presence or absence of special-status bat species and (2) generally assess the diversity of bat species in the study area.

Dudek biologists Karen Mullen, PhD, Traci Caddy, and Randall McInvale conducted acoustic bat surveys between July 15 and August 5, 2013. The surveys were conducted using the Anabat system (Titley Electronics, Ballina, Australia). The AnaBat system uses AnaBat SD1 and SD2 ultrasonic detectors containing flash disks that record bat calls during specified hours over a number of days. Recordings were downloaded to a computer using the Zero-Crossing Analysis Interface Module (ZCAIM) interface program (CFCread) for analysis.

The Anabat detectors were set up at 18 stations, for a total of 121 detector nights, within the 8,010-acre Grapevine Specific Plan Area and approximately 7,300 acres of adjacent lands on Tejon Ranch (including portions of the proposed off-site impact areas) and are shown in Figure B-3. The deployment schedule for each station is presented in Table B-1. Anabat detectors were set up in a variety of habitat types, with a focus on areas where bats are likely to roost or forage on site (e.g., riparian woodland, rocky outcrops, and detention basin). The Anabat detectors were set to record bat vocalizations each night between 7 p.m. and 7 a.m., starting approximately 1 hour before dusk and ending after daylight the following morning to coincide with early, peak, and late bat activity periods. Anabat detectors were placed in weatherproof boxes and mounted on trees, shrubs, boulders, or fence posts and left in place for 1 week at each location. The number of detector nights at 16 of the stations was 7 nights. Station locations No. 6 and No. 14 had 4 and 5 detector nights, respectively. After completion of the passive surveys, the acoustic data were sent to recognized bat expert Dr. Michael O'Farrell for species identification. Dr. O'Farrell made the species-level identifications using the methods of O'Farrell et al. (1999) based on frequency characteristics, call shape, and comparison with a comprehensive library of vocal signatures developed by Dr. O'Farrell and his colleagues.

Species richness (number of species verified as present) was obtained for each station. An index of abundance, or the magnitude of each species' contribution to spatial use, was obtained using the sum of 1-minute time increments for which a species was detected as present, divided by the number of nights of sampling (Miller 2001).

5.6.3.2 Maternity Bat Roost Survey

Between May and September 2014, Dudek biologist Noelle Ronan conducted a maternity bat roost survey using visual inspections of the I-5 underpass and overnight passive acoustic monitoring at multiple entrances to the underpass. A series of 2-day surveys were conducted during a 4-month period (see Table B-1). The visual survey included an inspection of the underpass crevices to look for and count any roosting bats and identify bat species using binoculars. To avoid disturbing roosting bats during the day, a red light flashlight was used during the visual survey. In addition, on May 1, 2014, an "exit count" visual survey was conducted at the abandoned buildings south of Edmonston Pumping Plant Road in order to look for bat species in the buildings.

The passive acoustic monitoring was conducted using the AnaBat system (Titley Electronics, Ballina, Australia). The AnaBat SD2 ultrasonic detector uses frequency division to transform echolocation calls into audible signals, and zero-crossing analysis (ZCA) to view the calls as a frequency-time spectrogram (or sonogram). The data is stored on a compact flash card, which is inserted into the SD2. AnaBat detectors were placed in weatherproof boxes and mounted at the southwest and northeast entrances to the I-5 underpass for Grapevine Creek. The AnaBat detectors were set to record bat vocalizations each night between 7 p.m. and 7 a.m., starting approximately 1 hour before dusk and ending after daylight the following morning to coincide with early, peak, and late bat activity periods. After each overnight acoustic monitoring, the recordings were downloaded to a computer using the interface program (CFCread) for analysis. The data was then analyzed independently by Dudek and Michael O'Farrell with Analook©, using a combination of filters and manual identification of calls (based primarily on frequency, duration, and call shape) with the aid of a reference call library. The analyses included species identification and calculation of an Index of Activity (Miller 2001).

5.6.4 Small Mammal Habitat Assessment and Trapping

In April 2014, Dudek biologist Melissa Blundell and Dr. David Germano conducted a habitat assessment to identify trap areas in the study area for the following special-status small mammals identified as having potential to occur on the study area:

- San Joaquin kangaroo rat (*Dipodomys nitratoides* spp.)
- Tulare grasshopper mouse.

The assessment included visiting 10 general areas within the study area (Figure B-4) that were identified as having potential for the San Joaquin kangaroo rat or grasshopper mouse during the burrow and den surveys (see Section 5.7). Methods for assessing these areas included walking through each area of potential burrows, visiting the potential burrow areas, and documenting suitability for trapping. Specifically, soils, ground cover, vegetation height, and visual identification of potential kangaroo rat or grasshopper mouse sign or burrows were assessed during this time.

In May 2014, Dr. David Germano conducted trapping at two areas identified during the habitat assessment. The other areas did not support appropriate soils, sparsely vegetated cover, and/or kangaroo rat sign and therefore those areas were eliminated from the trapping survey. The trapping methods followed the *Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats* (USFWS 2013d). The traps also contained bait known to attract Tulare grasshopper mouse to assess whether this species was present at trapping areas. Fifteen Sherman live-traps were set at site “B” and 30 were set at site “G” (see Figure B-4). The survey dates are included in Table B-1.

5.7 Methodology, Burrow and Den Habitat Assessment

In March 2013, Dudek wildlife biologists and Dr. David Germano conducted a site visit and preliminary habitat assessment of the study area for several special-status wildlife species that use dens and burrows, as listed below. Following this site visit, it was determined that the most appropriate method to evaluate the potential for certain of these special-status species was to assess and map burrow and den complexes throughout the study area. The mapping effort focused on evaluating potential for the following species:

- Burrowing owl, USFWS BCC, MBTA, and CDFW SSC
- American badger, CDFW SSC
- Blunt-nosed leopard lizard, federally and state-listed endangered, state fully protected species

- Short-nosed kangaroo rat, CDFW SSC
- Tulare grasshopper mouse, CDFW SSC
- San Joaquin kit fox, federally listed endangered, state-listed threatened.

While not a target species for the burrow assessment, habitat and identification information for Nelson's antelope squirrel (*Ammospermophilus nelsoni*) was also provided to the surveyors.

Dudek conducted transect surveys within the study area to identify potential dens and burrows used by the target species. The surveys consisted of walking belt transects approximately 30 meters (98 feet) apart and mapping and assessing all burrows and dens for their potential to support the species listed above. Additionally, all California ground squirrel (*Spermophilus beecheyi*) burrows were mapped in order to assess their distribution and density within the study area.

All burrows encountered that could be suitable for one of the species listed above (excluding California ground squirrel) were evaluated, and the following data were collected:

- Potential or known species occupying burrow or den
- Burrow/den activity (e.g., scat, pellets, whitewash, tracks)
- Burrow or den entrance width, depth, and angle of entrance
- Presence or absence of a soil apron
- Presence of latrine on soil apron
- Photographs and notes.

Specific information regarding suitable burrows and dens for each target species and the data collected are described below.

Burrowing Owl. According to the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012), suitable burrowing owl burrows or burrow surrogates have a diameter greater than 11 centimeters (4.3 inches) in height and width, and greater than 150 centimeters (59 inches) in depth. All burrows that met the size criteria and/or exhibited signs of burrowing owl (e.g., owls present at burrow, whitewash, pellets) were mapped. Additionally, all California ground squirrel burrows and burrow complexes were mapped and assessed for size to determine whether they were suitable for burrowing owls. The habitat assessment was used to characterize areas suitable for this species within the study area.

American Badger. Badgers often use a variety of burrows and will dig new ones regularly. Burrow entrances are typically 6 to 10.5 inches tall by 7 to 10.5 inches wide (Elbroch 2003), with noticeable scrapes (claw marks) around the entrance. Burrow characteristics can vary greatly in terms of slope (i.e., may be steep or gently sloped), and they may or may not have characteristic “throw mounds…fanning out from burrow entrance” (Elbroch 2003). All potential badger burrows were mapped.

Blunt-Nosed Leopard Lizard. Small mammal burrows are suitable for blunt-nosed leopard lizard. The mapping of small mammal burrows, in combination with slopes, vegetation communities, and vegetative cover and density, can be used to determine the suitability of the habitat for this species.

Short-Nosed Kangaroo Rat and Tulare Grasshopper Mouse. All burrows encountered that exhibited characteristics typical of potential kangaroo rat or grasshopper mouse burrows were mapped. These characteristics include gently sloping entrances, scat, tail drags, and/or tracks in suitable habitat. These burrows may also be used by Tulare grasshopper mouse, but the grasshopper mouse may also dig its own burrows or use pocket gopher burrows, so burrow morphology is not reliably indicative of grasshopper mouse use. Presence or absence of grasshopper mouse can only be confirmed through live trapping. The habitat assessment was used to determine where focused small mammal trapping studies would occur in spring 2014.

San Joaquin Kit Fox. San Joaquin kit fox dens are generally round or oval in shape, with entrances approximately 10 to 25 centimeters (4 to 10 inches) in diameter, and often have multiple openings (CDFG 1990). Dens that meet these criteria were further assessed for kit fox sign (e.g., scat, tracks, fresh digging, or prey remains), vegetation, land use, and den characteristics to determine their suitability for kit fox. All potential kit fox dens were mapped. The habitat assessment was used to characterize the suitable areas for this species within the study area.

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6 SURVEY ANALYSIS FACTORS

Special-Status Plants

Surveys were conducted in the 8,010-acre study area and approximately 7,300 acres of adjacent lands on Tejon Ranch in 2013, which was a below-average rainfall year measuring from July 2012 to July 2013, for the hydrologic regions (DWR 2014; WRCC 2013). Temperatures were slightly below average in January and February 2013 and slightly above average March through June 2013, with April being 4.0°F higher than average.

The special-status plant surveys conducted in 2013 were comprehensive, site-wide, and conducted at the peak phenology for all the special-status plant species expected to occur on site. The entire 8,010-acre site was covered on foot by qualified botanists; Pass 1 was conducted in April 2013 and Pass 2 was conducted in July 2013. An additional survey was conducted in October 2013, which was focused on mapping of an occurrence of Piute Mountains navarretia. Reference sites were visited for several species, as described in Section 4.3. These factors indicate that the survey effort was sufficient to identify the special-status plant species that occur within the study area.

Additional special-status plant surveys were conducted in the proposed off-site impact areas. Surveys were conducted in the proposed off-site impact areas in April and July 2015, which was a below-average rainfall year measuring from July 2014 to July 2015 (DWR 2015; WRCC 2015). Reference sites were visited for several species, as described in Section 4.3. The off-site impact areas, surveyed in 2015 are dominated by non-native grasslands and are non-natural land covers (e.g., orchards and vineyards, roadways and infrastructure, and urban/developed lands). During the survey, the following disturbance was noted in the off-site impact areas: (1) evidence of disking and historic agriculture (i.e., irrigation system); (2) presence of debris (e.g., asphalt rubble); (3) bioturbation of soils (e.g., ground squirrel burrows); and (4) invasion of non-native forbs. Additionally, these areas are located directly adjacent to roads or development areas and the biological function has been degraded over time. Based upon the 2015 survey and an evaluation of the habitat for special-status species in the off-site impact areas, potential for special-status plants to occur is either low or not expected, as described in detail in Appendix D of the BTR.

Diurnal and Nocturnal Wildlife Survey Factors

The majority of the surveys were conducted during the daytime to maximize the detection of most animals. Birds represent the largest component of the vertebrate fauna, and, because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of the fauna. Daytime surveys may result in fewer observations of animals that are more active at night. To address this potential factor, nocturnal focused surveys were conducted for nocturnally active special-status species that potentially occur on site, including ringtail, San Joaquin kit fox, and California red-legged frog. California red-legged frog was surveyed for on foot during three diurnal and five nocturnal surveys (see Section 5.4). Additionally, camera studies for ringtail and San Joaquin kit fox, described in Sections 5.6.1 and 5.6.2, respectively, documented nocturnal activity. While the nocturnal surveys were focused on specific species, anecdotal observations of all nocturnal species were documented.

Reptile and Amphibian Survey Factors

Reptiles and amphibians are secretive in their habits and are difficult to observe using standard meandering transects. To address this potential factor, focused surveys for California red-legged frog were conducted in accordance the USFWS (2005) guidelines, which were prepared to maximize detection of this species, if present. To account for survey difficulties, four special-status reptile and amphibian species that could occur, based on pertinent distribution and habitat preference literature and recorded off-site observations, are analyzed based upon their potential to occur and adequate measures to avoid and minimize impacts are provided in the BTR.

7 REFERENCES

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual*. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Corps of Engineers Waterways Experiment Station. January 1987.

ACOE. 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2). Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. http://el.erdc.usace.army.mil/elpubs/pdf/trel08-28.pdf.

ACOE. 2008b. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Cold Region Research and Environmental Laboratory, ERDC/CRREL TR-08-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2008.

AirPhoto USA. 2006. "1-foot color-ortho imagery of Grapevine planning area" [CAD DWG]. Flown June 2006.

AOU (American Ornithologists' Union). 1998. *Check-List of North American Birds: The Species of Birds of North America from the Arctic through Panama, including the West Indies and Hawaiian Islands*. 7th ed. Lawrence, Kansas: Allen Press Inc. Accessed March 31, 2010. http://www.aou.org/checklist/north/print.php.

AOU. 2013a. "Fifty-Fourth Supplement to the American Ornithologists' Union *Check-List of North American Birds*." *Auk* 130(3): 558–571.

AOU. 2013b. "Check-List of North American Birds: List of the 2,090 Bird Species Known From the AOU Check-List Area." Updated September 13, 2013. Accessed August 3, 2010. http://www.aou.org/checklist/north/full.php.

Bat Conservation International Inc. 2013. All About Bats. BCI Species Profiles. Accessed May 6, 2014. http://batcon.org/index.php/all-about-bats/species profiles.html?country=43&state=all&family=all&sort=species_asc&start=40.

Best, T.L., W.M. Kiser, and P.W. Freeman. 1996. "*Eumops perotis*." *Mammalian Species* No. 534. American Society of Mammalogists. December 27, 1996.

Bing (Bing Aerial Imagery). 2013. "Grapevine, California" [aerial photograph]. Bing is a registered trademark of Microsoft and is used in association with its data suppliers. Redmond, Washington: Microsoft.

Bogen, M.A., P.M. Cryan, E.W. Valdez, L.E. Ellison, and T.J. O'Shea. 2003. "Western Crevice and Cavity-Roosting Bats." In *Monitoring Trends in Bat Populations of the United States and Territories: Problems and Prospects*, edited by T.J. O'Shea and M.A. Bogen. U.S. Geological Survey, Biological Resources Discipline, Information and Technology Report, USGS/BRD/ITR-2003-0003.

Brady, Roland H. III, and Kris Vyverberg. 2013. *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants*. California Energy Commission. Publication Number: CEC-500-2014-013.

Calflora. 2013. Calflora: Information on Wild California Plants for Conservation, Education, and Appreciation. Website. Berkeley, California: Calflora. Accessed October 21, 2013. http://www.calflora.org/.

California High-Speed Rail Authority. 2013. Letter report re: California High-Speed Train: Bakersfield to Palmdale 2013 Botanical Survey Results on Tejon Ranch. From Mark McLoughlin (California High-Speed Rail Authority) to Nicole Esselman and Derek Abbott (Tejon Ranch Company). July 30, 2013.

CDFG (California Department of Fish and Game). 1990. *California Department of Fish and Game Region 4 Approved Survey Methodologies for Sensitive Species*.

CDFG. 2003. *Atlas of the Biodiversity of California*. CDFG.

CDFG. 2009. "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities." CDFG. November 24, 2009.

CDFG. 2010. *List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form*. September 2010. Accessed August 30, 2013. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp.

CDFG. 2012. *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency, Department of Fish and Game. March 7, 2012.

CDFW (California Department of Fish and Wildlife). 2013a. California Natural Diversity Database GIS layer. March 2013.

CDFW. 2013b. Rarefind. Version 4.0. CNDDB. Accessed September 17, 2013.

CDFW. 2013c. California Wildlife Habitat Relationships (CWHR) System. CWHR Life History Accounts and Range Maps. Mammals – bat species accounts selected. Available at: http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspxCNPS (California Native Plant Society). 2001. "CNPS Botanical Survey Guidelines." December 9, 1983; revised June 2, 2001. CNPS. http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf.

CDFW. 2015. Rarefind. Version 4.0. CNDDB. Accessed March 29, 2015, and July 20, 2015.

CNPS (California Native Plant Society). 2001. CNPS Botanical Survey Guidelines. December 9, 1983. Revised June 2, 2001.

CNPS. 2013a. "Inventory of Rare and Endangered Plants" (online edition, v8-01a). Sacramento, California: California Native Plant Society. Accessed September 2013. Search Criteria: Kern County. http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi.

CNPS. 2013b. Inventory of Rare and Endangered Plants (online edition, v8-01a). Sacramento, California: California Native Plant Society. Accessed September 2013. CRPR List Scientific and Common Names. http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi.

Consortium of California Herbaria. 2013. Data provided by the participants of the Consortium of California Herbaria. Accessed September 17, 2013. ucjeps.berkeley.edu/consortium/.

Crother, B.I., ed. 2008. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding*. 6th ed. Society for the Study of Amphibians and Reptiles Herpetological Circular no. 37. January 2008. Accessed December 14, 2010. http://ssarherps.org/pdf/HC_37_6thEd.pdf.

Curtis, K.E. and R.W. Lichvar. 2010. *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States.* July 2010.

Cypher, B., and T. Westall. 2014. *Buena Vista Lake Shrew Habitat Evaluation, Tejon Ranch Grapevine Area, Kern County, California*. February 17, 2014.

Cypher, E.A. 2002. "General Rare Plant Survey Guidelines." Bakersfield, California: California State University, Stanislaus, Endangered Species Recovery Program. Revised July 2002. Accessed May 2012. http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/rare_plant_protocol.pdf.

David Magney Environmental Consulting. 2010. *Flora of the Tejon Ranch Conservancy Acquisition Areas, Tejon Ranch, California*. Prepared for Tejon Ranch Conservancy. Ojai, California: David Magney Environmental Consulting. July 23, 2010.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report* (TMV BTR). May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan*. Final version. Prepared for Tejon Ranchcorp by Dudek with technical assistance from U.S. Fish and Wildlife Service. April 2013.

DWR (California Department of Water Resources). 2014. "Monthly Precipitation: Bakersfield Airport." California Data Exchange Center. Accessed April 29, 2014. http://cdec.water.ca.gov/cgi-progs/queryMonthly?BFK.

DWR. 2015. "Monthly Precipitation: Bakersfield Airport." California Data Exchange Center. Accessed September 28, 2015. http://cdec.water.ca.gov/cgi-progs/queryMonthly?BFK.

Elbroch, M. 2003. *Mammal Tracks & Sign: A Guide to North American Species*. Mechanicsburg, Pennsylvania: Stackpole Books.

ESRP (Endangered Species Recovery Program). 2015. "Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*)." Turlock, California: California State University Stanislaus, ESRP. Accessed August 25, 2015. http://esrp.csustan.edu/speciesprofiles/profile.php?sp=esle.

Evelyn, C. 2014. Occurrence of Tehachapi slender salamander on the Grapevine project site. Letter from C. Evelyn (University of California, Santa Barbara) to Dudek. In press.

FGDC (Federal Geographic Data Committee). 2008. *National Vegetation Classification Standard*, Version 2. FGDC-STD-005-2008 (Version 2). Reston, Virginia: Federal Geographic Data Committee, Vegetation Subcommittee. February 2008. http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/NVCS_V2_FINAL_2008-02.pdf.

Fuller, M.R., and J.A. Mosher. 1987. "Raptor Survey Techniques." In *Raptor Management Technique Manual*, edited by B.A. Giron Pendleton, B.A. Millsap, K.. Cline, and D.M. Birds, 37–65. Washington DC: National Wildlife Federation.

Google Earth. 2013. Aerial photograph. 1:200 scale. Hirshfeld, J.R., Z.C. Nelson, and W. G. Bradley. 1977. "Night Roosting Behavior in Four Species of Desert Bats." *Southwestern Naturalist* 22(4): 427–433.

Harvey, M.J., J.S. Altenbach, and T. Best. 1999. *Bats of the United States*. Arkansas Game and Fish Commission and U.S. Fish and Wildlife Service.

Hirshfeld, J.R., Z.C. Nelson, and W. G. Bradley. 1977. Night Roosting Behavior in Four Species of Desert Bats. The Southwestern naturalist 22 (4): 427-433.

Historic Aerials Online. 2013. "Historic Aerials [photographs]." Accessed August 2013. http://www.historicaerials.com/

HMANA (Hawk Migration Association of North America). n.d. *Winter Raptor Survey Guidelines*.

Impact Sciences Inc. 2000. *Resource Management and Monitoring Plan: Tejon Industrial Complex Habitat Preserve,* Tejon Ranch, Kern County, California. July 27, 2000.

Impact Sciences Inc. 2008. *Jurisdictional Delineation Report for Tejon Mountain Village*. Prepared for Tejon Mountain Village LLC. Revised August 2008.

Intermap (Intermap Technologies Inc.). 2004. "Vegetation Mapping for Western Kern County" [Digital Terrain Model (DTM) data]. Five-meter resolution. Denver, Colorado: Intermap.

Intermap. 2005a. "Vegetation mapping for eastern Kern County" [DTM data]. Five-meter resolution. Denver, Colorado: Intermap.

Intermap. 2005b. "Vegetation mapping for southern Kern County" [DTM data]. Five-meter resolution. Denver, Colorado: Intermap.

Intermap. 2013. "Grapevine contours" [Shapefiles]. January 2013.

Jepson Flora Project. 2013a. "Jepson eFlora." Berkeley, California: University of California. Accessed September 18, 2013. http://ucjeps.berkeley.edu/IJM.html.

Jepson Flora Project. 2013b. "Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California." Berkeley, California: University of California. http://ucjeps.berkeley.edu/interchange/I_status_1+2.html.

Keeley, B.W., and M.D. Tuttle. 1999. *Bats in American Bridges*. Bat Conservation International Inc. Resource Publication No. 4. www.batcon.org.

Kern Council of Governments. 2010. "Digital Imagery, 1 Foot Orthoimage, Kern County, Kern County, California, Digital Spatial Data, Image Map, Natural Color Orthophoto, Digital Orthophoto, Rectified Image" [JPEG]. Produced by Mapcon Mapping Ltd., Buraby, BC, Canada. April 2010.

Kern County (Kern County Planning and Community Development Department). 2000. *Tejon Industrial Complex. Volume I: Environmental Impact Report*. Prepared by Impact Sciences: Agoura Hills, California. February 2000.

Kern County. 2002. *Final Environmental Impact Report (SCH No. 2001101133) Tejon Industrial Complex East Specific Plan, Volume 1. Environmental Impact Report*. Final. SCH no. 2001101133. Prepared by Impact Sciences: Agoura Hills, California. November 2002.

Kern County. 2006. *Kern County Valley Floor Habitat Conservation Plan*, First Public Draft. Prepared for Kern County Planning Department. Bakersfield, California: Garcia and Associates. December 2006.

Kern County. 2009. *Frazier Park Estates Environmental Impact Report*. Recirculated Draft. SCH no. 2003111106. Prepared by Kern County Planning Department with Technical Assistance by ICF Jones & Stokes. Bakersfield, California: Kern County. June 2009.

Kern County. 2010. *Greater Tehachapi Area Specific Plan Environmental Impact Report*. Draft. SCH no. 2010051064. Prepared by Kern County Planning and Community Development Department with Technical Assistance by RGP Planning and Development Services. Bakersfield, California: Kern County. August 2010.

Kern County. 2011. *Valley Solar Project by enXco Development Corporation Environmental Impact Report*. Draft. SCH no. 2010031039. Prepared by Kern County PCDD with technical assistance by ICF International. Bakersfield, California: Kern County. August 2011.

Kern County. 2012a. *FRV Orion Solar Project Environmental Impact Report*. Draft. SCH no. 2012031079. Prepared by Kern County Planning and Community Development Department with Technical Assistance by ICF International. Bakersfield, California: Kern County. December 2012.

Kern County. 2012b. *RE Old River One and RE Old River Two Solar Project Environmental Impact Report*. Draft. SCH no. 2010121058. Prepared by Kern County PCDD with technical assistance by ICF International. Bakersfield, California: Kern County. May 2012.

Kern County. 2012c. *FRV Valley Solar Project (PP11297) Environmental Impact Report*. Draft. SCH no. 2011111027. Prepared by Kern County PCDD with technical assistance by ICF International. Bakersfield, California: Kern County. August 2012.

Kunz, T.H., and L.F. Lumsden. 2003. "Ecology of Cavity and Foliage Roosting Bats." In *Bat Ecology*, edited by T.H. Kunz and M.B. Fenton. The University of Chicago Press.

Miller, B.W. 2001. "A Method for Determining Relative Activity of Free Flying Bats Using a New Activity Index for Acoustic Monitoring." *Acta Chiropterologica* 3:93–105.

Moyle, P.B. 2002. *Inland Fishes of California*. Berkeley, California: University of California Press.

NABA (North American Butterfly Association). 2001. "Checklist of North American Butterflies Occurring North of Mexico." In *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies*, edited by B. Cassie, J. Glassberg, A. Swengel, and G. Tudor. 2001. Accessed March 2014. http://www.naba.org/pubs/enames2.html.

NABA. 2003. "Report of the NABA Names Committee." Prepared by M. Caterino, J. Glassberg, and J. Heraty. *American Butterflies* Summer 2003:24–27. Update to *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies* (2nd ed., 2001). Accessed August 16, 2010. http://www.naba.org/pubs/checklst.html.

NABA. 2004. "Checklist of North American Butterflies Occurring North of Mexico." September 8, 2004. Update to *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies* (2nd ed., 2001). Accessed August 15, 2010. http://www.naba.org/pubs/checklst.html.

O'Farrell, M.J., B.W. Miller, and W.L. Gannon. 1999. "Qualitative Identification of Free-Flying Bats Using the Anabat Detector." *Journal of Mammalogy* 80:11–23.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. Sacramento, California: California Native Plant Society.

Sloan, J. Grapevine Wildlife Surveys: Resource Agency Meeting, Grapevine Project. Conference call between J. Sloan (USFWS), B. Ortega (Dudek), M. Enright (Dudek), D. Germano (CSU Bakersfield), L. Connolly (CDFW), T. Leeman (USFWS), and D. Letterly (DMBPV). April 26, 2013.

TRC (Tejon Ranch Company). 2013a. "Topography GIS data, including 5-meter Digital Elevation Model, Hillshade, and Slopes, for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 17, 2013.

TRC. 2013b. "Utilities and service systems GIS, including basins, ponds, and reservoirs, for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

TRC. 2013c. “Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area” [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

TRC. 2013d. “Wildlife camera data.” Received from Tejon Ranch Company on July 16, 2013.

Twisselmann, E.C. 1967. *A Flora of Kern County, California*. San Francisco, California: University of San Francisco.

USDA (U.S. Department of Agriculture). 2007. “Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA.” Accessed January 2009. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2009. “Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA.” Accessed February 2013. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2012a. “1-Meter Digital Ortho Imagery of Kern County” [JPEG]. Salt Lake City, Utah: USDA Farm Service Agency, National Agriculture Imagery Program, Aerial Photography Field Office. October 22, 2012.

USDA. 2012b. “National List of Hydric Soils.” Excel file. USDA, Natural Resources Conservation Service. April 2012. Accessed March 1, 2013. http://soils.usda.gov/use/hydric/.

USDA. 2013. “PLANTS Database.” USDA Natural Resources Conservation Service. http://plants.usda.gov/java/.

USFWS (U.S. Fish and Wildlife Service). 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle.* July 9, 1999. Sacramento, California: Sacramento Fish and Wildlife Office.

USFWS. 2005. *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog (*Rana aurora draytonii*)*. August 2005. http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/crlf/caredleggedfrog_survey-guidelines.pdf.

USFWS. 2010. *San Joaquin Kit Fox (*Vulpes macrotis mutica*) 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

USFWS. 2013a. “NWI Wetlands for California” [Shapefiles]. National Wetlands Inventory. Data last updated March 5, 2013. Accessed August 2013. http://www.fws.gov/wetlands/Data/State-Downloads.html.

USFWS. 2013b. National Wetlands Inventory website. Accessed March 2013. http://www.fws.gov/wetlands/Data/Mapper.html.

USFWS. 2013c. "Kern County Species." Environmental Conservation Online System. Accessed September 19, 2013. http://www.fws.gov/endangered/.

USFWS. 2013d. "Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats." Sacramento, California: Sacramento Field Office. March 2013. http://www.fws.gov /sacramento/ES/Survey-Protocols-Guidelines/Documents/SFWO%20Final%20 San%20Joaquin%20K-Rat%20Trapping%20Protocol-2013.pdf.

USGS (U.S. Geological Survey). 2013. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies" [digital GIS data]. National Hydrography Dataset website. July 22, 2013. http://nhd.usgs.gov/.

USGS. 2015. "Hydrography: National Hydrography Dataset and Watershed Boundary Dataset." Accessed October 25, 2015. http://nhd.usgs.gov/.

USGS. n.d. 7.5-minute quadrangle topographical maps for the study area" [maps].

Vyverberg, K. 2010. *A Review of Stream Processes and Forms in Dryland Watersheds.* California Department of Fish and Wildlife. December 2010.

Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference.* 3rd ed. Online version. Baltimore, Maryland: Johns Hopkins University Press. Accessed March, 24, 2014. http://www.bucknell.edu/msw3/.

WRCC (Western Regional Climate Center). 2013. *Tejon Rancho*. Accessed May 2014. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8839.

WRCC. 2015. *Tejon Rancho*. Accessed September 2015. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8839.

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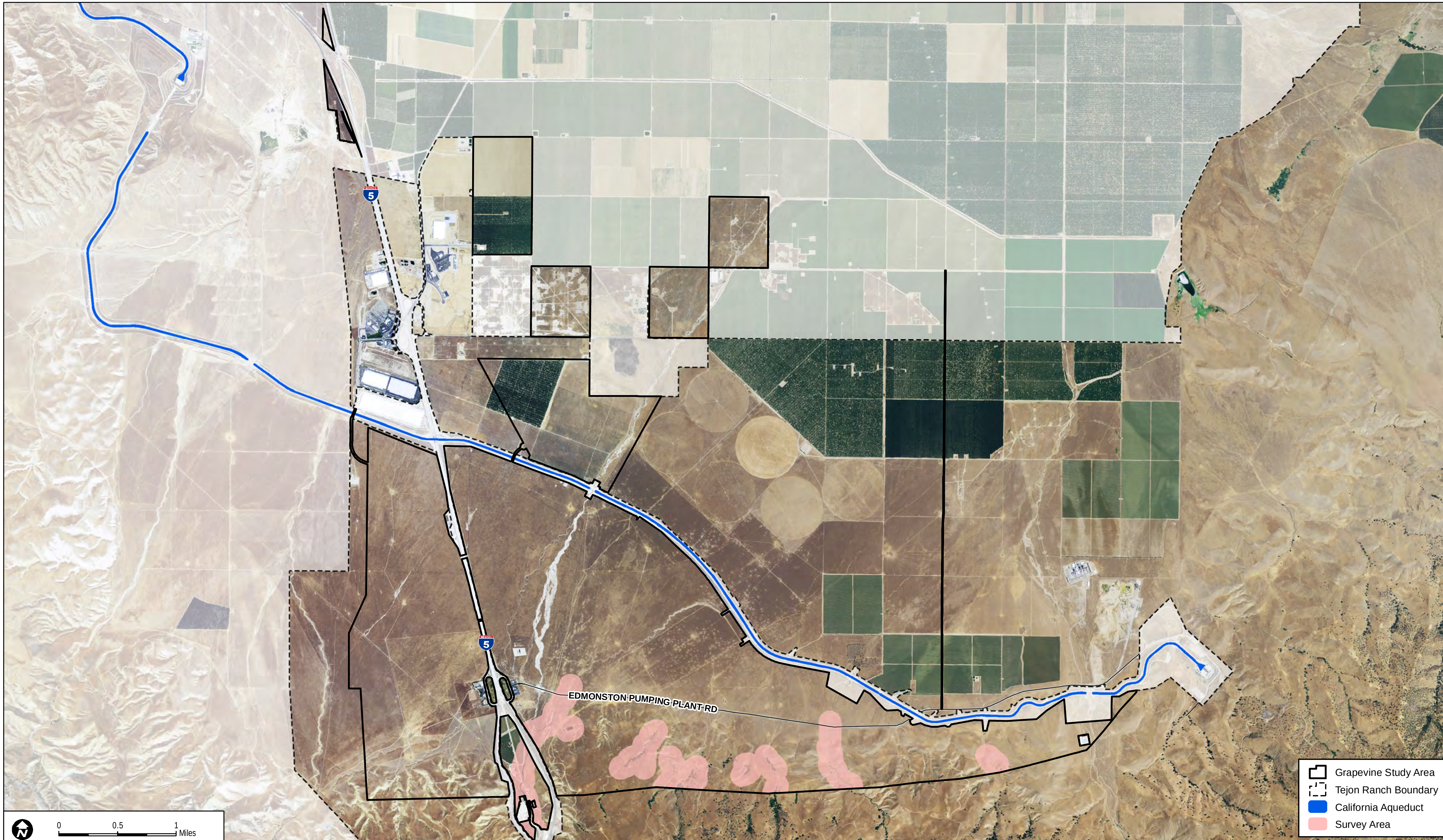

FIGURE B-1

California Red-Legged Frog Survey Areas

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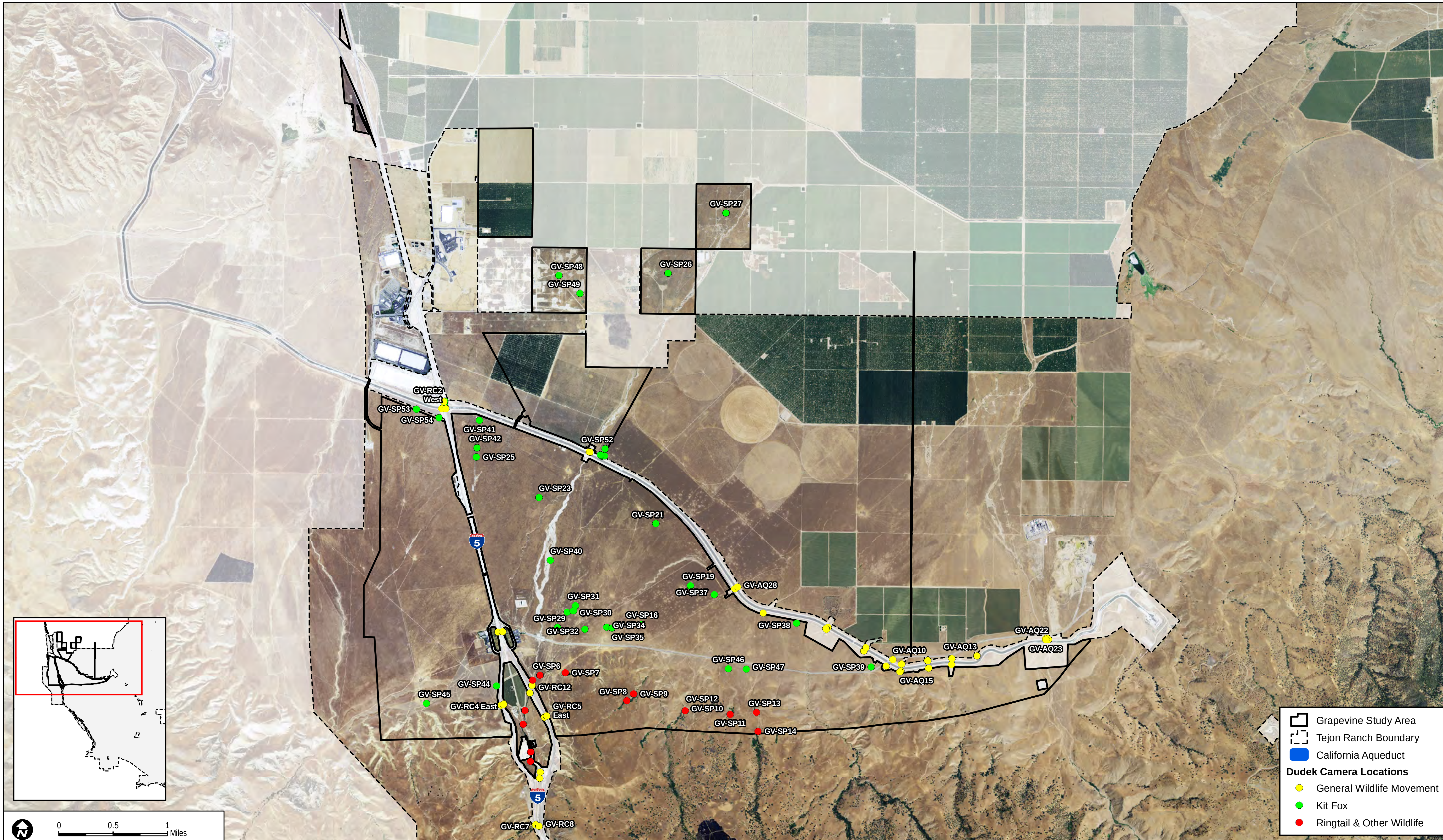

SOURCES: TRC 2013d

FIGURE B-2A

Wildlife Camera Stations

GRAPEVINE PROJECT

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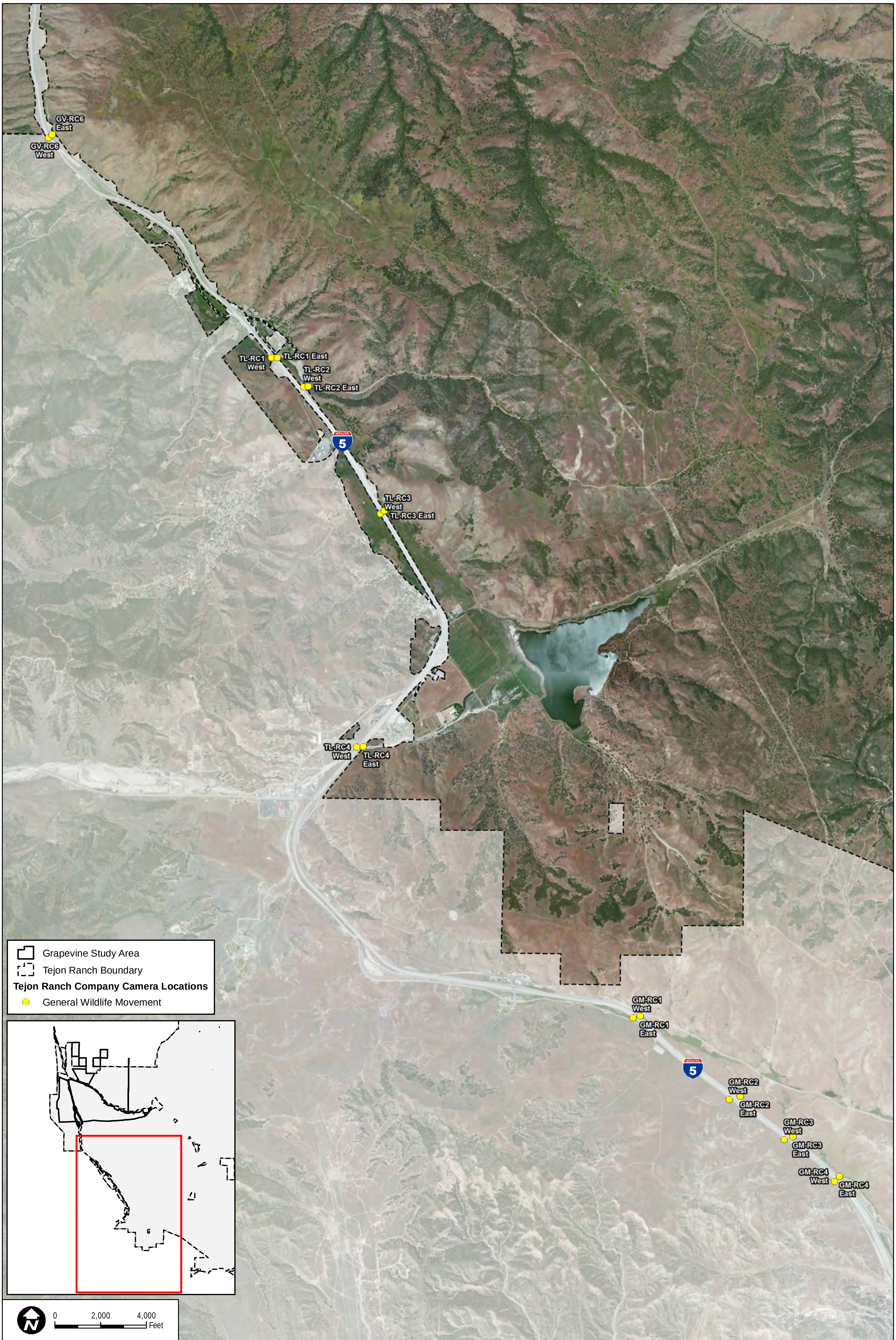

SOURCES: TRC 2013d

FIGURE B-2B
Wildlife Camera Stations

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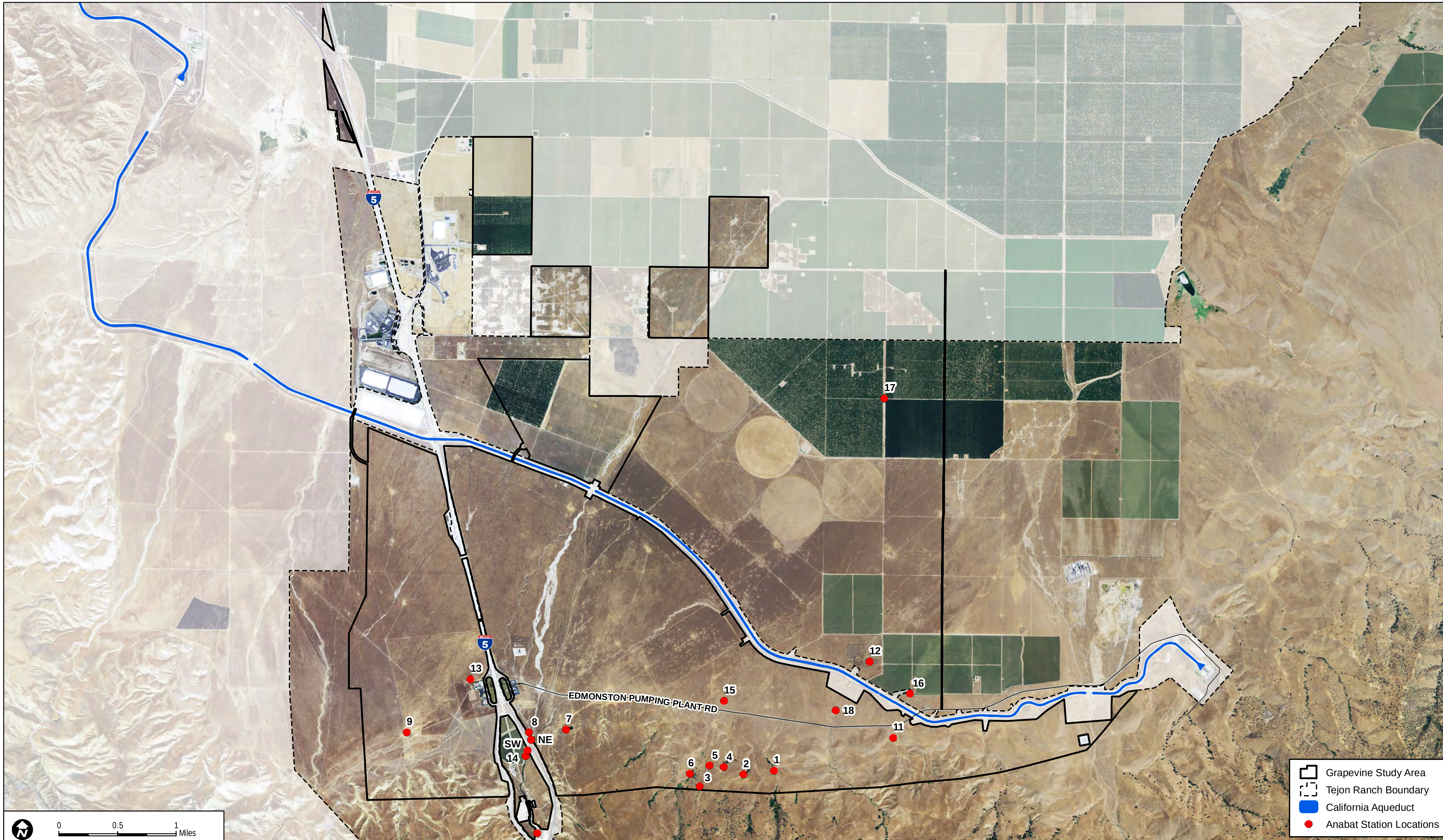

FIGURE B-3

Bat Survey Point Locations

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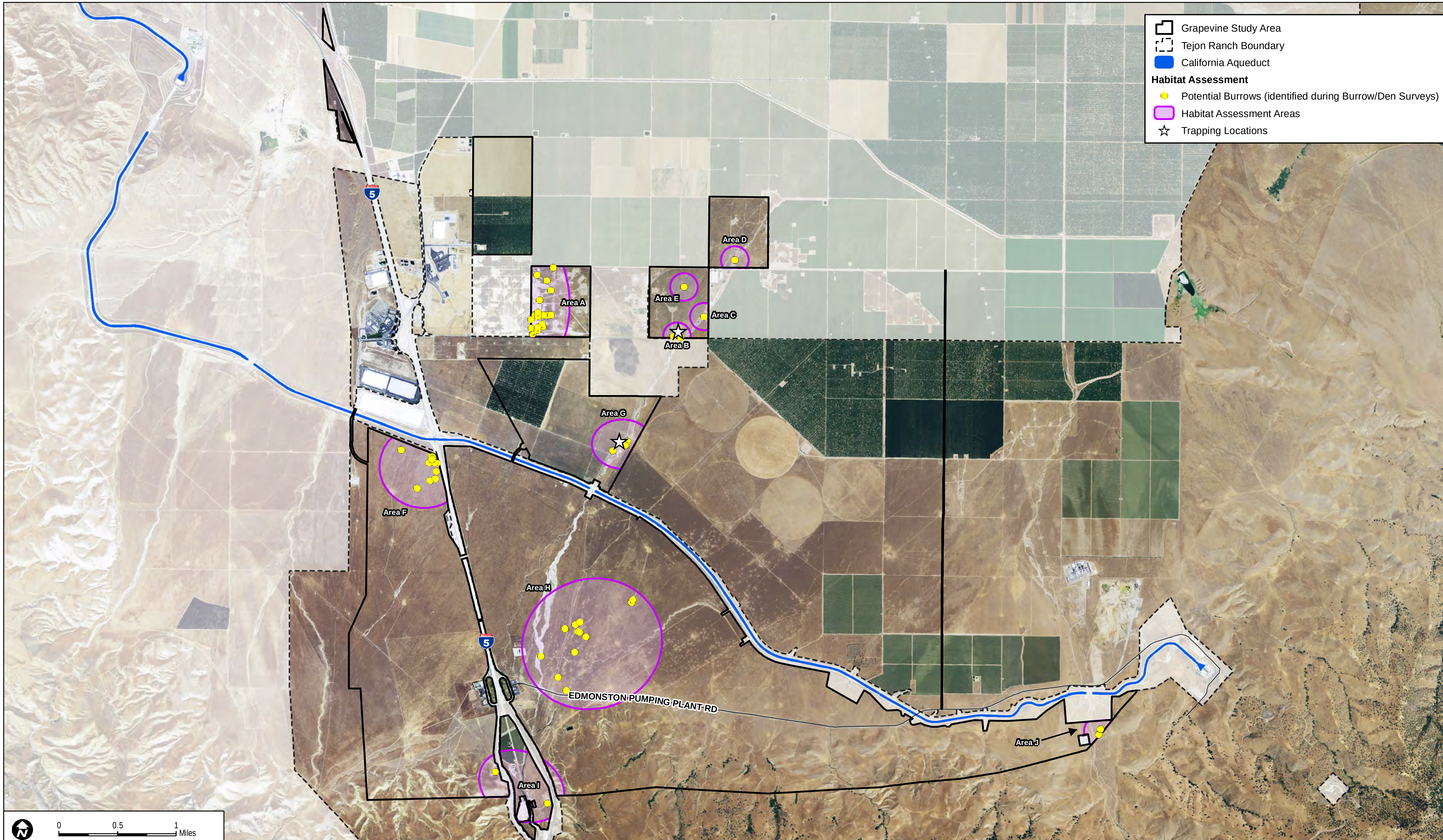

FIGURE B-4

Small Mammal Habitat Assessment and Trapping

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APPENDIX C

Soils Descriptions

APPENDIX C
Soils Descriptions

Cobbly Clay

Cibo cobbly clay, 30% to 75% slopes, is mapped in a relatively small area in the southeastern portion of the study area (USDA 2007, 2009a). These soils occur on foothills and mountainous uplands. Cibo series soils are moderately deep and well drained and are formed from material weathered from basic igneous rocks. Permeability of this soil is slow. Surface runoff is medium to very rapid after cracks swell shut. The textures throughout the profile are heavy clay loam or clay with 35% to 50% clay absolute. The topsoil is slightly acid to moderately alkaline (USDA 1997).

Fine Sandy Loam

Pleito sandy clay loam, 2% to 5% slopes, occur in the southern portion of the study area east and west of Interstate 5 (I-5). Pleito sandy clay loam, 5% to 9% slopes, occurs along the western boundary of the study area (USDA 2007, 2009a). Soils in the Pleito series generally occur on terraces, fan remnants, erosional remnants, and alluvial fans. Pleito series soils are very deep and well drained and are formed in mixed alluvium. Permeability of this soil is slow. Surface runoff is low to very high. The topsoil is neutral to moderately alkaline (USDA 1997).

Gravelly Clay Loam

Bitcreek-Dibble-Eaglerest complex, 15% to 50% slopes, occurs in the eastern portion of the study area south of Edmonston Pumping Plant Road (USDA 2007, 2009a). Bitcreek-Dibble-Eaglerest complex, 15% to 50% slopes, soils are composed of 40% Bitcreek and similar soils, 30% Dibble and similar soils, 15% Eaglerest and similar soils, and 15% minor components. Bitcreek soils generally occur on hillslopes. Bitcreek series soils are well drained and are formed in residuum weathered from sandstone and/or shale. Surface runoff is very high. Dibble soils generally occur on hillslopes. Dibble soils are well drained and are formed in residuum weathered from sandstone and shale. Surface runoff is very high. Eaglerest soils generally occur on mountain slopes. Eaglerest soils are well drained and are formed in residuum weathered from shale. Surface runoff is very high (USDA 2009b).

Gravelly Loam

Pleito-Loslobos, 15% to 75% slopes, occurs in the southwestern corner of the study area (USDA 2007, 2009a). These soils consist of 60% Pleito and similar soils, 25% Loslobos and similar soils, and 15% minor components. Pleito soils occur on stream terraces and are formed from alluvium derived from mixed sources. These soils are well drained and surface runoff is high. Loslobos soils are typically found on hillslopes and are formed from unconsolidated alluvium derived from mixed rock sources. These soils are well drained and surface runoff is medium (USDA 2009b).

Loam

Cerini loam, 0% to 2% slopes, soils occur in the northernmost parcel of the study area (USDA 2007, 2009a). These soils generally occur on alluvial fans. Cerini series soils are very deep and well drained and are formed in alluvium derived from sedimentary and/or granitoid rock. The topsoil is slightly to moderately alkaline (USDA 2009b).

Both the Geghus-Tecuya association, 30% to 75% slopes, and Geghus-Tecuya association, 9% to 30% slopes, occur in the southern portion of the study area (USDA 2007, 2009a). Geghus-Tecuya soils consist of 39% Geghus soils, 26% Tecuya soils, and 35% minor components. These soils occur on hillslopes and are very deep and well drained. They are formed in residuum weathered from shale, sandstone, and/or conglomerate (USDA 2009b).

Loamy Sand

Psamments-Xerolls complex, nearly level, soils occur in the eastern portion of the study area (USDA 2007, 2009a). This complex consists of approximately 60% Psamments and 35% Xerolls. These soils are often found on recent and old stream bottoms. They are very deep and excessively to moderately well drained. These soils have rapid to very rapid permeability with slow surface runoff (Valverde and Hill 1981).

Wheelridge gravelly loamy sand, 0% to 2% slopes, soils occur on the central and northern portion of the study area that lies south of the California Aqueduct. They also occur in three of the parcels north of Laval Road and the parcel south of Laval Road and north of the California Aqueduct (USDA 2007, 2009a). Wheelridge soils occur on fan remnants. They are formed in alluvium derived from granitoid rock. They are very deep and somewhat excessively drained. The topsoil is neutral to moderately alkaline (USDA 2009b).

Whitewolf loamy sand, 2% to 5% slopes, soils occur in two of the northwestern parcels of the study area (USDA 2007, 2009a). These soils are generally found on alluvial fans and floodplains. They are very deep, somewhat excessively drained soils. Whitewolf series soils are formed in alluvium derived dominantly from granitoid rock. The topsoil is slightly acid to moderately alkaline (USDA 2009b).

Sandy Loam

Guijarral sandy loam, 0% to 2% slopes, soils occur in the northern portion of the study area in three of the parcels north of Laval Road. Guijarral sandy loam, 2% to 9% slopes, soils occur south of Laval Road but north of Edmonston Pumping Plant Road west and east of I-5 (USDA 2007, 2009a). Guijarral soils are very deep and well drained and are generally found on fan remnants. They are formed in alluvium derived from calcareous sedimentary rock. The topsoil is moderately alkaline (USDA 2009b).

Hesperia sandy loam, 2% to 5% slopes, and Hesperia sandy loam, 5% to 9% slopes, soils are all found in the eastern portion of the study area (USDA 2007, 2009a). Hesperia soils are on alluvial fans. They are very deep and well drained. Hesperia soils are formed in alluvium derived from granitoid rock. The topsoil is slightly alkaline or moderately alkaline (USDA 2009b).

Loslobos-Walong association, 5% to 30% slopes, soils occur along the southern boundary of the study area east of the I-5 (USDA 2007, 2009a). This association is made up of 40% Loslobos and similar soils, 30% Walong and similar soils, and 30% minor components. These soils occur on mountains and hills. Loslobos soils are formed in unconsolidated alluvium derived from mixed rock sources. They are well drained and surface runoff is medium. Walong soils are formed in residuum weathered from igneous and/or metamorphic rock. They are well drained and runoff is very high (USDA 2009b).

Premier sandy loam, 0% to 2% slopes, occurs in the northeastern portion of the study area in two parcels north of Laval Road. Premier sandy loam, 2% to 5% slopes, is located south of the California Aqueduct and east of the center of the study area and in one of the parcels in the northern portion of the study area north of Laval Road (USDA 2007, 2009a). Premier soils occur on alluvial fans and are formed in alluvium derived predominantly from granitoid rock. They are slightly to moderately alkaline (USDA 2009b).

Pleitito-Laval complex, 1% to 5% slopes occurs in the proposed off-site impact area by the proposed weigh station (USDA 2007, 2009a). Pleitito-Laval soils occur on alluvial fans and floodplains in alluvium and derives predominantly from granitoid or sedimentary rock. This association is made up of 44% Laval and similar soils, 44% Pleitito and similar soils, and 12% minor components. Both the Laval and Pleitito soils series are frequently flooded and runoff is very high. However, the Laval soils are somewhat excessively drained whereas Pleitito soils are described as well drained. Pleitito soils are slightly alkaline to moderately alkaline and Laval soils are slightly alkaline to strongly alkaline (USDA 2009b)

Very Gravelly Sandy Loam

Guijarral-Klipstein complex, 2% to 5% slopes, occurs in the western portion of the study area and in the eastern portion of the study area south of the California Aqueduct (USDA 2007, 2009a). These soils are 45% Guijarral and similar soils, 45% Klipstein and similar soils, and 10% minor components (USDA 2009b). Klipstein-Guijarral complex, 5% to 15% slopes, soils occur in the southern portion of the study area (USDA 2007, 2009a). These soils consist of 60% Klipstein and similar soils, 25% Guijarral and similar soils, and 15% minor components.

Guijarral soils are formed on fan remnants in alluvium derived from calcareous sedimentary rock. They are well drained with low surface runoff. Klipstein soils are formed on alluvial fans and fan remnants. They are formed in alluvium derived from granitoid and/or sedimentary rock. Klipstein soils are well drained with very low surface runoff (USDA 2009b).

Riverwash occurs along portions of Grapevine Creek (USDA 2007, 2009a). Riverwash occurs on channels and floodplains in alluvium derived from mixed sources. It consists of about 85% riverwash and 15% minor components, including fluvaquents, xerofluvents and similar soils, and xerorthents, sandy, and similar soils. Riverwash has low surface runoff (USDA 2009b).

Very Stony Sandy Clay Loam

Tehachapi loam, 2% to 5% slopes, soils occur in the southeastern portion of the study area, south of Edmonston Pumping Plant Road (USDA 2007, 2009a). Soils in the Tehachapi series generally occur on old alluvial fans and terraces. Tehachapi series soils are deep and well drained and are formed in mixed alluvium. Permeability of this soil is slow. Surface runoff is slow to medium. Soils are slightly acid to moderately alkaline (USDA 1997).

Water

A small area is mapped as water where an off-site road is proposed over the California Aqueduct, in the northwest portion of the study area (USDA 2007, 2009a). USDA (2009b) describes these areas simply as 100% water.

REFERENCES CITED

USDA (United States Department of Agriculture). 1997. “Official Soil Series Descriptions.” USDA Natural Resources Conservation Service. Accessed February 27, 2013. https://soilseries.sc.egov.usda.gov/osdname.asp.

USDA. 2007. “Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA.” Accessed February 2013. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2009a. “Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA.” Accessed February 2013. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2009b. “Soil Survey Of Kern County, California, Southwest Part.” USDA Natural Resources Conservation Service. Accessed February 27, 2013. http://soils.usda.gov/survey/printed_surveys/.

Valverde, M.A., and H.L. Hill. 1981. *Soil Survey of Kern County, California, Southeastern Part*. Washington, DC: USDA, Soil Conservation Service.

APPENDIX D

Vegetation Community and Land Cover Descriptions and Additional Information on Jurisdictional Resources

APPENDIX D
Vegetation Community and Land Cover Descriptions and Additional Information on Jurisdictional Resources

The Biological Resources Technical Report (BTR) briefly describes vegetation community alliances and land covers. This appendix provides additional detail regarding the vegetation community alliances and land covers in the Grapevine study area. The locations of the vegetation community alliances and land covers within the study area are shown on Figures D-1 and D-1A through D-1H.

1 SCRUBS

Within the study area, the following alliances are in the California coastal scrub macrogroup: the California buckwheat scrub, narrowleaf goldenbush–bladderpod spiderflower scrub, and silver bush lupine scrub alliances. The poison oak scrub alliance is within the Vancouverian lowland grassland and shrubland macrogroup and the allscale scrub alliance is within the Mojavean-Sonoran desert scrub macrogroup. These five alliances are described in more detail in Sections 1.1 through 1.5.

1.1 Allscale Scrub Alliance

The allscale scrub alliance has an open to continuous shrub canopy cover with shrubs less than 3 meters (10 feet) in height with a variable ground layer (Sawyer et al. 2009). For a stand of vegetation to be classified as allscale scrub, allscale (*Atriplex polycarpa*) [1] must be greater than 50% relative cover in the shrub canopy. The allscale scrub alliance occurs in the Sierra Nevada foothills, along the central California Coast Ranges, southeastern great basin, and the Mojave, Sonoran and Colorado Deserts. This alliance occurs at elevations ranging from 75 meters (246 feet) below sea level to 1,500 meters (4,921 feet) above mean sea level (amsl). The allscale scrub alliance occurs on alluvial fans, washes, playas, lakebeds and shores and along upper terraces and edges of washes (Sawyer et al. 2009).

[1] The common name used in Appendix F to the BTR is cattle saltbush. However, because Sawyer et al. (2009) uses the common name allscale, this common name is used in the description of the vegetation communities.

Study Area-Specific Information

Allscale scrub alliance in the study area.

The allscale scrub alliance is limited to an off-site area west of Interstate 5 (I-5) near the proposed California Department of Transportation (Caltrans) Commercial Vehicle Enforcement Facility Weigh Station and is associated with or adjacent to Tecuya Creek. Approximately 1 acre of the off-site area consists of the allscale scrub alliance. Consistent with the literature, the alliance occurs between 860 and 930 feet amsl.

Within the off-site area, the allscale scrub alliance is characterized as having greater than 50% relative cover of allscale in the shrub canopy, including 25% to 50% absolute cover. Emergent saltcedar (*Tamarix ramosissima*) is present at a low cover. The understory of this alliance is characterized by shortpod mustard (*Hirschfeldia incana*), prickly Russian thistle (*Salsola tragus*), and non-native grasses such as ripgut brome (*Bromus diandrus*), red brome (*B. madritensis* ssp. *rubens*), and oats (*Avena* ssp.). Other native species noted in this association include bladderpod spiderflower (*Isomeris arborea* = *Peritoma arborea*) and California broomsage (*Lepidospartum squamatum*).

Status

The California Department of Fish and Wildlife (CDFW)[2] does **not** consider the allscale scrub alliance a sensitive biological resource under the California Environmental Quality Act (CEQA) (CDFG 2010). While 1.1 acres of allscale scrub is located in the proposed impact outside of the study area, the California Vehicle Enforcement Facility Weigh Station would be designed to avoid impacts to Tecuya Creek and 0.4 acre of allscale scrub on the west side of the creek.

[2] Note that effective January 1, 2013, the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). Within this report, publications bearing the name CDFG (pre-2013) reflect the original authorship, while documents published after the name change reflect CDFW as the author.

1.2 California Buckwheat Scrub Alliance

California buckwheat scrub alliance in the study area

The California buckwheat scrub alliance has a continuous to intermittent shrub canopy cover less than 2 meters (7 feet) in height. In general, for a stand of vegetation to be classified as California buckwheat scrub, California buckwheat (*Eriogonum fasciculatum*)[3] must be greater than 50% relative cover in the shrub canopy and other shrubs, if present, are less than 50% relative cover[4] in the shrub canopy (Sawyer et al. 2009). The California buckwheat scrub alliance occurs in a number of regions, including the Sierra Nevada foothills. This alliance occurs at elevations ranging from sea level to 1,200 meters (3,937 feet) amsl. Typically, California buckwheat scrub is found on upland slopes, intermittently flooded arroyos, channels, and washes (Sawyer et al. 2009; CNPS and CDFG 2007).

Study Area-Specific Information

The California buckwheat scrub alliance is limited to the southern portion of the study area, east of I-5, in the Tehachapi foothills. Less than 1%, or 15 acres, of the study area consists of the California buckwheat scrub alliance. Consistent with the literature, the alliance occurs between 1,361 and 1,750 feet amsl and on flat land and slopes in the study area.

Two associations within the California buckwheat scrub alliance occur in the study area, the California buckwheat scrub–deer weed scrub association and the California buckwheat scrub association. In the study area, the California buckwheat scrub–deer weed scrub association is characterized as having 5% to 15% absolute cover[5] of California buckwheat and 5% to 15% absolute cover of common deerweed (*Acmispon glaber*) in the shrub canopy and the understory is dominated by slender oat (*Avena barbata*), ripgut brome, and red brome. The California buckwheat scrub association is characterized as having 15% to 50% absolute cover of California

[3] The common name used in Appendix F to the BTR is Mojave buckwheat. However, because Sawyer et al. (2009) uses the common name California buckwheat, this common name is used in the description of the vegetation communities.

[4] Relative cover refers to the amount of the stand sampled that is covered by one species as compared to (relative to) the amount of the stand covered by all species (in that group). Thus, 50% relative cover means that half of the total cover of all species is composed of the single species. Relative cover values are proportional numbers and, if added, total 100% for each stand (CNPS and CDFG 2007).

[5] Absolute cover refers to the actual percentage of the ground that is covered by a species. For example, California buckwheat covers between 5% and 15% percent of the stand. Absolute cover of all species if added in a stand or plot may total greater or less than 100% because it is not a proportional number (CNPS and CDFG 2007).

buckwheat in the shrub canopy with an herbaceous understory dominated by slender oat, ripgut brome, red brome, and redstem stork's bill (*Erodium cicutarium*).

Status

The two associations within the California buckwheat scrub alliance in the study area are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), as described further in Chapter 3. The two associations of the California buckwheat scrub alliance on site are located within the proposed project open space in the foothills.

1.3 Narrowleaf Goldenbush–Bladderpod Spiderflower Scrub Alliance

The narrowleaf goldenbush scrub alliance is described as a provisional alliance[6] in the *Natural Communities List* (CDFG 2010). Since the publication of the *Natural Communities List* (CDFG 2010), the CDFW has reclassified the alliance as the narrowleaf goldenbush–bladderpod spiderflower scrub alliance and no longer considers the alliance provisional (Evens and Keeler-Wolf, pers. comm. 2013), based upon documentation presented in the *Vegetation Mapping and Accuracy Assessment Report for Carrizo Plain National Monument* (CNPS 2013) and *Carrizo Plain National Monument Vegetation Classification and Mapping Project* (CNPS 2011).

Narrowleaf goldenbush (*Ericameria linearifolia*), bladderpod spiderflower, and/or yellow aster (*Eastwoodia elegans*) are dominant or co-dominant in the shrub canopy of the narrowleaf goldenbush–bladderpod spiderflower scrub alliance. The shrub layer may also include San Joaquin snakeweed (*Gutierrezia californica*), California jointfir (*Ephedra californica*), golden-yarrow (*Eriophyllum confertiflorum*), or California buckwheat. The herbaceous layer can be well developed and Sandberg bluegrass (*Poa secunda*) is characteristically present (CNPS 2013, 2011).

6 An alliance is described as provisional if there are "sufficient data to propose the vegetation type" but "not enough research and regional information to be confident about its status in California's vegetation" (Sawyer et al. 2009).

Study Area-Specific Information

The narrowleaf goldenbush–bladderpod spiderflower scrub alliance is limited to the southern and central foothill area of the study area. Less than 1%, or 53 acres, of the study area consists of the narrowleaf goldenbush–bladderpod spiderflower scrub alliance, all of which is located within proposed project open space in the foothills. The alliance occurs between 1,631 and 2,140 feet in elevation on flat land and slopes in the study area.

Narrowleaf goldenbush–bladderpod spiderflower scrub alliance in the study area.

One association within the narrowleaf goldenbush–bladderpod spiderflower scrub alliance occurs in the study are, the bladderpod spiderflower scrub association.

Within the study area, the bladderpod spiderflower scrub association is characterized as having 5% to 50% absolute cover of bladderpod spiderflower and less than 1% Menzies' goldenbush (*Isocoma menziesii*). The understory of this association is characterized by non-native grasses such as slender oat, ripgut brome, red brome, and mouse barley (*Hordeum murinum*).

Status

The narrowleaf goldenbush–bladderpod spiderflower scrub alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within the proposed project open space in the foothills.

1.4 Poison Oak Scrub Alliance

The poison oak scrub alliance has a two-tiered, intermittent to continuous shrub canopy cover with shrubs less than 4 meters (13 feet) in height with a variable ground layer (Sawyer et al. 2009). For a stand of vegetation to be classified as poison oak scrub, Pacific poison oak must be greater than 50% relative cover in the shrub canopy. The poison oak scrub alliance occurs in the Sierra Nevada foothills, in coastal California from the Oregon border into Los Angeles County, and in the Mojave Desert. This alliance occurs at elevations ranging from sea level to 720 meters (2,362 feet) amsl. The poison oak scrub alliance occurs in mesic hollows where salt-laden fog is present and on sheltered mesic and disturbed dry slopes farther inland (Sawyer et al. 2009).

Study Area-Specific Information

Poison oak scrub alliance in the study area.

The poison oak scrub alliance is limited to the southern and central portion of the study area in the Tehachapi foothills east of I-5. Less than 0.5 acre of the study area consists of the poison oak scrub alliance. Consistent with the literature, the alliance occurs in the study area between 1,691 and 1,840 feet amsl.

One association within the poison oak scrub alliance occurs in the study area, the poison oak/herbaceous association, or *Toxicodendron diversilobum*/herbaceous association. Within the study area, the poison oak/herbaceous association is characterized as having 25% to 50% absolute cover of poison oak. The understory of this association is dominated by non-native grasses such as ripgut brome.

Status

The poison oak scrub alliance is **not** consider the a sensitive biological resource by CDFW under CEQA (CDFG 2010) and all of this alliance is located within proposed project open space in the foothills.

1.5 Silver Bush Lupine Scrub Alliance

The silver bush lupine scrub alliance has an open shrub canopy cover with shrubs less than 2 meters (7 feet) in height with an open to intermittent herbaceous layer with seasonal annuals (Sawyer et al. 2009). For a stand of vegetation to be classified as silver bush lupine scrub, silver lupine (*Lupinus albifrons*) must be greater than 50% relative cover in the shrub canopy. Sawyer et al. (2009) list the following shrub species as associates within the silver bush lupine scrub alliance: California buckwheat, golden-yarrow, California yerba santa (*Eriodictyon californicum*), threadleaf ragwort (*Senecio flaccidus*), and Pacific poison oak (*Toxicodendron diversilobum*). The silver bush lupine scrub alliance occurs in a number of regions, including the Great Valley and Sierra Nevada foothills. This alliance occurs at elevations less than 1,500 meters (4,921 feet) amsl (Sawyer et al. 2009). Typically, the silver bush lupine scrub alliance occurs on steep, dry slopes and rocky alluvial sites (Sawyer et al. 2009).

Study Area-Specific Information

The silver bush lupine scrub alliance is limited to the southern and central portion of the study area in the Tehachapi foothills. Less than 1%, or 9 acres, of the study area consists of the silver bush lupine scrub alliance. Consistent with the literature, the alliance occurs between 1,421 and 1,870 feet amsl in the study area.

Silver bush lupine alliance in the study area.

One association within the silver bush lupine scrub alliance occurs in the study area, the silver bush lupine scrub association. Within the study area, the silver bush lupine scrub association is characterized as having greater than 50% relative cover of silver bush lupine in the shrub canopy, including 5% to 15% absolute cover and 25% to 50% absolute cover. Some stands include 1% to 5% absolute cover of naked buckwheat (*Eriogonum nudum*). The understory of this association is characterized by non-native grasses such as slender oat, ripgut brome, red brome, wild oat (*Avena fatua*), and soft brome (*Bromus hordeaceus*). Other native species noted in this association include nodding needlegrass (*Stipa cernua*).

Status

The silver bush lupine scrub alliance is **not** consider the a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within proposed project open space in the foothills.

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2 GRASSLANDS

All of the grasslands within the study area are in the California annual and perennial grassland macrogroup. Non-native grasslands and four native grassland alliances were mapped on the study area and are described in Sections 2.1 through 2.5.

2.1 Non-Native Grassland

As noted in the description of BTR methods (Appendix B), non-native grasslands were mapped to the general habitat type because **none** of the semi-natural stands[7] are considered sensitive biological resources by CDFW under CEQA (CDFG 2010).

Non-native grassland has a sparse to dense cover of annual grasses that is typically 0.2 meter (0.7 feet) to 0.5 meter (1.6 feet) tall and can be up to 1 meter (3 feet) tall. Grasses that occur in non-native grassland include wild oats (*Avena* spp.), bromes (*Bromus* spp.), fescue (*Vulpia* spp.), and Italian ryegrass (*Festuca perennis*). Forbs that occur with these grasses include California poppy (*Eschscholzia californica*), stork's bill (*Erodium* ssp.), goldfields (*Lasthenia* spp.), phacelias (*Phacelia* ssp.), gilias (*Gilia* spp.), and baby blue eyes (*Nemophila menziesii*) (Holland 1986). Non-native grassland also includes land that is used as pasture for grazing purposes. Grasses such as barley (*Hordeum* spp.) and wild oats may grow in these areas. This land has very few native species.

Study Area-Specific Information

Non-native grasslands in the study area.

Non-native grassland dominates the study area and is by far the dominant land cover in the study area. Approximately 86%, or 6,917 acres, of the study area is mapped as non-native grassland, 77% of which is on the valley floor (non-riparian) and 23% of which is in the foothills. The majority of project development (84%) would occur on non-native grasslands.

Within the study area, the non-native grasslands alliance is characterized as having 25% to greater than 75% absolute cover of non-native grasses, including slender oat, ripgut brome, red brome, soft brome, rat-tail fescue (*Festuca myuros*), cheatgrass (*Bromus tectorum*), and mouse barley. In areas where non-native grass cover was lower (i.e., 25% to 50%), the area contained either a high percentage of bare ground or non-native weedy species,

7 Semi-natural stands are invasive naturalized plant groups where "plants are sufficiently dominant to have replaced most of the natives, and, in many situations, the associates are themselves non-native species" (Sawyer et al. 2009).

such as stork's bill or black mustard (*Brassica nigra*). Other herbaceous species characterized within this association include redstem stork's bill, longbeak stork's bill (*Erodium botrys*), common fiddleneck (*Amsinckia intermedia*), bristly fiddleneck (*Amsinckia tessellata* var. *tessellata*), and miniature lupine (*Lupinus bicolor*).

Status

Non-native grasslands are located throughout the study area and are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010).

2.2 Fiddleneck Fields Alliance

The fiddleneck fields alliance has an intermittent to continuous herbaceous cover less than 1 meter (3 feet) in height. Emergent shrubs including chamise (*Adenostoma fasciculatum*), coastal sagebrush (*Artemisia californica*), brittlebush (*Encelia farinosa*), Palmer's goldenbush (*Ericameria palmeri*), California buckwheat, and Menzies' goldenbush may be present at low cover. For a stand of vegetation to be classified as fiddleneck fields, fiddleneck (Menzies' fiddleneck (*Amsinckia menziesii*) or bristly fiddleneck) is usually greater than 10% relative cover of the herbaceous layer (Sawyer et al. 2009). Sawyer et al. (2009) list the following grass species as associates within the fiddleneck fields alliance: wild oat, ripgut brome, soft brome. Annual herbs, including dwarf white milkvetch (*Astragalus didymocarpus*), exserted Indian paintbrush (*Castilleja exserta*), California goldfields (*Lasthenia californica*), miniature lupine, and valley popcornflower (Plagiobothrys canescens) are common.

The fiddleneck fields alliance occurs in a number of regions, including the Sierra Nevada foothills and the Great Valley. This alliance occurs at elevations ranging from sea level to 1,200 meters (3,937 feet) amsl. Fiddleneck field communities are found along valleys and upland slopes at low elevations and typically occur on loam soils (Sawyer et al. 2009).

Study Area-Specific Information

Less than 1%, or 14 acres, of the study area consists of the fiddleneck fields alliance, the majority of which is located west of I-5. The fiddleneck fields alliance primarily occurs on sandy loam soils. Consistent with the literature, the alliance occurs in the study area between 1,117 and 1,566 feet amsl.

Fiddleneck fields alliance in the study area.

Within the study area, the fiddleneck fields alliance is characterized as having 5% to 50% absolute cover of bristly fiddleneck. The herbaceous understory of this association is characterized by slender oat, ripgut brome, cheatgrass, red brome, mouse barley, and redstem stork's bill.

Status

The fiddleneck fields alliance, all located in the valley floor, is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010).

2.3 Giant Wild Rye Grassland Alliance

The giant wild rye grassland alliance has an open to intermittent herbaceous cover less than 3 meters (9 feet) in height. Emergent trees, including California live oak (*Quercus agrifolia*) and southern California black walnut (*Juglans californica*) and shrubs, including coastal sagebrush, mulefat (*Baccharis salicifolia* ssp. *salicifolia*), and San Luis purple sage (*Salvia leucophylla*) may be present at low cover. For a stand of vegetation to be classified as giant wild rye grassland, giant wildrye (*Elymus condensatus*) is usually greater than 50% relative cover of the herbaceous layer (Sawyer et al. 2009). Sawyer et al. (2009) list the following grass species as associates within the giant wild rye grassland alliance: wild oat and ripgut brome, and with annual herbs, Maltese star-thistle (*Centaurea melitensis*), shortpod mustard, and cliff desert dandelion (*Malacothrix saxatilis*) are common.

The giant wild rye grassland alliance occurs along the California coast from Santa Barbara County to Los Angeles County, the Central California coast, Central California Coast Ranges, Southern California mountains and valleys, and the Mojave Desert. This alliance occurs at elevations ranging from sea level to 1,500 meters (4,921 feet) amsl. Giant wild rye grassland communities are found along northern slopes at low elevations and typically occur in loam soils (Sawyer et al. 2009).

Study Area-Specific Information

There is only one association in the giant wild rye grassland alliance that occurs in the study area—the giant wild rye association. In the study area, the giant wild rye association is characterized as having 50% to 75% absolute cover of giant wild rye, 5% to 15% absolute cover of ripgut brome, 1% to 5% absolute cover of burclover (*Medicago polymorpha*), and 1% to 5% absolute cover of tall tumblemustard (*Sisymbrium altissimum*).

Giant wild rye grassland alliance in the study area.

The giant wild rye grassland association is limited to one stand located in the foothill area west of I-5, which is located within proposed project open space. Approximately 0.3 acre of the study area consists of the giant wild rye grassland association. The giant wild rye grassland association occurs primarily on loam. Consistent with the literature, the association occurs in the study area between 2,021 and 2,110 feet amsl.

Status

The giant wild rye alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within proposed project open space in the foothills.

2.4 Popcorn Flower Fields Alliance

The popcorn flower fields alliance has an intermittent to continuous herbaceous cover less than 1 meter (3 feet) in height. Emergent shrubs may be present at low cover. For a stand of vegetation to be classified as popcorn flower fields, popcornflower (*Plagiobothrys nothofulvus*) is usually greater than 1% absolute cover of the herbaceous layer (Sawyer et al. 2009). Sawyer et al. (2009) list the following grass species as associates within the popcorn flower fields alliance: wild oat, various bromes, and annual herbs, including attenuate Indian paintbrush (*Castilleja attenuata*), exserted Indian paintbrush, American wild carrot (*Daucus pusillus*), California poppy, yellowflower tarweed (*Holocarpha virgata*), and California goldfields.

The popcorn flower fields alliance occurs in a number of regions, including the Sierra Nevada foothills and the Great Valley. This alliance occurs at elevations ranging from 10 to 1,800 meters (32 to 5,905 feet) amsl. Popcorn flower field communities are found along upland slopes at low elevations and typically occur in loam soils (Sawyer et al. 2009).

Study Area-Specific Information

The popcorn flower fields alliance is limited to one stand located in the southeastern portion of the study area in the valley floor. Less than 1%, or 9 acres, of the study area consists of the popcorn flower fields alliance. The popcorn flower fields alliance primarily occurs on sandy loam soils. Consistent with the literature, the alliance occurs in the study area between 1,117 and 1,306 feet amsl.

Status

The popcorn flower fields alliance is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within proposed project open space in the valley floor.

There are several alliances and associations that the Natural Communities List (CDFG 2010) relates to wildflower fields, only one of which occurs in the study area: the popcorn flower fields alliance.

See Section 8 of this appendix for additional information regarding the evolution of the natural communities list with respect to the term “wildflower fields” to describe vegetation communities.

2.5 Purple Needle Grass Grassland Alliance

The purple needle grass grassland alliance has an open to continuous herbaceous canopy cover less than 1 meter (3 feet) in height. Emergent trees shrubs, including coastal sagebrush, California buckwheat, sawtooth goldenbush (*Hazardia squarrosa*), and other shrubs and trees may be present at low cover. For a stand of vegetation to be classified as purple needle grass grassland, purple needlegrass (*Stipa pulchra*) is usually greater than 10% relative cover of the herbaceous layer or purple needlegrass is greater than 5% absolute cover as a characteristic to dominant species in the herbaceous layer (Sawyer et al. 2009). Sawyer et al. (2009) list the following perennial grass species as associates within the purple needle grass grassland alliance: blue wildrye (*Elymus glaucus*), California fescue (*Festuca californica*), meadow barley (*Hordeum brachyantherum*), prairie Junegrass (*Koeleria macrantha*), Italian ryegrass, California melicgrass (*Melica californica*), smallflower melicgrass (*Melica imperfecta*), foothill needlegrass (*Stipa lepida*), nodding needlegrass, and Sandberg bluegrass, as well as perennials such as lilies (*Calochortus* spp.), bindweed and morning-glories (*Calystegia* spp.), *Sanicula* spp., and western blue-eyed grass (*Sisyrinchium bellum*). Sawyer et al. (2009) list the following annual herbs as associates within the purple needle grass grassland alliance: milkvetch (*Astragalus* spp.), slender oat, wild oat, soft brome, red brome, *Clarkia* spp., *Cryptantha* spp., dove weed (*Croton setiger*), stork’s bill (*Erodium* spp.), shortpod mustard, yellowflower tarweed, goldfields, shining pepperweed (*Lepidium nitidum*), lupines (*Lupinus* spp.), plantain (*Plantago* spp.), and clover (*Trifolium* spp.).

The purple needle grass grassland alliance occurs along the California coast from Humboldt County to San Diego County, Northern and Central California Coast Ranges, Northern California Interior Coast Ranges, Southern California mountains and valleys, Great Valley, Klamath Mountains, Mojave Desert, and Sierra Nevada foothills. This alliance occurs at elevations ranging from sea level to 1,300 meters (4,265 feet) amsl (Sawyer et al. 2009). Purple needle grass grassland communities are found in valley and foothill areas on all topographic locations. Inland soils are deep with high clay content, or shallow and rocky near the coast (Sawyer et al. 2009).

Purple needle grass grassland alliance in the study area.

Study Area-Specific Information

The purple needle grass grassland alliance is limited to the southern portion of the study area, east of I-5 in the foothill area. Less than 1%, or 52 acres, of the study area consists of the purple needle grass grassland alliance. Consistent with the literature, the alliance occurs in the study area between 1,361 and 2,200 feet in elevation.

Within the study area, the purple needle grass grassland alliance is characterized as having 5% to 50% absolute cover of purple needlegrass. In the stands of the purple needle grass grassland alliance in the study area, associated species include slender oat, ripgut brome, soft brome, red brome, redstem stork's bill, and exserted Indian paintbrush.

Status

The purple needle grass grassland alliance **is** considered the a sensitive biological resource by CDFW under CEQA (CDFG 2010), and 95% (49 acres) of this alliance is located within the proposed project open space in the foothills

3 RIPARIAN SCRUB/MARSH

There are two riparian scrub and marsh macrogroups that occur on the Grapevine study area: (a) Southwestern North American riparian, flooded, and swamp forest and (b)Western North American wet meadow and low shrub carr. Within the Southwestern North American riparian, flooded, and swamp forest macrogroup, the study area supports three native riparian scrub alliances (mulefat thickets, red willow thickets, and sandbar willow thickets) and one semi-natural stand (tamarisk thickets). Within the Western North American wet meadow and low shrub carr macrogroup, the study area supports one riparian scrub alliance (Baltic and Mexican rush marshes). In addition, the stock pond is described under riparian scrub/marsh because it is surrounded by cattails. Each alliance is described in more detail in Sections 3.1 through 3.6.

3.1 Baltic and Mexican Rush Marshes Alliance

The Baltic and Mexican rush marshes alliance has an intermittent to continuous herbaceous canopy cover less than 1 meter (3 feet) in height. Emergent trees or shrubs may be present at low cover. For a stand of vegetation to be classified as Baltic rush marsh, mountain rush (*Juncus balticus* ssp. *ater*) must be greater than 50% relative cover in the herbaceous layer or greater than 25% relative cover in the herbaceous layer (Sawyer et al. 2009). Sawyer et al. (2009) list the following species as associates within the Baltic rush marsh alliance: common yarrow (*Achillea millefolium*), Pacific silverweed (*Potentilla anserina* ssp. *pacifica*), ripgut brome, sedge (*Carex* spp.), poison hemlock (*Conium maculatum*), tufted hairgrass (*Deschampsia cespitosa*), saltgrass (*Distichlis spicata*), needle spikerush (*Eleocharis acicularis*), largeleaf avens (*Geum macrophyllum*), Rocky Mountain iris (*Iris missouriensis*), common rush (*Juncus effusus*), brownhead rush (*Juncus phaeocephalus*), basin wildrye (*Elymus cinereus*), broadleaved pepperweed (*Lepidium latifolium*), Kentucky bluegrass (*Poa pratensis*), plantainleaf buttercup (*Ranunculus alismifolius*), sturdy bulrush (*Bolboschoenus robustus*), common threesquare (*Schoenoplectus pungens* var. *longispicatus*), alkali sacaton (*Sporobolus airoides*), common dandelion (*Taraxacum officinale*), and longstalk clover (*Trifolium longipes*).

The Baltic and Mexican rush marshes alliance occurs in a number of regions of California, including the Sierra Nevada foothills and the Great Valley. This alliance occurs at elevations ranging from sea level to 2,200 meters (7,218 feet) amsl. Baltic and Mexican rush marshes alliance communities are found in wet and mesic meadows; along stream banks, rivers, lakes, ponds, fens, and sloughs; and in freshwater, brackish, and alkaline marshes. Soils are poorly drained, often with a thick organic layer. Soils are shallow and rocky (Sawyer and Keeler-Wolf 1995).

Study Area-Specific Information

Baltic and Mexican rush marshes alliance in the study area.

The Baltic and Mexican rush marshes alliance is limited to the southern portion of the study area, east of I-5, in the foothill area. Approximately 0.06 acre of the study area consists of the Baltic and Mexican rush marshes alliance. The Baltic and Mexican rush marshes alliance occurs on loam. Consistent with the literature, the alliance occurs in the study area between 1,631 and 1,690 feet amsl.

One association within the Baltic and Mexican rush marshes alliance occurs in the study area, the Baltic rush marsh association. Within the study area, the Baltic rush association is characterized as having 50% to 75% absolute cover of mountain rush. In the stand of the Baltic rush association in the study area, associated species include ripgut brome, saltgrass, common sunflower (*Helianthus annuus*), curly dock (*Rumex crispus*), and stinging nettle (*Urtica dioica*).

Status

The Baltic and Mexican rush marshes alliance is **not** considered the a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within proposed project open space in the foothills.

3.2 Mulefat Thickets Alliance

The mulefat thickets alliance occurs in a number of regions in California, including the Sierra Nevada foothills and the Great Valley. This alliance occurs at elevations ranging from sea level to 1,250 meters (4,101 feet) amsl. The mulefat thickets alliance occurs in canyon bottoms, floodplains, irrigation ditches, lake margins, and stream channels on mixed alluvium soils (Sawyer et al. 2009).

Study Area-Specific Information

Mulefat thickets alliance in the study area.

The mulefat thickets alliance occurs within Live Oak Creek and within a tributary to Cattle Creek in both the foothills and valley floor. Less than 1%, or 5 acres, of the study area consists of the mulefat thickets alliance. Consistent with the literature, the alliance occurs in the study area between 1,421 and 1,630 feet amsl.

One association within the mulefat thickets alliance occurs in the study area, the mulefat thickets association. Within the study area, the mulefat thickets association is characterized as having 100% relative cover of mulefat (*Baccharis salicifolia* ssp. *salicifolia*) in the shrub canopy. In some areas, saltcedar, Fremont cottonwood (*Populus fremontii*), and red willow (*Salix laevigata*) are present at low cover, and common understory species include saltgrass, red brome, annual rabbitsfoot grass (*Polypogon monspeliensis*), seep monkeyflower (*Mimulus guttatus*), tree tobacco (*Nicotiana glauca*), stinging nettle, black mustard, and Douglas' sagewort (*Artemisia douglasiana*).

Status

The mulefat thickets alliance is **not** considered a sensitive biological resource under CEQA (CDFG 2010), and 97% (4.6 acres) of this alliance is located within the proposed project open space in the foothills (41%) and the valley floor (59%) (see also Section 2.3 of the BTR).

3.3 Red Willow Thickets Alliance

The red willow thickets alliance has an open to continuous tree canopy cover less than 20 meters (66 feet) in height, open to intermittent cover in the shrub layer, and variable herbaceous layer. For a stand of vegetation to be classified as red willow thickets, red willow must be greater than 5% absolute cover and typically dominant in the tree canopy—sometimes it is co-dominant with California buckeye (*Aesculus californica*), incense cedar (*Calocedrus decurrens*), California foothill pine (*Pinus sabiniana*), or live oaks (*Quercus* spp.); or greater than 50% relative cover in the tree canopy; or greater than 30% relative cover with arroyo willow (*Salix lasiolepis*) in the sub-canopy (Sawyer et al. 2009). Sawyer et al. (2009) list the following species as associates within the red willow thickets alliance: boxelder (*Acer negundo*), California buckeye, white alder (*Alnus rhombifolia*), incense cedar, Jeffrey pine (*Pinus jeffreyi*), California foothill pine, California sycamore (*Platanus racemosa*), Fremont cottonwood, California live oak, canyon live oak (*Quercus chrysolepis*), Goodding's willow (*Salix gooddingii*), arroyo willow, Pacific willow (*Salix lasiandra* var. *lasiandra*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*).

The red willow thickets alliance is widespread in cismontane California occurring in most of the state except the Colorado Desert, Modoc Plateau, and Sonoran Desert. This alliance occurs at elevations ranging from sea level to 1,700 meters (5,577 feet) amsl. Red willow thickets communities are found in ditches, floodplains, lake edges, and low-gradient deposits along streams (Sawyer et al. 2009).

Study Area-Specific Information

The red willow thickets alliance is limited to the southern and central portion of the study area in the Tehachapi foothills. Less than 1%, or 8 acres, of the study area consists of the red willow thickets alliance. The red willow thickets alliance occurs on loam and sandy loam. Consistent with the literature, the alliance occurs in the study area between 1,481 and 1,900 feet amsl.

Red willow thickets alliance in the study area.

One association within the red willow thickets alliance occurs in the study area, the red willow thickets association. Within the study area, the red willow thickets association is characterized as having 50% to 75% absolute cover and greater than 50% relative cover of red willow in the tree canopy. In the stand of the red willow thickets association in the study area, the understory of this association is characterized by common sunflower, saltcedar, annual rabbitsfoot grass, tree tobacco, cardoon (*Cynara cardunculus*), and saltgrass.

Status

The red willow thickets alliance, which is also associated with streams, **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010) and all of this alliance is located within proposed project open space in the foothills (see also Section 2.3 of the BTR).

3.4 Sandbar Willow Thickets Alliance

The sandbar willow thickets alliance has an intermittent to continuous shrub canopy cover with shrubs less than 7 meters (23 feet) in height with a variable ground layer (Sawyer et al. 2009). For a stand of vegetation to be classified as sandbar willow thickets, narrowleaf willow (*Salix exigua*) must be greater than or equal to 5% absolute cover and dominant in the shrub canopy; greater than 20% absolute cover in the shrub canopy; greater than 50%

relative cover in the shrub canopy; or greater than 50% relative cover or greater than 30% relative cover with arroyo willow in the shrub canopy. Sawyer et al. (2009) list the following shrub species as associates within the sandbar willow thickets alliance: baccharis (*Baccharis* spp.), California brickellbush (*Brickellia californica*), California wildrose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), California blackberry (*Rubus ursinus*), arroyo willow, and dusky willow (*Salix melanopsis*). Emergent trees of many different species may be present at low cover (Sawyer et al. 2009).

The sandbar willow thickets alliance is widespread and common throughout California in most of the state. This alliance occurs at elevations ranging from sea level to 2,700 meters (8,858 feet) amsl. The sandbar willow thickets alliance occurs in temporarily flooded floodplains, deposits along rivers and streams, and at springs (Sawyer et al. 2009).

Study Area-Specific Information

The sandbar willow thickets alliance is limited to two small patches within the southeastern portion of the study area in the foothill area in Cattle Creek. Approximately 0.4 acre of the study area consists of the sandbar willow thickets alliance. Consistent with the literature, the alliance occurs in the study area between 1,331 and 1,450 feet amsl.

Sandbar willow thickets alliance in the study area.

One association within the sandbar willow thickets alliance occurs in the study area, the sandbar willow thickets association.

Within the study area, the sandbar willow thickets association is characterized as having 25% to 50% absolute cover of narrowleaf willow in the shrub layer and ripgut brome in the herbaceous layer.

Status

The sandbar willow thickets alliance, which is also associated with streams, is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010) and all of this alliance is located within proposed project open space in the foothills (see also Section 2.3 of the BTR).

3.5 Stock Pond

There is a stock pond in the southern portion of the study area, east of I-5, in the foothill area. The stock pond contains open water (0.4 acre), which lacks emergent vegetation, and supports 0.5 acre of the southern cattail association (within the cattail marshes alliance) around its margin. There is a very small patch of willows and tamarisk growing along the northern edge of the stock pond.

Stock pond.

Study Area-Specific Information

Within the study area, the southern cattail association is characterized as having greater than 75% absolute cover of southern cattail (*Typha domingensis*). In the stands of the cattail marshes alliance in the study area, associated species include cardoon, saltgrass, common sunflower, and curly dock.

Status

The stock pond is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), and it is located within the proposed project open space in the foothills.

3.6 Tamarisk Thickets Semi-Natural Stands

The tamarisk thickets semi-natural stands has a continuous to open shrub canopy cover less than 8 meters (26 feet) in height and a sparse herbaceous layer. For a stand of vegetation to be classified as tamarisk thickets, *Tamarix* spp. must be greater than 3% absolute cover and greater than 60% relative cover compared to other microphyllous trees or shrubs, greater than 60% relative cover in the shrub or low tree canopy, greater than 75% relative cover in the shrub canopy, or greater than 60% relative cover in the shrub canopy with minor presence of native species (Sawyer et al. 2009). Sawyer et al. (2009) list the following tree species as potential associates within low cover within the tamarisk thickets semi-natural stands: Fremont cottonwood and willows (*Salix* spp.).

Tamarisk thickets semi-natural stands occur throughout California, including the Central California coast, Colorado Desert, Great Valley, Mojave Desert, Northern California Interior Coast Ranges, Sierra Nevada foothills, Southern California Coast, and Sonoran Desert. Tamarisk thickets semi-natural stands occur from 75 meters (246 feet) to 800 meters (2,625 feet) amsl. Tamarisk thickets semi-natural stands are found on arroyo margins, lake margins, ditches, washes, rivers, and other watercourses (Sawyer et al. 2009).

Study Area-Specific Information

The tamarisk thickets semi-natural stands are dominated by saltcedar (5% to 15% absolute cover) and are limited to Grapevine Creek in the valley floor. Less than 1%, or 30 acres, of the study area consists of tamarisk thickets semi-natural stands. Consistent with the literature, the alliance occurs in the study area between 911 and 1,600 feet amsl.

Tamarisk thickets semi-natural stands on site.

Status

Tamarisk thickets semi-natural stands outside of streams are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010). A majority of the tamarisk thickets semi-natural stands occur within the bed and bank of Grapevine Creek, and Grapevine Creek is considered a sensitive biological resource under CEQA, as described in greater detail in Section 2.3 of the BTR. The majority of this alliance (29 acres, or 99%) is located within the proposed project open space in the valley floor (see also Section 2.3 of the BTR).

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4 WASH

The unvegetated channel in the study area described in this chapter is the only land cover type in the wash general habitat type.

4.1 Unvegetated Channel

Unvegetated channels in the study area are associated with the downstream portions of Grapevine Creek and associated tributaries, Live Oak Creek, Cattle Creek and associated tributaries, Pastoria Creek, and isolated drainages. Unvegetated channel is also present in a portion of Tecuya Creek, located within an off-site impact area. Less than 1%, or 62 acres, of the study area consists of unvegetated channels and almost all (99%) of the unvegetated channels occur within the valley floor.

Unvegetated channelin the study area.

Status

Unvegetated channels are **not** considered sensitive biological resources by CDFW under CEQA (CDFG 2010), but see Section 2.3 of the BTR for the analysis of jurisdictional resources. Of the 62.4 acres of unvegetated channel in the study area: 55.5 acres (89%) is located within proposed project open space (2% in the foothills and 98% in the valley floor); 3.1 acres is located in an avoidance area in the off-site impact areas in the valley floor (5%); and 1.6 acres (3%) is located within a proposed temporary impact area in the valley floor that would be restored after construction. Thus, a total of 97% of unvegetated channel would be conserved, avoided or restored on site (see also Section 2.3 of the BTR).

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5 RIPARIAN WOODLAND

Within the study area, the Fremont cottonwood forest alliance is within the Southwestern North American riparian, flooded, and swamp forest macrogroup and is discussed in Section 5.1. There is one alliance in the forest and woodland macrogroup: the valley oak woodland alliance. Two associations within this alliance were mapped: the valley oak–arroyo willow association and valley oak woodland/grass association. The valley oak-arroyo willow association is discussed in Section 5.2, and the valley oak woodland/grass association is described under savannahs in Chapter 6.

5.1 Fremont Cottonwood Forest Alliance

The Fremont cottonwood forest alliance has a continuous to open canopy cover less than 25 meters (82 feet) in height, intermittent to open shrub layer, and variable herbaceous layer. For a stand of vegetation to be classified as Fremont cottonwood forest, Fremont cottonwood must be greater than 50% relative cover in the tree layer, greater than 5% absolute cover in the tree layer, or greater than 50% relative cover in the tree layer, though sometimes Fremont cottonwood is greater than 30% relative cover if *Salix* spp. are co-dominant (Sawyer et al. 2009). Sawyer et al. (2009) list the following species as associates within the Fremont cottonwood alliance: boxelder, Oregon ash, Northern California black walnut and hybrids, California sycamore, California live oak, narrowleaf willow, Goodding's willow, red willow, arroyo willow, Pacific willow, and yellow willow (*Salix lutea*).

The Fremont cottonwood forest alliance occurs in the Central California coast to Southern California coast, Central California Coast Ranges to Northern California Coast Ranges, Northern California Interior Coast Ranges, Klamath Mountains, Sierra Nevada, Sierra Nevada foothills, Southern California mountains and valleys, Colorado Desert, Mojave Desert, Sonoran Desert, and Great Valley. This alliance occurs at elevations ranging from sea level to 2,400 meters (7,874 feet) amsl. Fremont cottonwood forest communities are found on floodplains, along low-gradient rivers, along perennial or seasonally intermittent streams, around springs, in lower canyons in desert mountains, in alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year (Sawyer et al. 2009).

Study Area-Specific Information

Less than 1%, or 6 acres, of the study area consists of the Fremont cottonwood forest alliance, which is located within Grapevine Creek in the valley floor and the foothill area. Consistent with the literature, the alliance occurs in the study area between 1,601 and 2,020 feet amsl. Two associations within the Fremont cottonwood forest alliance occur in the study area, the Fremont cottonwood forest–red willow thickets association and the Fremont cottonwood forest–mulefat thickets association.

Fremont cottonwood forest alliance in the study area.

Within the study area, the Fremont cottonwood forest–red willow thickets association is characterized as having greater than 50% relative cover and 50% to 75% absolute cover of Fremont cottonwood in the tree canopy and 25% to 50% absolute cover of red willow. In stand of the Fremont cottonwood forest–red willow association in the study area, the shrub and herbaceous understory of this association is characterized by mulefat, Pacific poison oak, giant reed (*Arundo donax*), tree of heaven (*Ailanthus altissima*), seep monkeyflower, and saltcedar.

Within the study area, the Fremont cottonwood forest–mulefat thickets association is characterized as having 25% to 50% absolute cover of Fremont cottonwood with 5% to 15% absolute cover of mulefat in the shrub layer and 25% to 50% absolute cover of ripgut brome in the herbaceous layer.

Status

The Fremont cottonwood forest alliance, which is also associated with streams, **is** considered the a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within the proposed project open space in the foothills (32%) and the valley floor (68%) (see also Section 2.3 of the BTR).

5.2 Valley Oak Woodland Alliance (Riparian Woodland)

The valley oak woodland alliance has varying canopy cover less than 30 meters (98 feet) in height. For a stand of vegetation to be classified as valley oak woodland, valley oak (*Quercus lobata*) must be either greater than 50% relative cover in the tree canopy when dominant or greater than 30% relative cover when other tree species are present. If boxelder, white alder, Oregon ash (*Fraxinus latifolia*), California sycamore, or Fremont cottonwood is present, relative cover of valley oak must be greater than 35% relative cover in the tree canopy (Sawyer et al. 2009). Sawyer et al. (2009) list the following tree species as associates within the valley oak woodland alliance: boxelder, white alder, Oregon ash, northern California black walnut (*Juglans* *hindsii*) and hybrids, California sycamore, Fremont cottonwood, California live oak, blue oak (*Quercus douglasii*), California black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizeni*), Goodding's willow, and arroyo willow. Shrubs can be common to occasional in this alliance, and the herbaceous understory may be grassy (Sawyer et al. 2009).

The valley oak woodland alliance occurs in the coastal ranges of California, the southern California mountains and valleys, the Great Central Valley, the Sierra Nevada and foothills, the Cascades, and the Klamath Range. This alliance occurs at elevations ranging from sea level to 775 meters (2,543 feet) amsl (Sawyer et al. 2009). Valley oak communities are found in valley bottoms, summit valleys, and gentle slopes (Sawyer et al. 2009). These slopes require deep and alluvial or residual soils that are intermittently flooded and seasonally saturated (Sawyer and Keeler-Wolf 1995). They also occur in riparian areas with shallow water tables (Pavlik et al. 2006). Allen et al. (1991) further describe the alliance as generally occurring on rich loam soils of valleys and foothills.

Study Area-Specific Information

Valley oak woodland alliance (riparian woodland) in the study area.

Two associations within the valley oak woodland alliance occur in the study area: the valley oak woodland–arroyo willow thickets association and the valley oak woodland/grass association. The valley oak woodland–arroyo willow thickets association is considered a riparian woodland and is described in this section (Section 5.2). The valley oak woodland/grass association is described in Section 6.1 under savannahs. The valley oak woodland–arroyo willow association is located in the foothill areas and is characterized as having approximately 50% relative cover of valley oak in the tree canopy and approximately 50% relative cover of arroyo willow in the tree canopy. The understory of this association is characterized by blue elderberry and Pacific poison oak. The valley oak woodland alliance is limited to the southern and central portion of the study area in the foothill areas. Less than 1%, or 10 acres, of the study area consists of the valley oak woodland–arroyo willow thickets association.

Status

The valley oak woodland alliance **is** considered the a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within the proposed project open space in the foothills (see also Section 2.3 of the BTR).

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6 SAVANNAH

Within the study area, there is one alliance in the California forest and woodland macrogroup: the valley oak woodland alliance. Two associations were mapped within this alliance: the valley oak–arroyo willow association and valley oak woodland/grass association. The valley oak–arroyo willow association is described under riparian woodland in Section 5.2. The valley oak woodland/grass association (or savannah) is discussed in Section 6.1.

6.1 Valley Oak Woodland Alliance (Savannah)

The valley oak woodland alliance (riparian woodland) is described in Section 5.2.

Study Area-Specific Information

Two associations within the valley oak woodland alliance occur in the study area, the valley oak woodland–arroyo willow thickets association and the valley oak woodland/grass association. The valley oak woodland/grass association is considered a savannah and is described in this section (Section 6.1). The valley oak woodland–arroyo willow thickets association is considered a riparian woodland and is described in Section 5.2.

Valley oak woodland alliance (savannah) in the study area.

Within the study area, the valley oak woodland/grass association occurs only in the foothill area, and is characterized as having greater than 50% relative cover of valley oak in the tree canopy, and in most cases relative cover of valley oak in the tree canopy is 100%. In some stands of the valley oak woodland/ grass association, California buckeye is present in the tree strata, but with a relative cover of 25% or less. The understory of this association is characterized by non-native grasses such as slender oat and ripgut brome. Other native species noted in this association include blue elderberry and Pacific poison oak. The valley oak woodland alliance is limited to the southern and central portion of the study area in the foothill areas. Less than 1%, or 5 acres, of the study area consists of the valley oak woodland/grass association.

Status

The valley oak woodland alliance **is** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010), and all of this alliance is located within the proposed project open space in the foothills.

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7 NON-NATURAL LAND COVERS

7.1 Orchards and Vineyards

Orchards and vineyards are mapped in portions of the valley floor where almond orchards and vineyards are planted. Approximately 6%, or 493 acres, of the study area is mapped as orchards and vineyards, which is the second most common land cover in the study area after the grasslands. These acreages are calculated spatially in GIS[8]. Orchards and vineyards primarily occur on loam, sandy loam, fine sandy loam, and loamy sand.

Orchards and vineyards in the study area.

Status

Orchards and vineyards consist of non-native crops grown for commercial use and are **not** considered sensitive biological resources by CDFW under CEQA (CDFG 2010). See the Agricultural Resources Technical Report for additional information on agricultural resources within the study area.

7.2 Roadways and Infrastructure (Disturbed Lands)

Dirt roads greater than 10 feet wide and devoid of vegetation were mapped as disturbed lands. Dirt roads less than 10 feet wide were mapped where trails are proposed to show that trails are being sited on existing roads. Areas that have been disturbed or cleared were mapped as disturbed lands. Additionally, graded or cleared areas for existing infrastructure such as oil-production related equipment, substations and subsurface oil and gas pipelines with surface equipment, were also mapped as disturbed lands. Approximately 4%, or 329 acres, of the study area is mapped as disturbed lands and this land cover occurs throughout the study area.

Roadways and infrastructure (disturbed lands) in the study area.

The study area also has infrastructure such as electric power poles, transmission towers, and substations; subsurface communication lines; and subsurface oil and gas pipelines that have

8 It is important to note that for agricultural resources, acreages are calculated using bearing acreages and the Agricultural Resources Technical Report should be referenced for bearing acreage information related to the Specific Plan. However, for biological resources, spatial acreages of land covers is appropriate to address impacts.

limited surface equipment. These infrastructure-related disturbance areas are limited in scale and sparsely distributed, and were considered non-native grasslands rather than separately tabulated as disturbed lands areas.

Status

Disturbed lands are either devoid of vegetation or dominated by a collection of non-native forbs and are **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010).

7.3 Urban/Developed Land

Areas mapped as urban/developed land include paved roads, commercial areas, and landscaped areas. Urban/developed land occurs in isolated locations on the study area, primarily Edmonston Pumping Plant Road and existing commercial areas near the I-5. Approximately 1%, or 68 acres, of the study area is mapped as urban/developed.

Urban/developed land in the study area.

The study area also overlies oil reserves, and includes oil production-related equipment. These oil-related ground disturbance areas are limited in scale, and sparsely distributed, and were considered non-native grasslands rather than separately tabulated as urban/developed.

Status

Urban/developed land typically does not support any vegetation or is a landscaped area and is **not** considered a sensitive biological resource by CDFW under CEQA (CDFG 2010).

8 WILDFLOWER FIELDS

Background

The CDFW describes the California Natural Diversity Database (CNDDB) as a "natural heritage program" that "is part of a nationwide network of similar programs overseen by NatureServe" (CDFW 2014a). The CNDDB provides the "location and natural history information on special status plants, animals, and natural communities to the public, other agencies, and conservation organizations." Natural communities have been part of the CNDDB since its inception in 1979, but since 1999, the CDFW has been standardizing vegetation terminology to conform with the National Vegetation Classification Standard (FGDC 2008). The Holland (1986) vegetation types originally tracked by the CNDDB are referenced in the *Natural Communities List* (CDFG 2010) and are provided as "legacy information." Holland (1986) community types are "no longer supported" by the CDFW (CDFW 2014b). "Instead, all new information on terrestrial natural communities should use the State's standard nomenclature as provided in the current Natural Communities List" (CDFW 2014b), which is from 2010. As described in Appendix B, Biological Resources Survey Methods, the nomenclature for the vegetation community mapped on the Grapevine project uses the *Natural Communities List* (CDFG 2010).

In 2003, the CDFW published the *List of California Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2003). The 2003 list was based on the National Vegetation Classification System, but was structured to be compatible with previous CNDDB lists (e.g., Holland 1986). In 2007, the *List of California Vegetation Alliances* (CDFG 2007), which superseded the 2003 list of terrestrial natural communities, was published. In 2010, the CDFW published the *Natural Communities List* (CDFG 2010), which supersedes the 2003 and 2007 lists of terrestrial natural communities.

The CNDDB notes that communities using the Holland (1986) vegetation types from records prior to the CDFW's vegetation classification standardization process remain in the database because the CDFW would like to assess the CNDDB vegetation occurrences and reclassify them in terms of the currently accepted state and national standards for vegetation classification prior to removing them from the CNDDB. As noted by the CDFW, the standardization of the CNDDB "will take some time" (CDFW 2014b).

CNDDB

Wildflower fields is a community that was tracked in the CNDDB, and Holland (1986) describes it as "an amorphous grab bag of herb-dominated types noted for conspicuous annual wildflower displays." The dominant species vary from site to site and from year to year at any particular site. There are no CNDDB occurrences of wildflower fields on the study area and the closest CNDDB occurrence of wildflower fields is over 8 miles away from the study area, with a citation date of April 1980 (CDFW 2014c).

Classification

The CDFW recognizes wildflower fields in the 2003 *List of California Terrestrial Natural Communities* (CDFG 2003), not in the *List of California Vegetation Alliances* (CDFG 2007), which superseded the 2003 list of terrestrial natural communities. Similarly, the CDFW does not recognize wildflower fields in the most recent *Natural Communities List* (CDFG 2010), which supersedes the 2003 and 2007 list of terrestrial natural communities.

The CDFW published three versions of the *Natural Communities List* (CDFG 2010), one of which replaces the natural communities as described by Holland (1986) that currently remain in the CNDDB. According to the CDFW, "Users more familiar with Holland types can see the approximate relationships of those types to alliances and associations, and thus transition to the State's new classification system" (CDFW 2014b).

There are several alliances and associations that the *Natural Communities List* (CDFG 2010) relates to wildflower fields, only one of which occurs on the study area: the popcorn flower fields alliance. The popcorn flower fields alliance, which is described in Section 2.4, is limited to one 9-acre stand located at the southeastern portion of the study area in the valley floor open space. The CDFW does **not** consider the popcorn flower fields alliance (G4S4) a sensitive biological resource under CEQA (CDFG 2010), and all of this alliance will be conserved in the study area within open space.

See the Aesthetics section of the Grapevine project environmental impact report for information regarding wildflower fields.

9 JURISDICTIONAL RESOURCES

This section of Appendix D describes the vegetation community alliances and land covers that are coincident with the state jurisdictional features or potentially jurisdictional features discussed in Section 2.3 of the BTR. Table D-1 includes the linear feet of the waters of the state or potential waters of the state within the study area and the underlying vegetation alliance.

Table D-1
Waters of the State or Potential Waters of the State

Jurisdiction	General Habitat Type	Alliance or Land Cover Type	Linear Feet
CDFW/RWQCB Non-Wetland Waters of the State—Ephemeral	Wash	Unvegetated channel	50,473
CDFW/RWQCB Non-Wetland Waters of the State—Ephemeral Subtotal			*50,473*
CDFW/RWQCB Non-Wetland Waters of the State—Intermittent	Wash	Unvegetated channel	22,664
CDFW/RWQCB Non-Wetland Waters of the State—Intermittent Subtotal			*22,664*
CDFW Riparian/RWQCB Non-Wetlands Waters—Intermittent Total	Riparian Scrub/Wetland	Tamarisk thickets semi-natural stands	13,216
CDFW Riparian/RWQCB Non-Wetlands Waters—Intermittent Subtotal			*13,216*
CDFW/RWQCB Wetland[1] Waters of the State	Riparian Scrub/Wetland	Mulefat Thickets Alliance	6,553
		Red Willow Thickets Alliance	209
		Sandbar Willow Thickets Alliance	333
	Riparian Woodland	Fremont Cottonwood Forest Alliance	3,682
CDFW/RWQCB Wetland Waters of the State Subtotal			*10,778*
USGS Stream Features[2]	Grasslands	Fiddleneck Fields Alliance	423
		Non-Native Grassland	110,964
		Popcorn Flower Fields Alliance	368
		Purple Needle Grass Grassland Alliance	48
	Non-Natural Land Cover	Roadways and Infrastructure (Disturbed Habitat)	1,754
		Urban/Developed	1,450
	Riparian Scrub/Wetland	Baltic and Mexican Rush Marshes Alliance	24
		Red Willow Thickets Alliance	2,395
	Riparian Woodland	Fremont Cottonwood Forest Alliance	876
		Valley Oak Woodland Alliance	2,467
	Savannah	Valley Oak Woodland Alliance	1,107
	Scrubs	California Buckwheat Scrub Alliance	626
		Narrowleaf goldenbush-Bladderpod Spiderflower Alliance	587
		Poison Oak Scrub Shrubland Alliance	263
USGS Stream Features Subtotal			*123,352*
Grand Total			**220,482**

[1] The term "wetlands" refers to locations that meet the criteria for wetlands established by the U.S. Army Corps of Engineers (i.e., have hydric soils, hydrophytic vegetation, and hydrology) (ACOE 1987, 2008).

[2] Refers to the 38 unnamed USGS features that Dudek determined were not jurisdictional waters of the state.

10 REFERENCES

Allen, B.H., B.A. Holzman, and R.R. Evett. 1991. "A Classification System for California's Hardwood Rangelands." *Hilgardia* 59(2):1–45.

CDFG (California Department of Fish and Game). 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CNDDB).* CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program. September 2003.

CDFG. 2007. *List of California Vegetation Alliances and Associations.* CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program. October 22, 2007.

CDFG. 2010. *List of Vegetation Alliances and Associations*: *Natural Communities List Arranged Alphabetically by Life Form.* September 2010. Accessed August 30, 2013. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp.

CDFW (California Department of Fish and Wildlife). 2014a. "California Natural Diversity Database Info." Accessed July 2, 2014. http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp.

CDFW. 2014b. "Natural Communities—Background Information." Accessed July 2, 2014. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_background.asp.

CDFW. 2014c. California Natural Diversity Database GIS layer. July 2014.

CNPS (California Native Plant Society). 2011. *Carrizo Plain National Monument Vegetation Classification and Mapping Project*. Prepared by J. Buck-Diaz and J.M. Evens for the California Native Plant Society.

CNPS. 2013. *Vegetation Mapping and Accuracy Assessment Report for Carrizo Plain National Monument*. Prepared by D. Stout, J. Buck-Diaz, S. Taylor, and J.M. Evens for the California Native Plant Society, Vegetation Program.

CNPS and CDFG. 2007. *Classification of the Vegetation Alliances and Associations of the Northern Sierra Nevada Foothills, California*. Vol. 1. December 2007.

Evens, J.M., and T. Keeler-Wolf. 2013. The expansion of the definition of the pre-existing *Ericameria linearifolia* provisional alliance and current treatment as a mixed alliance of *Ericameria linearifolia–Isomeris arborea* alliance. Email correspondence between J.M. Evens (Vegetation Program Director, California Native Plant Society), T. Keeler-Wolf (California Department of Fish and Wildlife), and M.S. Enright (Project Manager/Biologist, Dudek). July 15 and 16, 2013.

FGDC (Federal Geographic Data Committee). 2008. *National Vegetation Classification Standard, Version 2*. FGDC-STD-005-2008 (Version 2). February 2008. http://usnvc.org/data-standard/.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game.

Pavlik, B.M., P.C. Muick, S.G. Johnson, and M. Popper. 2006. *Oaks of California*. Published 1991; revised 2006. Los Olivos, California: Cachuma Press and the California Oak Foundation. June 2006.

Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. http://davisherb.ucdavis.edu/cnpsActiveServer/index.html.

Sawyer J.O., T. Keeler-Wolf., and J.M. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. California Native Plant Society.

APPENDIX E

Jurisdictional Delineation

APPENDIX E-1

ACOE Determination

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

March 7, 2014

Mr. Steve Letterly
Tejon Ranchcorp
801 Montgomery Street, Suite 200
San Francisco, California 94133-5151

DETERMINATION OF NEED FOR A DEPARTMENT OF THE ARMY PERMIT

Dear Mr. Letterly:

I am responding to your request (File No. SPL-2006-02020) dated September 4, 2013, for clarification whether a Department of the Army Permit is required for the Grapevine Study Area located near the city of Frazier Park, Kern County, California.

The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the River and Harbor Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the attached approved jurisdictional determination dated March 7, 2014, it appears the Grapevine Creek Study Area does not contain water(s) of the United States pursuant to 33 CFR Part 325.9.

If you have any questions, please contact me at 805-585-2148 or via e-mail at Aaron.O.Allen@usace.army.mil. Thank you for participating in the Regulatory Program. Please also complete the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey, which would help me to evaluate and improve the regulatory experience for others.

Sincerely,

Aaron O. Allen

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Enclosure

CESPL-RG-N March 7, 2014

MEMORANDUM FOR THE RECORD
SUBJECT: ISOLATED WATERS DETERMINATION FOR THE GRAPEVINE CREEK STUDY AREA (SPL-2006-2020-AOA)

1. Background: Impact Sciences, on behalf of Tejon Ranch, submitted a jurisdictional determination package, including a hybrid functional assessment and detailed hydrology information, for the 28,028-acre Tejon Mountain Village (TMV) site in Kern/Los Angeles County in October 2006. Based on additional field data and subsequent technical review, the above jurisdictional determination was modified four times between October 2006 and August 2008. The final jurisdictional determination package was submitted to both the Corps and USEPA on August 5, 2008 and includes a determination that there are approximately 642 acres of waters of the United States in the TMV project area, including the 346-acre Castac Lake (also known as Tejon Lake), 286 acres of wetlands adjacent to Castac Lake and approximately 123 tributaries to Castac Lake that support 10 acres of waters of the United States. The final jurisdictional determination package also includes a finding that 41 tributaries (0.59 acres of potential jurisdictional waters of the United States) to Castac Lake lack sufficient evidence of a significant nexus to meet the requirements in the 2007 Rapanos Guidance and that 19 isolated drainages in the project area (approximately 84.7 acres of potential waters of the United States) are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3) that directly or indirectly flow into Tejon Reservoir 1 an isolated, non-navigable water body that does not support substantial interstate commerce.

As documented in Table 12 of the TMV Jurisdictional Delineation Report, a total of 19 isolated drainages that support 84.7 acres of potential waters of the United States, including wetlands, are located within the TMV project area. Oso Creek, the only isolated drainage in the southern section of the project area, was previously determined to be non-jurisdictional under the SWANCC Supreme Court decision in 2004 (File No. 2005-00026-AOA). The remaining 18 isolated drainages are concentrated in the northern section of the project area and include two relatively large intermittent/perennial drainages, Grapevine and Pastoria Creek, which support a variety of habitat types including adjacent wetlands and riparian vegetation that exhibits moderate to high physical and biological functions. In addition, there are also a number of smaller isolated drainages that are tributaries to Grapevine Creek or Pastoria Creek. Based on information in the Jurisdictional Delineation Report, none of the isolated drainages connect to an irrigation system that directs water outside of the Tejon Ranch agricultural fields. In addition, based on observations made during our July 2008 site visit, the California Aqueduct has a siphon that goes under Grapevine Creek and, as a result, there is no hydrologic connection between the isolated drainages and the aqueduct. Tejon Ranch does utilize some water from the above isolated drainages to irrigate farm fields by diverting seasonal surface flows into Tejon Reservoir 1 and pumping water into the 850 Irrigation Canal. Under one of the four factors in the "Migratory Bird Rule", which was invalidated by the 2001 SWANCC Supreme Court decision, water from isolated drainages that was used for irrigation could be utilized to establish substantial interstate commerce to determine jurisdictional waters of the United States; however, water uses in the isolated drainages in the project area do not appear to meet any of the current criteria at 33 CFR Part 328.3(a)(3). During our July 2008 site visit, Tejon Reservoir 1 was completely dry, with little if any potential for public access and no evidence of seasonal boating opportunities and, as a result, Tejon Reservoir 1 is an isolated, non-navigable water body that does not support substantial interstate commerce.. For additional information, please reference the Jurisdictional Determination Report dated August 2008. Based on the above information, the Corps made a final determination that 19 isolated drainages that support approximately 84.7 acres of potential waters of the United States are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3).

2. <u>Grapevine Study Area</u>: On September 4, 2013, Dudek, on behalf of Tejon Ranch, submitted a supplemental jurisdictional determination package for the Tejon Ranch Grapevine Study Area (August 2013), which includes approximately 15,315 acres within unincorporated Kern County just south of the junction of I-5 and Highway 99. The Grapevine Creek study area includes two isolated drainages, Grapevine Creek and Pastoria Creek, which were previously determined to be non-jurisdictional pursuant to the 2001 SWANCC Supreme Court decision (File No. SPL-2006-02020-AOA). The Grapevine Creek study area also includes several tributaries to Grapevine Creek and Pastoria Creek that were not specifically analyzed as part of the previous TMV jurisdictional determination.

3. <u>Methodology</u>: The supplemental jurisdictional determination report dated August 2013 contains detailed information regarding the physical and biological characteristics of the drainage features and surrounding uplands in the study area. In general, the tributaries to Pastoria and Grapevine Creek are relatively small, isolated ephemeral washes that exhibit low volume, infrequent and short duration surface flows. Exceptions to the above include Live Oak Creek that is diverted into an irrigation ditch that is connected to Cattle Creek, which then flows into Pastoria Creek and terminates in Tejon Reservoir 1 (previously determined to be an isolated, non-navigable water body) and Ostrich Detention Basin, a small isolated water body.

5. <u>Isolated Waters</u>: As previously documented as part of the TMV jurisdictional determination, Grapevine Creek enters the study area and flows north under the I-5 through an existing culvert. At the intersection of Grapevine Creek and California Aqueduct, the aqueduct is diverted underground, allowing Grapevine Creek to flow north terminating in agricultural lands off site. The upstream portion of Grapevine Creek, where the creek parallels Grapevine Road, supports a perennial flow regime that is regulated by the Grapevine Pump Station. The pump station delivers water to the Ostrich Detention basin, which is constructed in uplands and is used exclusively for agricultural purposes. A portion of Grapevine Creek is diverted near I-5 and flows east over the California Aqueduct via a concrete overcrossing. The stream channel then flows into an irrigation ditch that connects to Cattle Creek. Cattle Creek than flows through some irrigation ditches before connecting to Pastoria Creek, which terminates in Tejon Reservoir No. 1. Nine ephemeral tributaries flow into Grapevine Creek in the study area, the majority of which originate in the foothills west of I-5.

Pastoria Creek originates in the foothills near the southeastern portion of the study area. As previously documented as part of the TWM jurisdictional determination, the majority of flow in Pastoria Creek is diverted into an irrigation ditch that terminates in Tejon Reservoir No. 1. Live Oak Creek, a tributary to Pastoria Creek, originates within the foothills in the southern portion of the study area. Live Oak Creek crosses over the California Aqueduct via a concrete overcrossing and then flows into an irrigation ditch, which than flows into Cattle Creek. Cattle Creek originates in the foothills on the eastern side of the study area. Cattle Creek flows into Pastoria Creek after crossing over the California Aqueduct and being diverted into an irrigation ditch. Cattle Creek also has one small ephemeral tributary located near the southern border of the study area.

There are also five relative small unnamed drainages in the study area that are isolated and contained in their entity in the Grapevine Study area. None of the five drainages connect to any irrigation ditches or flow over the California Aqueduct. In addition, the Grapevine Study area also supports four small seeps that are not connected to any downstream water bodies.

The Grapevine study area supports a total of 130.7 acres of potential waters of the United States consisting of 17.6 acres of unvegetated stream channels (includes reaches in Grapevine Creek, Live Oak Creek, Cattle Creek, Pastoria Creek and unnamed tributaries/drainages), 18.8 acres of braided stream channel in the main-stem of Pastoria Creek, 78.6 acres of braided stream channel in Grapevine Creek, 0.4

acre in Ostrich Detention Basin and 15.3 acres of wetlands, including areas in Grapevine Creek (5.7 acres), Live Oak Creek (1.9 acres), Cattle Creek (5.6 acres) and Pastoria Creek (2.0 acres).

6. Conclusion: Based on information in the Jurisdictional Determination Report for TMV (August 2008) and the Supplemental Jurisdictional Determination Report for the Grapevine Study Area (August 2013), two previous site visits and our independent review of all the above information, the Corps has made a determination that the above isolated drainages and aquatic resources that support approximately 130.7 acres of potential waters of the United States are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3). If you have any questions regarding the above determinations, please contact me at (805) 585-2148.

Aaron O. Allen
Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Dudek, August 2013. Jurisdictional Delineation Report for the Grapevine Study Area.

APPENDIX E-2

Request for Jurisdictional Determination

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

September 4, 2013 7667-13

Aaron O. Allen, PhD, Chief, North Coast Branch
Regulatory Division, U.S. Army Corps of Engineers
Ventura Field Office
2151 Alessandro Drive, Suite 110
Ventura, California 93001

Subject: ***Request for an Approved Jurisdictional Determination for Grapevine and Pastoria Creeks and Related Tributaries and Isolated Waters in the Grapevine Study Area, Tejon Ranch, Kern County, California***

Dear Dr. Allen:

This letter is being sent on behalf of the Tejon Ranchcorp as a request for an Approved Jurisdictional Determination (JD) for the for the Grapevine study area. An Approved JD for the Tejon Mountain Village (TMV) study area (File No. SPL-2006-02020-AOA), concluded that two creeks (and related tributaries) flowing north into the Central Valley, Grapevine and Pastoria Creeks, were not jurisdictional. Additionally, fieldwork was completed in the Grapevine study area of Tejon Ranch. Based on the enclosed 2013 *Supplemental Jurisdictional Delineation Report for Tejon Ranch, Grapevine Study Area* (2013 JD Report), there are no U.S. Army Corps of Engineers-jurisdictional waters of the United States within the Grapevine study area.

The attached 2013 JD Report (Attachment A) describes the methods and results of the JD conducted within the Grapevine study area in April–July 2013. Additionally, the Approved Jurisdictional Determination Forms are attached for your review (Attachment B).

We appreciate your review of this site and provision of an Approved JD. If you have any questions or comments regarding the content of this report, please do not hesitate to contact me via telephone at 760.479.4281 or email at menright@dudek.com.

Sincerely,

Megan S Enright

Megan Enright
Senior Biologist

Att: A, 2013 Supplemental Jurisdictional Delineation Report for Tejon Ranch, Grapevine Study Area
B, Approved Jurisdictional Delineation Forms
cc: Steve Letterly, DMB Pacific Ventures

ATTACHMENT A

2013 Supplemental Jurisdictional Delineation Report for Tejon Ranch, Grapevine Study Area

SUPPLEMENTAL JURISDICTIONAL DELINEATION REPORT FOR TEJON RANCH, GRAPEVINE STUDY AREA

Prepared for:

Tejon Ranchcorp
801 Montgomery Street, Suite 200
San Francisco, California 94133-5151
Contact: Steve Letterly, DMB Pacific Ventures
(On Behalf of Tejon Ranchcorp)

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Megan Enright

AUGUST 2013

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to describe the methods and results of the supplemental jurisdictional delineation of further tributaries to the Grapevine and Pastoria Creeks that were previously determined to be non-jurisdictional by the U.S. Army Corps of Engineers (ACOE) (File No. SPL-2006-02020-AOA), and other isolated waters, within the Grapevine study area of Tejon Ranch, and to request a supplemental jurisdictional determination for this study area from the ACOE. Based upon this formal supplemental jurisdictional delineation, there are no ACOE-jurisdictional waters of the United States within the Grapevine study area.

1.2 Contents of Document

A general overview of the content of this document is provided below.

- **Chapter 1—Introduction**: This chapter describes the purpose of this document and the location of the study area.
- **Chapter 2—Environmental Setting**: This chapter describes the purpose of environmental setting of the study area including land uses, climate, soils, terrain, hydrology, watersheds, and beneficial uses.
- **Chapter 3—Methods**: This section provides an overview of the methods used by Dudek to conduct the jurisdictional delineation.
- **Chapter 4—Jurisdictional Determination**: This chapter briefly provides the results of the jurisdictional delineation.
- **Chapter 5—References**: The references cited in this document are provided in this chapter.

1.3 Overview of On-Site Resources

The Grapevine study area is located in the San Joaquin Valley at the base of the Tehachapi Mountains. Grapevine Creek and its tributaries; Pastoria Creek and its tributaries, including Live Oak Creek and Cattle Creek; and one unnamed tributary flow through the study area. Additionally, there are a few isolated, unnamed drainages and seeps within the study area.

As previously determined by the ACOE, Grapevine Creek ends in a playa in the San Joaquin Valley and has no connectivity to other waters of the United States; there is no hydrologic connection between Grapevine Creek and the California Aqueduct (ACOE 2008b; Appendix A-2).

Also as previously determined by the ACOE, Pastoria Creek either dissipates into agricultural lands north of the study area or flows into an unnamed drainage at the very northeast corner of the study area, which flows off site into a detention basin referred to as Tejon Reservoir No. 1. Tejon Reservoir No. 1 is not publicly accessible, has no boating opportunities, was created by excavating uplands, and is used exclusively for agricultural purposes. Tejon Reservoir No. 1 is an isolated, non-navigable water body that does not support substantial interstate commerce. Tejon Ranch diverts seasonal surface flows into Tejon Reservoir No. 1 and pumps water into the Wheeler Ridge–Maricopa Water District's 850 Canal (Appendix A-2, ACOE 2008b).

Both Live Oak Creek and Cattle Creek are tributaries to Pastoria Creek. Live Oak Creek connects to Cattle Creek via an artificially created agricultural irrigation ditch and Cattle Creek flows into Pastoria Creek, which, as noted above, does not have a hydrologic connection to any navigable water.

A jurisdictional determination for the Tejon Mountain Village project, located approximately 1.8 miles to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the on-site portions of Pastoria Creek and the unnamed tributary it flows into, as well as Cattle and Live Oak Creeks (tributaries to Pastoria Creek), are not considered waters of the United States. The on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream.

Finally, there are a few isolated, unnamed drainages and seeps within the study area that do not flow into navigable waters of the United States and are likewise non-jurisdictional.

1.4 Grapevine Study Area Location

The Grapevine study area is located in the west-central portion of Tejon Ranch (the Ranch). The approximately 270,000-acre Ranch is currently held in private ownership by Tejon Ranchcorp. The Ranch includes a large portion of the Tehachapi Mountains as well as smaller portions of the San Joaquin and Antelope Valleys. Generally, the Ranch extends from Interstate 5 (I-5) on the western side to Highway 58 on the northern side (Figure 1-1).

The 15,315-acre Grapevine study area is entirely within unincorporated Kern County just south of the junction of I-5 and Highway 99. The City of Bakersfield is approximately 13 miles north of the study area. The majority of the study area is on the east side of I-5, but approximately 12% lies on the west side of I-5. The study area is bisected by the California Aqueduct (Figure 1-2).

The Grapevine study area mainly lies in the Grapevine and Pastoria Creek U.S. Geological Survey (USGS) 7.5-minute quadrangles. There is one parcel and a portion of two other parcels in the study area that lie entirely within the Mettler USGS 7.5-minute quadrangles. The latitude and longitude of the approximate center of the site is 34°57'24" N and 118°53'21" W. The Universal Transverse Mercator (UTM) coordinates for the approximate center are UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.

2.0 ENVIRONMENTAL SETTING

2.1 Land Uses

Adjacent to the study area, west of I-5, the land is relatively flat and used for grazing purposes. The Tejon Ranch Commerce Center is to the northwest of the site and includes distribution centers and retail locations. South of the site, Pacific Pipeline Systems and Exxon-Mobil Corp operate oil/gas pump stations. The Wheeler Ridge–Maricopa Water District's 850 Canal is located just north of the study area and generally runs west–east (Figure 2-1). The Pastoria Energy Facility and Griffith Rock Plant are located just east of the site. Edmonston Pumping Station, located on the southeastern side of the study area, is a pump station at the southern end of the California Aqueduct. Edmonston Pumping Plant Road, off Grapevine Road East, runs east–west across the study area just north of the foothills and crosses the aqueduct on the eastern side of the study area. There are active and inactive oil and gas wells throughout the site and several oil and gas mineral leases in the northern portion of the site. Other existing land uses include agriculture and grazing.

The slopes to the south and east of the site are generally undeveloped. The Los Padres National Forest is located south and west of the site and extends west and south to Ventura and Santa Barbara Counties. North of the Los Padres National Forest and west of I-5, at the southern edge of the San Joaquin Valley, is the Wind Wolves Preserve, a privately owned preserve area. Lands immediately west, south, and east of the Grapevine study area are owned by Tejon Ranchcorp. Through the Ranchwide Agreement, Tejon Ranch Company committed to conserve 90% of the 270,000-acre ranch (for a total of approximately 240,000 acres of Ranchwide Agreement conservation lands). To date, conservation easements have been recorded on approximately 100,243 acres. At the regional level, there are undeveloped private lands to the east and south, and predominantly agricultural lands to the north and immediately west (Figure 2-1).

2.2 Climate

The Tejon Rancho National Oceanic and Atmospheric Administration (NOAA) Cooperative Station is approximately 6 miles to the northeast of the Grapevine study area at an elevation of 1,420 feet above mean sea level (amsl). Given the proximity to the study area and the elevation of the station, which is close to the mid-point of the study area elevation (i.e., 1,542 feet amsl), the approximate climate of the Grapevine study area is characterized herein using the data collected at this station.

As mentioned previously, the study area is located at the base of the Tehachapi Mountains on the extreme southern end of the San Joaquin Valley floor. However, the majority of the study area is located in the San Joaquin Valley, which has a semi-arid climate characterized by long, hot, dry summers and damp, short winters that have a heavy fog layer for weeks at a time. The average high temperature during the summer approaches 96 degrees Fahrenheit (°F) with an annual average of 75.9°F. Low temperatures range from approximately 37–68°F, with an annual average low temperature of 51.2°F. The average annual precipitation is 11.68 inches. The majority of the rainfall (precipitation over 1 inch/month) during the year occurs between November and April, the typical rainy season for this region. The summer months are virtually rainless with average monthly rainfalls ranging from 0.1–0.02 inch/month (WRCC 2013).

2.3 Soils

Soils mapping for the majority of the study area is included in the U.S. Department of Agriculture (USDA) Soil Survey Geographic database (SSURGO) (USDA 2007, 2009). The majority of the Grapevine study area is sandy loam (41.9%), very gravelly sandy loam (19.5%), and loamy sand (17.1%) (see Table 2-1).

Table 2-1
USDA Mapped Soil Units

Soil Groups	Soil Name	Acreage[1]	% of Total
Cobbly clay	Cibo cobbly clay, 30–75% slopes	36	0.2%
	Subtotal	*36*	*0.2%*
Cobbly sandy clay loam	Tehachapi cobbly sandy clay loam, warm, 2–9% slopes	11	0.1%
	Subtotal	*11*	*0.1%*
Fine sandy loam	Pleito sandy clay loam, 2–5% slopes	1,333	8.7%
	Pleito sandy clay loam, 5–9% slopes	41	0.3%
	Subtotal	*1,374*	*9.0%*
Gravelly clay loam	Bitcreek-Dibble-Eaglerest complex, 15–50% slopes	430	2.8%
	Subtotal	*430*	*2.8%*
Gravelly loam	Pleito-Loslobos, 15–75% slopes	35	0.2%
	Subtotal	*35*	*0.2%*
Gravelly sandy loam	Cuyama sandy loam, 2–5% slopes	132	0.9%
	Subtotal	*132*	*0.9%*
Loam	Cerini loam, 0–2% slopes	76	0.5%
	Geghus-Tecuya association, 30–75% slopes	361	2.4%
	Geghus-Tecuya association, 9–30% slopes	636	4.1%
	Subtotal	*1,072*	*7.0%*

Table 2-1
USDA Mapped Soil Units

Soil Groups	Soil Name	Acreage[1]	% of Total
Loamy sand	Psamments-Xerolls complex, nearly level	175	1.1%
	Wheelridge gravelly loamy sand, 0–2% slopes	2,290	15.0%
	Whitewolf loamy sand, 2–5% slopes	192	1.3%
	Subtotal	*2,657*	*17.3%*
Sandy clay loam	Pleito-Chanac sandy clay loams, 15–30% slopes	0	0.0%
	Subtotal	*0*	*0.0%*
Sandy loam	Arvin sandy loam, 2–5% slopes	1	0.0%
	Arvin sandy loam, 5–9% slopes	130	0.9%
	Guijarral sandy loam, 0–2% slopes	552	3.6%
	Guijarral sandy loam, 2–9% slopes	1,454	9.5%
	Hesperia sandy loam, 0–2% slopes	103	0.7%
	Hesperia sandy loam, 2–5% slopes	376	2.5%
	Hesperia sandy loam, 5–9% slopes	598	3.9%
	Loslobos-Walong association, 5–30% slopes	164	1.1%
	Pleitito-Laval complex, 1–5% slopes	166	1.1%
	Premier sandy loam, 0– 2% slopes	2,610	17.0%
	Premier sandy loam, 2–5% slopes	77	0.5%
	Subtotal	*6,232*	*40.7%*
Stony sandy loam	Arvin stony sandy loam, 5–9% slopes	100	0.7%
	Subtotal	*100*	*0.7%*
Very gravelly sandy loam	Guijarral-Klipstein complex, 2–5% slopes	2,394	15.6%
	Klipstein-Guijarral complex, 5–15% slopes	473	3.1%
	Riverwash	182	1.2%
	Subtotal	*3,049*	*19.9%*
Very stony sandy clay loam	Tehachapi loam, 2–5% slopes	157	1.0%
	Subtotal	*157*	*1.0%*
Area not surveyed, access denied		29	0.2%
	Total	**15,315**	**100.0%**

Source: USDA 2007, 2009.
[1] Numbers may not total precisely due to rounding.
Blue shading indicates that the soil is listed on the National List of Hydric Soils (USDA 2012a).

According to the National List of Hydric Soils (USDA 2012a), 18 of the 30 soil types within the Grapevine study area are considered hydric. These hydric soils are indicated by blue shading in Table 2-1. Soils within the Grapevine study area are shown on Figure 2-2. Hydric soils are defined as a soil that "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. This definition includes soils that developed under anaerobic conditions in the upper part but no longer experience these conditions due to hydrologic alteration such as those hydric soils that have been artificially drained or protected (e.g., ditches or levees)" (USDA 2013). Hydric soils, hydrophytic vegetation, and hydrology are the three factors used to determine the presence and extent of wetlands per the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c). The presence of USDA-mapped hydric soils does not automatically determine whether an area contains hydric soils. Instead, the list is used to identify areas that may contain hydric soils and guide the formal jurisdictional delineation. Hydric soils testing was performed in accordance with the methods discussed in Section 3.2.

2.4 Terrain

The Grapevine study area ranges in elevation from 898–2,186 feet amsl. The majority of the site is at the lower to mid-elevational range of approximately 1,000–1,400 feet amsl. The slopes in the southern portion of the site are steepest. Slopes become less steep from the southwestern corner of the site to the northeast corner. The majority of the site is relatively flat. The slopes along the southern boundary generally face north, but exhibit a range of aspects. Monroe and Aliso Canyons trend north to south in the southern portion of the site (Figure 2-3).

The lowest elevations in the study area occur in the northwestern part of the site and along the northern boundary of the site to the northeastern corner. Elevations generally rise in the southwesterly direction. The entire length of the aqueduct through the center of the site is approximately 1,250 feet amsl and elevations continue to increase to the southwest. Aspects vary considerably more in the southern portion of the site where the steepness increases. The highest point on the study area is located at the southern edge of the site east of I-5.

2.5 Hydrology

The Grapevine study area is located at the base of the Tehachapis. The hydrogeological history is summarized as follows: "at the base of the granitic basement rock of the Tehachapis are deep layers of sediments that have been eroded from the mountains and deposited in the adjacent valleys. Groundwater formed via the infiltration of rain, and snowmelt travels down-slope and accumulates in these alluvial groundwater basins. The faulting prevalent in the region produces fractures through which groundwater moves to the surface rather than continuing down-gradient, expressing as springs or seeps of water" (Tejon Ranch Conservancy 2013). Generally, groundwater in the southern San Joaquin Valley generally lies between 150 and 500 feet below ground surface (Faunt 2009, as cited in Tejon Ranch Conservancy 2013).

Within the study area, the USGS National Hydrography Dataset (NHD) identifies Grapevine Creek, Pastoria Creek, Live Oak Creek, and Cattle Creek as well as additional streams consisting of tributaries, pipelines, and artificially created channels (USGS 2013). A detailed discussion of the hydrology of the Grapevine study area based upon the jurisdictional delineation is provided in Section 4.2.

2.6 Watersheds and Beneficial Uses

The Grapevine study area is located within the Tulare Lake hydrologic basin. The majority of the study area is within the Arvin-Wheeler Ridge hydrologic area in the South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30). The southernmost portion of the study area lies within two hydrologic areas—Tejon Creek (HUC 556.20) and San Emigdio (HUC 556.3)—both of which are within the Grapevine hydrologic unit (Central Valley RWQCB 2004) (Figure 2-4).

The Water Quality Control Plan for the Tulare Lake Basin (Central Valley RWQCB 2004) includes the following beneficial uses, excerpted directly from the basin plan, for the surface waters of Westside Streams in Hydrologic Unit 556 and Valley Floor Waters in Hydrological Unit 557:

- Agricultural Supply (AGR)—Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Industrial Service Supply (IND)— Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
- Industrial Process Supply (PRO)—Uses of water for industrial activities that depend primarily on water quality.
- Water Contact Recreation (REC-1)—Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
- Non-Contact Water Recreation (REC-2)—Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- Warm Freshwater Habitat (WARM)—Uses of water that support warm water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. WARM includes support for reproduction and early development of warm water fish.

- Wildlife Habitat (WILD)—Uses of water that support terrestrial or wetland ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- Rare, Threatened, or Endangered Species (RARE)—Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.
- Ground Water Recharge (GWR)—Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

3.0 METHODS

3.1 Literature Review

Dudek reviewed aerial maps from the Kern Council of Governments (2010), USDA (2012b), AirPhoto USA (2006) and Bing (2013); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2013a); the USGS NHD (USGS 2013); the National List of Hydric Soils (USDA 2012a); the *Jurisdictional Delineation Report for Tejon Mountain Village* (Impact Sciences Inc. 2008); intermittent stream and topographical data from Tejon Ranch Company (TRC 2013a; Intermap Technologies 2005, 2013); basins, ponds, and reservoirs data from TRC (2013b); and historical aerials and topographic maps (Google Earth 2013; Historic Aerials Online 2013). Dudek identified vegetation communities within the Grapevine study area by keying them out using the Manual of California, Second Edition (Sawyer et al. 2009) in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Populations and Natural Communities* (CDFG 2009). The project-specific vegetation map was reviewed in conjunction with the delineation field data.

The NHD contains water features such as lakes, ponds, streams, rivers, canals, dams, and stream gages (USGS 2013). The USFWS created the NWI to "provide biologists and others with information on the distribution and type of wetlands to aid in conservation efforts" (USFWS 2013b). Potential wetlands and waters are mapped by the USFWS based on aerial images and that data is provided to the public. This compilation of data was reviewed to gain a better understanding of the hydrologic setting of the study area and identify areas potentially under the jurisdiction of the ACOE.

3.2 Jurisdictional Delineation

A formal (routine) jurisdictional wetlands delineation within the study area was conducted by Dudek biologists Patricia Schuyler, Callie Ford, Heather Moine, Britney Strittmater, Emily Weir, Danielle Mullen, Linda Archer, and Randall McInvale in April, May, June, and July 2013. Specifically, Dudek conducted the delineation on April 16–18; May 13 and 14; June 18, 19, 26, and 27; and July 9, 16, and 18. All areas of the study area were surveyed on foot for waters of the United States, including wetlands, under the jurisdiction of ACOE, pursuant to Section 404 of the federal Clean Water Act (CWA).

Non-wetland waters of the United States are delineated based on the presence of an ordinary high water mark (OHWM) as determined utilizing the methodology in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (ACOE 2008d). Wetland waters of the United

States are delineated based on methodology described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c). The ACOE and U.S. Environmental Protection Agency (EPA) Rapanos Guidance states that the ACOE will regulate: (i) traditional navigable waters of the United States and (ii) their adjacent wetlands as well as (iii) non-navigable tributaries to traditional navigable waters that are relatively permanent and (iv) wetlands that directly abut such tributaries (ACOE and EPA 2008). In addition, if a significant nexus has been determined, the ACOE may also assert jurisdiction over (i) non-navigable tributaries that are not relatively permanent and (ii) their adjacent wetlands, as well as (iii) wetlands that are adjacent to but that do not directly abut a relatively permanent non-navigable tributary (ACOE and EPA 2008).

Drainage features were delineated using either a Trimble GeoXT handheld Global Positioning System (GPS) unit with sub-meter accuracy or directly onto a 500-scale (1 inch = 500 feet) topographic base with 5-foot contours overlaid onto an aerial photographic base (USDA 2012b; Intermap Technologies 2013). All of the drainage features were surveyed on foot and the OHWM width was recorded when changes in the width occurred.

The wetlands delineation was performed in accordance with the methods prescribed in the 1987 Wetlands Delineation Manual (ACOE 1987), the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c), and the ACOE and EPA Rapanos Guidance (ACOE and EPA 2008). Pursuant to the federal CWA, ACOE jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation.

To assist in the determination of jurisdictional areas on site, data was collected at 38 locations (i.e., data stations) using wetland determination data forms (Appendix B). Hydrology, vegetation, and soils were assessed and data were collected and captured on approved ACOE forms. The location of data stations were collected either using a Trimble GeoXT handheld GPS unit with sub-meter accuracy or directly onto a 500-scale (1 inch = 500 feet) topographic base with 5-foot contours overlaid onto an aerial photographic base (USDA 2012b). Potentially jurisdictional area were digitized in GIS based on the GPS data collected in the field and data collected directly onto field maps into a project-specific geographic information system (GIS) using ArcGIS software. A more detailed description of the methods is described below.

Hydrophytic Vegetation

Seasonal changes in species composition, human land-use practices, wildfires, and other natural disturbances can adversely affect the wetlands vegetation determination. During the delineation, a data station point was considered positive for hydrophytic vegetation if it passed the basic dominance test (Indicator 1), meaning that more than 50% of the dominant species sampled were characterized as either obligate, facultative wetland, and/or facultative per *The National Wetland Plant List: 2013 Wetland Ratings* (Lichvar 2013), or if it passed the prevalence index (Indicator 2), which takes into account all plant species in the community, not just dominants. The standard plot sampling technique was used to sample vegetation within a 10-foot radius for herbaceous vegetation and a 30-foot radius for trees, shrubs, and woody vines (ACOE 1987). All plant species observed within the data station were identified and recorded on the forms. Where plant identification could not be made in the field, a sample was taken and later identified in the laboratory and the forms were modified to reflect the presence of the identified species at the data station from which it was collected (Appendix B).

Hydric Soils

According to the National Technical Committee for Hydric Soils, hydric soils are "soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USDA 1994). Soil pits were prepared using a "sharp shooter" shovel to determine if hydric soils were present. The presence of hydric soils was determined through consultations with the *ACOE 1987 Wetlands Delineation Manual* (ACOE 1987) as well as *Field Indicators of Hydric Soils in the United States* (USDA 2010) and ACOE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c). Munsell Soil Color Charts were used to determine soil chroma and value. Where feasible, soil pits were prepared to depths ranging from 16–18 inches. Dry soils were moistened to obtain the most accurate color. In general, soils from test pits were determined to be hydric if found to be of a chroma one or chroma two with mottles. Excavated soils were examined for evidence of hydric conditions, including low chroma values and mottling, vertical streaking, sulfidic odor, and high organic matter content in the upper horizon. Evidence of previous ponding or flooding was assessed, along with the slope, slope shape, existing landform characteristics, soil material/composition, and hydrophytic vegetation to determine if hydric soils were present. See Appendix B for the completed data station forms.

Hydrology

In accordance with the guidelines prescribed in ACOE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE 2008c), wetland hydrology indicators are separated into four major groups: Groups A, B, C, and D. Group A indicators are based on direct observations of surface flow, ponding, and soil saturation/groundwater. Group B indicators consist of evidence that the site has been or is currently subjected to ponding, including, but not limited to watermarks, drift deposits, and sediment deposits. Group C indicators include signs of previous and/or current saturation, including oxidized rhizospheres surrounding living roots and the presence of reduced iron or sulfur, both of which are indicative of extended periods of soil saturation. Group D indicators consist of "vegetation and soil features that are indicative of current rather than historic wet conditions and include a shallow aquitard and results of the FAC-Neutral test" (ACOE 2008c). Each group is subdivided into primary and secondary categories based on their frequency and reliability to occur in the Arid West region. See Appendix B for the completed data station forms and Appendix C for photos of each data station.

Survey Limitations

The survey was conducted during the spring and summer seasons, which resulted in detection and identification of most annual and perennial plant species that may potentially occur in the area. Due to the timing of the surveys, late blooming summer annuals may not have been detectable. However, based on characteristics observed at each of the investigation locations, this limitation would not have affected the jurisdictional determination.

The delineation was conducted at the end of the rainy season (see Section 2.2) into summer. Conducting a delineation during one weather season has the potential to limit the results by reflecting only a certain snapshot in time. However, a week prior to the May surveys, the study area received a rainstorm and portions of the site previously delineated were rechecked for signs of hydrology.

3.3 Site-Specific Methods

Due to the complexity and anthropogenic alteration of the study area, Dudek reviewed the site in conjunction with historical aerials and topographic maps and NHD data (Google 2013; Historic Aerials Online 2013; USGS 2013). In order to categorize all features within the study area, Dudek classified the potentially jurisdictional features as swales; ephemeral, intermittent, or perennial waters; irrigation ditches; seeps; wetlands habitat; detention basins; or as having none of three ACOE parameters. During the initial site visit, Dudek observed several areas that were mapped as streams within the NHD, aerial and topographic data, but were either non-existent or swale-like features that did not meet any of the parameters outlined in Section 3.2 (i.e., no OHWM).

4.0 JURISDICTONAL DETERMINATION

4.1 Results

Creeks and Tributaries

There are four named creeks within the study area: Grapevine Creek, Pastoria Creek, Live Oak Creek, and Cattle Creek (Figure 4-1). All of the features within the study area, except for five isolated drainages and four seeps drain to these four creeks. The five isolated drainages and four seeps are not connected to a feature with an ACOE field indicator of hydrology, hydrophytic vegetation, or hydric soils. The jurisdictional delineation determination conducted by the ACOE for the Tejon Mountain Village area of Tejon Ranch previously confirmed that Grapevine Creek and Pastoria Creek—the main drainages within the study area—both drain into the San Joaquin Valley Plain and are, therefore, isolated, non-navigable waters that do not support any recreation, fish, or shellfish production or industry that results in substantial interstate commerce. The ACOE confirmed the determination that Grapevine Creek and Pastoria Creek, and their associated tributaries (which would include Cattle Creek and Live Oak Creek), are not waters of the United States (ACOE 2008a, 2008b; Appendices A-1 and A-2).

A description of each creek and their tributaries is contained in Tables 4-1, 4-2, 4-2a, and 4-2b. Tributaries to Grapevine Creek are identified as GV-1 through GV-9 and tributaries to Cattle Creek are identified as CC-1 and CC-2 (Figure 4-1). Photos representing the creeks and various tributaries are provided in Appendix C. The acreages and linear feet for the features described in Tables 4-1, 4-2, 4-2a, and 4-2b and the isolated drainages are shown in Table 4-3.

Table 4-1
Grapevine Creek and Associated Tributaries and Ostrich Detention Basin

Attribute	Description
On-site location	Grapevine creek enters the project study area from the south and flows north between I-5 where the interstate is divided (Figures 4-2 and 4-3). The creek continues to flow under the eastern section of I-5 via a culvert. At this location, a portion of the creek has been diverted to the northeast (see Table 4-2b), becoming a tributary to Cattle Creek (CC-2), while the main channel continues north, crossing under Edmonston Pumping Plant Road. At the intersection of Grapevine creek and the aqueduct, the aqueduct is diverted underground and Grapevine Creek continues to follow downstream uninterrupted. The creek then continues to flow north and northeast into agricultural lands off site.
Tributaries present on site	There are several ephemeral tributaries (GV-1 through GV-9) that flow into Grapevine Creek, the majority of which originate in the foothills to the west of I-5 (Figure 4-2). Five of these tributaries (GV-2 through GV-6) merge into one larger tributary (GV-1) that flows northeast, through a commercial complex, and under I-5. This tributary flows through the study area for approximately 7,800 feet before connecting to Grapevine Creek, just south of the aqueduct. Tributary GV-9, located within the freeway divide, enters the study area through a culvert located under I-5 and

Table 4-1
Grapevine Creek and Associated Tributaries and Ostrich Detention Basin

Attribute	Description
	connects with Grapevine Creek approximately 1,300 feet downstream. A second tributary (GV-7) also originates downstream of I-5, just north of the commercial complex, and flows approximately 700 feet before it connects to GV-1. Another tributary (GV-8) originates at the outlet of a culvert under Edmonston Pumping Plant Road, adjacent to developed lands associated with the rest stop. This tributary connects to Grapevine Creek approximately 2,400 feet downstream.
On-site topography	The tributaries to the west of I-5 originate from steep slopes associated with the foothills located in the southern portion of the project. Upper elevations of the tributaries range from 1,835 to 2,070 feet amsl. These tributaries flow north towards the main tributary (GV-1), which is located at the base of the foothills. The main tributary starts at an elevation of approximately 1,780 feet amsl and flows northeast towards the I-5, dropping to 1,535 feet before crossing through the Grapevine commercial complex. The upstream portion of Grapevine creek is located at an elevation of 1,840 feet amsl and as the creek flows through the study area, the elevation gradually decreases to 930 feet.
Hydrology	The upstream portion of Grapevine Creek, where the creek parallels Grapevine Road, contains perennial flows that are regulated by the Grapevine Pump Station. There is a detention basin, constructed in uplands and used exclusively for agricultural purposes, referred to as the Ostrich Detention Basin, east of Grapevine Creek, and riparian habitat has established adjacent to the basin. The basin receives water from Grapevine Creek through an underground pipe. Once the creek crosses I-5, it becomes intermittent, and the upstream portions contain riparian habitat while the downstream portions are relatively unvegetated.
Tributary to ?	Based on the *Jurisdictional Delineation Report for Tejon Mountain Villag*e, Grapevine Creek flows into the San Joaquin Valley and off site the outflow either infiltrates into the soil, is captured and used for irrigation, or enters a playa without an outlet (Impact Sciences 2008). Field investigations conducted for the study area confirm that the upstream portion of the creek has been diverted for agricultural purposes (see Table 4-2b). Aerial photography shows that the creek naturally ends approximately 1,000 feet northeast of the study area boundary, as is represented by the NHD Data (USGS 2013). From this point, based on aerial photography, it appears that the creek is diverted and used for agricultural areas to the north of the study area. Based on current field investigations and aerial photography review, this delineation confirms that conditions cited in the *Jurisdictional Delineation Report for Tejon Mountain Village* (Impact Sciences 2008) have not changed and the determination that Grapevine Creek does not connect to other waters of the U.S. has not changed.
Riparian vegetation present?	There is riparian vegetation within the portion of the creek confined within the I-5 split. As the creek flows to the north, riparian vegetation becomes sparse to nonexistent. Riparian vegetation is also present around the edges of and adjacent to the Ostrich Detention Basin. None of the tributaries contain riparian vegetation.
Potential ACOE jurisdiction	None. See Section 4.3, ACOE Jurisdiction.
Data station numbers	DS 1, DS 2, DS 16, DS 17, DS 28, DS 29.

Table 4-2
Pastoria Creek and Unnamed Tributary

Attribute	Description
On-site location	Similar to Live Oak Creek and Cattle Creek, Pastoria Creek originates in the foothills in the southeastern portion of the study area (Figures 4-6 and 4-7). At the downstream end of Pastoria Creek, a portion of the creek has been diverted to the east and flows into an irrigation ditch, some of which contains riparian habitat, then flows into an unnamed tributary (Unnamed-1) that flows off site into Tejon Reservoir No. 1. The section of Pastoria Creek that has not been diverted flows north and off site into agricultural lands.
Tributaries present on site	Cattle Creek.
On-site topography	From the foothills to where the creek is diverted, the elevation ranges from approximately 1,310 to 930 feet amsl.
Hydrology	All of Pastoria Creek is intermittent. At the intersection of the creek and the aqueduct, the aqueduct is diverted underground and Pastoria Creek flows downstream without interruption at this location.
Tributary to ?	The downstream portion of Pastoria Creek is either diverted into an unnamed tributary (Unnamed-1) to Tejon Reservoir No. 1 or terminates within agricultural lands to the north (Figure 4-7). Tejon Reservoir No. 1 is not publicly accessible, has no boating opportunities, was created by excavating uplands, and is used exclusively for agricultural purposes. Tejon Reservoir No. 1 is an isolated, non-navigable water body that does not support substantial interstate commerce. Tejon Ranch diverts seasonal surface flows into Tejon Reservoir No. 1 and pumps water into the Wheeler Ridge–Maricopa Water District's 850 Canal (Appendix A-2, ACOE 2008b).
Riparian vegetation present?	Riparian vegetation is located at the downstream portion of the creek, within an area of the creek that has been diverted into the unnamed tributary.
Potential ACOE jurisdiction	None. See Section 4.3, ACOE Jurisdiction.
Data station numbers	DS 22, DS 23, DS 24, DS 25, DS 26, DS 27.

Table 4-2a
Pastoria Creek Tributary—Live Oak Creek

Attribute	Description
On-site location	Live Oak Creek is located just east of the center of the study area and originates within the foothills in the southern portion of the study area (Figure 4-5). Live Oak Creek crosses over the California Aqueduct via a concrete overcrossing and then flows into an irrigation ditch, which connects flows from Live Oak Creek to Cattle Creek (see Table 4-2b).
Tributaries present on site	There are no tributaries that flow directly into the on-site portions of the creek.
On-site topography	Live Oak Creek originates in the foothills at an elevation of 1,550 feet. The creek flows north, reaching an elevation of 1,370 feet before crossing under Edmonston Pumping Plant Road via a culvert. At its terminus (i.e., tributary to Cattle Creek), the creek is at an elevation of 1,175 feet.
Hydrology	The portion of Live Oak Creek within the study area is intermittent with groundwater observed reaching the surface in portions of the creek located in the foothills.
Tributary to ?	Cattle Creek (see Table 4-2b).
Riparian vegetation present?	The upstream portion of the Live Oak Creek contains riparian vegetation.

Table 4-2a
Pastoria Creek Tributary—Live Oak Creek

Attribute	Description
Potential ACOE jurisdiction	None. See Section 4.3, ACOE Jurisdiction.
Data station numbers	DS 20, DS 21.

Table 4-2b
Pastoria Creek Tributary – Cattle Creek (and Associated Tributaries to Cattle Creek)

Attribute	Description
On-site location	Cattle Creek originates in the foothills located on the eastern side of the study area (Figure 4-5). Cattle Creek flows into Pastoria Creek after crossing over the California Aqueduct and through agricultural lands via an irrigation ditch. A large portion of Cattle Creek is contained within an irrigation ditch. Based on historical data and field investigations, it appears that Cattle Creek would have dissipated into the landscape after crossing the aqueduct. The downstream portion of the creek, just north of the aqueduct, was channelized and diverted to Pastoria Creek (Historic Aerials Online 2013). Historical topographic maps show Cattle Creek terminating either prior to crossing the aqueduct or continuing north without connecting to Pastoria Creek (Historic Aerials Online 2013).
Tributaries present on site	An unnamed, ephemeral tributary (CC-1) flows into Cattle Creek just west of the creek. On the western side of the study area, flows from Grapevine Creek have been diverted and now flow into Cattle Creek (CC-2). Starting from the diversion point, the tributary to Cattle Creek contains riparian habitat but portions further downstream from the tributary are unvegetated and ephemeral. The tributary to Cattle Creek flows over the California Aqueduct via a concrete crossing and flows are ephemeral until it joins Cattle Creek.
On-site topography	In the foothills, the elevations for Cattle Creek and the adjacent tributary (CC-1) are 1,435 feet and 1,460 feet amsl, respectively. The creek continues downstream to an elevation of 1,025 feet where it converges with Pastoria Creek. The tributary originating from Grapevine creek spans an elevation range of approximately 1,600–1,110 feet.
Hydrology	The majority of Cattle Creek in the study area is ephemeral. The upstream portion is intermittent, where groundwater reaches the surface and riparian vegetation is present.
Tributary to ?	Pastoria Creek
Riparian vegetation present?	Riparian vegetation is located in the upstream portion of Cattle Creek in the southern foothills and in a tributary where the flows are diverted from Grapevine Creek.
Potential ACOE jurisdiction	None. See Section 4.3, ACOE Jurisdiction.
Data station numbers	DS 3, DS 4, DS 5, DS 6, DS 37, DS 38.

Other Isolated Drainages

Within the study area, there are five additional, unnamed drainages that are isolated, are wholly contained in the study area (meaning they originate and terminate within the study area), and do not connect to a feature with an ACOE field indicator of hydrology, hydrophytic vegetation, or hydric soils (Figures 4-2 and 4-4), nor do they connect hydrologically to the California aqueduct. All of these drainages are ephemeral channels that lack riparian vegetation.

Isolated drainages A and B originate at the outlets of culverts underneath and east of I-5 (Figure 4-2). Isolated drainage A had evidence of flow approximately 1,530 linear feet downstream of the outlet and isolated drainage B had evidence of flow for approximately 930 linear feet downstream of the outlet. Isolated drainage C originates at the outlet of a series of culverts located under Edmonston Pumping Plant Road (Figure 4-4). Because there are no corresponding drainage features located downstream of drainage C, it is likely that this drainage is the result of road runoff that then dissipates into the landscape. Isolated drainage C had evidence of flow approximately 750 linear feet downstream of the road. Based upon aerial photography (USDA 2012b) and field indicators, isolated drainages D and E were likely tributaries to Cattle Creek but through anthropogenic changes have since become isolated. Isolated drainage E is connected to the foothills southeast of the study area by a culvert that crosses under I-5 (Figure 4-2). Another culvert, approximately 730 feet south, is located under I-5 creating erosion upstream of drainage D. There is a culvert located under the dirt road that designates the beginning of drainage D. The erosional feature and drainage D would have once been connect by this culvert; however, the culvert is now obstructed with debris and does not convey water flow. The downstream portion of isolated drainage E once crossed back under I-5 via a culvert, but there are no longer signs of flow (i.e., an OHWM) east of I-5. It is likely that isolated drainage E may have been a tributary to Cattle Creek (USDA 2012b) (see Tables 4-1 and 4-2b; Figures 4-2 and 4-4).

Seeps

During the surveys, four seep features (seeps A-D) were observed within the foothills (Figure 4-4). These small seeps are seasonal, isolated, and not hydrologically connected with other surface or near-surface waters nor are they hydrologically connected to the California aqueduct. The seeps are located in the southern portion of the study area in the foothills.

4.2 Summary of Results

None of the features delineated within the study area and described in this report are under the jurisdiction of the ACOE. There are approximately 130.7 acres of stream channels, detention basins (Ostrich Detention Basin), and wetlands within the study area, consisting of approximately 115.0 acres of unvegetated stream channel, 15.3 acres of wetlands, and 0.4 acre of ponded water in the Ostrich Detention Basin (Table 4-3). More specifically, the majority of the features on site are braided channels associated with the downstream portions of both Grapevine Creek (78.6 acres) and Pastoria Creek (18.8 acres). There are approximately 17.6 acres of unbraided, unvegetated stream channels within the study area. Cattle Creek and its associated tributaries (CC-1 and CC-2) account for the majority of the unbraided, unvegetated stream channels on site. Of the 15.3 acres of wetlands delineated within the study area, 5.7 acres are associated with Grapevine Creek while the remaining wetlands are associated with Cattle Creek (5.6 acres), Live Oak Creek (1.9 acres), and Pastoria Creek (2.0 acres). The Ostrich Detention Basin is the only basin within the study area that contains a perennial water source that is fed from Grapevine Creek. This feature totals 0.4 acre of open water and 0.6 acre of wetlands.

Table 4-3
Potentially Jurisdictional Features

Potentially Jurisdictional Feature[1]	Grapevine Creek and Associated Tributaries and Ostrich Detention Basin		Live Oak Creek		Cattle Creek and Associated Tributaries		Pastoria Creek		Unnamed Tributary		Unnamed, Isolated Drainages		Total	
	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet
Unvegetated Stream Channels	2.8	36,448	0.2	4,935	11.1	31,289	3.1	15,401	0.1	555	0.4	6,489	**17.6**	**95,122**
Braided Channel	78.6	20,885	—	—	—	—	18.8	21,164	—	—	—	—	**97.4**	**42,049**
Detention Basin	0.4	248	—	—	—	—	—	—	—	—	—	—	**0.4**	**248**
Wetlands	5.7	7,998	1.9	1,990	5.6	6,968	2.0	1,783	—	—	—	—	**15.3**	**18,739**
Total	**87.5**	**65,579**	**2.1**	**6,925**	**16.8**	**38,256**	**23.9**	**38,348**	**0.1**	**555**	**0.4**	**6,489**	**130.7**	**156,157**

Notes: Due to rounding, columns may not precisely total.
[1] Seeps are not included in this table because these features were mapped as points due to their small size (i.e., less than 200 square feet).

4.3 ACOE Jurisdiction

Based on the jurisdictional delineation determination conducted for Tejon Mountain Village, the existing conditions described in this report, and the jurisdictional analysis herein, none of the features delineated within the study area are under the jurisdiction of the ACOE.

5.0 REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers, Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1.

ACOE. 2008a. Jurisdictional Delineation Letter. Letter from Aaron Allen, PhD (ACOE, North Coast Branch, Regulatory Division) to Larry Lodwick (on behalf of Tejon Mountain Village LLC) in Response to Request No. SPL-2006-02020-AOA. October 2, 2008.

ACOE. 2008b. Significant Nexus and Isolated Waters Determination for Tejon Mountain Village (SPL-2006-2020-AOA). Memorandum for the Record. CESPL-RG-N. September 11, 2008.

ACOE. 2008c. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. Accessed March 5, 2013. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/trel08-28.pdf.

ACOE. 2008d. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. Cold Region Research and Environmental Laboratory, ERDC/CRREL TR-08-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2008.

ACOE and EPA (U.S. Environmental Protection Agency). 2008. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States* and *Carabell v. United States*. Washington, D.C.: EPA. December 2, 2008.

AirPhoto USA. 2006. "1-foot color-ortho imagery of Grapevine planning area" [CAD DWG]. Flown June 2006.

Bing (Bing Aerial Imagery). 2013. "Grapevine, California" [aerial photograph]. Bing is a registered trademark of Microsoft and is used in association with its data suppliers. Redmond, Washington: Microsoft.

CDFG (California Department of Fish and Game). 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Populations and Natural Communities*.

Central Valley RWQCB (Regional Water Quality Control Board). 2004. *Water Quality Control Plan for the Tulare Lake Basin*. 2nd ed. Accessed July 2013. http://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/newpages200401.pdf.

Google Earth. 2013. Aerial photograph. 1:200 scale.

Historic Aerials Online. 2013. Historic Aerials. Accessed August 2013. http://www.historicaerials.com/

Impact Sciences Inc. 2008. *Jurisdictional Delineation Report for Tejon Mountain Village*. Prepared for Tejon Mountain Village LLC. Revised August 2008.

Intermap Technologies. 2005. "Topography GIS data, including Contours 2-foot Analysis, for the Grapevine planning area" [Shapefiles].

Intermap Technologies. 2013. "Grapevine contours" [Shapefiles]. January 2013.

Kern Council of Governments. 2010. "Digital Imagery, 1 Foot Orthoimage, Kern County, Kern County, California, Digital Spatial Data, Image Map, Natural Color Orthophoto, Digital Orthophoto, Rectified Image" [JPEG]. Produced by Mapcon Mapping Ltd., Buraby, BC, Canada. April 2010.

Lichvar, R.W. 2013. *The National Wetland Plant List: 2013 Wetland Ratings*. Phytoneuron 2013-49: 1-241. Accessed July 19, 2013. http://rsgisias.crrel.usace.army.mil/NWPL/.

Sawyer, J.O., Keeler-Wolf, T., and J.M. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. Sacramento, California: California Native Plant Society.

Tejon Ranch Conservancy. 2013. *Ranch-Wide Management Plan, Volume 1: Natural Community Description*. June 2013.

TRC (Tejon Ranch Company). 2008. "WRM Canal 850" [ESRI Shapefile]. February 2008.

TRC. 2013a. "Hydrology and water quality GIS data, including intermittent streams, for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on February 22, 2013.

TRC. 2013b. "Utilities and service systems GIS, including basins, ponds, and reservoirs, for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

WWRC (Western Regional Climate Center). 2013. *Tejon Rancho*. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8839.

USDA (U.S. Department of Agriculture). 1994. National Technical Committee for Hydric Soils. Service. Accessed August 2013. http://soils.usda.gov/use/hydric/intro.html.

USDA. 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed January 2009.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed January 2009.

USDA. 2010. *Field Indicators of Hydric Soils in the United States.*

USDA. 2012a. "National List of Hydric Soils." Excel file. USDA, Natural Resources Conservation Service. April 2012. Accessed March 1, 2013. http://soils.usda.gov/use/hydric/.

USDA. 2012b. "1-Meter Digital Ortho Imagery of Kern County" [JPEG]. Salt Lake City, Utah: USDA Farm Service Agency, National Agriculture Imagery Program, Aerial Photography Field Office. October 22, 2012.

USDA. 2013. "Hydric Soils – Introduction." *USDA NRCS Hydric Soils*. Accessed August 1, 2013. http://soils.usda.gov/use/hydric/intro.html.

USFWS (U.S. Fish and Wildlife Service). 2013a. "NWI Wetlands for California" [Shapefiles]. National Wetlands Inventory. Data last updated March 5, 2013. Accessed August 2013. http://www.fws.gov/wetlands/Data/State-Downloads.html.

USFWS. 2013b. National Wetlands Inventory website. Accessed March 2013. http://www.fws.gov/wetlands/Data/Mapper.html.

USGS (U.S. Geological Survey). 2013. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies " [digital GIS data]. National Hydrography Dataset website. July 22, 2013. http://nhd.usgs.gov/.

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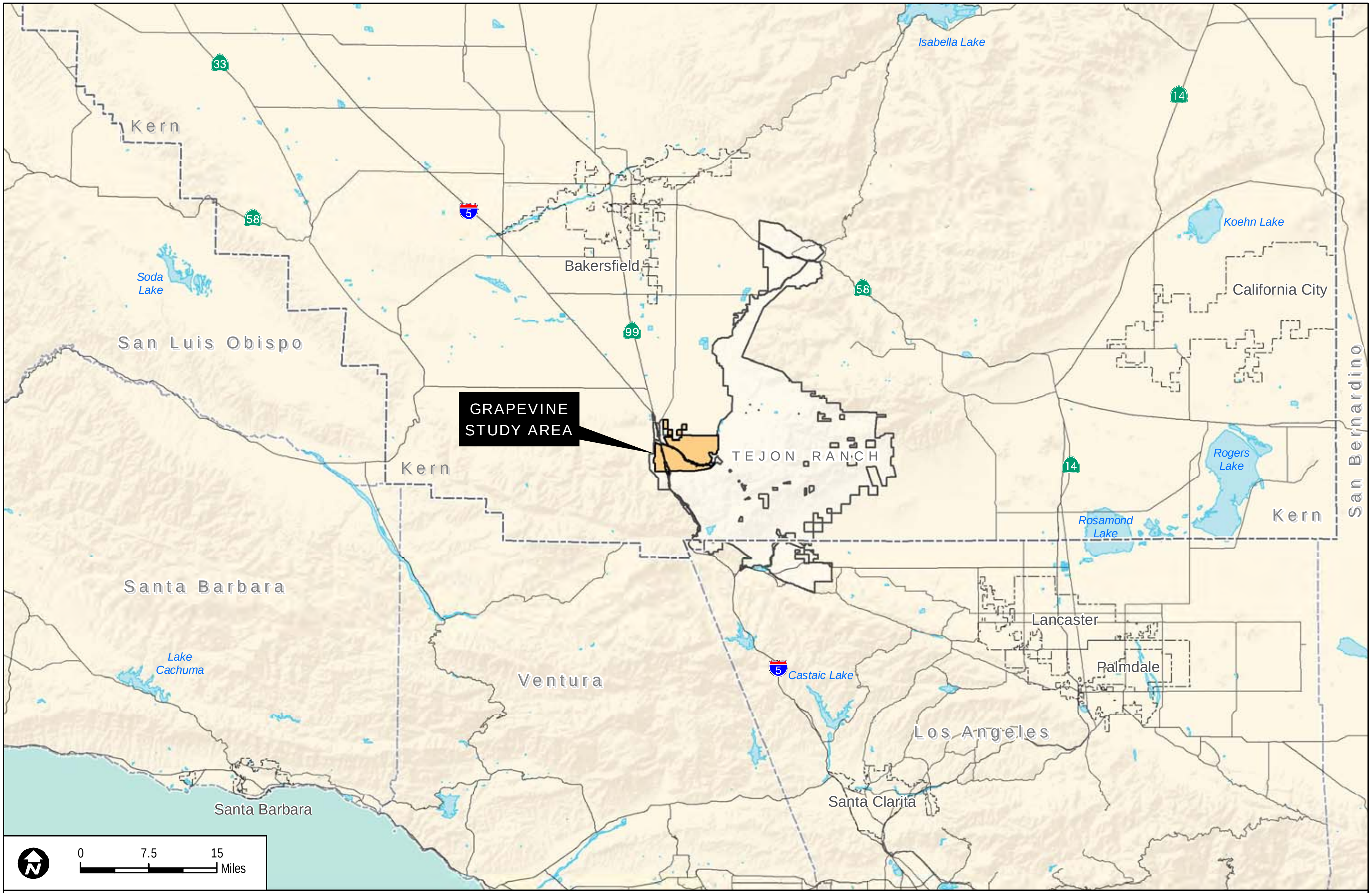

SOURCES: USGS, ESRI

FIGURE 1-1

Regional Map

SUPPLEMENTAL JURISDICTIONAL DELINEATION REPORT FOR TEJON RANCH, GRAPEVINE STUDY AREA

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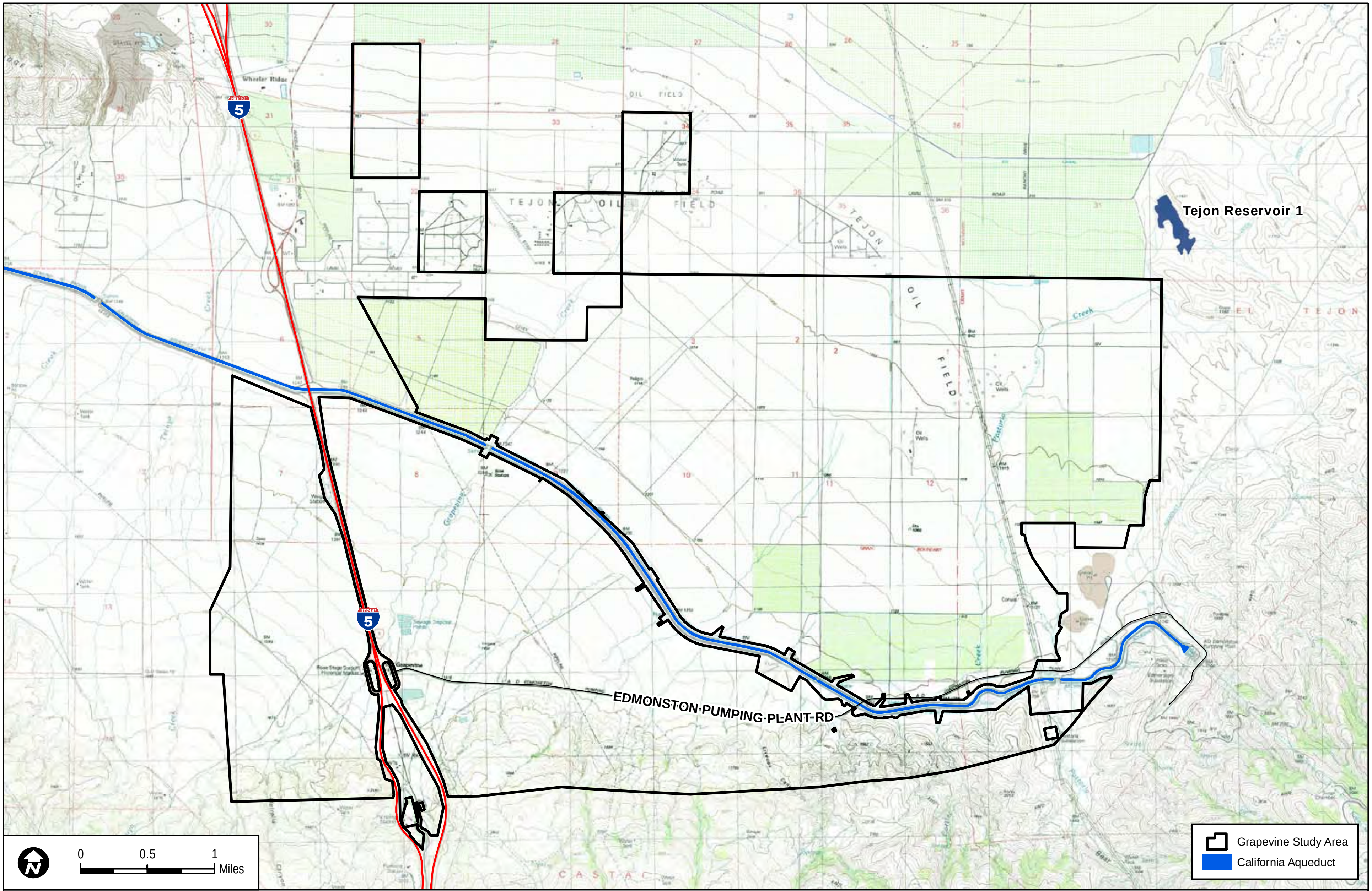

SOURCES: USGS 7.5-Minute Series Grapevine, Mettler, Pastoria Creek and Tejon Hills Quadrangles; TRC 2013a

FIGURE 1-2

Vicinity Map

SUPPLEMENTAL JURISDICTIONAL DELINEATION REPORT FOR TEJON RANCH, GRAPEVINE STUDY AREA

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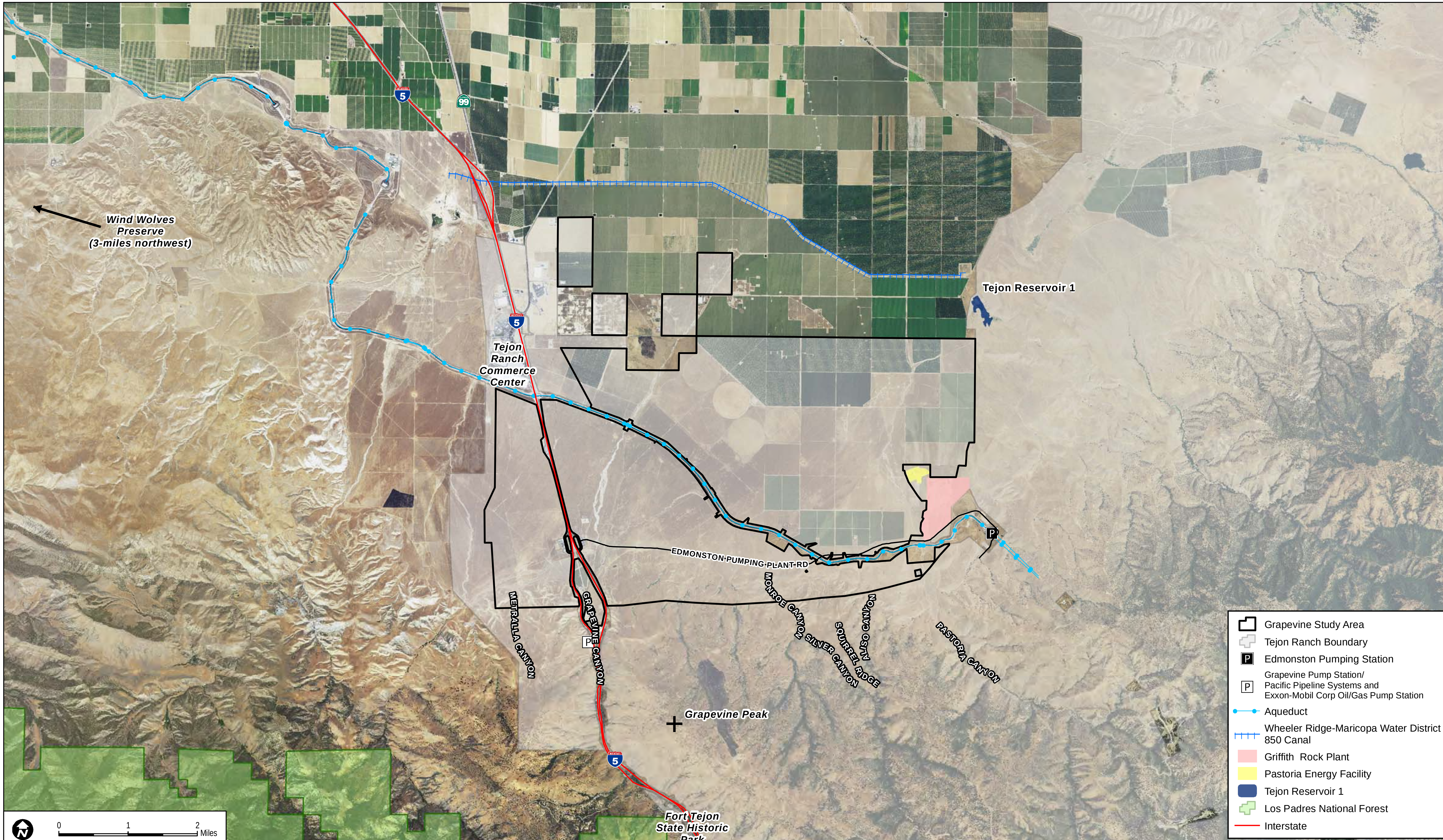

SOURCES: TRC 2013; US Forest Service; USDA NAIP 2012

FIGURE 2-1

Land Use Map

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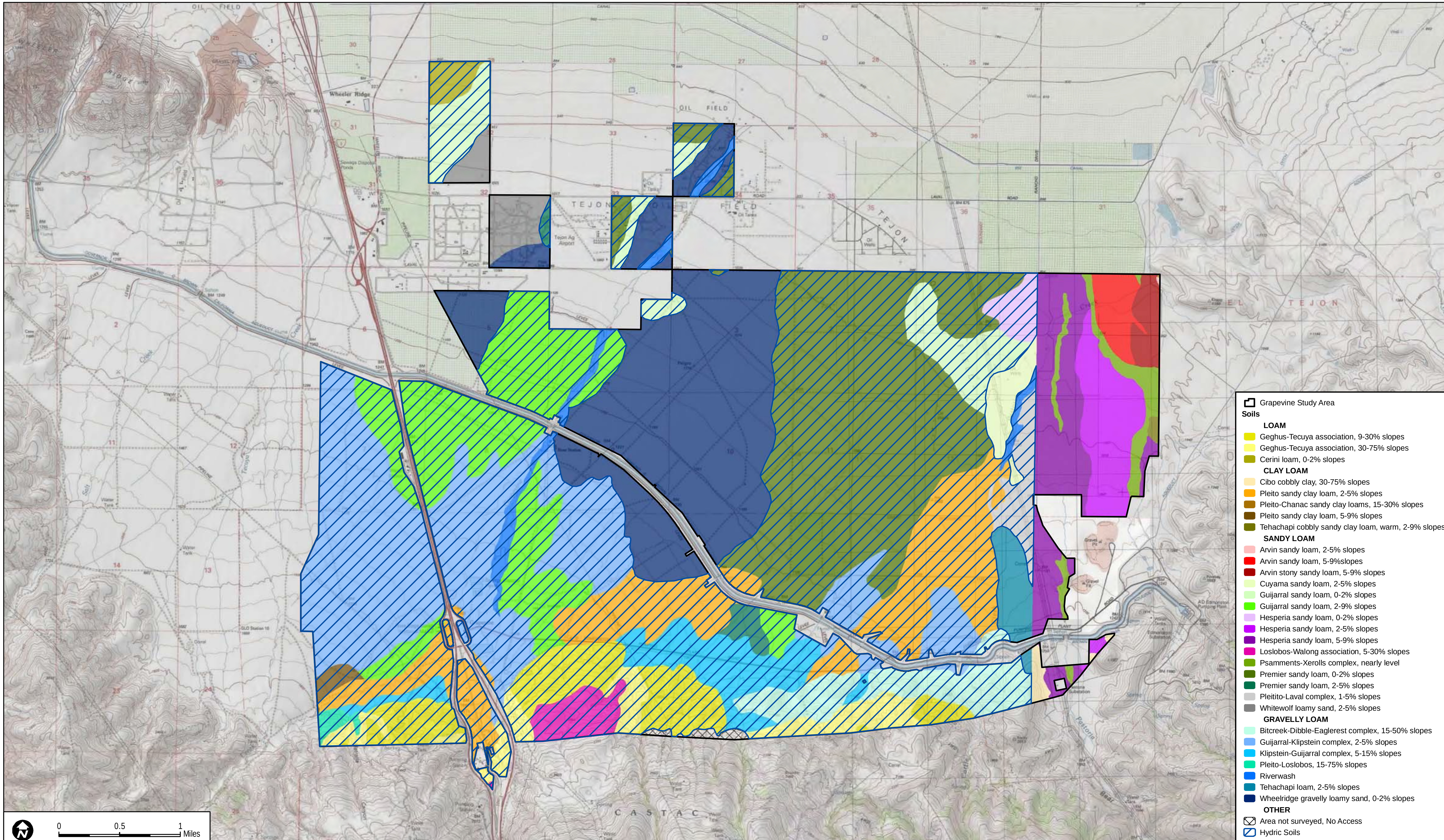

SOURCES: TRC 2013; ESRI USGS Basemap; USDA 2007 and 2009

FIGURE 2-2

Soils Map

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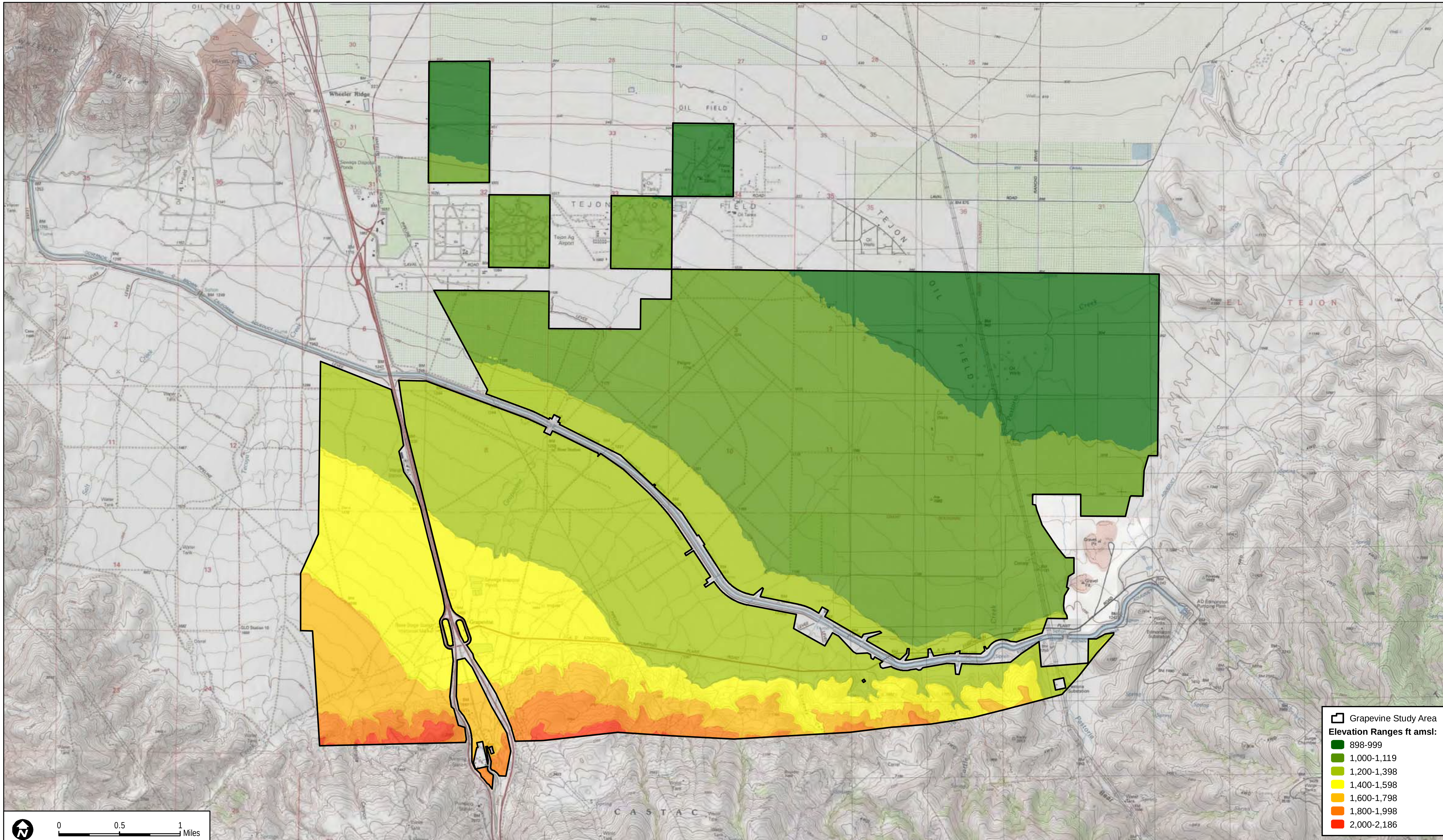

SOURCES: TRC 2013; ESRI USGS Basemap

FIGURE 2-3

Topography Map

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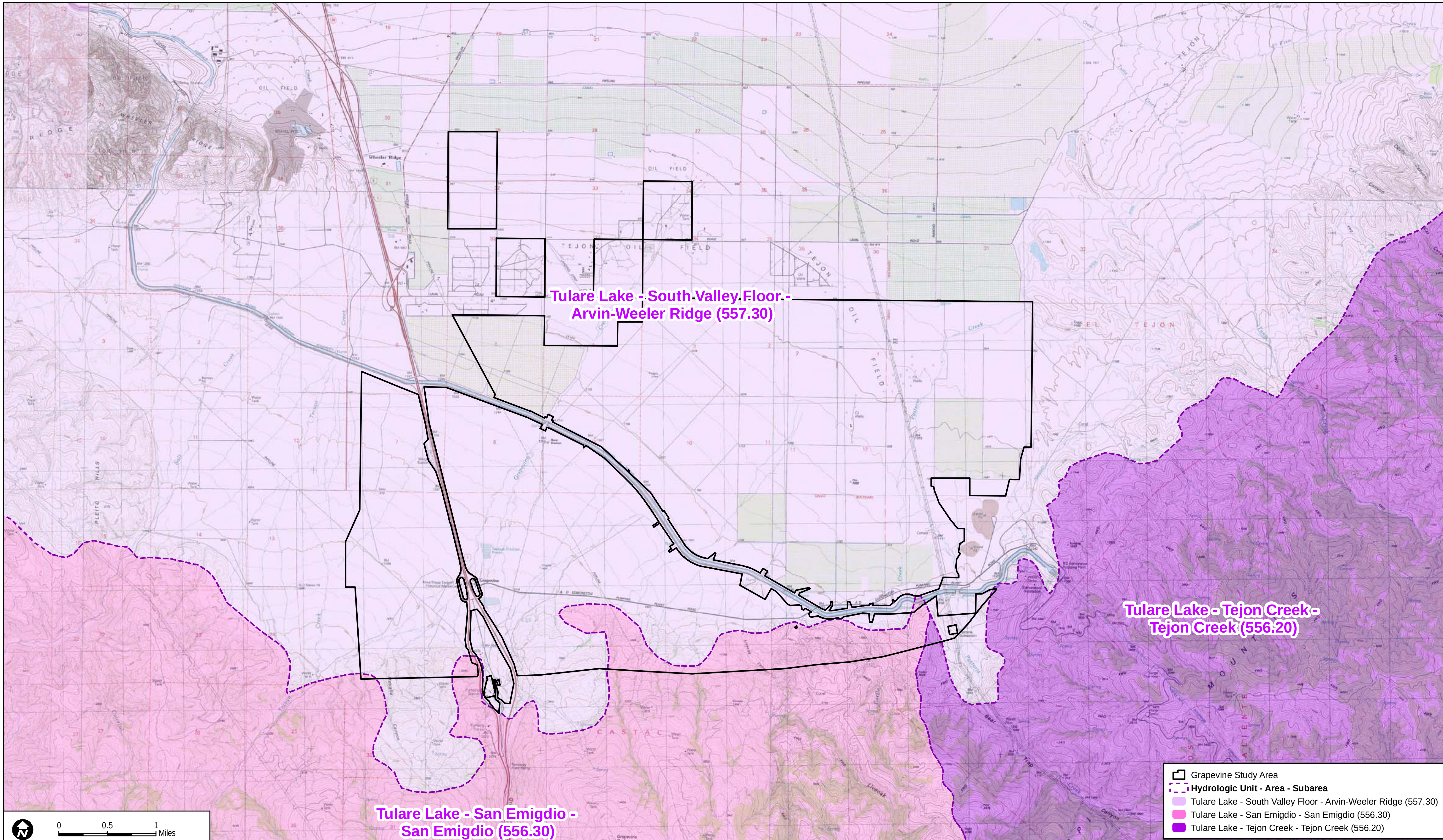

SOURCES: TRC 2013; ESRI USGS Basemap; DWR 2010

FIGURE 2-4

Hydrologic Setting

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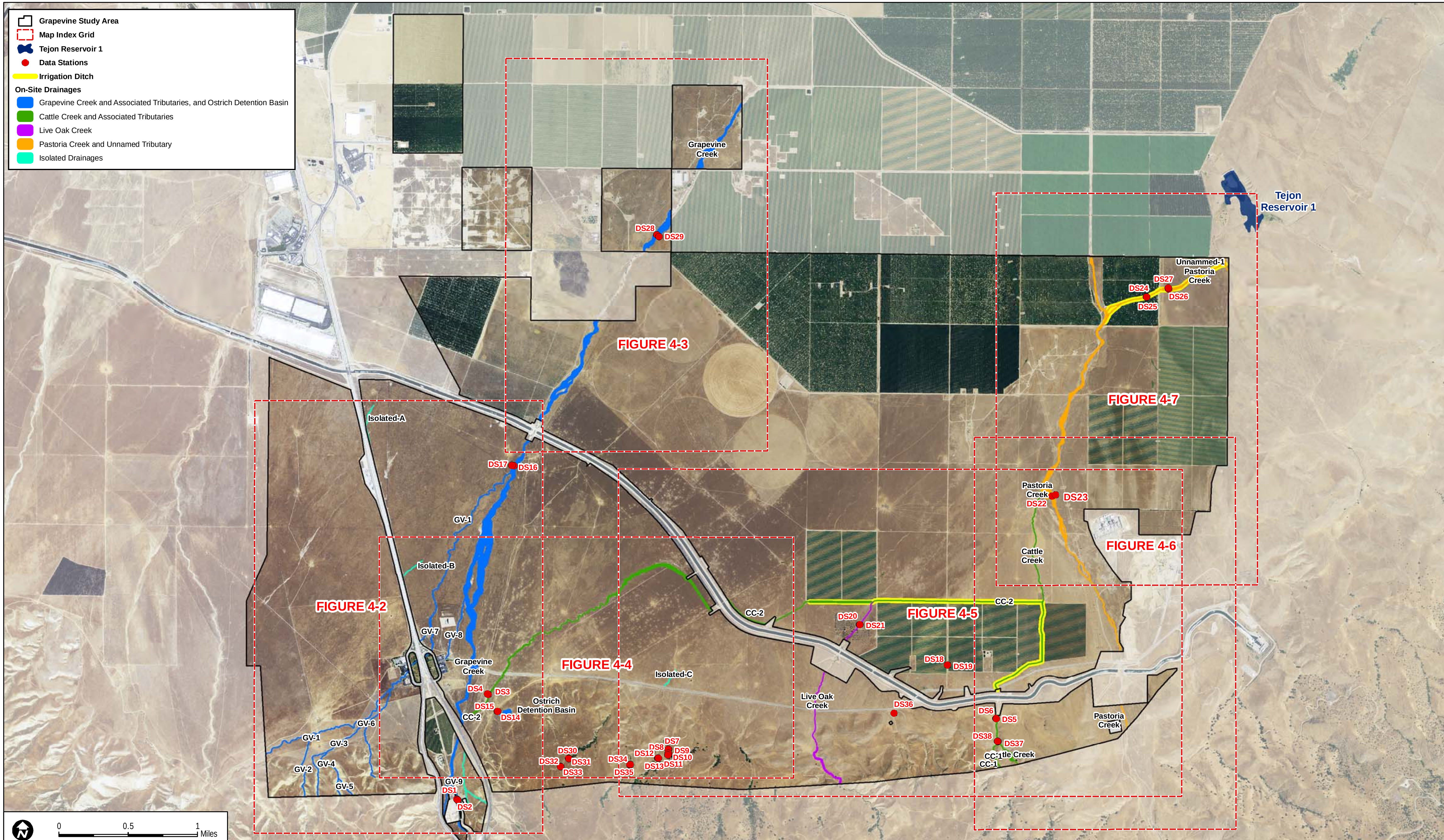

SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012

FIGURE 4-1
Wetlands and Waters

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SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012

FIGURE 4-2

Grapevine Creek South and Associated Tributaries, Ostrich Detention Basin, and Isolated Drainages

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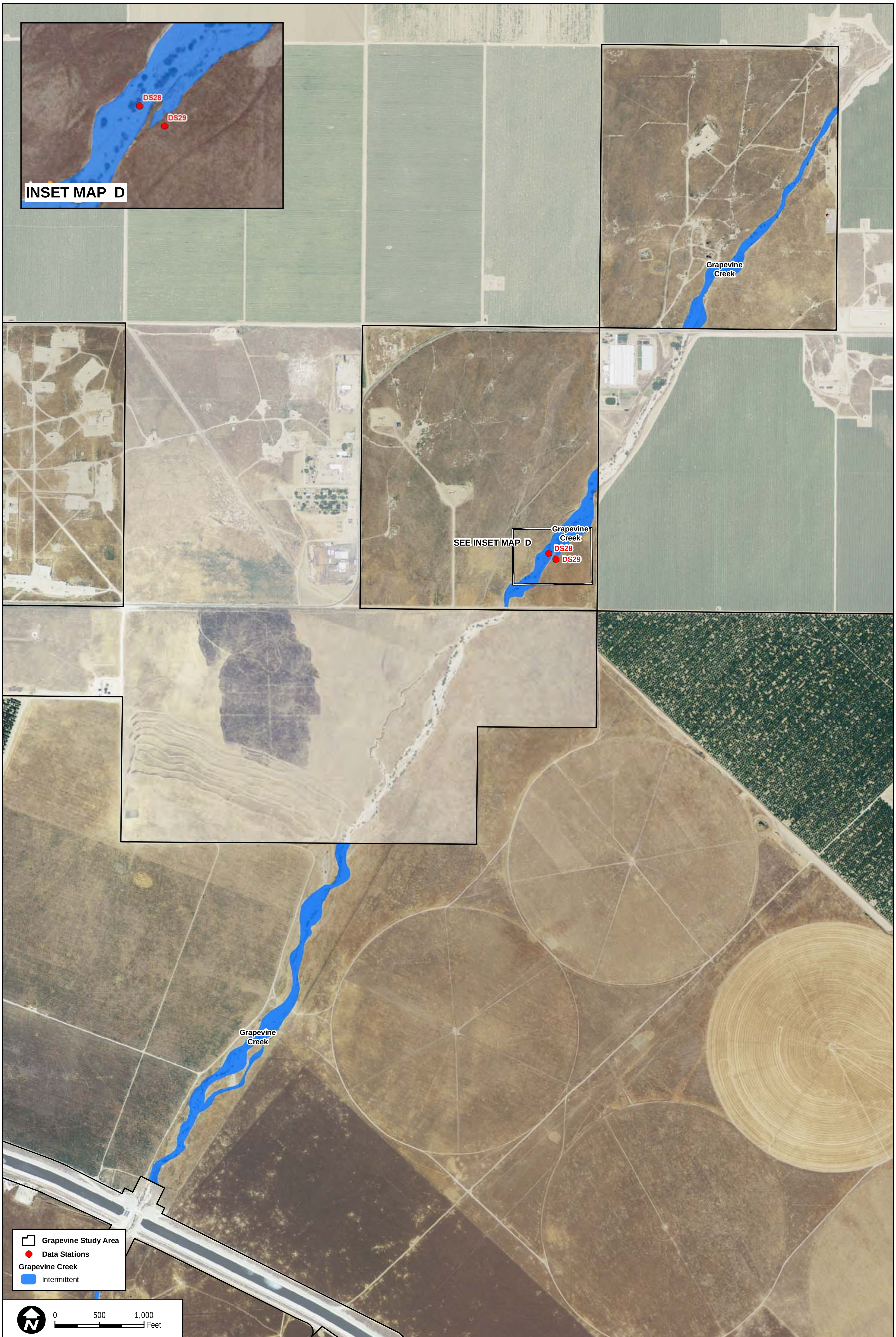

SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012

FIGURE 4-3
Grapevine Creek North

SUPPLEMENTAL JURISDICTIONAL DELINEATION REPORT FOR TEJON RANCH, GRAPEVINE STUDY AREA

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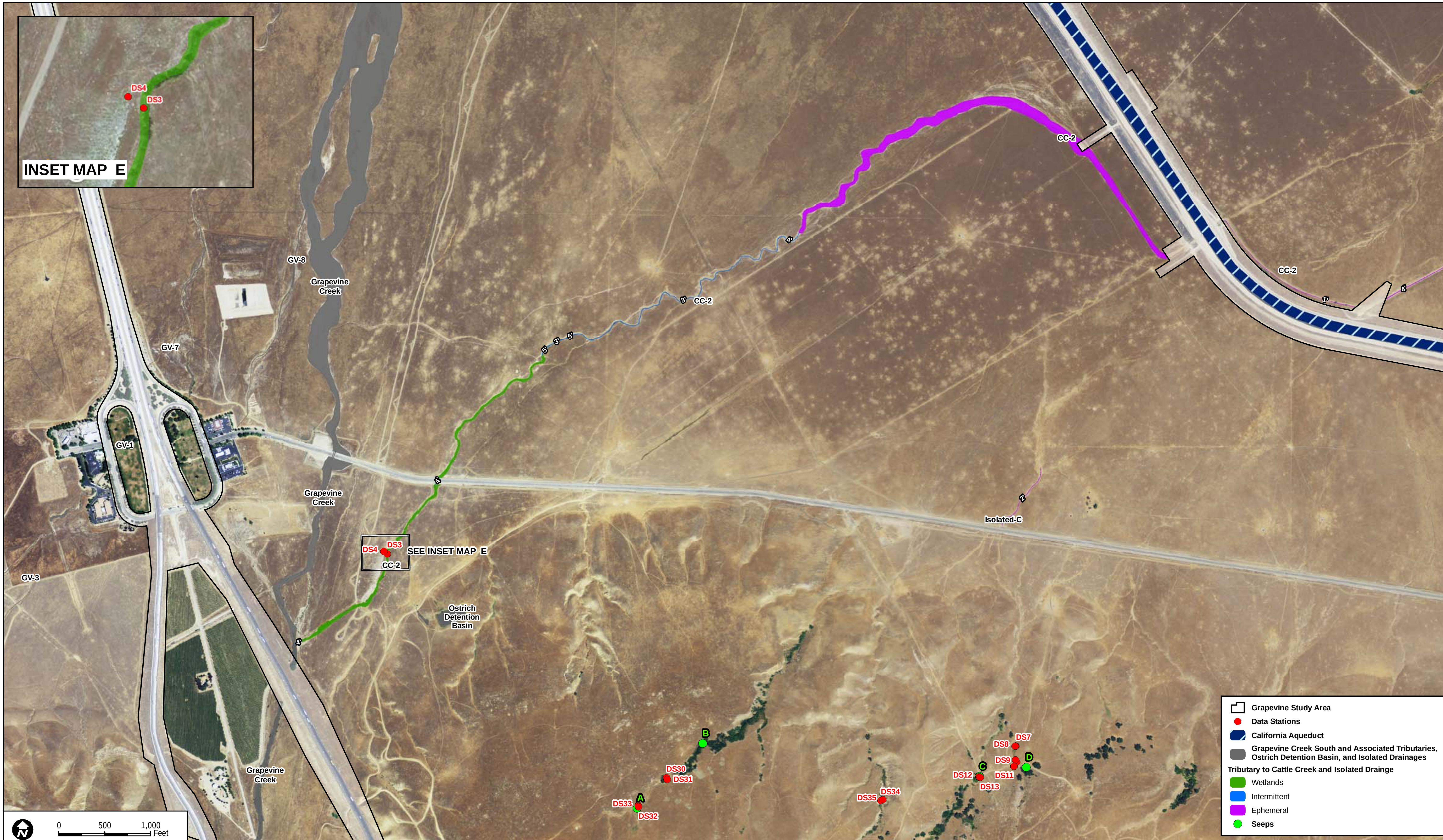

SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012

FIGURE 4-4

Tributary to Pastoria Creek (Tributary to Cattle Creek and Isolated Drainage)

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SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012; Bing Maps

FIGURE 4-5

Tributaries to Pastoria Creek (Cattle Creek and Associated Tributaries and Live Oak Creek) and Isolated Drainage

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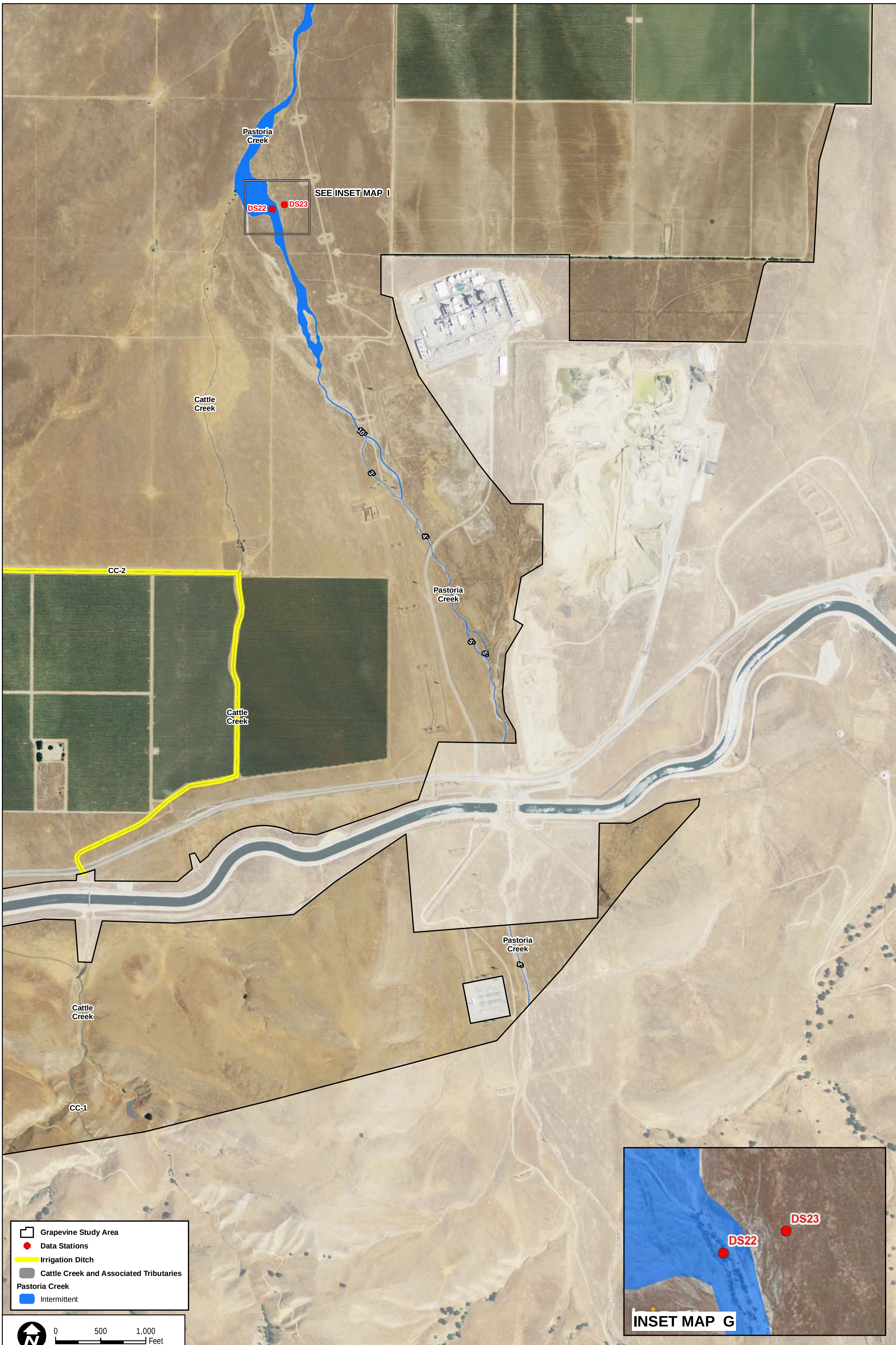

SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012; Bing Maps

FIGURE 4-6

Pastoria Creek South

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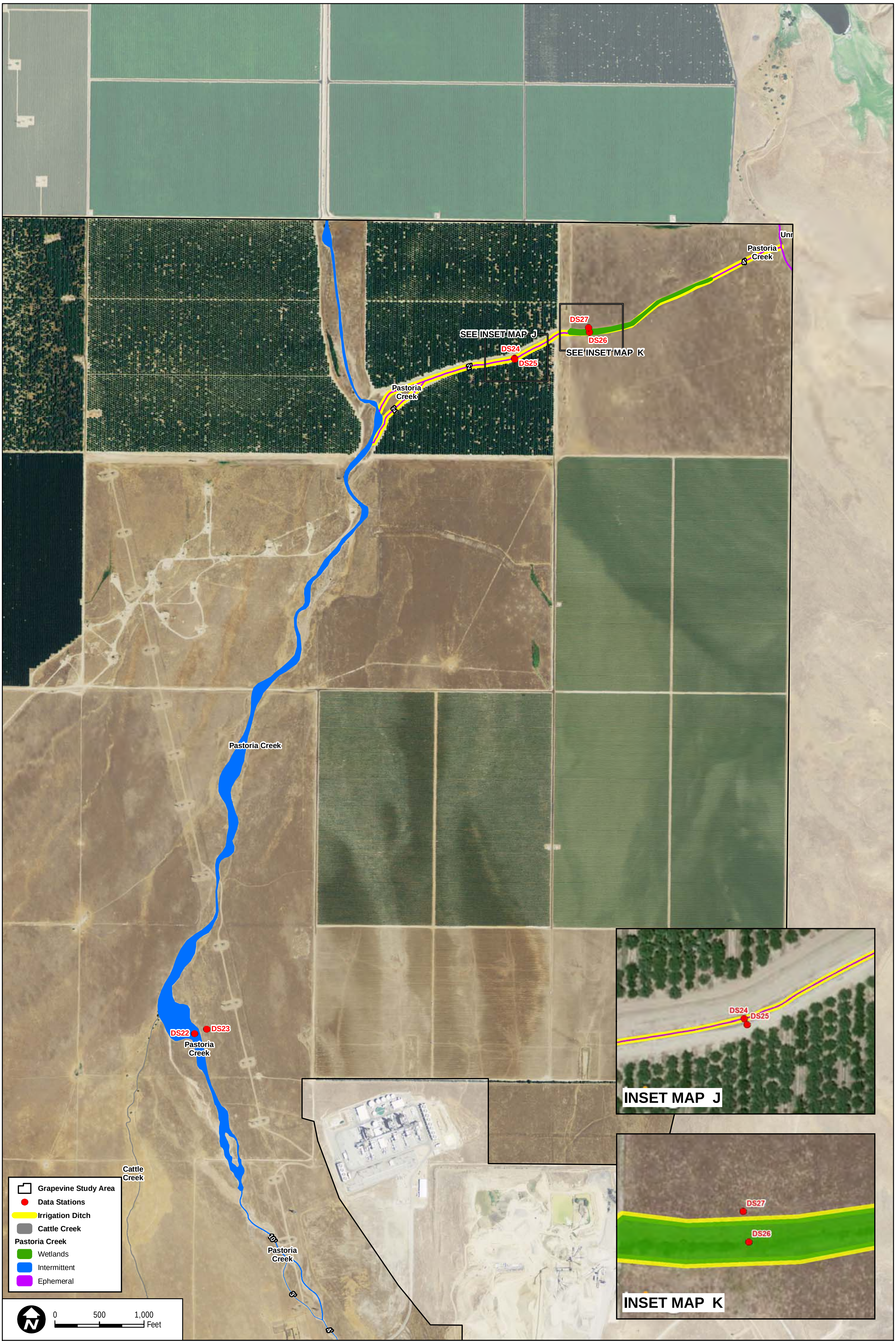

SOURCES: TRC 2013; USGS 2013; USDA NAIP 2012

FIGURE 4-7

Pastoria Creek North and Unnamed Tributary

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APPENDIX A

Tejon Mountain Village Jurisdictional Delineation Information

APPENDIX A-1

Jurisdictional Delineation Letter (ACOE 2008a)

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

October 2, 2008

REPLY TO
ATTENTION OF
Office of the Chief
Regulatory Division

Tejon Mountain Village, LLC
c/o Impact Sciences
Attn: Larry Lodwick
803 Camarillo Springs Road, Suite A
Camarillo, California 93012

Dear Mr. Lodwick:

Reference is made to your request (File No. SPL-2006-02020-AOA) dated October 26, 2006, for a Department of the Army Permit to discharge fill material in waters of the United States for construction activities associated with a low density residential and commercial development on approximately 28,028 acres (Tejon Mountain Village) near the city of Gorman, Los Angeles and Kern Counties, California. As part of the permit evaluation process, we have made the jurisdictional determination below.

Based on the information furnished in your letter, our November 2006 and July 2008 site visits and the Jurisdictional Delineation Report for Tejon Mountain Village dated August 2008, we have determined that the 28,028-acre project area supports a total of 642 acres of jurisdictional waters of the United States, including the 346-acre Castac Lake, 286 acres of wetlands adjacent to Castac Lake and 123 tributaries to Castac Lake that support 10 acres of jurisdictional area (enclosure). As part of this jurisdictional determination, we have determined that 19 isolated drainages that support 84.7 acres of potential jurisdictional area are non-navigable and do not support substantial interstate commerce as identified in 33 CFR Part 328.3(a)(3). Pursuant to the Solid Waste Agency of Northern Cook County Supreme Court decision, we have determined that the 19 isolated drainages in the project area are not waters of the United States (enclosure). In addition, we have also determined that 41 tributaries to Castac Lake that support 0.6 acres of potential waters of the United States lack sufficient evidence of a significant nexus to meet the requirements in the June 2007 Joint Rapanos Guidance document and, as a result, would not be subject to jurisdiction under Section 404 of the Clean Water Act (enclosure). Based on the above analysis, we have determined that your proposed project would discharge dredged or fill material into a water of the United States or adjacent wetlands. Therefore, the proposed project is subject to our jurisdiction under Section 404 of the Clean Water Act and a Section 404 permit would be required from our office.

This letter contains an approved jurisdictional determination for the Tejon Mountain Village project area. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix A) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDS-O, 2042B
1455 Market Street, San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by **December 1, 2008**. It is not necessary to submit an RFA form to the Division office if you do not object to the decision in this letter.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to Aaron Allen at the letterhead address by **December 1, 2008**. The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

If you have any questions, please contact me at 805-585-2148 or via e-mail at Aaron.O.Allen@usace.army.mil.

Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Aaron O. Allen

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Enclosures

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Tejon Mountain Village, LLC		File Number: SPL-2006-02020-AOA	Date: 10/02/2008
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

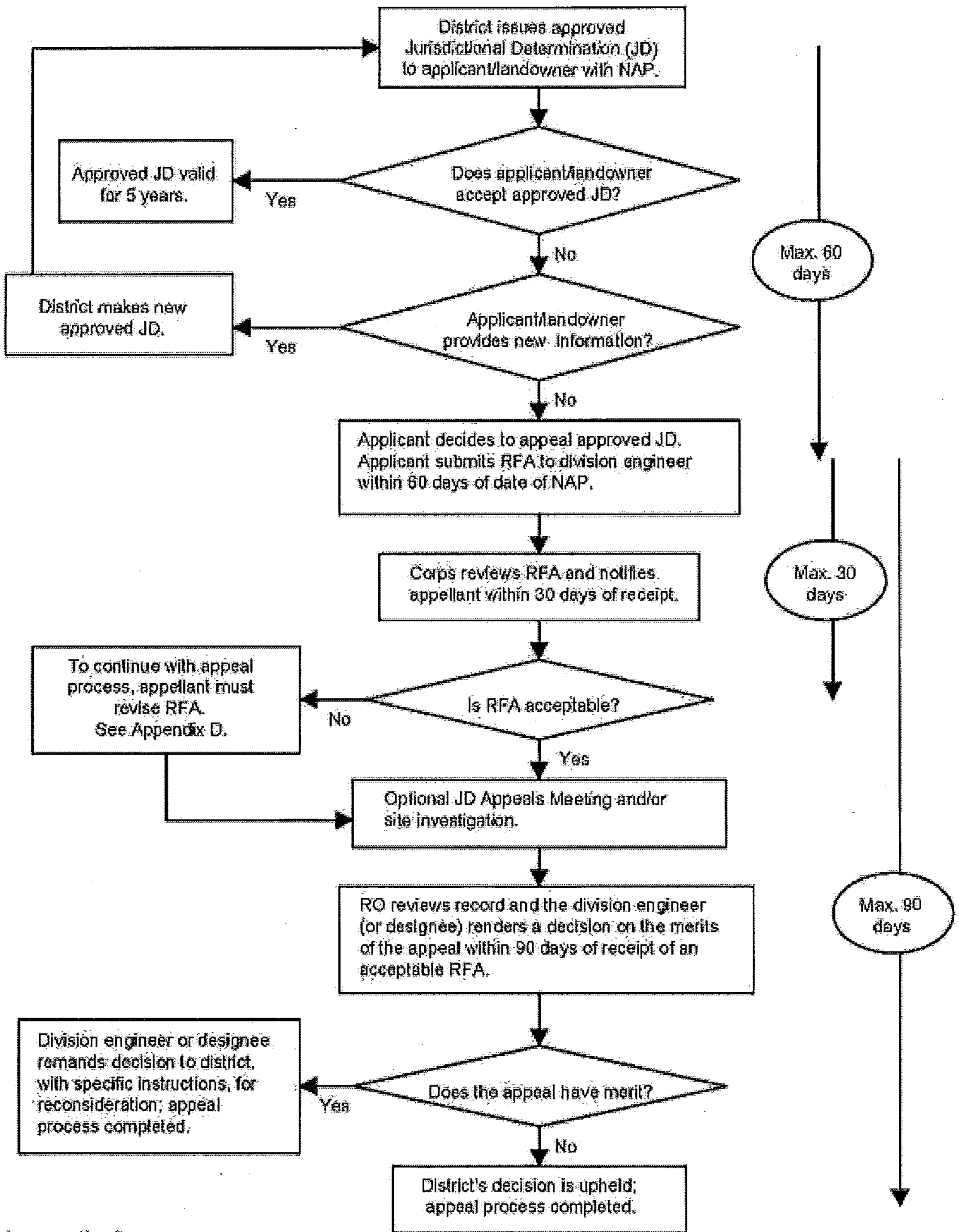
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
DISTRICT ENGINEER Los Angeles District, Corps of Engineers ATTN: Chief, Regulatory Division P.O. Box 532711 Los Angeles, CA 90053-2325 Tel. (213) 452-3425	DIVISION ENGINEER South Pacific Division, Corps of Engineers ATTN: Tom Cavanaugh Administrative Appeal Review Officer, South Pacific Division, CESPD-PDS-O, 2042B 1455 Market Street, San Francisco, California 94103-1399 Tel. (415) 503-6574

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_______________________ Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

APPENDIX A-2

Significant Nexus and Isolated Waters Determination for Tejon Mountain Village (ACOE 2008b)

CESPL-RG-N September 11, 2008

MEMORANDUM FOR THE RECORD
SUBJECT: SIGNIFICANT NEXUS AND ISOLATED WATERS DETERMINATION FOR TEJON MOUNTAIN VILLAGE (SPL-2006-2020-AOA)

1. Background: Impact Sciences, on behalf of Tejon Ranch, submitted a jurisdictional determination package, including a hybrid functional assessment and detailed hydrology information, for the 28,028-acre Tejon Mountain Village site in Kern/Los Angeles County in October 2006. Based on additional field data and subsequent technical review, the above jurisdictional determination has been modified four times over the last two years. The final jurisdictional determination package was submitted to both the Corps and USEPA on August 5, 2008 and includes a determination that there are approximately 642 acres of waters of the United States in the project area, including the 346-acre Castac Lake (also known as Tejon Lake), 286 acres of wetlands adjacent to Castac Lake and approximately 123 tributaries to Castac Lake that support 10 acres of waters of the United States. Although the project design is still in the preliminary planning stages, the applicant has estimated that the proposed project would result in the discharge of fill into approximately three acres of waters of the United States in the project area. As a result, a large majority of the wetlands and stream reaches in the project area would be avoided. The final jurisdictional determination package also includes a finding that 41 tributaries (0.59 acres of potential jurisdictional waters of the United States) to Castac Lake lack sufficient evidence of a significant nexus to meet the requirements in the 2007 Rapanos Guidance and that 19 isolated drainages in the project area (approximately 84.7 acres of potential waters of the United States) are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3) that directly or indirectly flow into Tejon Reservoir 1 an isolated, non-navigable water body that does not support substantial interstate commerce.

2. Site Visit: The Corps (Aaron Allen) visited the site with the agent (Larry Lodwick of Impact Sciences) and the applicant on November 1, 2006 to review the draft delineation and a potential significant nexus for a variety of tributaries to Castac Lake. The Corps examined a sample of delineated waters of the United States and other possible jurisdictional features throughout the project area. The Corps also examined all drainage connections with Castac Lake to verify the presence of a hydrologic connection. Most of the smaller tributaries that typically exhibit 100-year peak flows of less than 3 cfs were not specifically examined in the field. On July 15 and 16, 2008, the Corps conducted a second site visit with the applicant, agent and USEPA staff.

3. Methodology: The final jurisdictional delineation report dated August 2008 contains detailed information regarding the physical and biological characteristics of the project area. In general, the majority of the drainages in the project area are small ephemeral washes that exhibit low volume, infrequent and short duration flow. For the purposes of the significant nexus evaluation for the 164 tributaries, the Castac Lake watershed is for the most part natural. Based on existing information, very few of the drainages have any adjacent land uses that would generate pollutants that would be discharged into the stream channels. As a result, the contributing watersheds are not expected to be sources of pollutants or do not convey pollutants that would adversely affect water quality in Castac Lake (other than expected background inputs from natural sources and small-scale ranching activities). As a result, possible presence of nutrients, sediments, pesticides and other water quality parameters do not have much of an effect on the determination of significant nexus for the 164 tributaries. All of the tributaries to Castac Lake are located within approximately three miles and, therefore, are in relatively close proximity to the nearest traditional navigable water (Castac Lake). To account for the relatively close proximity of the tributaries, as part of the significant nexus evaluation the highest functional score was utilized to represent the physical and biological functions for each tributary, rather than a more conservative average or weighted average for the function scores. As a result, an ephemeral tributary with relatively low

hydrology and/or habitat functional scores could still exhibit a significant nexus with a relatively high score in the biogeochemical functions (for additional information please reference the Tejon Mountain Village Jurisdictional Delineation Report dated August 2008). Based on the above information, the two critical factors for the significant nexus evaluation, as defined in the 2007 Rapanos Guidance document, were considered to be physical and biological functional scores as well as the hydrology for each of the tributaries, which has been emphasized in the significant nexus evaluation through the use of the hybrid functional assessment and the hydrologic analysis. For additional information regarding the methodology, please reference the Jurisdictional Delineation Report for Tejon Mountain Village dated August 2008.

4. Significant Nexus Evaluation: As documented in Tables 11, B-2, B-3, B-4 and B-5 in the Tejon Mountain Village Jurisdictional Delineation Report that provides detailed functional and hydrologic information for the 164 tributaries to Castac Lake, a total of 123 tributaries exhibit sufficient evidence to support a significant nexus. The 41 drainages that were found to lack sufficient evidence of a significant nexus can be divided into the three following categories:

A. **100-year Peak flow equal to 1 cfs or less** (Drainages 3B-1B, 3B-1C, 3B-1D, 3B-2A, 3B-2B, 3C-1F, 3C-1I, 3F-1BBB, 3F-1EEE, 3F-1HHH, 3F-1II, 3F-1XX and 3F-1ZZ) – these 13 drainage features exhibit 100-year peak flows that vary from 0.1 cfs to 1 cfs. The 13 tributaries range in area from approximately 16 square feet to 517 square feet and have a total area of 2,179 square feet (0.05 acres of potential waters of the United States), with an average area of 168 square feet. Although some of these tributaries did exhibit functional scores above 0.8, the very small drainage area and associated low volume, frequency and duration of surface flows are insufficient to support a significant nexus (in most cases these drainages would not support any surface flow during small to moderate storm events and would only support surface flow for a very short amount of time, even during large storm events);

B. **100-year Peak Flow between 1 and 5 cfs with moderate functional scores** (1H-1B, 1I-1P, 1I-1U, 1I-1V, 3B-1A, 3B-3A, 3C-1A, 3C-1B, 3C-1C, 3C-1G, 3C-1H, 3C-2A, 3C-2B, 3F-1CCC, 3F-1DDD, 3F-1FFF, 3F-1III, 3F-1NN, 3F-1Q, 3F-1QQ, 3F-1TT, 3F-1UU, 3F-1VV and 3F-1YY) – these 24 drainages support relatively low 100-year peak flows with an average peak discharge of 2.2 cfs. The 24 tributaries range in area from approximately 82 square feet to 3,583 square feet and have a total area of 18,673 square feet (0.43 acres of potential waters of the United States), with an average area of 778 square feet. The highest functional score for most drainages in this category is approximately 0.6. In most cases these drainages would not support any surface flow during small to moderate storm events and would only support surface flow for a very short amount of time, even during relatively large storm events. With the combination of the relatively small 100-year peak flow and relatively low functional score, these drainages had insufficient evidence of a significant nexus (3C-1G, 3C-2B and 3F-1NN were examined in greater detail to see if any information from the site visits or the functional assessment warranted a significant nexus).

C. **100-year Peak Flow over 5 cfs with relatively low functional scores** (1I-1Q, 1I-1R, 1I-1T and 3F-1U) - these four drainages have 100-year peak flows of 8, 7, 7.7 and 14.4 cfs. In terms of the highest function, the drainages have scores of 0.6, 0.6, 0.51 and 0.31, respectively. The four tributaries range in area from approximately 188 square feet to 4,281 square feet and have a total area of 4872 square feet (0.11 acres of potential waters of the United States), with an average area of 1,218 square feet. With the combination of the relatively moderate 100-year peak flow and relatively low functional scores, these four drainages had insufficient evidence of a significant nexus (1I-1Q and 1I-1R both were examined in greater detail to see if any information from the site visits or the functional assessment warranted a significant nexus).

In general the 41 drainages that did not appear to support a significant nexus to Castac Lake were very narrow (1-2 feet in width), with limited potential waters of the United States. In terms of area, the 41 drainages varied from 16 square feet to 4,281 square feet, with an average of 627 square feet (the total potential waters of the United States for all 41 drainages is 0.59 acres).

Overall, the 41 drainages exemplify non-jurisdictional features referenced by the Rapanos Guidance. The Guidance states, "Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow) are generally not waters of the United States because they are not tributaries or they do not have a significant nexus to downstream traditional navigable waters." The majority of the above reaches have 100-year peak flows that are well below 5 cfs, and have peak storm flows that would typically not last for more than a few hours, given the relatively steep slopes, small drainage area and the ephemeral nature of surface flow. In addition, the hybrid functional assessment for each of the 41 drainages indicates that most of these small tributaries generally exhibit low to moderate physical and biological functional scores.

5. Isolated Waters: As documented in Table 12 of the Jurisdictional Delineation Report, a total of 19 isolated drainages that support 84.7 acres of potential waters of the United States, including wetlands, are located within the Tejon Mountain Village project area. Oso Creek, the only isolated drainage in the southern section of the project area, was previously determined to be non-jurisdictional under the SWANCC Supreme Court decision in 2004 (File No. 2005-00026-AOA). The remaining 18 isolated drainages are concentrated in the northern section of the project area and include two relatively large intermittent/perennial drainages, Grapevine and Pastoria Creek, which support a variety of habitat types including adjacent wetlands and riparian vegetation that exhibits moderate to high physical and biological functions. In addition, there are also a number of smaller isolated drainages that are tributaries to Grapevine Creek or Pastoria Creek. Based on information in the Jurisdictional Delineation Report, none of the isolated drainages connect to an irrigation system that directs water outside of the Tejon Ranch agricultural fields (see Figure 3a). In addition, based on observations made during our July 2008 site visit, the California Aqueduct has a siphon that goes under Grapevine Creek and, as a result, there is no hydrologic connection between the isolated drainages and the aqueduct. Tejon Ranch does utilize some water from the above isolated drainages to irrigate farm fields by diverting seasonal surface flows into Tejon Reservoir 1 and pumping water into the 850 Irrigation Canal. Under one of the four factors in the "Migratory Bird Rule", which was invalidated by the 2001 SWANCC Supreme Court decision, water from isolated drainages that was used for irrigation could be utilized to establish substantial interstate commerce to determine jurisdictional waters of the United States; however, water uses in the isolated drainages in the project area do not appear to meet any of the current criteria at 33 CFR Part 328.3(a)(3). During our July 2008 site visit, Tejon Reservoir 1 was completely dry, with little if any potential for public access and no evidence of seasonal boating opportunities. For additional information, please reference the Jurisdictional Determination Report dated August 2008. Based on the above information, the Corps has made a preliminary determination that 19 isolated drainages that support approximately 84.7 acres of potential waters of the United States are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3) that directly or indirectly flow into Tejon Reservoir 1 an isolated, non-navigable water body that does not support substantial interstate commerce.

6. Conclusion: Based on information in the Jurisdictional Delineation Report for Tejon Mountain Village (August 2008), two site visits and our independent review of all the above information, the Corps has made a final determination that 19 isolated drainages that support approximately 84.7 acres of potential waters of the United States are non-navigable and do not support substantial interstate commerce, as identified by 33 CFR 328.3 (a)(3) that directly or indirectly flow into Tejon Reservoir 1 an isolated, non-navigable water body that does not support substantial interstate commerce. In addition, 41 tributaries to Castac Lake, which support approximately 0.59 acres of potential waters of the United States, exhibit insufficient evidence of a significant nexus under the Rapanos Guidance dated June 2007.

Based on the above, the Tejon Mountain Village project area supports of total of 642 acres of waters of the United States in the project area, including the 346-acre Castac Lake, 286 acres of wetlands adjacent to Castac Lake and approximately 123 tributaries to Tejon Lake that support 10 acres of waters of the United States. If you have any questions regarding the above determinations, please contact me at (805) 585-2148.

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Impact Sciences, August 2008. Jurisdictional Delineation Report for Tejon Mountain Village.

APPENDIX B

Data Station Forms

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 04/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 1

Investigator(s): PCS and CJF Section, Township, Range: 29-10N-19W

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34° 55' 37.04"N Long: 118° 55' 34.91" Datum:

Soil Map Unit Name: Pleito sandy clay loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯
Hydric Soil Present?	Yes ◉	No ◯
Wetland Hydrology Present?	Yes ◉	No ◯

Is the Sampled Area within a Wetland? Yes ◉ No ◯

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	20	Yes	FACW
2. *Populus fremontii ssp. fremontii*	75	Yes	FAC
3.			
4.			
Total Cover:	95 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus diandrus*	2	No	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 60 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species	75	x 3 =	225
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	97 (A)		275 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Cobble

Depth (inches): 0

Hydric Soil Present? Yes ◉ **No** ○

Remarks:

Cannot dig a soil pit in this location due to the large amount of rocks and cobbles. Some loamy sand in between rocks and cobbles. Assume hydric soils since data station is located within Grapevine Creek.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Evidence of flow in high flood years but does not appear to be regular flow. This could also be a sign of controlled flow from the pump station.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 04/18/13
Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 2
Investigator(s): CJF and PCS and HM | Section, Township, Range: 20-10N-19W
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None | Slope (%): 0
Subregion (LRR): C - Mediterranean California | Lat: 34°55'36.65" | Long: 118°55'34.64" | Datum:
Soil Map Unit Name: Pleito sandy clay loam | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station taken adjacent to and outside of OHWM of Grapevine Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isomeris arborea*	1	No	Not Listed
2. *Isocoma menziesii*	<1	No	FAC
3.			
4.			
5.			
Total Cover:	1 %		
Herb Stratum			
1. *Bromus diandrus*	75	Yes	UPL
2. *Galium aparine*	25	Yes	FACU
3. *Bromus madritensis*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	110 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	86	x 5 =	430
Column Totals:	111 (A)		530 (B)

Prevalence Index = B/A = 4.77

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 3/2	100					Sandy Loam	
8+	rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 8 "

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 05/14/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 3

Investigator(s): PCS and EW | Section, Township, Range: 20 - 10N - 19W

Landform (hillslope, terrace, etc.): channel | Local relief (concave, convex, none): None | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 34° 56' 16.61" N | Long: 118° 55' 20.90"W | Datum:

Soil Map Unit Name: Guijarral-Klipstein complex | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? **Yes** (●) **No** ( )

Remarks: Data station within tributary to Cattle Creek (CC-2).

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	20	Yes	FACW
2. *Ambrosia psilostachya*	<1	No	FACU
3.			
4.			
5.			
Total Cover:	20 %		
Herb Stratum			
1. *Polypogon monspeliensis*	30	Yes	FACW
2. *Bromus hordeaceus*	<1	No	FACU
3. *Avena sp.*	<1	No	UPL
4. *Hordeum murinum*	<1	No	FACU
5. *Lepidium latifolium*	<1	No	FAC
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		100 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (●) **No** ( )

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks: Impenetrable rock with algal matting. Assume hydric soils due to presence of water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 1
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: D.S. point in center of channel

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 05/14/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 4

Investigator(s): PCS and EW Section, Township, Range: 20-10N-19W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 34° 56' 16.85" N Long: 118° 55' 21.31"W Datum:

Soil Map Unit Name: Guijarral-Klipstein complex NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station take in upland area adjacent to DS 3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Brassica nigra*	5	No	UPL
2. *Bromus diandrus*	5	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 80 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	0	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	10	(A)	50 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks: Soil pit not dug because area is fill (concrete chunks).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine — City/County: Lebec/Kern — Sampling Date: 06/18/13

Applicant/Owner: Tejon — State: CA — Sampling Point: 5

Investigator(s): CJF and HLM — Section, Township, Range: 24-10N-19W

Landform (hillslope, terrace, etc.): Flat — Local relief (concave, convex, none): Concave — Slope (%): 0

Subregion (LRR): C - Mediterranean California — Lat: 34° 56' 9.13"N — Long: 118° 51' 28.81" W — Datum:

Soil Map Unit Name: Bitcreek-Dibble-Eaglecrest complex — NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (●)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Feature fed by water from adjacent above ground tank. Tank is creating the riparian/wetland area. Although the area meets all 3 parameters, it is not a wetland due to the fact that the water source is artificial.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Polypogon monspeliensis*	85	Yes	FACW
2. *Urtica dioica*	<1	No	FAC
3. *Nasturtium officinale*	15	Yes	OBL
4. *Rumex crispus*	<1	No	FAC
5. *Mimulus guttatus*	<1	No	OBL
6. *Hirshfeldia incana*	2	No	UPL
7.			
8.			
Total Cover:	102 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % — % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	102 (A)		195 (B)

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Data station in patch of Polypogon monspeliensis.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	5Y 2.5/1	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☒ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock/hard surface

Depth (inches): 10"

Hydric Soil Present? Yes ◉ **No** ○

Remarks: High percentage of organic material emitting odor (not hydrogen sulfide).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 1"
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Feature fed by water from adjacent above ground tank.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 6

Investigator(s): CJF and RJM Section, Township, Range: 24, 10N, 19W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34°56'09.2139" Long: 118°51'28.9500" Datum: NAD83

Soil Map Unit Name: Bitcreek-Dibble-Eaglerest complex, 15 to 50 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (X) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (X) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (X)
Hydric Soil Present?	Yes ( )	No (X)
Wetland Hydrology Present?	Yes ( )	No (X)

Is the Sampled Area within a Wetland? Yes ( ) No (X)

Remarks: Data station taken in upland area, 10' west of data station 5.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	40	Yes	UPL
2. *Hordeum murinum*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	10	x 4 =	40
UPL species	40	x 5 =	200
Column Totals:	50 (A)		240 (B)

Prevalence Index = B/A = 4.80

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (X)

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	7.5 YR 3/3	100	-	-			loamy sand	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Lebec/Kern | Sampling Date: 06/26/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 7

Investigator(s): CJF and BAS | Section, Township, Range: 22-10N-29W

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34° 55' 56.64"N | Long: 118° 53' 58.70"W | Datum:

Soil Map Unit Name: Geghus-Tecuya association | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Juncus balticus ssp. ater*	50	Yes	FACW*
2. *Distichlis spicata*	5	No	FAC
3. *Helianthus annus*	60	Yes	FACU
4. *Polypogon monspeliensis*	<1	No	FACW
5. *Rumex crispus*	15	No	FAC
6.			
7.			
8.			
Total Cover:	130%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species	20	x 3 =	60
FACU species	60	x 4 =	240
UPL species		x 5 =	0
Column Totals:	130 (A)		400 (B)

Prevalence Index = B/A = 3.08

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4"	7.5 YR 3/2	95	5 YR 3/4	5	C	PL	Sandy Loam	Loc2 = PL/M
4-10"	7.5 YR 3/2	98	5 YR 3/4	2	C	M	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [x] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Organic matter. Redox features at 0-4".

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [x] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	( )	(●)	
Water Table Present?	( )	(●)	
Saturation Present? (includes capillary fringe)	( )	(●)	

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Oxidized rhizospheres at 0-4". No surface water or water within the soil pit present. No channel features present (i.e., no OWHM, erosion, or other drainage patterns).

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Lebec/Kern | Sampling Date: 06/26/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 8

Investigator(s): CJF and BAS | Section, Township, Range: 22-10N-19W

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 34° 55' 56.32"N | Long: 118° 53' 58.54" W | Datum:

Soil Map Unit Name: Geghus Tecuya | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯
Hydric Soil Present?	Yes ◯	No ◉
Wetland Hydrology Present?	Yes ◯	No ◉

Is the Sampled Area within a Wetland? Yes ◯ No ◉

Remarks: Taken 6' from DS #7

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Juncus balticus ssp. ater*	50	Yes	FACW*
2. *Distichlis spicata*	5	No	FAC
3. *Bromus diandrus*	20	Yes	UPL
4. *Helianthus annus*	10	Yes	FACU
5. *Rumex crispus*	5	No	FAC
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	20	x 5 =	100
Column Totals:	90 (A)		270 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-3"	7.5YR 3/2						Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Only can dig to 3", soils too hard.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Lebec/Kern | Sampling Date: 06/26/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 9

Investigator(s): CJF and BAS | Section, Township, Range: 22-10N-19W

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 34° 55' 54.88"N | Long: 118° 53' 58.66"W | Datum:

Soil Map Unit Name: Geghus Tecuya | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Marrubium vulgare*	3	No	FACU
2.			
3.			
4.			
5.			
Total Cover:	3 %		
Herb Stratum			
1. *Centaurea melitensis*	5	No	UPL
2. *Brassica nigra*	5	No	UPL
3. *Bromus diandrus*	80	Yes	UPL
4. *Erigeron canadensis*	1	No	UPL
5. *Holocarpha sp.*	5	No	UPL
6.			
7.			
8.			
Total Cover:	96 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	3	x 4 =	12
UPL species	96	x 5 =	480
Column Totals:	99	(A)	492 (B)

Prevalence Index = B/A = 4.97

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4"	10 YR 3/4						Sandy loam	
4+	Hard soil							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indicators

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Lebec/Kern | Sampling Date: 06/26/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 10

Investigator(s): CJF and BAS | Section, Township, Range: 22-10N-19W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): None | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 34° 55' 54.76" N | Long: 118° 53' 58.52"W | Datum:

Soil Map Unit Name: Geghus Tecuya | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus diandrus*	80	Yes	UPL
2. *Centaurea melitensis*	15	Yes	UPL
3. *Brassica nigra*	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100	(A)	500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-6"	10YR 3/4	99	5 YR 4/6	<1	C	M	Sandy loam	
6+	Hard soil							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 11

Investigator(s): CJF and RJM Section, Township, Range: 22, 10N, 19W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Tone Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34°55'54.3459" Long: 118°53'58.7370" Datum: NAD83

Soil Map Unit Name: Geghus-Tecuya association, 9 to 30 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Helianthus annuus*	15	Yes	FACU
2. *Centaurea melitensis*	8	No	UPL
3. *Polypogon monspeliensis*	6	No	FACW
4. *Bromus diandrus*	30	Yes	UPL
5. *Hirschfeldia incana*	8	No	UPL
6. *Erigeron canadensis*	2	No	FACU
7.			
8.			
Total Cover:	69 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ___ % % Cover of Biotic Crust ___ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	6	x 2 =	12
FAC species		x 3 =	0
FACU species	17	x 4 =	68
UPL species	46	x 5 =	230
Column Totals:	69 (A)		310 (B)

Prevalence Index = B/A = 4.49

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	7.5YR 3/4	100	-	-			-	
8+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 12

Investigator(s): CJF and RJM | Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): depression | Local relief (concave, convex, none): none | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34°55'53.1655" | Long: 118°54'03.2906" | Datum: NAD83

Soil Map Unit Name: Geghus-Tecuya association, 9 to 30 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (X) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (X) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(X)
Hydric Soil Present?	(X)	( )
Wetland Hydrology Present?	(X)	( )

Is the Sampled Area within a Wetland? Yes ( ) No (X)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix gooddingii*	5	Yes	FACW
2.			
3.			
4.			
Total Cover:	5 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Rumex crispus*	2	No	FAC
2. *Polypogon monspeliensis*	10	No	FACW
3. *Distichlis spicata*	20	Yes	FAC
4. *Helianthus annuus*	10	No	FACU
5. *Hordeum murinum*	25	Yes	FACU
6. *Elymus triticoides*	2	No	FAC
7. *Bromus diandrus*	30	Yes	UPL
8.			
Total Cover:	99 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species	24	x 3 =	72
FACU species	35	x 4 =	140
UPL species	30	x 5 =	150
Column Totals:	104 (A)		392 (B)

Prevalence Index = B/A = 3.77

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (X)

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 4/2	96	2.5YR 4/6	1	C	M	loamy sand	
0-6	-	-	5YR 4/6	3	C	PL	loamy sand	
6-10	7.5YR 4/6	100	-	-			loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Data station taken in depression that was muddy in May. No surface water or water within the soil pit present in July. No channel features present (i.e., no OWHM, erosion, or other drainage patterns).

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine   City/County: Grapevine/Kern   Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp   State: CA   Sampling Point: 13

Investigator(s): CJF and RJM   Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): terrace   Local relief (concave, convex, none): none   Slope (%): 0

Subregion (LRR): C - Mediterranean California   Lat: 34°55'53.0999"   Long: 118°54'03.1087"   Datum:

Soil Map Unit Name: Geghus-Tecuya association, 9 to 30 percent slopes   NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks: Data station just 10' east of #12, slightly out of depression.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	5	Yes	FACU
2. *Salix gooddingii*	5	Yes	FACW
3.			
4.			
Total Cover:	10 %		
Sapling/Shrub Stratum			
1. *Peritoma arborea*	1	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	1 %		
Herb Stratum			
1. *Elymus triticoides*	5	No	FAC
2. *Distichlis spicata*	50	Yes	FAC
3. *Rumex crispus*	1	No	FAC
4. *Helianthus annuus*	1	No	FACU
5. *Avena sp.*	1	No	UPL
6. *Bromus diandrus*	30	Yes	UPL
7. *Hordeum sp.*	15	No	
8. *Epilobium canum*	1	No	UPL
Total Cover:	104 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ %   % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	56	x 3 =	168
FACU species	6	x 4 =	24
UPL species	33	x 5 =	165
Column Totals:	100 (A)		367 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	99	10YR 6/8	1	C	M	loamy sand	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil too hard to dig past 4". Not enough redox to meet the standards for hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Lebec/Kern | Sampling Date: 07/09/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 14

Investigator(s): CJF, PCS, LA | Section, Township, Range: 21-10N-19W

Landform (hillslope, terrace, etc.): Erosion | Local relief (concave, convex, none): None | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34 56'10.24 | Long: 118 55'16.80 | Datum:

Soil Map Unit Name: Geghus-Tecuya association | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☒ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (●)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? Yes (●) No ( )

Remarks: Anthropogenic influences via water piped into beginning of channel from pond (via underground pipe).

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tamarix ramosissima=Tamarix chinensis*	15	Yes	FAC
2.			
3.			
4.			
Total Cover:	15 %		
Sapling/Shrub Stratum			
1. *Nicotiana glauca*	5	No	FAC
2.			
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Helianthus annuus*	12	Yes	FACU
2. *Polypogon monspeliensis*	25	Yes	FACW
3. *Rumex crispus*	3	No	FAC
4. *Eleusine tristachya*	3	No	FAC
5. *Petroselinum crispum*	1	No	UPL
6. *Xanathium strumarium*	2	No	FAC
7. *Apium graveolens*	1	No	UPL
8. *Nasturtium officinale*	1	No	OBL
Total Cover:	48 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	25	x 2 =	50
FAC species	28	x 3 =	84
FACU species	12	x 4 =	48
UPL species	2	x 5 =	10
Column Totals:	68 (A)		193 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	2.5Y 4/2	85	2.5Y 3/4	15	C	PL	Clay loam	Loc squared = PL/M

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [x] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Both redox and oxidized roots throughout sample.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [x] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [x] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes (●)	No ( )	Depth (inches):
Water Table Present?	Yes ( )	No (●)	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ( )	No (●)	Depth (inches):

Wetland Hydrology Present? **Yes** (●) **No** ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 15

Investigator(s): CJF, PCS, LA | Section, Township, Range: 20, 10N, 19W

Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): none | Slope (%): 35

Subregion (LRR): C - Mediterranean California | Lat: 34°56'10.2669" | Long: 118°55'16.9367" | Datum: NAD83

Soil Map Unit Name: Guijarral-Klipstein, 2-5% slopes and Geghus-Tecuya, 9-30% slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) **No** (●)

Remarks: Data station taken approx. 10' west of #14 on slope of bank

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Nicotiana glauca*	1	No	FAC
2. *Helianthus annuus*	5	No	FACU
3. *Xanthium strumarium*	2	No	FAC
4. *Rumex crispus*	2	No	FAC
5. *Hirschfeldia incana*	15	Yes	UPL
6. *Bromus diandrus*	80	Yes	UPL
7.			
8.			
Total Cover:	105 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	95	x 5 =	475
Column Totals:	105 (A)		510 (B)

Prevalence Index = B/A = 4.86

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	2.5Y 4/4	100	-	-			clay loam	
2+								soil too hard to dig further

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: hard soil

Depth (inches): 2

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil too hard to dig further

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 16

Investigator(s): HLM and BAS | Section, Township, Range: 8, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): C - Mediterranean California | Lat: 34°57'42.7229" | Long: 118°55'10.2184" | Datum: NAD83

Soil Map Unit Name: Riverwash | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	○	◉
Hydric Soil Present?	○	◉
Wetland Hydrology Present?	◉	○

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: Data station located within Grapevine Creek. Vegetation disturbed by grazing. Multiple low flow channels and terraces within the active floodplain.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus tectorum*	2	No	UPL
2. *Bromus madritensis*	7	Yes	UPL
3. *Avena barbata*	2	No	UPL
4. *Schismus barbatus*	1	No	UPL
5. *Erodium sp. (dried)*	3	No	
6. *Bromus diandrus*	1	No	NI
7.			
8.			
Total Cover:	16 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 84 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	13	x 5 =	65
Column Totals:	13 (A)		65 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	2.5Y 5/3	100	-	-			loamy sand	*

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks: * soil pit collapsing during excavation due to high percentage of sand.
High percentage of angular cobbles
Matrix difficult to see because of high amount of sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ● Depth (inches):

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? **Yes** ● **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 17

Investigator(s): HLM and BAS Section, Township, Range: 8, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowlands Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: 34°57'42.8390" Long: 118°55'11.2632" Datum: NAD83

Soil Map Unit Name: Guijarral-Klipstein complex, 2 to 5 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Vegetation disturbed by grazing.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus madritensis*	33	Yes	UPL
2. *Avena barbata*	2	No	UPL
3. *Erodium sp. (dried)*	60	Yes	
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	35	x 5 =	175
Column Totals:	35	(A)	175 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-9	10YR 5/2	100	-	-			loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 18

Investigator(s): HLM and BAS | Section, Township, Range: 13, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): C - Mediterranean California | Lat: 34°56'29.2420" | Long: 118°51'51.1464" | Datum: NAD83

Soil Map Unit Name: Pleito sandy clay loam, 2 to 5 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(•)
Hydric Soil Present?	( )	(•)
Wetland Hydrology Present?	(•)	( )

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks: Data station taken in a man-made agricultural/drainage ditch. Vegetation shows potential signs of maintenance (manual removal and/or herbicides). While there are signs of hydrology due to irrigation run-off, this does not convey flow from a natural drainage and is not considered jurisdictional.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Croton setigerus*	5	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	5 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 95 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	5	(A)	25 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	10YR 4/3	100	-	-			clay loam	*

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: *high percentage of angular cobbles in pit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Data station taken in a man-made agricultural/drainage ditch. While there are signs of hydrology due to irrigation run-off, this does not convey flow from a natural drainage and is not considered jurisdictional.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13
Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 19
Investigator(s): HLM and BAS | Section, Township, Range: 13, 10N, 19W
Landform (hillslope, terrace, etc.): terrace lowlands | Local relief (concave, convex, none): none | Slope (%): 1
Subregion (LRR): C - Mediterranean California | Lat: 34°56'29.2236" | Long: 118°51'51.2287" | Datum: NAD83
Soil Map Unit Name: Pleito sandy clay loam, 2 to 5 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)
Are Vegetation ☒ Soil ☒ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	◯	◉
Hydric Soil Present?	◯	◉
Wetland Hydrology Present?	◯	◉

Is the Sampled Area within a Wetland? **Yes** ◯ **No** ◉

Remarks: Sample point within agriculture access road. Soil appears to be graded.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Croton setigerus*	1	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 99 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	1 (A)		5 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ◯ **No** ◉

Remarks: Area lacks vegetation because of maintenance/removal.

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 4/3	100	-	-			silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 20

Investigator(s): HLM and BAS Section, Township, Range: 14, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowland Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 34°56'44.2198" Long: 118°52'31.7486" Datum: NAD83

Soil Map Unit Name: Guijarral-Klipstein complex, 2 to 5 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Vegetation disturbed by grazing. OHWM 2'. Pit depth 12".

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	5	No	UPL
2. *Bromus madritensis*	40	Yes	UPL
3. *Bromus diandrus*	40	Yes	UPL
4. *Centaurea melitensis*	1	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	86 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 14 % % Cover of Biotic Crust 0 %

Remarks:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	86	x 5 =	430
Column Totals:	86 (A)		430 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

SOIL

Sampling Point: 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/3	100	-	-			clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology is present, but drainage patterns are present and this data station is within Live Oak Creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine　City/County: Grapevine/Kern　Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp　State: CA　Sampling Point: 21

Investigator(s): HLM and BAS　Section, Township, Range: 14, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowland　Local relief (concave, convex, none): None　Slope (%): 0

Subregion (LRR): C - Mediterranean California　Lat: 34°56'44.0962"　Long: 118°52'31.5193"　Datum: NAD83

Soil Map Unit Name: Guijarral-Klipstein complex, 2 to 5 percent slopes　NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☒ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉
Hydric Soil Present?	Yes ◯	No ◉
Wetland Hydrology Present?	Yes ◯	No ◉

Is the Sampled Area within a Wetland? Yes ◯ No ◉

Remarks: Data station taken east of data station 20. Vegetation disturbed by grazing. Soil disturbed by small mammal burrows.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus diandrus*	40	Yes	UPL
2. *Bromus madritensis*	15	Yes	UPL
3. *Hirschfeldia incana*	5	No	UPL
4. *Chamaesyce ocellata ssp. ocellata*	1	No	UPL
5. *Amaranthus blitoides*	1	No	FACW
6.			
7.			
8.			
Total Cover:	62 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 38 %　% Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	1	x 2 =	2
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	61	x 5 =	305
Column Totals:	62 (A)		307 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-13	10YR 3/3	100	-	-			loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 22

Investigator(s): HLM and BAS | Section, Township, Range: 12, 10N, 19W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 34°57'33.1346" | Long: 118°51'04.0978" | Datum: NAD83

Soil Map Unit Name: Pleitito-Laval complex, 1 to 5 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	○	◉
Hydric Soil Present?	○	◉
Wetland Hydrology Present?	○	◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: Vegetation disturbed by grazing.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	10	Yes	FAC
2. *Tamarix ramosissima=Tamarix chinensis*	30	Yes	FAC
3.			
4.			
5.			
Total Cover:	40 %		
Herb Stratum			
1. *Hirschfeldia incana*	5	No	UPL
2. *Bromus madritensis*	15	Yes	UPL
3. *Bromus diandrus*	10	Yes	UPL
4. *Datura wrightii*	5	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	35 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	40	x 3 =	120
FACU species		x 4 =	0
UPL species	35	x 5 =	175
Column Totals:	75 (A)		295 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

- ○ Dominance Test is >50%
- ○ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

SOIL

Sampling Point: 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 4/3	100	-	-			loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks: Top soil layer collapsing due to high sand content.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Braided system within active floodplain.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13
Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 23
Investigator(s): HLM and BAS | Section, Township, Range: 12, 10N, 19W
Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): none | Slope (%): 1
Subregion (LRR): C - Mediterranean California | Lat: 34°57'33.6393" | Long: 118°51'02.4512" | Datum: NAD83
Soil Map Unit Name: Pleitito-Laval complex, 1 to 5 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station taken upland of DS #22. Vegetation disturbed by grazing.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus madritensis*	50	Yes	UPL
2. *Erodium sp. (dried)*	15	Yes	
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	65 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 35 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	50 (A)		250 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 3/3	100	-	-			loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 24

Investigator(s): HLM and BAS | Section, Township, Range: 6, 10N, 18W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): C - Mediterranean California | Lat: 34°58'48.3749" | Long: 118°50'21.7379" | Datum: NAD83

Soil Map Unit Name: Hesperia sandy loam, 5 to 9 percent slopes | NWI classification: freshwater emergent wtl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Anthropogenic feature (irrigation ditch) in agricultural field. Vegetation disturbed by maintenance. Soils and hydrology disturbed by anthropogenic creation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erigeron canadensis*	1	Yes	FACU
2. *Datura wrightii*	1	Yes	UPL
3. *Hordeum murinum*	1	Yes	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	3 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 97 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	2	x 4 =	8
UPL species	1	x 5 =	5
Column Totals:	3 (A)		13 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	2.5Y 4/3	100	-	-			loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil pit collapsing while excavating due to high percentage of sandy soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology is present, but drainage patterns are present and this data station is within the diverted portion of Pastoria Creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 25

Investigator(s): HLM and BAS Section, Township, Range: 6, 10N, 18W

Landform (hillslope, terrace, etc.): terrace lowland Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: 34°58'48.2787" Long: 118°50'21.6815" Datum: NAD83

Soil Map Unit Name: Hesperia sandy loam, 5 to 9 percent slopes NWI classification: freshwater emergent wtl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(•)
Hydric Soil Present?	( )	(•)
Wetland Hydrology Present?	( )	(•)

Is the Sampled Area within a Wetland? Yes ( ) No (•)

Remarks: Agricultural field access road absent of vegetation. Road has evidence of grading.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Datura wrightii*	1	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 99 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	1 (A)		5 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks:

SOIL

Sampling Point: 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	2.5Y 4/3	100	-	-			loamy sand	
14-16	10YR 4/3	95	7.5YR 4-6	5	C	RC	silty clay loam	*

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks: *Redox features observed at depth 14-16", likely due to agricultural irrigation for adjacent crops.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ● Depth (inches):

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 26

Investigator(s): HLM and BAS | Section, Township, Range: 6, 10N, 18W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): C - Mediterranean California | Lat: 34°58'51.3606" | Long: 118°50'11.6555" | Datum: NAD83

Soil Map Unit Name: Arvin sandy loam, 5 to 9 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(●)	( )
Hydric Soil Present?	(●)	( )
Wetland Hydrology Present?	(●)	( )

Is the Sampled Area within a Wetland? Yes (●) No ( )

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	15	Yes	FACW
2. *Baccharis salicifolia*	35	Yes	FACW
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1. *Artemisia douglasiana*	15	Yes	FAC
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Melilotus indicus*	1	No	FACU
2. *Polypogon monspeliensis*	5	No	FACW
3. *Rumex crispus*	1	No	FAC
4. *Hirschfeldia incana*	5	No	UPL
5. *Helianthus annuus*	15	Yes	FACU
6. *Hordeum sp. (dried)*	5	No	
7. *Cynodon dactylon*	30	Yes	FACU
8. *Stachys rigida*	1	No	FACW
Total Cover:	63 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	56	x 2 =	112
FAC species	16	x 3 =	48
FACU species	46	x 4 =	184
UPL species	5	x 5 =	25
Column Totals:	123	(A)	369 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: 26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-13	10YR 4/2	93	7.5YR 4/6	7	C	RC	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 2
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 27

Investigator(s): HLM and BAS | Section, Township, Range: 6, 10N, 18W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): none | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 34°58'51.5588" | Long: 118°50'11.7152" | Datum: NAD83

Soil Map Unit Name: Arvin sandy loam, 5 to 9 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) **No** (●)

Remarks: Vegetation disturbed by grazing and competition form non-native plant species. Data station located on berm.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum sp. (dried)*	50	Yes	FAC
2. *Bromus diandrus*	50	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: The Hordeum sp. recorded in conjunction with this data station could not be identified to species because it was desiccated. However, the only two Hordeum spp. observed in the study area were Hordeum marinum (FAC) and Hordeum marinum (FACU). This area would not be a wetlands regardless of which species was present in the data station. For analysis purposes, it is assumed that the species is FAC. Additionally, the data station was taken in a non-native grassland area.

SOIL

Sampling Point: 27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/3	100	-	-			loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/16/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 28

Investigator(s): HLM and BAS | Section, Township, Range: 33, 11N, 19W

Landform (hillslope, terrace, etc.): terrace lowland | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): C - Mediterranean California | Lat: 34°59'10.1067" | Long: 118°54'05.9762" | Datum: NAD83

Soil Map Unit Name: Riverwash | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (X) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (X) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes ( ) No (X)

Remarks: Vegetation disturbed by grazing.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Tamarix ramosissima=Tamarix chinensis*	30	Yes	FAC
2.			
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Bromus madritensis*	15	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	15 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 55 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	30	x 3 =	90
FACU species		x 4 =	0
UPL species	15	x 5 =	75
Column Totals:	45	(A)	165 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (X)

Remarks:

SOIL

Sampling Point: 28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	2.5Y 5/3	100	-	-			sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: High percentage of sand and cobble. Excavation pit collapsing while digging.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine
City/County: Grapevine/Kern
Sampling Date: 07/16/13
Applicant/Owner: Tejon Ranchcorp
State: CA
Sampling Point: 29
Investigator(s): HLM and BAS
Section, Township, Range: 33, 11N, 19W
Landform (hillslope, terrace, etc.): flat terrace
Local relief (concave, convex, none): none
Slope (%): 0
Subregion (LRR): C - Mediterranean California
Lat: 34°59'09.4693"
Long: 118°54'04.9500"
Datum: NAD83
Soil Map Unit Name: Riverwash
NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus madritensis*	95	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	95	x 5 =	475
Column Totals:	95	(A)	475 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-13	10YR 4/3	100	-	-			loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 30

Investigator(s): CJF | Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): depression | Local relief (concave, convex, none): concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34°55'52.7664" | Long: 118°54'44.1032" | Datum: NAD83

Soil Map Unit Name: Loslobos-Walong association, 5 to 30 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(●)	( )
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks: Data station taken in depression by Salix laevigata

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	70	Yes	FACW
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *Salix laevigata (sapling)*	1	No	FACW
2. *Baccharis salicifolia*	5	Yes	FAC
3.			
4.			
5.			
Total Cover:	6 %		
Herb Stratum			
1. *Helianthus annuus*	1	No	FACU
2. *Bromus diandrus*	50	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	51 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	71	x 2 =	142
FAC species	5	x 3 =	15
FACU species	1	x 4 =	4
UPL species	50	x 5 =	250
Column Totals:	127 (A)		411 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (●) **No** ( )

Remarks:

SOIL

Sampling Point: 30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	-	-	-	-			-	organic material
4-12	10YR 2/2	100	-	-			loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None observed. No defined bed and bank.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 31

Investigator(s): CJF | Section, Township, Range: 24, 10N, 19W

Landform (hillslope, terrace, etc.): top of slope | Local relief (concave, convex, none): None | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34°55'52.5970" | Long: 118°54'44.0290" | Datum: NAD83

Soil Map Unit Name: Loslobos-Walong association, 5 to 30 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	( )	(●)
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? **Yes** ( ) **No** (●)

Remarks: Taken 20' south of #30 outside wetland vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	5	No	FACW
2.			
3.			
4.			
Total Cover:	5 %		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Helianthus annuus*	20	Yes	FACU
2. *Croton setigerus*	3	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	23 %		
Woody Vine Stratum			
1. *Cucurbita foetidissima*	1	Yes	UPL
2.			
Total Cover:	1 %		

% Bare Ground in Herb Stratum 80 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species		x 3 =	0
FACU species	20	x 4 =	80
UPL species	4	x 5 =	20
Column Totals:	29 (A)		110 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

- ( ) Dominance Test is >50%
- ( ) Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ( ) **No** (●)

Remarks:

SOIL

Sampling Point: 31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	100	-	-			loamy sand	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: none

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 32

Investigator(s): CJF Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34°55'49.6078" Long: 118°54'47.7139" Datum: NAD83

Soil Map Unit Name: Loslobos-Walong association, 5 to 30 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station taken in depression with herbs growing. Natural or anthropogenic berm cuts off from "downstream".

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Xanthium strumarium*	40	Yes	FAC
2. *Helianthus annuus*	25	Yes	FACU
3. *Rumex crispus*	5	No	FAC
4. *Polypogon monspeliensis*	10	No	FACW
5. *Elymus triticoides*	5	No	FAC
6.			
7.			
8.			
Total Cover:	85 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species	50	x 3 =	150
FACU species	25	x 4 =	100
UPL species		x 5 =	0
Column Totals:	85 (A)		270 (B)

Prevalence Index = B/A = 3.18

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 3/1	100	-	-			loamy sand	
6+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water was observed in this location in May, but the area was not wet in July when this data station was recorded. This area may be periodically inundated due to a seep located approximately 22 feet southwest of the data station.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 33

Investigator(s): CJF Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34°55'49.7613" Long: 118°54'47.7497" Datum: NAD83

Soil Map Unit Name: Loslobos-Walong association, 5 to 30 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	(●)	( )
Hydric Soil Present?	( )	(●)
Wetland Hydrology Present?	( )	(●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station taken 15' north of #32.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus diandrus*	20	Yes	UPL
2. *Distichlis spicata*	50	Yes	FAC
3. *Lotus sp.*	5	No	
4. *Helianthus annuus*	5	No	FACU
5. *Eleocharis macrostachya*	35	Yes	OBL
6.			
7.			
8.			
Total Cover:	115 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species		x 2 =	0
FAC species	50	x 3 =	150
FACU species	5	x 4 =	20
UPL species	20	x 5 =	100
Column Totals:	110 (A)		305 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Area containing hydrophytic vegetation is less than 0.1 acre.

SOIL

Sampling Point: 33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	100	-	-			-	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 34

Investigator(s): CJF and RJM Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): Canyon Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 34°55'50.5145" Long: 118°54'16.0705" Datum: NAD83

Soil Map Unit Name: Geghus-Tecuya association, 30 to 75 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	○	◉
Hydric Soil Present?	○	◉
Wetland Hydrology Present?	○	◉

Is the Sampled Area within a Wetland? **Yes** ○ **No** ◉

Remarks: No signs of flow or surface water.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	40	Yes	FACW
2.			
3.			
4.			
Total Cover:	40 %		
Sapling/Shrub Stratum			
1. *Toxicodendron diversilobum*	5	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Bromus diandrus*	40	Yes	UPL
2. *Bromus madritensis*	5	No	UPL
3. *Centaurea melitensis*	1	No	UPL
4. *Rumex crispus*	1	No	FAC
5. *Croton setigerus*	1	No	UPL
6. *Elymus triticoides*	3	No	FAC
7.			
8.			
Total Cover:	51 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ___ % % Cover of Biotic Crust ___ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	40	x 2 =	80
FAC species	4	x 3 =	12
FACU species		x 4 =	0
UPL species	52	x 5 =	260
Column Totals:	96 (A)		352 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ○ **No** ◉

Remarks:

SOIL

Sampling Point: 34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	2.5Y 4/3	100	-	-			loam	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None. No defined bed and bank.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 35

Investigator(s): CJF and RJM | Section, Township, Range: 21, 10N, 19W

Landform (hillslope, terrace, etc.): top of slope | Local relief (concave, convex, none): none | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34°55'50.6118" | Long: 118°54'15.8253" | Datum: NAD83

Soil Map Unit Name: Geghus-Tecuya association, 30 to 75 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒

Is the Sampled Area within a Wetland? Yes ☐ No ☒

Remarks: Data station taken 15' east from #34.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	5	Yes	FACU
2.			
3.			
4.			
Total Cover:	5 %		
Sapling/Shrub Stratum			
1. *Toxicodendron diversilobum*	2	Yes	UPL
2. *Peritoma arborea*	2	Yes	UPL
3.			
4.			
5.			
Total Cover:	4 %		
Herb Stratum			
1. *Bromus diandrus*	70	Yes	UPL
2. *Isocoma acradenia*	1	No	FACU
3. *Avena barbata*	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	76 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	6	x 4 =	24
UPL species	79	x 5 =	395
Column Totals:	85	(A)	419 (B)

Prevalence Index = B/A = 4.93

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point: 35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-1	-	-	-	-			-	organic matter
1-10	2.5Y 4/4	100	-	-			sandy loam	
10+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine City/County: Grapevine/Kern Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp State: CA Sampling Point: 36

Investigator(s): CJF and RJM Section, Township, Range: 23, 10N, 19W

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): none Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 34°56'10.9384" Long: 118°52'15.4973" Datum: NAD83

Soil Map Unit Name: Klipstein-Guijarral complex, 5 to 15 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Data station taken in swale feature.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hirschfeldia incana*	35	Yes	UPL
2. *Bromus madritensis*	40	Yes	UPL
3. *Bromus hordeaceus*	10	No	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	85 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	10	x 4 =	40
UPL species	75	x 5 =	375
Column Totals:	85	(A)	415 (B)

Prevalence Index = B/A = 4.88

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

SOIL

Sampling Point: 36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 2/2	20	-	-			clay	
0-6	10YR 4/3	80	7.5YR 5/8	1	C	M	loamy sand	
6+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: A few redox features found, but less than 1% of matrix. Clay soils mottled in soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):
Water Table Present? Yes ○ No ◉ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No OHWM features.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine | City/County: Grapevine/Kern | Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp | State: CA | Sampling Point: 37

Investigator(s): CJF and RJM | Section, Township, Range: 24, 10N, 19W

Landform (hillslope, terrace, etc.): channel | Local relief (concave, convex, none): none | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 34°56'00.5458" | Long: 118°51'27.9984" | Datum: NAD83

Soil Map Unit Name: Bitcreek-Dibble-Eaglerest complex, 15 to 50 percent slopes | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )
Hydric Soil Present?	Yes (●)	No ( )
Wetland Hydrology Present?	Yes (●)	No ( )

Is the Sampled Area within a Wetland? Yes (●) No ( )

Remarks: Data station in standing water, associated with Cattle Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Salix exigua*	15	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Polypogon monspeliensis*	35	Yes	FACW
2. *Distichlis spicata*	35	Yes	FAC
3. *Helianthus annuus*	3	No	FACU
4. *Rumex crispus*	2	No	FAC
5. *Eleocharis macrostachya*	10	No	OBL
6.			
7.			
8.			
Total Cover:	85 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	50	x 2 =	100
FAC species	37	x 3 =	111
FACU species	3	x 4 =	12
UPL species		x 5 =	0
Column Totals:	100 (A)		233 (B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: 37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	7.5YR 3/1	81	7.5YR 5/8	4	C	PL	-	
0-12	10YR 2/1	15	-	-			-	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 0.5
Water Table Present?	Yes ◉	No ○	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Data station located within Cattle Creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Grapevine — City/County: Grapevine/Kern — Sampling Date: 07/18/13

Applicant/Owner: Tejon Ranchcorp — State: CA — Sampling Point: 38

Investigator(s): CJF and RJM — Section, Township, Range: 24, 10N, 19W

Landform (hillslope, terrace, etc.): terrace — Local relief (concave, convex, none): none — Slope (%): 5

Subregion (LRR): C - Mediterranean California — Lat: 34°56'00.6063" — Long: 118°51'28.0977" — Datum: NAD83

Soil Map Unit Name: Bitcreek-Dibble-Eaglerest complex, 15 to 50 percent slopes — NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	○	◉
Hydric Soil Present?	○	◉
Wetland Hydrology Present?	○	◉
Is the Sampled Area within a Wetland?	○	◉

Remarks: Data station upland 25' west of #37.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. *Distichlis spicata*	20	Yes	FAC
2. *Hirschfeldia incana*	20	Yes	UPL
3. *Bromus hordeaceus*	10	No	FACU
4. *Centaurea melitensis*	2	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	52 %		

Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % — % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	22	x 5 =	110
Column Totals:	52 (A)		210 (B)

Prevalence Index = B/A = 4.04

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

SOIL

Sampling Point: 38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	100	-	-			sandy loam	
4+	-	-	-	-			-	soil too hard

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ● Depth (inches):

Water Table Present? Yes ○ No ● Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ● Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: None.

APPENDIX C

Grapevine Jurisdictional Delineation Photos

Data Station Photos

APPENDIX C
Grapevine Jurisdictional Delineation Photos

DATA STATION PHOTOS

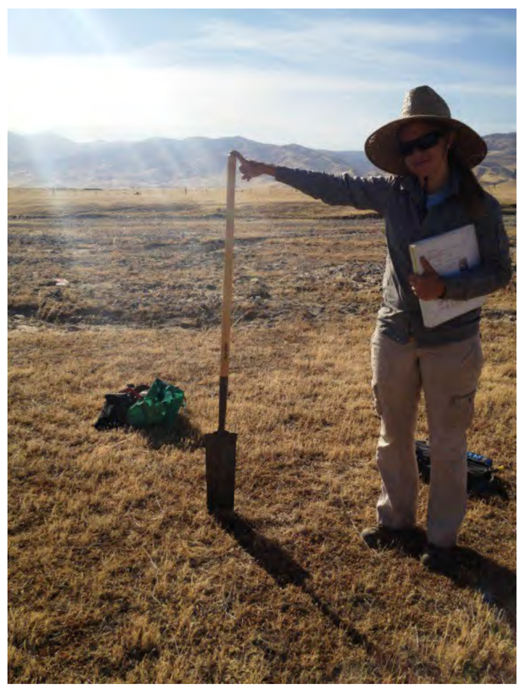
	
Data Station 1	Data Station 2
	
Data Stations 3 and 4	Data Station 5

	
Data Station 6	Data Station 7
	
Data Station 8	Data Station 9

APPENDIX C (Continued)

	
Data Station 10	Data Station 11
	
Data Station 12	Data Station 13

APPENDIX C (Continued)

	
Data Station 14	Data Station 15
	
Data Station 16	Data Station 17

	
Data Station 18	Data Station 19
	
Data Station 20	Data Station 21

APPENDIX C (Continued)

Data Station 22

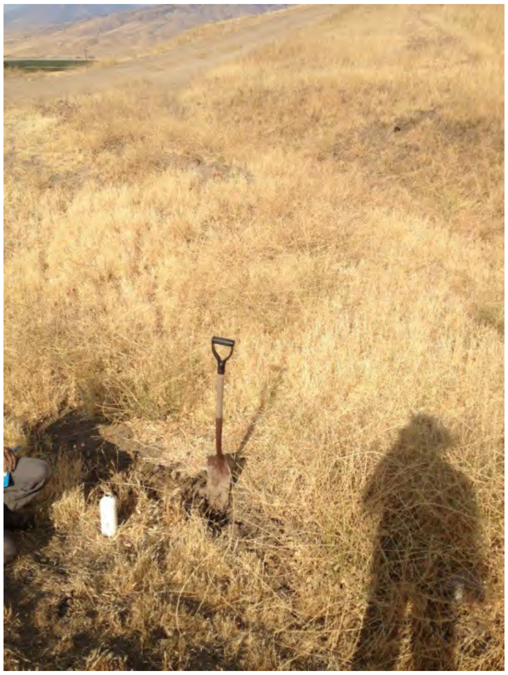
Data Station 23

Data Stations 24 and 25

Data Station 26

	
Data Station 27	Data Station 28
	
Data Station 29	Data Station 30

	
Data Station 31	Data Station 32
	
Data Station 33	Data Station 34

	
Data Station 35	Data Station 36
	
Data Station 37	Data Station 38

Overview Photos

OVERVIEW PHOTOS

Grapevine Creek

Tributary to Grapevine Creek

Tributary to Pastoria Creek

Cattle Creek

	
Live Oak Creek	Pastoria Creek
	
Tributary to Cattle Creek	Pond

ATTACHMENT B

Approved Jurisdictional Delineation Forms

Approved Jurisdictional Determination Form: Cattle Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Pastoria Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **10,818** linear feet, **2-10** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 0.4 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Cattle Creek and Associated Tributaries

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Cattle Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .

☐ Wetland fringe. Characteristics: .

☐ Habitat for:

☐ Federally Listed species. Explain findings: .

☐ Fish/spawn areas. Explain findings: .

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☐ Directly abutting

☐ Not directly abutting

☐ Discrete wetland hydrologic connection. Explain: .

☐ Ecological connection. Explain: .

☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .

☐ Vegetation type/percent cover. Explain: .

☐ Habitat for:

☐ Federally Listed species. Explain findings: .

☐ Fish/spawn areas. Explain findings: .

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

- ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

- ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **20,470** linear feet, **2-10** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 5.2 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Grapevine Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° N, Long. 118°53'21" ° W.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☐ Non-RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: linear feet: width (ft) and/or acres.
   Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

☒ Non-wetland waters (i.e., rivers, streams): **18,794** linear feet, **40-550** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 8.0 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Grapevine Creek and Associated Tributaries

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° N, Long. 118°53'21" ° W.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Grapevine Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **square miles**
   Drainage area: **acres**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **36,270** linear feet, **42-24** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: GV Detention Basin

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      - ☐ TNWs, including territorial seas
      - ☐ Wetlands adjacent to TNWs
      - ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      - ☐ Non-RPWs that flow directly or indirectly into TNWs
      - ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      - ☐ Impoundments of jurisdictional waters
      - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that crosses through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **square miles**
   Drainage area: **acres**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

---

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

   - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☒ Lakes/ponds: 1.0 acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 0.2 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Isolated Drainage A

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° N, Long. 118°53'21" ° W.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **square miles**
   Drainage area: **acres**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

---

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **1,543** linear feet, **2-6** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Isolated Drainage B

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   ☐ TNWs, including territorial seas
   ☐ Wetlands adjacent to TNWs
   ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   ☐ Non-RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   ☐ Impoundments of jurisdictional waters
   ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: linear feet: width (ft) and/or acres.
   Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain: .
- ☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

- ☐ Silts ☐ Sands ☐ Concrete
- ☐ Cobbles ☐ Gravel ☐ Muck
- ☐ Bedrock ☐ Vegetation. Type/% cover:
- ☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):

- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u> <u>Size (in acres)</u> <u>Directly abuts? (Y/N)</u> <u>Size (in acres)</u>

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---
[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **946** linear feet, **2-4** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Isolated Drainage C

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):

☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **791** linear feet, **2** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Isolated Drainage D

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply): [1]**
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):[3]**
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **735** linear feet, **4** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Isolated Drainage E

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: N/A
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that crosses through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):

☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **2,474** linear feet, **2-4** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Live Oak Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Tributaries to Cattle Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):

- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: **.**
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
- ☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☒ Non-wetland waters (i.e., rivers, streams): **4,935** linear feet, **2** width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☒ Wetlands: 1.9 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☒ U.S. Geological Survey Hydrologic Atlas: .
  - ☒ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
  or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
- ☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
- ☐ Applicable/supporting case law: .
- ☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Pastoria Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Unnamed Drainage
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

---
[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):

☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
  ☐ Federally Listed species. Explain findings: .
  ☐ Fish/spawn areas. Explain findings: .
  ☐ Other environmentally-sensitive species. Explain findings: .
  ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
  ☐ Discrete wetland hydrologic connection. Explain: .
  ☐ Ecological connection. Explain: .
  ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .
☐ Vegetation type/percent cover. Explain: .
☐ Habitat for:
  ☐ Federally Listed species. Explain findings: .
  ☐ Fish/spawn areas. Explain findings: .
  ☐ Other environmentally-sensitive species. Explain findings: .
  ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

- ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **21,558** linear feet, **2-350** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 2 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

Approved Jurisdictional Determination Form: Unnamed Drainage

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 08/16/13

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Kern City: Unincorporated County
Center coordinates of site (lat/long in degree decimal format): Lat. 34°57'24" ° **N**, Long. 118°53'21" ° **W**.
Universal Transverse Mercator: UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11.
Name of nearest waterbody: Tejon Reservoir No. 1
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Not Applicable
Name of watershed or Hydrologic Unit Code (HUC): South Valley Floor hydrologic unit (Hydrologic Unit Code (HUC) 557.30); Tejon Creek (HUC 556.20); and San Emigdio (HUC 556.3).

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The drainages that cross through or are located in the study area do not have a significant nexus (no direct or indirect connectivity) to a TNW**.

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **square miles**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: Flow during and for a brief period after rain events typical of ephemeral channels in the region.
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: No evidence of subsurface flow (emergent wetland vegetation, etc.).
☐ Dye (or other) test performed: No.

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .

☐ Wetland fringe. Characteristics: .

☐ Habitat for:

☐ Federally Listed species. Explain findings: .

☐ Fish/spawn areas. Explain findings: .

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☐ Directly abutting

☐ Not directly abutting

☐ Discrete wetland hydrologic connection. Explain: .

☐ Ecological connection. Explain: .

☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .

☐ Vegetation type/percent cover. Explain: .

☐ Habitat for:

☐ Federally Listed species. Explain findings: .

☐ Fish/spawn areas. Explain findings: .

☐ Other environmentally-sensitive species. Explain findings: .

☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **555** linear feet, **4** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5-minute Frazier Park quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USGS 2007; USGS 2009.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Kern Council of Governments (2010); USDA (2012b); AirPhoto USA (2006); Bing (2013); Google Earth (2013); and Historic Aerials Online (2013).
or ☒ Other (Name & Date): Attachment C of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☒ Previous determination(s). File no. and date of response letter:File No. SPL-2006-02020-AOA; October 2, 2008.
☐ Applicable/supporting case law: .
☒ Applicable/supporting scientific literature: See Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013).
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: A jurisdictional determination for the Tejon Mountain Village project, located approximately 1 mile to the south of the Grapevine study area, was made in 2008 by the ACOE (ACOE 2008a). The ACOE determined that

Grapevine and Pastoria Creeks were isolated, non-jurisdictional streams (ACOE 2008a, 2008b; Appendices A-1 and A-2 of Jurisdictional Delineation Report for the Grapevine Project (Dudek 2013)). Therefore, the portions of Grapevine Creek within the Grapevine study area are not considered waters of the United States. Additionally, the on-site tributaries to Grapevine Creek are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Similarly, the portions of Pastoria Creek within the Grapevine study area as well as Cattle and Live Oak Creeks, tributaries to Pastoria Creek, are not considered waters of the United States. Finally, the on-site tributaries to Cattle, Live Oak, and Pastoria Creeks are not considered waters of the United States because they are tributaries to and flow into a non-jurisdictional stream. Water from the 850 Canal is only distributed to the adjacent agricultural fields. No water from the 850 Canal comes close to any navigable water, tributary of a navigable water, aqueduct, or any jurisdictional water body (Impact Sciences 2008). Additionally, there are a few isolated, unnamed drainages within the study area that do not flow into navigable waters of the U.S.

APPENDIX E-3

Summary of Grapevine Jurisdictional Delineation

APPENDIX E-3
Summary of Grapevine Jurisdictional Delineation

1 INTRODUCTION

This appendix compares the results of the jurisdictional delineation to the literature sources that show water features such as creeks, unnamed streams, and ponds within the Grapevine project site, and specifically focuses on areas that were not considered waters of the state despite water features being depicted on the applicable U.S. Geological Survey (USGS) topographic maps. This appendix includes a brief overview of the methods and results.

As described in Section 2.3 of the Biological Resources Technical Report (BTR), the Grapevine project site does not contain any streams, wetlands, or other waters that are subject to federal jurisdiction under Section 404 of the Clean Water Act, as determined by the U.S. Army Corp of Engineers (Appendix E-1 to the BTR). Therefore, the focus of this analysis is on waters of the state under the jurisdictional of the California Department of Fish and Wildlife (CDFW) and Regional Quality Control Board (RWQCB).

2 METHODS

2.1 Literature Review

In 2013, Dudek biologists conducted a jurisdictional delineation of waters, including wetlands, under the jurisdiction of CDFW and RWQCB (see Appendices E-1 and E-2 for more information).

Prior to the fieldwork, all of the USGS creeks, tributaries, and additional unnamed streams identified on the 7.5-minute quadrangle topographic maps located within the Grapevine project site were digitized, and each one was reviewed against historical aerials and topographic maps (Google Earth 2013; Historic Aerials Online 2014). Historical topographic maps dating between 1903 and 2000 were reviewed to provide the year(s) each feature was shown on a historical topographic map. For example, Grapevine Creek was delineated on each historical topographic map available online for this area: 1903, 1910, 1916, 1922, 1929, 1939, 1945, 1948, 1957, 1959, 1963, 1975, 1984, 1992, and 2000 (Historic Aerials Online 2014).

Using this information, the following criteria were assigned to each USGS feature in the field: (1) USGS stream data present on map, but in the field the drainage feature was not present (flat terrain with no change in topography) or it was a swale that lacked an Ordinary High Water Mark[1] (OHWM) or indicators of an OHWM; or (2) USGS stream data present on map and field indicators of an OHWM were present in areas mapped by USGS. In a few cases, described below, there were jurisdictional waters of the state present in areas not mapped as streams by USGS.

[1] The OHWM is used to determine the lateral limits of non-wetland waters; it is indicated by physical characteristics such as a "natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, or the presence of litter and debris" (ACOE 2008).

2.2 Field Data Collection

The focus of the field portion of the jurisdictional delineation was to use the criteria specified above in order to (1) map and delineate non-wetland waters of the state based on the presence of an OHWM as determined utilizing the methodology in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual (ACOE 2008) and per Section 1602 of Fish and Game Code; (2) map wetland waters pursuant to the three-parameter wetland criteria specified in the 1987 Wetlands Delineation Manual (ACOE 1987): hydric soils, hydrology, and hydrophytic vegetation; and (3) collect data for all unnamed streams shown on USGS topographic maps, but that were determined to not be jurisdictional under the United States or state. The results of this appendix focus on the streams shown on USGS topographic maps, but that were determined to not be jurisdictional waters of the state.

3 RESULTS

Within the project site, the USGS 7.5-minute quadrangle topographical maps identify Grapevine Creek, Pastoria Creek, Live Oak Creek, and Cattle Creek, tributaries to these creeks, and additional unnamed streams (USGS n.d.). Within the Grapevine project site, approximately 58 creeks and unnamed streams are shown on the USGS 7.5-minute quadrangle topographical maps and were visited during the jurisdictional delineation. Of these, 38 lacked field indicators of a jurisdictional streambed, such as bed and bank, evidence of surface flow or hydrology, OHWM, and/or hydrophytic vegetation. The majority of the 38 non-jurisdictional areas mapped on the USGS maps as streams had some type of topographical relief, such as a swale, canyon, or low point. In some cases, there were areas that were relatively flat with no change in topography, but mapped on USGS maps as streams.

Table 1 lists the 38 features and the data collected in the field used to determine that these features are not, in fact, state jurisdictional; Dudek gave each of these features a unique identification number, also included in Table 1. Figure E3-1 shows the jurisdictional delineation results for Grapevine, the USGS unnamed streams that were not considered jurisdictional, and photo point locations; Figure E3-2 includes example photographs of these features.

Table 1
Non-jurisdictional USGS Streams

USGS Feature Identification No.	Notes on Features
1	No topographical relief; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.

Table 1
Non-jurisdictional USGS Streams

USGS Feature Identification No.	Notes on Features
2	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
3	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
4	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
5	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
6	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
7	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
8	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
9	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
10	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
11	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
12	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
13	No topographical relief; no OHWM indicators.
14	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
15	Swales only or no topographical relief; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
16	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
17	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
18	Swales only; two seeps present; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
19	Swales only; one seep present; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
20	Swales only; one seep present; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
21	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
22	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
23	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.

Table 1
Non-jurisdictional USGS Streams

USGS Feature Identification No.	Notes on Features
24	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
25	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
26	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
27	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
28	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
29	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
30	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
31	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
32	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
33	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
34	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
35	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
36	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
37	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.
38	Swale only; no OHWM indicators such as bed and bank, evidence of surface flow or hydrology, or OHWM present.

3.1 Foothills

As described above, the foothills of the Tehachapi and San Emigdio mountains consist of canyons, ravines, and topographical low points in between hilltops. Many of the features identified on USGS topographic maps did not have jurisdictional features, such as a defined bed and bank, evidence of surface flow (e.g., sandy soils void of vegetation, water marks), or an OHWM. Within the foothills, water may flow across the landscape during storm events, but water accumulation within these features appear to percolate into the ground and do not demonstrate surface connection to the base of the foothills or the valley floor.

This percolation and lack of surface flow is consistent with the soils on site which are generally rocky and transform to a more sandy nature near the base of the mountains, and are characterized as well- to excessively drained.

During the surveys, four seep features were observed within the foothills in USGS features 18, 19, and 20 (Figure E3-1). These small seeps are seasonal, isolated, and not hydrologically connected with other surface or near-surface waters.

3.2 Valley Floor

The valley floor consists of flat terrain with occasional swales and some stream channels. Similar to the foothills, many of the features identified on USGS topographic maps did not demonstrate features consistent with mapping waters of the state, such as a defined bed and bank, evidence of surface flow (e.g., sandy soils void of vegetation, water marks), or an OHWM. It appears that surface flow in the valley floor is limited to Grapevine Creek, Live Oak Creek, Cattle Creek, and Pastoria Creek, their tributaries, and some isolated channels. Outside of these jurisdictional features, water appears to percolate into the ground rather than flow or connect with other surface or near-surface waters.

4 REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual*. Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. http://www.fedcenter.gov/Bookmarks/index.cfm?id= 6403&pge_id=1606.

ACOE. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. Cold Region Research and Environmental Laboratory, ERDC/CRREL TR-08-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2008.

Google Earth 2013. Aerial photograph. 1:200 scale.

Accessed July 2014.

Historic Aerials Online. 2014. “Historic Aerials [photographs].” Accessed August 2013 and July 2014. http://www.historicaerials.com/.

USGS (U.S. Geological Survey). No date. 7.5 Minute Series, Grapevine and Pastoria Creek Quadrangles.

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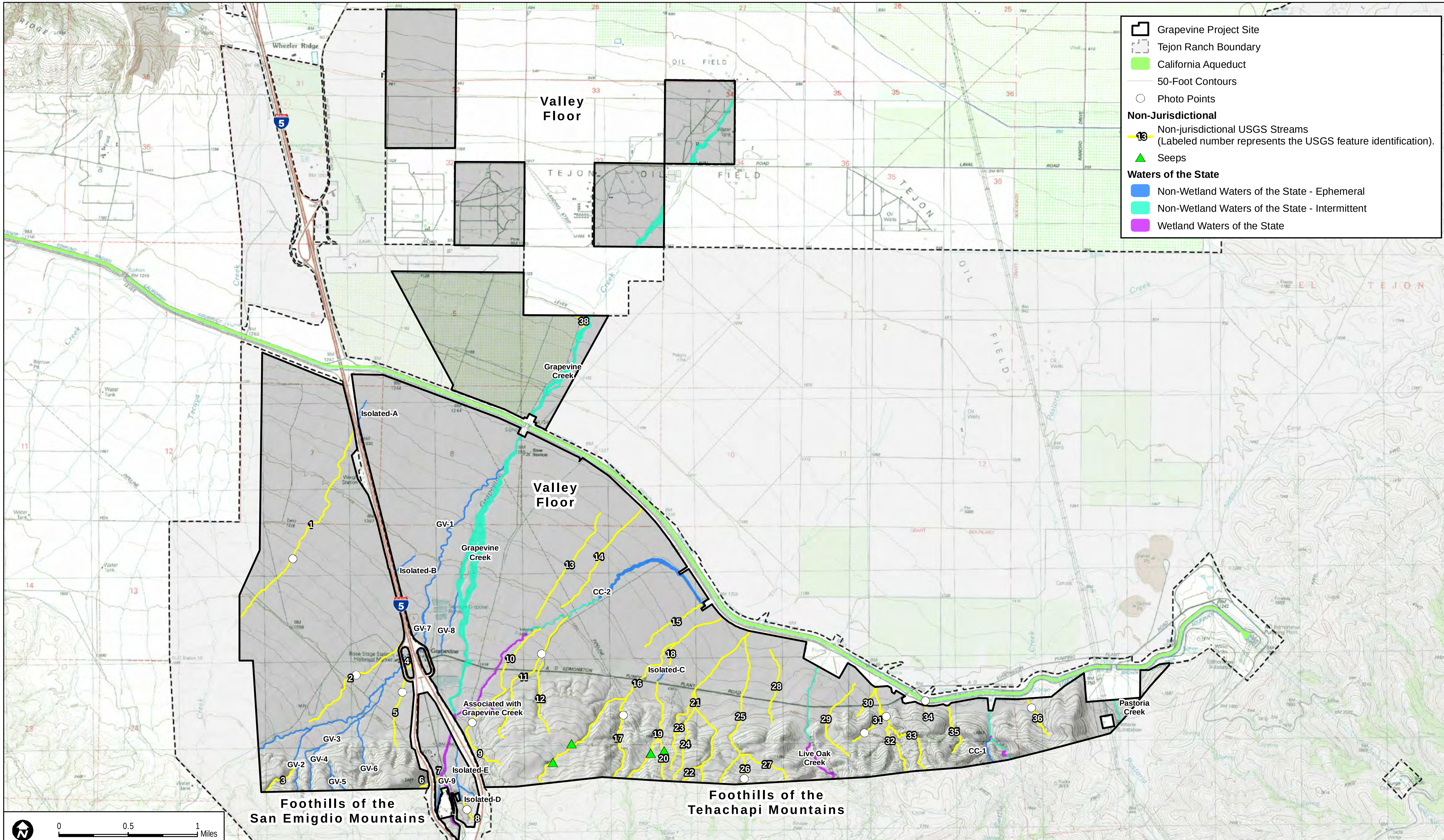

SOURCES: USGS n.d.; TRC 2013

FIGURE E3-1

Waters of the State and Non-jurisdictional USGS Streams

GRAPEVINE PROJECT

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Figure E3-2

	
USGS 1	USGS 1
	
USGS 2	USGS 2

Figure E3-2

	
USGS 5	USGS 8
	
USGS 9	USGS 11

Figure E3-2

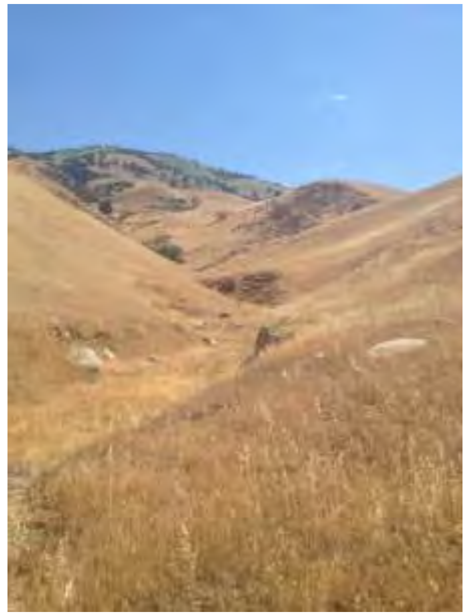
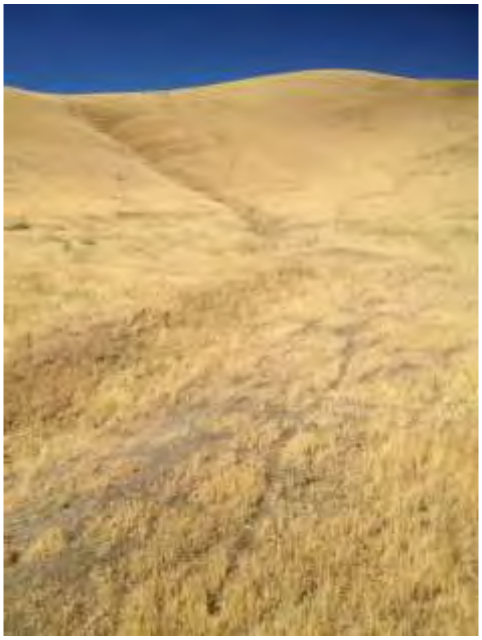
	
USGS 11	USGS 17
	
USGS 26	USGS 26

Figure E3-2

	
USGS 31	USGS 32
	
USGS 34	USGS 36

APPENDIX F

Plant Compendium

APPENDIX F
Plant Compendium

A total of 353 species of vascular plants in 69 plant families were recorded within the 8,010-acre Grapevine Specific Plan Area; 77-acre off-site impact areas and approximately 7,300 acres of adjacent lands on Tejon Ranch in 2013, 2014, and 2015. Approximately 251 (71%) were native species and 102 (29%) were non-native introduced species. These species are listed below by family.

DICOTS

ADOXACEAE – MUSKROOT FAMILY

Sambucus nigra ssp. *caerulea* – blue elderberry

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – prostrate pigweed
Amaranthus blitoides – mat amaranth

ANACARDIACEAE – SUMAC OR CASHEW FAMILY

* *Schinus molle* – Peruvian peppertree
Toxicodendron diversilobum – Pacific poison oak

APIACEAE – CARROT FAMILY

* *Apium graveolens* – wild celery
Bowlesia incana – hoary bowlesia
Lomatium dissectum var. *multifidum* – carrotleaf biscuitroot
Lomatium nevadense – Nevada biscuitroot
Lomatium utriculatum – common lomatium
Sanicula bipinnata – poison sanicle
Sanicula graveolens – northern sanicle

APOCYNACEAE – DOGBANE FAMILY

* *Nerium oleander* – oleander
Apocynum cannabinum – Indian hemp
Asclepias erosa – desert milkweed
Asclepias fascicularis – Mexican whorled milkweed

ASTERACEAE – SUNFLOWER FAMILY

* *Carduus pycnocephalus* ssp. *pycnocephalus* – Italian plumeless thistle
* *Centaurea melitensis* – Maltese star-thistle
* *Centaurea solstitialis* – yellow star-thistle
* *Cirsium vulgare* – bull thistle
* *Cynara cardunculus* ssp. *flavescens* – cardoon
* *Cynara cardunculus* – cardoon

* *Erigeron bonariensis* – asthmaweed
* *Hedypnois cretica* – Cretanweed
* *Hypochaeris glabra* – smooth cat's ear
* *Lactuca serriola* – prickly lettuce
* *Logfia gallica* – narrowleaf cottonrose
* *Matricaria discoidea* – disc mayweed
* *Pseudognaphalium luteoalbum* – Jersey cudweed
* *Senecio vulgaris* – old-man-in-the-Spring
* *Silybum marianum* – blessed milkthistle
* *Sonchus asper* ssp. *asper* – spiny sowthistle
* *Sonchus oleraceus* – common sowthistle
Achillea millefolium – common yarrow
Achyrachaena mollis – blow wives
Ambrosia acanthicarpa – flatspine bur ragweed
Ancistrocarphus filagineus – false neststraw
Artemisia douglasiana – Douglas' sagewort
Artemisia dracunculus – tarragon
Baccharis pilularis – coyotebrush
Baccharis salicina – willow baccharis
Calycadenia multiglandulosa – sticky western rosinweed
Chaenactis glabriuscula var. *glabriuscula* – yellow pincushion
Chaenactis stevioides – Esteve's pincushion
Cirsium occidentale var. *californicum* – cobwebby thistle
Corethrogyne filaginifolia – common sandaster
Deinandra pallida – Kern tarweed
Eastwoodia elegans – yellow aster
Ericameria linearifolia – narrowleaf goldenbush
Ericameria nauseosa – rubber rabbitbrush
Erigeron canadensis – Canadian horseweed
Erigeron foliosus var. *foliosus* – leafy fleabane
Eriophyllum confertiflorum – golden-yarrow
Euthamia occidentalis – western goldentop
Gnaphalium palustre – western marsh cudweed
Gutierrezia californica – San Joaquin snakeweed
Gutierrezia sarothrae – broom snakeweed
Helianthus annuus – common sunflower
Heterotheca grandiflora – telegraphweed
Heterotheca sessiliflora ssp. *echioides* – sessileflower false goldenaster
Heterotheca subaxillaris ssp. *latifolia* – camphorweed

Holocarpha heermannii – Heermann's tarweed
Isocoma acradenia var. *bracteosa* – alkali goldenbush
Isocoma acradenia – alkali goldenbush
Lagophylla ramosissima – branched lagophylla
Lepidospartum squamatum – California broomsage
Lessingia glandulifera var. *glandulifera* – valley lessingia
Logfia filaginoides – California cottonrose
Malacothrix coulteri – snake's head
Malacothrix saxatilis var. *commutata* – cliff desertdandelion
Microseris douglasii ssp. *douglasii* – Douglas' silverpuffs
Pseudognaphalium beneolens – Wright's cudweed
Pseudognaphalium californicum – ladies' tobacco
Pseudognaphalium thermale – Wright's cudweed
Rafinesquia californica – California plumeseed
Solidago velutina ssp. *californica* – threenerve goldenrod
Stephanomeria pauciflora – brownplume wirelettuce
Stephanomeria virgata ssp. *pleurocarpa* – wand wirelettuce
Uropappus lindleyi – Lindley's silverpuffs
Xanthium strumarium – rough cocklebur
Baccharis salicifolia ssp. *salicifolia* – mulefat

BORAGINACEAE – BORAGE FAMILY

Amsinckia eastwoodiae – Eastwood's fiddleneck
Amsinckia intermedia – common fiddleneck
Amsinckia menziesii – Menzies' fiddleneck
Amsinckia retrorsa – Menzies' fiddleneck
Amsinckia tessellata var. *gloriosa* – bristly fiddleneck
Amsinckia tessellata var. *tessellata* – bristly fiddleneck
Cryptantha nevadensis var. *rigida* – Nevada cryptantha
Emmenanthe penduliflora – whisperingbells
Heliotropium curassavicum var. *oculatum* – seaside heliotrope
Pectocarya penicillata – sleeping combseed
Phacelia cicutaria var. *cicutaria* – caterpillar phacelia
Phacelia cicutaria var. *hispida* – caterpillar phacelia
Phacelia ramosissima – branching phacelia
Phacelia tanacetifolia – lacy phacelia
Pholistoma membranaceum – white fiestaflower
Plagiobothrys arizonicus – Arizona popcornflower
Plagiobothrys canescens var. *catalinensis* – Catalina popcornflower

Plagiobothrys canescens – valley popcornflower
Plagiobothrys nothofulvus – rusty popcornflower
Phacelia imbricata var. *imbricata* – no common name

BRASSICACEAE – MUSTARD FAMILY

* *Brassica nigra* – black mustard
* *Brassica tournefortii* – Asian mustard
* *Capsella bursa-pastoris* – shepherd's purse
* *Hirschfeldia incana* – shortpod mustard
* *Lepidium latifolium* – broadleaved pepperweed
* *Sisymbrium altissimum* – tall tumblemustard
* *Sisymbrium irio* – London rocket
* *Sisymbrium orientale* – Indian hedgemustard
Athysanus pusillus – common sandweed
Caulanthus coulteri – Coulter's wild cabbage
Caulanthus lasiophyllus – California mustard
Lepidium nitidum – shining pepperweed
Nasturtium officinale – watercress
Thysanocarpus curvipes – sand fringepod
Tropidocarpum gracile – dobie pod

CACTACEAE – CACTUS FAMILY

* *Opuntia ficus-indica* – Barbary fig

CARYOPHYLLACEAE – PINK FAMILY

* *Cerastium glomeratum* – sticky chickweed
* *Herniaria hirsuta* var. *cinerea* – hairy rupturewort
* *Herniaria hirsuta* – hairy rupturewort
* *Silene gallica* – common catchfly
* *Stellaria media* – common chickweed

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Chenopodium album* – lambsquarters
* *Chenopodium murale* – nettleleaf goosefoot
* *Chenopodium vulvaria* – stinking goosefoot
* *Salsola tragus* – prickly Russian thistle
Atriplex lentiformis – big saltbush
Atriplex polycarpa – cattle saltbush
Atriplex serenana var. *serenana* – bractscale
Chenopodium berlandieri – pitseed goosefoot

CLEOMACEAE – CLEOME FAMILY

Peritoma arborea var. *globosa* – bladderpod spiderflower
Peritoma arborea – bladderpod spiderflower
Isomeris arborea – bladderpod spiderflower

CONVOLVULACEAE – MORNING-GLORY FAMILY

* *Convolvulus arvensis* – field bindweed
Calystegia malacophylla ssp. *malacophylla* – Sierra false bindweed

CRASSULACEAE – STONECROP FAMILY

Crassula connata – sand pygmyweed
Dudleya lanceolata – lanceleaf liveforever

CUCURBITACEAE – GOURD FAMILY

Cucurbita foetidissima – Missouri gourd
Cucurbita palmata – coyote gourd
Marah macrocarpa – Cucamonga manroot

EUPHORBIACEAE – SPURGE FAMILY

Croton californicus – California croton
Euphorbia albomarginata – whitemargin sandmat
Euphorbia ocellata ssp. *ocellata* – Contura Creek sandmat
Croton setiger – dove weed

FABACEAE – LEGUME FAMILY

* *Medicago polymorpha* – burclover
* *Melilotus albus* – yellow sweetclover
* *Melilotus indicus* – annual yellow sweetclover
* *Parkinsonia aculeata* – Jerusalem thorn
Acmispon americanus var. *americanus* – American bird's-foot trefoil
Acmispon brachycarpus – foothill deervetch
Acmispon glaber – common deerweed
Acmispon maritimus var. *maritimus* – coastal bird's-foot trefoil
Acmispon strigosus – strigose bird's-foot trefoil
Acmispon wrangelianus – Chilean bird's-foot trefoil
Astragalus didymocarpus var. *didymocarpus* – dwarf white milkvetch
Astragalus douglasii var. *douglasii* – Parish's milkvetch
Astragalus gambelianus – Gambel's dwarf milkvetch
Astragalus lentiginosus var. *nigricalycis* – freckled milkvetch
Lupinus albifrons var. *albifrons* – silver lupine

Lupinus benthamii – spider lupine
Lupinus bicolor – miniature lupine
Lupinus concinnus – bajada lupine
Lupinus excubitus var. *austromontanus* – mountain bush lupine
Lupinus microcarpus var. *densiflorus* – whitewhorl lupine
Lupinus microcarpus var. *microcarpus* – valley lupine
Lupinus microcarpus – valley lupine
Lupinus nanus – sky lupine
Lupinus succulentus – hollowleaf annual lupine
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum – foothill clover
Trifolium microcephalum – smallhead clover
Trifolium willdenovii – tomcat clover

FAGACEAE – OAK FAMILY
Quercus agrifolia – California live oak
Quercus douglasii – blue oak
Quercus kelloggii – California black oak
Quercus lobata – valley oak

GERANIACEAE – GERANIUM FAMILY
* *Erodium botrys* – longbeak stork's bill
* *Erodium brachycarpum* – shortfruit stork's bill
* *Erodium cicutarium* – redstem stork's bill
* *Erodium moschatum* – musky stork's bill

GROSSULARIACEAE – GOOSEBERRY FAMILY
Ribes quercetorum – rock gooseberry

JUGLANDACEAE – WALNUT FAMILY
Juglans californica – Southern California black walnut

LAMIACEAE – MINT FAMILY
* *Marrubium vulgare* – horehound
Salvia columbariae – chia
Stachys rigida var. *quercetorum* – rough hedgenettle
Stachys rigida var. *rigida* – rough hedgenettle
Trichostema lanceolatum – vinegarweed

LOASACEAE – LOASA FAMILY

Mentzelia affinis – yellowcomet
Mentzelia albicaulis – whitestem blazingstar

LYTHRACEAE – LOOSESTRIFE FAMILY

* *Lythrum hyssopifolia* – hyssop loosestrife
* *Punica granatum* – pomegranate

MALVACEAE – MALLOW FAMILY

* *Malva parviflora* – cheeseweed mallow

MELIACEAE – MAHOGANY FAMILY

* *Melia azedarach* – Chinaberry tree

MONTIACEAE – MONTIA FAMILY

Claytonia parviflora ssp. *parviflora* – streambank springbeauty
Claytonia perfoliata ssp. *perfoliata* – miner's lettuce
Claytonia rubra ssp. *rubra* – redstem springbeauty
Calandrinia ciliata – fringed redmaids

MORACEAE – MULBERRY FAMILY

* *Ficus carica* – edible fig

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus cladocalyx* – sugargum
* *Eucalyptus globulus* – Tasmanian bluegum

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Boerhavia coccinea – scarlet spiderling
Mirabilis multiflora var. *pubescens* – Colorado four o'clock

OLEACEAE – OLIVE FAMILY

* *Olea europaea* – olive
Fraxinus latifolia – Oregon ash
Fraxinus velutina – velvet ash

ONAGRACEAE – EVENING PRIMROSE FAMILY

Camissonia campestris ssp. *campestris* – Mojave suncup
Camissonia strigulosa – sandysoil suncup
Camissoniopsis micrantha – miniature suncup
Clarkia cylindrica – speckled clarkia

Clarkia purpurea ssp. *quadrivulnera* – winecup clarkia
Epilobium canum ssp. *canum* – hummingbird trumpet
Epilobium canum – hummingbird trumpet
Epilobium ciliatum ssp. *ciliatum* – fringed willowherb
Eremothera boothii ssp. *decorticans* – shredding suncup

OROBANCHACEAE – BROOM-RAPE FAMILY
Castilleja attenuata – attenuate Indian paintbrush
Castilleja densiflora ssp. *densiflora* – denseflower Indian paintbrush
Castilleja exserta ssp. *exserta* – exserted Indian paintbrush
Castilleja subinclusa ssp. *subinclusa* – longleaf Indian paintbrush

PAPAVERACEAE – POPPY FAMILY
Eschscholzia californica – California poppy
Eschscholzia lemmonii ssp. *lemmonii* – Lemmon's poppy
Eschscholzia minutiflora – pygmy poppy
Papaver heterophyllum – windpoppy

PHRYMACEAE – LOPSEED FAMILY
Mimulus floribundus – manyflowered monkeyflower
Mimulus guttatus – seep monkeyflower

PLANTAGINACEAE – PLANTAIN FAMILY
* *Veronica anagallis-aquatica* – water speedwell
Plantago erecta – dotseed plantain

PLATANACEAE – PLANE TREE, SYCAMORE FAMILY
Platanus racemosa – California sycamore

POLEMONIACEAE – PHLOX FAMILY
Eriastrum pluriflorum ssp. *pluriflorum* – Tehachapi woollystar
Gilia capitata ssp. *abrotanifolia* – bluehead gilia
Gilia capitata ssp. *capitata* – bluehead gilia
Gilia tricolor ssp. *diffusa* – bird's-eye gilia
Leptosiphon liniflorus – narrowflower flaxflower
Leptosiphon parviflorus – variable linanthus
Navarretia setiloba – Piute Mountains navarretia

POLYGONACEAE – BUCKWHEAT FAMILY
* *Polygonum aviculare* ssp. *aviculare* – prostrate knotweed
* *Rumex conglomeratus* – clustered dock

* *Rumex crispus* – curly dock
Chorizanthe xanti var. *xanti* – Riverside spineflower
Eriogonum angulosum – anglestem buckwheat
Eriogonum cithariforme – Cithara buckwheat
Eriogonum fasciculatum var. *foliolosum* – Eastern Mojave buckwheat
Eriogonum fasciculatum var. *polifolium* – Eastern Mojave buckwheat
Eriogonum gracillimum – rose and white buckwheat
Eriogonum maculatum – spotted buckwheat
Eriogonum nudum var. *pubiflorum* – naked buckwheat
Eriogonum nudum – naked buckwheat
Persicaria lapathifolia – curlytop knotweed
Pterostegia drymarioides – woodland pterostegia

RANUNCULACEAE – BUTTERCUP FAMILY
Clematis ligusticifolia – western white clematis
Delphinium gypsophilum – Pinoche Creek larkspur

RUBIACEAE – MADDER FAMILY
Galium angustifolium ssp. *angustifolium* – narrowleaf bedstraw
Galium aparine – stickywilly

SALICACEAE – WILLOW FAMILY
Populus fremontii ssp. *fremontii* – Fremont cottonwood
Salix exigua – narrowleaf willow
Salix gooddingii – Goodding's willow
Salix laevigata – red willow
Salix lasiolepis – arroyo willow

SAPINDACEAE – SOAPBERRY FAMILY
Acer negundo – boxelder
Aesculus californica – California buckeye

SAURURACEAE – LIZARD'S-TAIL FAMILY
Anemopsis californica – yerba mansa

SAXIFRAGACEAE – SAXIFRAGE FAMILY
Lithophragma parviflorum var. *parviflorum* – smallflower woodland-star

SCROPHULARIACEAE – FIGWORT FAMILY
Mimulus pictus – calico monkeyflower
Scrophularia californica – California figwort

SIMAROUBACEAE – QUASSIA OR SIMAROUBA FAMILY

* *Ailanthus altissima* – tree of heaven

SOLANACEAE – NIGHTSHADE FAMILY

* *Nicotiana glauca* – tree tobacco
* *Solanum elaeagnifolium* – silverleaf nightshade
Datura wrightii – sacred thorn-apple
Nicotiana quadrivalvis – Indian tobacco

TAMARICACEAE – TAMARISK FAMILY

* *Tamarix aphylla* – Athel tamarisk
* *Tamarix ramosissima* – saltcedar

URTICACEAE – NETTLE FAMILY

* *Urtica urens* – dwarf nettle
Urtica dioica ssp. *holosericea* – stinging nettle
Urtica dioica – stinging nettle

VERBENACEAE – VERVAIN FAMILY

Verbena lasiostachys – western vervain

VISCACEAE – MISTLETOE FAMILY

Phoradendron leucarpum ssp. *macrophyllum* – no common name
Phoradendron leucarpum ssp. *tomentosum* – no common name

VITACEAE – GRAPE FAMILY

* *Vitis vinifera* – wine grape
Vitis californica – California wild grape
Vitis girdiana – desert wild grape

ZYGOPHYLLACEAE – CALTROP FAMILY

* *Tribulus terrestris* – puncturevine

EBENACEAE – NO COMMON NAME

* *Diospyros virginiana* – common persimmon

CASUARINACEAE – SHE-OAK FAMILY

* *Casuarina equisetifolia* – beach she-oak

FERNS AND FERN ALLIES

PTERIDACEAE – BRAKE FAMILY

Cheilanthes covillei – Coville's lipfern
Pellaea andromedifolia – coffee cliffbrake
Pentagramma triangularis ssp. *triangularis* – goldback fern

SELAGINELLACEAE – SPIKE-MOSS FAMILY

Selaginella bigelovii – bushy spikemoss

GYMNOSPERMS AND GNETOPHYTES

CUPRESSACEAE – CYPRESS FAMILY

Juniperus californica – California juniper

MONOCOTS

AGAVACEAE – AGAVE FAMILY

Chlorogalum pomeridianum var. *pomeridianum* – wavyleaf soap plant
Hesperoyucca whipplei – chaparral yucca

ARACEAE – ARUM FAMILY

Lemna gibba – swollen duckweed
Lemna minor – common duckweed

ARECACEAE – PALM FAMILY

Washingtonia filifera – California fan palm

CYPERACEAE – SEDGE FAMILY

Carex praegracilis – clustered field sedge
Cyperus eragrostis – tall flatsedge
Eleocharis macrostachya – pale spikerush
Eleocharis parishii – Parish's spikerush
Schoenoplectus acutus var. *occidentalis* – tule

JUNCACEAE – RUSH FAMILY

Juncus balticus ssp. *ater* – mountain rush
Juncus bufonius var. *bufonius* – toad rush
Juncus mexicanus – Mexican rush
Juncus xiphioides – irisleaf rush

LILIACEAE – LILY FAMILY

Calochortus kennedyi var. *kennedyi* – desert mariposa lily
Calochortus venustus – butterfly mariposa lily

POACEAE – GRASS FAMILY

* *Arundo donax* – giant reed
* *Avena barbata* – slender oat
* *Avena fatua* – wild oat
* *Bromus diandrus* – ripgut brome
* *Bromus hordeaceus* – soft brome
* *Bromus madritensis* ssp. *madritensis* – compact brome
* *Bromus madritensis* ssp. *rubens* – red brome
* *Bromus tectorum* – cheatgrass
* *Crypsis alopecuroides* – foxtail pricklegrass
* *Crypsis schoenoides* – swamp pricklegrass
* *Cynodon dactylon* – Bermudagrass
* *Echinochloa crus-galli* – barnyardgrass
* *Festuca myuros* – rat-tail fescue
* *Festuca perennis* – Italian ryegrass
* *Hordeum marinum* ssp. *gussoneanum* – Mediterranean barley
* *Hordeum murinum* ssp. *glaucum* – smooth barley
* *Hordeum murinum* ssp. *leporinum* – hare barley
* *Hordeum murinum* – mouse barley
* *Koeleria gerardii* – Mediterranean hairgrass
* *Lamarckia aurea* – goldentop grass
* *Paspalum dilatatum* – dallisgrass
* *Phalaris minor* – littleseed canarygrass
* *Poa annua* – annual bluegrass
* *Poa bulbosa* – bulbous bluegrass
* *Polypogon monspeliensis* – annual rabbitsfoot grass
* *Polypogon viridis* – beardless rabbitsfoot grass
* *Schismus arabicus* – Arabian schismus
* *Schismus barbatus* – common Mediterranean grass
* *Setaria pumila* ssp. *pumila* – yellow foxtail
* *Stipa miliacea* var. *miliacea* – smilograss
* *Triticum aestivum* – common wheat
Aristida ternipes var. *gentilis* – spidergrass
Distichlis spicata – saltgrass
Elymus condensatus – giant wildrye

Elymus triticoides – beardless wildrye
Eragrostis pectinacea var. *pectinacea* – tufted lovegrass
Festuca microstachys – desert fescue
Melica imperfecta – smallflower melicgrass
Poa secunda ssp. *secunda* – Sandberg bluegrass
Poa secunda – Sandberg bluegrass
Sporobolus airoides – alkali sacaton
Stipa cernua – nodding needlegrass
Stipa pulchra – purple needlegrass
Elymus ×gouldii – no common name

THEMIDACEAE – BRODIAEA FAMILY
Brodiaea terrestris ssp. *kernensis* – Kern brodiaea
Dichelostemma capitatum ssp. *capitatum* – bluedicks
Triteleia ixioides ssp. *scabra* – prettyface
Triteleia laxa – Ithuriel's spear

TYPHACEAE – CATTAIL FAMILY
Typha domingensis – southern cattail

ZANNICHELLIACEAE – HORNED-PONDWEED FAMILY
Zannichellia palustris – horned pondweed

* signifies introduced (non-native) species

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APPENDIX G

Evaluation of Special-Status Plants

APPENDIX G
Evaluation of Special-Status Plants

This appendix analyzes each of these special-status plant species' potential to occur in the study area based on several factors, including the species' known range, habitat associations, preferred soil substrate, life form, elevation, blooming period, and surveys. These factors were determined through various resources, including the special-status plant species reported in the U.S. Geologic Survey 7.5-minute Grapevine, Pastoria Creek, and Mettler quadrangles and the surrounding nine topographic quadrangles (CNPS 2015a; CDFW 2015), for a total 15-quadrangle search; special-status species covered in the Tehachapi Uplands Multiple Species Habitat Conservation Plan (Dudek 2013); special-status species that are proposed for coverage in the draft Valley Floor Habitat Conservation Plan (Kern County 2006); species known to occur on Tejon Ranch on the valley floor or adjacent to the study area (Dudek 2009; Tejon Ranch Conservancy 2013; DMEC 2010); and special-status species known to occur near the study area and that also occur at similar elevations, within similar vegetation communities, and on similar soils to those in the Grapevine study area (Calflora 2015a).

Table G-1 includes species that are not expected to occur in the Grapevine study area or not expected to be impacted by the proposed project because: (1) the study area is outside of the species' known geographic range (i.e., the species is not known to occur on the San Joaquin Valley floor, the Tehachapi Mountains, or in the San Emigdio foothills); (2) the study area is outside of the known elevation range of the species; (3) the study area lacks suitable soils and/or vegetation communities; (4) the suitable habitat for the species is restricted to proposed project open space in the foothills; and/or (5) the species has a low potential to occur in the Grapevine study area within the proposed project footprint. No direct, indirect, or cumulative impacts are expected to occur to the special-status species listed in this appendix.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Abrams' oxytheca	*Acanthoscyphus parishii* var. *abramsii*	None/None/1B.2	Chaparral (sandy or shale)/annual herb/Jun–Aug/3,750–6,749	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 1,560 feet above the study area's highest elevation range. There is no suitable habitat for the species within the study area. The species is not known to occur on the San Joaquin Valley floor, the Tehachapis, or in the San Emigdio foothills (CDFW 2015); thus, the study area is outside of the species' geographic range. Additionally, focused surveys were conducted and this species was not observed.
adobe yampah	*Perideridia pringlei*	None/None/4.3	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, serpentinite, often clay/perennial herb/Apr–Jun(Jul)/984–5,906	Not observed. Low potential to occur only in the foothill areas of the study area; not expected to occur in the valley floor areas of the study area. This species occurs on serpentinite soils, which are not mapped in the study area (USDA 2007; USDA 2009) and were not observed during surveys. Suitable vegetation for the species and clay soils are restricted to areas that are located in proposed project open space in the foothills. Focused surveys were conducted and this species was not observed.
alkali mariposa lily	*Calochortus striatus*	None/None/1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps, alkaline, mesic/ perennial bulbiferous herb/Apr–Jun/230–5,233	Not observed. Not expected to occur. The nearest occurrence is over 30 miles from the study area. Suitable, but marginal, habitat for the species is restricted to the foothill areas of the study area that are located within proposed project open space and this species is not expected to occur in the valley floor portions of the study area. Furthermore, this species was not observed during focused surveys and the species was detectable during surveys based upon reference population verification surveys conducted in 2013, which detected the species.
aromatic canyon gooseberry	*Ribes menziesii* var. *ixoderme*	None/None/1B.2	Chaparral, cismontane woodland/perennial deciduous shrub/Apr/2,001–3,806	Not observed. Not expected to occur. Although there is suitable woodland habitat in the foothills, which is located in proposed project open space, this easily detectable, perennial shrub was not observed during focused surveys.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Baja navarretia	*Navarretia peninsularis*	None/None/1B.2	Chaparral (openings), lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland, mesic/annual herb/Jun–Aug/4,921–7,546	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 2,110 feet above the study area's highest elevation range. Suitable, but marginal, habitat for the species is restricted to the foothills areas located in proposed project open space. Finally, focused surveys were conducted and this species was not observed.
Bakersfield cactus	*Opuntia basilaris* var. *treleasei*	FE/SE/1B.1	Chenopod scrub, cismontane woodland, valley and foothill grassland, sandy or gravelly/ perennial stem succulent/Apr–May/394–3,740	Not observed. Not expected to occur. The study area is within the species' known range and there are several occurrences within 3 miles of the area. There is also suitable habitat present. However, this conspicuous, perennial stem succulent was not observed during surveys. The species would have been easily detectable because it is a perennial stem succulent. When in bloom, it has showy pink flowers. In 2013, this species was observed blooming during reference population verification surveys that overlapped the timing of the focused survey. In 2015, this species was not observed, nor is it expected to occur in the off-site impact areas because this species would have been easily detectable as a perennial steam succulent.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Bakersfield smallscale	*Atriplex tularensis*	None/SE/1A	Chenopod scrub/annual herb/Jun–Oct/295–656	Not observed. Not expected to occur. Historical populations of Bakersfield smallscale are located on the subalkaline margins of alkali sinks at elevations of 91 meters (299 feet) to 96 meters (315 feet) (ESRP 2013) and are restricted to a small area of south-central Kern County between Greenfield and Mettler (CDFG 2004). Furthermore, the only remaining occurrence at the Kern Lake Preserve is presumed extirpated (CNPS 2015b). There is 0.7 acre of allscale scrub in the proposed off-site impact area, but the study area is outside of the species' known elevation range, with the species' highest known elevation range approximately 113 feet below the study area's lowest elevation range. Finally, focused surveys were conducted and this species was not observed.
California jewel-flower	*Caulanthus californicus*	FE/SE/1B.1	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland, sandy/ annual herb/Feb–May/200–3,281	Not observed. Low potential to occur. All of the occurrences on the San Joaquin Valley floor and in Kern County have been extirpated (USFWS 1998; CDFW 2015). While the USFWS states that additional populations may persist in the foothills of Kern County where potential habitat remains in rangeland (USFWS 1998), plant surveys conducted on portions of Tejon Ranch in the San Joaquin Valley floor (DMEC 2010; White, pers. comm. 2013) and focused surveys within the study area were negative. Extant occurrences are located approximately 30 miles west of the study area.
caper-fruited tropidocarpum	*Tropidocarpum capparideum*	None/None/1B.1	Valley and foothill grassland (alkaline hills)/ annual herb/Mar–Apr/3–1,493	Not observed. Low potential to occur. Species is reported as occurring on Tejon Hills near Comanche Point in Kern County (Calflora 2015b), but this observation is the only known occurrence in Kern County. The closest CNDDB records for this species are 90 miles northwest of the study area in San Luis Obispo.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Comanche Point layia	*Layia leucopappa*	None/None/1B.1	Chenopod scrub, valley and foothill grassland/ annual herb/Mar–Apr/328–1,148	Not observed. Low potential to occur. This species has been recorded within approximately 5 miles of the study area on the San Joaquin Valley floor (CDFW 2015). There is suitable habitat with the study area, but because the study area is on the periphery of the species' relatively narrow range and focused surveys within the study area were negative, the potential for the species to occur in the study area is low.
delicate bluecup	*Githopsis tenella*	None/None/1B.3	Chaparral, cismontane woodland, mesic/ annual herb/May–Jun/3,609–6,234	Not observed. Not expected to occur. Suitable habitat for the species is restricted to the foothill areas, which are located in the proposed project open space. However, the study area is outside of the species' known elevation range, with the species' lower elevation range approximately 1,420 feet above the study area's highest elevation range. Focused surveys were conducted and this species was not observed.
Fort Tejon woolly sunflower	*Eriophyllum lanatum* var. *hallii*	None/None/1B.1	Chaparral, cismontane woodland/perennial herb/May–Jul/3,494–4,921	Not observed. Not expected to occur. Suitable habitat for the species is restricted to the foothill areas, which are located in the proposed project open space. However, the study area is outside of the species' known elevation range, with the species' lower elevation range approximately 1,310 feet above the study area's highest elevation range. Focused surveys were conducted and this species was not observed.
heartscale	*Atriplex cordulata* var. *cordulata*	None/None/1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy), saline or alkaline/annual herb/Apr–Oct/0–1,837	Not observed. Low potential to occur. The nearest occurrence is approximately 13 miles from the study area along the Old Rim Ditch. According to Kern County, this species is not known to occur on or near the study area (Kern County 2006). There is suitable habitat within the study area; however, other literature indicates that this species occurs in saltbush/grassland (as opposed to grasslands with no saltbush or chenopod scrub intermixed) and valley sink scrub (Kern County 2006), which is limited to allscale scrub in a 0.7-acre portion of the off-site impact areas. Focused surveys for this species were negative.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
hispid bird's-beak	*Chloropyron molle* ssp. *hispidum*	None/None/1B.1	Meadows and seeps, playas, valley and foothill grassland, alkaline/annual herb hemiparasitic/ Jun–Sep/3–509	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' highest known elevation range approximately 260 feet below the study area's lowest elevation range. Additionally, focused surveys were conducted and this species was not observed.
Hoover's eriastrum	*Eriastrum hooveri*	Delisted/None/4.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland, sometimes gravelly/annual herb/Mar–Jul/164–3,002	Not observed. Low potential to occur. Although there is suitable vegetation within the study area and gravelly substrates, the known occurrences are over 12 miles north and over 30 miles west of the study area (CDFW 2015). While there is habitat within the study area, because focused surveys were negative, the potential for the species to occur in the study area is low.
Horn's milk-vetch	*Astragalus hornii* var. *hornii*	None/None/1B.1	Meadows and seeps, playas/lake margins, alkaline/annual herb/May–Oct/197–2,789	Not observed. Low potential to occur in the foothill areas of the study area; not expected to occur in the valley floor areas of the study area. Suitable, but marginal, habitat (marshes and seeps) for this species is restricted to areas that are located within proposed project open space. Furthermore, this species was not observed during focused surveys.
Kern mallow	*Eremalche kernensis*	FE/None/1B.1	Chenopod scrub, valley and foothill grassland/ annual herb/Mar–May/230–4,232	Not observed. Low potential to occur. The study area is dominated by grasslands, but the closest and most recent (2011) occurrence on Tejon Ranch is approximately 8 miles from the study area at the Kern Lake Preserve (CDFW 2015). While there is suitable habitat with the study area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015), because focused surveys were negative, the potential for the species to occur in the study area is low.
Kusche's sandwort	*Eremogone macradenia* var. *arcuifolia*	CBR (a synonym of *Arenaria macradenia* ssp. *kuschei*, a taxon previously included on CNPS List 1B.1)	Chaparral (openings, granitic)/June–July/2,132– 7,874 (Jepson Flora Project 2013)	Not observed. Not expected to occur. There is no suitable habitat for the species within the study area. Additionally, focused surveys were conducted and this species was not observed.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Lemmon's jewelflower	*Caulanthus lemmonii*	None/None/1B.2	Pinyon and juniper woodland, valley and foothill grassland/annual herb/Mar–May/262–4,003	Not observed. Low potential to occur. The study area is located along the southeastern edge of the species' known range and there are occurrences within approximately 2 miles of the study area. While there is suitable habitat within the study area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015), because focused surveys were negative, the potential for the species to occur in the study area is low.
Lesser saltscale	*Atriplex minuscula*[1]	None/ None/ 1B.1	Chenopod scrub, playas, valley and foothill grassland/alkaline, sandy/ annual herb/ May–Oct/ 49–656	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' highest known elevation range approximately 113 feet below the study area's lowest elevation range. Additionally, while the species occurs in the San Joaquin Valley, the closest occurrence is approximately 43 miles northwest of the study area (CDFW 2015). Finally, focused surveys were conducted and this species was not observed.
Lost Hills crownscale	*Atriplex coronata* var. *vallicola*	None/None/1B.2	Chenopod scrub, valley and foothill grassland, vernal pools, alkaline/annual herb/Apr–Aug/ 164–2,083	Not observed. Low potential to occur. The nearest occurrence is approximately 12 miles northwest of the study area (CDFW 2015). According to Kern County, this species is not known to occur in or near the study area (Kern County 2006). There is suitable habitat (grasslands and allscale scrub) within the study area; however, other literature indicates that this species occurs in alkaline sinks and chenopod scrub (USFWS 1998), which is limited to a 0.7-acre area in the off-site impact area. The valley floor populations of this crownscale occur at elevations between 165 and 280 feet amsl (USFWS 1998), which is approximately 480 feet below the study area's lowest elevation range. Additionally, focused surveys were conducted and this species was not observed.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Madera leptosiphon	*Leptosiphon serrulatus*	None/None/1B.2	Cismontane woodland, lower montane coniferous forest/annual herb/Apr–May/984–4,265	Not observed. Low potential to occur in the foothill areas of the study area; not expected to occur in the valley floor areas of the study area. The nearest occurrence is in the Tehachapi Mountains (Winters Ridge) east of the study area on Tejon Ranch; however, the record notes that the only source of information for this occurrence is a 1935 collection and it is a southerly extension of the known range of the plant, so the identification should be confirmed. The next nearest occurrence is in northern Kern County in the Greenhorn Mountains (southern Sierra Nevada Foothills), approximately 50 miles north of the study area (CDFW 2015). Furthermore, suitable habitat for the species is restricted to the foothill areas, which are located in proposed project open space. Finally, focused surveys were conducted and this species was not observed.
Mount Pinos onion	*Allium howellii* var. *clokeyi*	None/None/1B.3	Great Basin scrub, pinyon and juniper woodland/perennial bulbiferous herb/Apr–Jun/ 4,265–6,070	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 2,080 feet above the study area's highest elevation range. There is no suitable habitat for the species within the study area. The species is not known to occur on the San Joaquin Valley floor, the Tehachapis, or the San Emigdio foothills (CDFW 2015); thus, the study area is outside of the species' geographic range. Additionally, focused surveys were conducted and this species was not observed.
pale-yellow layia	*Layia heterotricha*	None/None/1B.1	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland, alkaline or clay/annual herb/Mar–Jun/984–5,594	Not observed. Low potential to occur. The study area is within the species' known range and there are occurrences in the adjacent USGS quadrangles. There is also suitable oak woodland, coastal scrub, and grassland vegetation in the study area. While there is suitable habitat within the study area and the species is known to occur on the San Joaquin Valley floor and Tehachapis (CDFW 2015), because focused surveys were negative, the potential for the species to occur in the study area is low.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Palmer's mariposa lily	*Calochortus palmeri* var. *palmeri*	None/None/1B.2	Chaparral, lower montane coniferous forest, meadows and seeps, mesic/perennial bulbiferous herb/Apr–Jul/3,281–7,841	Not observed. Not expected to occur. Suitable, but marginal, habitat for the species is restricted to areas that are located in proposed project open space. However, the study area is outside of the species' known elevation range, with the species' lower elevation range approximately 1,110 feet above the study area's highest elevation range. Focused surveys were conducted and this species was not observed.
recurved larkspur	*Delphinium recurvatum*	None/None/1B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland, alkaline/ perennial herb/Mar–Jun/10–2,592	Not observed. Low potential to occur. The study area is located at the periphery of the species' known range and the nearest CNDDB occurrence is over 20 miles from the study area. However, the species' range is relatively large (spanning from Kern to Butte County) (CNPS 2015c) and there is suitable oak woodland and grassland vegetation in the study area. While there is suitable habitat within the study area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015), because focused surveys were negative, the potential for the species to occur in the study area is low.
Robbins' nemacladus	*Nemacladus secundiflorus* var. *robbinsii*	None/None/1B.2	Chaparral, valley and foothill grassland, openings/annual herb/Apr–Jun/1,148–5,577	Not observed. Not expected to occur. The species is not known to occur on the San Joaquin Valley floor, the Tehachapis, or the San Emigdio foothills (CDFW 2015); thus, the study area is outside of the species' geographic range. There is an occurrence approximately 10 miles from the study area, and this species has a relatively wide distribution, from eastern Los Angeles County to San Benito County (CDFW 2015). While there is suitable habitat within the study area (i.e., grasslands), focused surveys were negative and the study area is outside of the species' geographic range; therefore, this species is not expect to occur.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
round-leaved filaree	*California macrophylla*	None/None/1B.1	Cismontane woodland, valley and foothill grassland, clay/annual herb/Mar–May/49–3,937	Not observed. Not expected to occur in the study area based upon negative survey results and because 2013 reference population verification surveys confirmed the species was detectable during the 2013 surveys. The study area is within the species' known range, including the San Joaquin Valley floor, and there are occurrences in the adjacent USGS quadrangles. There is suitable oak woodland and grassland vegetation in the study area. However, this species was not observed during 2013 focused surveys and the species was detectable during the survey period based upon reference population verification surveys. In 2015, reference population verification surveys were conducted and this species was not observed. This species was not observed during 2015 focused surveys. However, this species is not expected to occur in the off-site impact areas as they lack suitable clay soils habitat.
salt spring checkerbloom	*Sidalcea neomexicana*	None/None/2.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas, alkaline, mesic/perennial herb/Mar–Jun/ 49–5,020	Not observed. Not expected to occur. The species is not known to occur on the San Joaquin Valley floor, the Tehachapis, or the San Emigdio foothills (CDFW 2015); thus, the study area is outside of the species' geographic range. There is a known occurrence approximately 11 miles from the study area (CDFW 2015). Suitable, but marginal, habitat for the species is restricted to the foothill areas, which are located in proposed project open space. Focused surveys were conducted and this species was not observed.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
San Bernardino aster	*Symphyotrichum defoliatum*	None/None/1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic), near ditches, streams, springs/perennial rhizomatous herb/ Jul–Nov/7–6,693	Not observed. Not expected to occur. The nearest record of this species is a 1939 record from around Lebec. Otherwise, this species is not known to occur on the San Joaquin Valley floor, the Tehachapis, or the San Emidgio foothills (CDFW 2015). Furthermore, this species was not observed during focused surveys and the species was detectable during surveys based upon reference population verification surveys in 2013 and 2015, which detected the species.
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	FT/SE/1B.1	Cismontane woodland, valley and foothill grassland, adobe clay/annual herb/Mar–Apr/ 295–2,625	Not observed. Not expected to occur. Three major population concentrations of the species are in the eastern San Joaquin Valley, including east of Fresno in Fresno County, west of Lake Success in Tulare County, and northeast of Bakersfield in Kern County (CDFW 2015). The nearest occurrence, observed in 2015, is in the Tejon Hills (Tejon Ranch Conservancy 2015), which is approximately 8 miles from the study area. Furthermore, wild occurrences of this species are associated with Cibo clay, Porterville clay, Centerville clay, and Mount Olive clay (Stebbins 1991, as cited in USFWS 2007), and, of these, only Cibo clay is in the study area, within open space foothill areas more than 1 mile from the proposed project footprint (USDA 2007, 2009).

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
San Joaquin woollythreads	*Monolopia congdonii*	FE/None/1B.2	Chenopod scrub, valley and foothill grassland (sandy)/annual herb/Feb–May/197–2,625	Not observed. Low potential to occur. This species is known to occur on the San Joaquin Valley floor at elevations from 200 feet to 850 feet amsl (USFWS 1998). It occurs at higher elevations (2,000 to 2,600 feet) in San Luis Obispo and Santa Barbara Counties (USFWS 1998). Additionally, on the San Joaquin Valley floor, this species is found on sand or sandy loam soils, particularly those of the Kimberlina series (USFWS 2010), which are not present in the study area or on Tejon Ranch. On the valley floor, this species is associated with valley saltbush scrub (USFWS 2010), which is limited to a 0.7-acre area of allscale scrub in the off-site impact area. The species is also known to occur in the surrounding hills of the Valley floor, but not within the Tehachapis. There is an occurrence within approximately 12 miles, north of the study area on the eastern side of the Valley floor (CDFW 2015). While there is suitable habitat within the study area and the species is known to occur on the San Joaquin Valley floor, the potential for the species to occur is low because the study area is outside of the species' known valley floor elevation range, and focused surveys were negative.
silvery false lupine	*Thermopsis californica* var. *argentata*	None/None/4.3	Lower montane coniferous forest, pinyon and juniper woodland/perennial rhizomatous herb/ Apr–Oct/2,493–5,233	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 310 feet above the study area's highest elevation range. There is no suitable habitat for the species within the study area. Additionally, focused surveys were conducted and this species was not observed.
slender nemacladus	*Nemacladus gracilis*	None/None/4.3	Cismontane woodland, valley and foothill grassland, sandy or gravelly/annual herb/Mar–May/394–6,234	Not observed. Not expected to occur in the valley floor areas of the study area. There is suitable habitat in the foothills, which are within the species' known range (Calflora 2015b)However, because focused surveys were negative, the potential for the species to occur in the study area is low.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
slough thistle	*Cirsium crassicaule*	None/None/1B.1	Chenopod scrub, marshes and swamps (sloughs), riparian scrub/annual or perennial herb/May–Aug/10–328	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' highest known elevation range approximately 441 feet below the study area's lowest elevation range. Additionally, the nearest occurrence is over 25 miles northwest of the study area and the remaining occurrences are farther north (CDFW 2015). Additionally, focused surveys were conducted and this species was not observed.
small-flowered monkeyflower	Mimulus inconspicuus	None/ None/ 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest/mesic/ annual herb/ May–Jun/ 899–2493	Not observed. Not expected to occur in the valley floor areas of the study area. There is suitable habitat within the proposed project open space in the foothills, which are within the species known range (Calflora 2015b). However, because focused surveys were negative, the potential for the species to occur on the study area is low.
spring lessingia	*Lessingia tenuis*	None/None/4.3	Chaparral, cismontane woodland, lower montane coniferous forest, openings/annual herb/May–Jul/984–7,054	Not observed. Not expected to occur in the valley floor areas of the study area. There is suitable habitat in the foothills, which are in the species known range (Calflora 2015b). However, because focused surveys were negative, the potential for the species to occur in the study area is low.
striped adobe-lily	*Fritillaria striata*	None/ST/1B.1	Cismontane woodland, valley and foothill grassland, usually clay/perennial bulbiferous herb/Feb–Apr/443–4,774	Not observed. There are extant occurrences within approximately 10 miles of the study area on Tejon Ranch in the Old Headquarters Acquisition areas (CDFW 2015). However, this species is not expected to occur based upon negative survey results and because reference population verification surveys confirmed the species was in fruit and easily detectable during the surveys in 2013. The striped adobe-lily is endemic to the southern Sierra Nevada foothills, including the Tehachapis, of Tulare and Kern Counties (CDFG 2004; CDFW 2015); therefore the valley floor areas of the study area are outside of the known geographic range of the species and this species is not expected to occur in the valley floor portion of the study area, including the off-site impact areas surveyed in 2015. The foothill areas in the study area are located in proposed project open space.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
sylvan microseris	*Microseris sylvatica*	None/None/4.2	Chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland (serpentinite)/perennial herb/ Mar–Jun/148–4,921	Not observed. Low potential to occur only in the foothill areas of the study area; not expected to occur in the valley floor areas of the study area, including the off-site impact areas surveyed in 2015. This species occurs on serpentinite soils, which are not mapped in the study area (USDA 2007; USDA 2009). This species is not known to occur in the San Joaquin Valley (Jepson Flora Project 2013) and the only suitable vegetation communities present in the study area are within the foothill areas in open space. Furthermore, this species was not observed during focused surveys, and the species was detectable during surveys based upon reference population verification surveys conducted in 2013, which detected the species.
Tehachapi buckwheat	*Eriogonum callistum*	None/None/1B.1	Chaparral, openings, rocky, limestone/ perennial herb/May–Jul/4,593–4,921	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 2,410 feet above the study area's highest elevation range. There is no suitable habitat for the species within the study area. In addition, focused surveys were conducted and this conspicuous perennial species was not observed. This buckwheat is easily detectable all year round. Additionally, in 2013 it was blooming during reference population verification surveys that overlapped the timing of the 2013 focused survey.
Tehachapi monardella	*Monardella linoides* ssp. *oblonga*	None/None/1B.3	Lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest/perennial rhizomatous herb/Jun–Aug/ 2,953–8,104	Not observed. Not expected to occur. The study area is outside of the species' known elevation range, with the species' lower elevation range approximately 770 feet above the study area's highest elevation range. There is no suitable habitat for the species within the study area. Additionally, focused surveys were conducted and this species was not observed.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
Tejon poppy	*Eschscholzia lemmonii* ssp. *kernensis*	None/None/1B.1	Chenopod scrub, valley and foothill grassland/ annual herb/Mar–May/525–3,281	This species was mapped in the Specific Plan Area in open space in 1999 west of I-5 (TRC 2013); however, this species was not observed in this location or elsewhere in the Specific Plan Area during the 2013 special-status plant surveys. Reference population verification surveys in 2013 confirmed the species was detectable during the surveys. Beyond project-specific reference checks conducted by Dudek, the species was also observed in March and April 2013 on a nearby project (California High-Speed Rail Authority 2013). The dichotomous keys for poppies (*Eschscholzia* spp.) that have been published since 1999 have made it easier to distinguish poppies, and, it is possible that the 1999 observation was mistakenly identified as Tejon poppy. While there is suitable grassland habitat within the Specific Plan Area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015), because focused surveys were negative and the species was detectable during 2013 surveys, this species is not considered to be present in the Specific Plan Area. In 2015, reference populations were visited; however, the species was not observed. The species was not observed within off-site impact areas during 2015 surveys. While there is an occurrence within 2 miles of the study area (CDFW 2015), this species has a low potential to occur because this species is typically found on clay soils (ESRP 2015), which are not present in the off-site impact areas, and the area is disturbed.[2]

2 The off-site impact areas, surveyed in 2015, are dominated by non-native grasslands (63%) and non-natural land covers (e.g., orchards and vineyards, roadways and infrastructure, and urban/developed lands) (35%). During the survey, the following disturbance was noted in the off-site impact areas: (1) evidence of disking and historic agriculture (i.e., irrigation system); (2) presence of debris (e.g., asphalt rubble); (3) bioturbation of soils (e.g., ground squirrel (*Otospermophilus beecheyi)* burrows); and (4) invasion of non-native forbs. Additionally, these areas are located directly adjacent to roads or development areas and the biological function has been degraded over time.

Table G-1
Analysis of the Potential for Special-Status Plant Species to Occur in the Study Area

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Potential to Occur
umbrella larkspur	*Delphinium umbraculorum*	None/ None/ 1B.3	Cismontane woodland/ perennial herb/ Apr-Jun/1,312-5,249	Not observed. Low potential to occur only in the foothill areas of the study area; not expected to occur in the valley floor areas of the study area, including the off-site impact areas surveyed in 2015. Although there is suitable woodland habitat in the foothills, which is located in proposed project open space, this species would have been observed during focused surveys.
Vasek's clarkia	*Clarkia tembloriensis* ssp. *calientensis*	None/None/1B.1	Valley and foothill grassland/annual herb/Apr/ 902–1,640	Not observed. Low potential to occur. Although there is suitable grassland vegetation in the study area, this species is known from only three occurrences near Caliente Creek, over 20 miles northeast of the study area on Tejon Ranch (CNPS 2015d; CDFW 2015; Tejon Ranch Conservancy 2010). The *Clarkia* species detected in the study area were *Clarkia cylindrica* and *Clarkia purpurea* ssp. *quadrivulnera*, which are easily distinguishable from Vasek's clarkia. While there is suitable grassland habitat within the study area and the species is known to occur on the San Joaquin Valley floor (CDFW 2015), because focused surveys were negative and the study area is not located near known occurrences, the potential for the species to occur in the study area is low.

1 Bakersfield smallscale (*Atriplex minuscula*) was added to this table based upon CDFW's recommendation that the species be analyzed on a different, but nearby, project site.

REFERENCES

Calflora. 2015a. Calflora: Information on wild California plants for conservation, education, and appreciation [website]. Berkeley, California. Accessed October 21, 2013. http://www.calflora.org/.

Calflora. 2015b. "Calflora Observation Hotline." Version 1.39. Accessed October 27, 2015. http://www.calflora.org/entry/observ.html.

California High-Speed Rail Authority. 2013. "RE: California High-Speed Train: Bakersfield to Palmdale 2013 Botanical Survey Results on Tejon Ranch." Letter report to Nicole Esselman and Derek Abbott of Tejon Ranch Company with a summary of botanical survey findings. Sacramento, California: California High-Speed Rail Authority. July 30, 2013.

CDFG (California Department of Fish and Game). 2004. *The Status of Rare, Threatened, and Endangered Plants of California from 2000–2004*. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/docs/2004/t_eplants.pdf.

CDFW (California Department of Fish and Wildlife). 2015. California Natural Diversity Database GIS layer. October 2015.

CNPS (California Native Plant Society). 2015a. *Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society*. Sacramento, California. Accessed October 26, 2015.

CNPS. 2015b. "*Atriplex tularensis*." Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. http://www.rareplants.cnps.org. Accessed Monday, October 26, 2015.

CNPS. 2015c. "*Delphinium recurvatum*." Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. http://www.rareplants.cnps.org. Accessed Monday, October 26, 2015.

CNPS. 2015d. "*Clarkia tembloriensis* ssp. *calientensis.*" Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. http://www.rareplants.cnps.org. Accessed Monday, October 26, 2015.

DMEC (David Magney Environmental Consulting). 2010. *Flora of the Tejon Ranch Conservancy Acquisition Areas, Tejon Ranch, California*. Prepared for the Tejon Ranch Conservancy. Ojai, California: DMEC. July 23, 2010.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared for Tejon Mountain Village LLC. Prepared by Dudek. May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan.* Draft. Prepared for Tejon Ranchcorp. Encinitas, California: Dudek. With technical assistance from U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

ESRP (Endangered Species Recovery Program). 2013. "Species Profile: Bakersfield Smallscale." Accessed November 19, 2013. http://esrp.csustan.edu/speciesprofiles/ profile.php?sp=attu.

ESRP. 2015. "Species Profile: Tejon poppy." Accessed September 2, 2015. http://esrp.csustan.edu/ speciesprofiles/profile.php?sp=esle.

Jepson Flora Project. 2013. *Jepson eFlora*, Version 1.0. Berkeley, California: University of California. Accessed December 2013. http://ucjeps.berkeley.edu/IJM.html.

Kern County. 2006. *Kern County Valley Floor Habitat Conservation Plan*. Draft. Prepared by Garcia and Associates for the Kern County Planning and Community Development Department. Lompoc, California: Garcia and Associates. December 2006.

TRC (Tejon Ranch Company). 2013. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

Tejon Ranch Conservancy. 2010. "Hunting for Vasek's Clarkia with Kern County CNPS." Accessed November 26, 2013. http://www.tejonconservancy.org/clarkia.htm. May 9, 2010.

Tejon Ranch Conservancy. 2013. "Tejon Ranch Conservancy Species GIS Data, including Mammal (January 28, 2013), Plant (August 7, 2013), and Bird (March 20, 2013) points" [Shapefiles]. Received from TRC on January 7, 2014.

Tejon Ranch Conservancy. 2015. "Board Agenda & Packet." Lebec, California: Tejon Ranch Conservancy. March 13, 2015.

USDA (U.S. Department of Agriculture). 2007. "Soil Survey Geographic (SSURGO) Database for Kern County, Southeast Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed January 2009.

USDA. 2009. "Soil Survey Geographic (SSURGO) Database for Kern County, Southwest Part, CA." Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed January 2009.

USFWS (U.S. Fish and Wildlife Service). 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2007. Pseudobahia bahiifolia *(Hartweg's golden sunburst) and* Pseudobahia peirsonii *(San Joaquin adobe sunburst), 5-Year Review: Summary and Evaluation*. Sacramento, California: USFWS.

USFWS. 2010. Monolopia (=Lembertia) congdonii *(San Joaquin woolly-threads), 5-Year Review: Summary and Evaluation*. Sacramento, California. June 2010.

White, M. 2013. "*Caulanthus californicus*." Email from M. White (Tejon Ranch Conservancy) to M. Enright (Dudek). November 19, 2013.

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APPENDIX H

Special-Status Wildlife Species Not Expected to Occur in the Grapevine Study Area or Be Impacted by the Proposed Project

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Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Invertebrate					
Branchinecta conservatio	Conservancy fairy shrimp	FE	None	Larger, more turbid vernal pools and playa pools	Not expected to occur. The study area lacks vernal pool habitat and is not within the San Joaquin Valley vernal pool region (USFWS 2005a). The species has been recorded in Kern County (USFWS 2013).
Branchinecta longiantenna	longhorn fairy shrimp	FE	None	Sandstone outcrop pools, alkaline grassland vernal pools, and pools within alkali sink and alkali scrub communities	Not expected to occur. The study area lacks vernal pool habitat and is not within the San Joaquin Valley vernal pool region (USFWS 2005a). The species has been recorded in Kern County (USFWS 2013).
Branchinecta lynchi	vernal pool fairy shrimp	FT	None	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	Not expected to occur. The study area lacks vernal pool habitat and is not within the San Joaquin Valley vernal pool region (USFWS 2005a). The species has been recorded in Kern County (USFWS 2013).
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	None	Riparian habitat and adjacent uplands; completely dependent on host plant elderberry	Not expected to occur. During focused, protocol surveys for this species, four individual elderberry shrubs (this species' host plant) were mapped within the study area, and no exit holes were observed. In addition, the project site is on the edge of the species range.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Euproserpinus euterpe	Kern primrose sphinx moth	FT	None	Sandy washes	Not expected to occur. The study area is outside species' range. The species occurs only in Walker Basin, Kern County in agriculture land, and on Carrizo Plain. It occurs in desert washes. The species is known from two locations: Walker Basin northeast of Tehachapi Mountains in Kern County and on Carrizo Plain (USFWS 2007).
Fish					
Entosphenus hubbsi	Kern brook lamprey	None	SSC	Slow, silty backwaters of foothill streams	Not expected to occur. The study area has limited aquatic habitat suitable for fish. One California Natural Diversity Database (CNDDB) record in Kern County is located in the Kern Canal, near the Kern–Tulare County border (CDFW 2015).
Reptiles and Amphibians					
Ambystoma californiense	California tiger salamander	FT	ST; SSC	Annual grassland, valley/foothill hardwood, and valley/foothill riparian	Not expected to occur within the study area. The study area is outside of the known range, which includes the Central California coastal ranges. It is discontinuously distributed along the coast ranges between Sonoma and Santa Barbara Counties and within the Central Valley and surrounding foothills from southern Colusa County to northwestern Kern County west of the valley and southern Butte County to northern Tulare County east of the valley.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Anaxyrus californicus	arroyo toad	FE	SSC	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral, and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur within the study area. The study area is outside its known range and lacks suitable habitat for this species (USFWS 2009). The nearest known populations are in Monterey, San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties.
Batrachoseps stebbinsi	**Tehachapi slender salamander**	**None**	**ST**	**North-facing talus slopes in moist canyons supporting oak and mixed native woodlands and/or yuccas in arid and semi-arid locations**	**Moderate potential to occur in one of the drainages in the southern foothill portion of the study area; and low to moderate potential to occur within the perennial portion of Grapevine Creek (Evelyn 2014). The species has been recorded in the surrounding 15 U.S. Geological Survey (USGS) quadrangles; the closest records are located along Pastoria Road approximately 3 miles west of Elderberry Springs (CDFW 2015) and on Tejon Mountain Village (TMV). Potentially suitable habitat for this species is not expected to be impacted based on avoidance of suitable habitat and an additional buffer area.**

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Emys marmorata	western pond turtle	None	SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	While recorded in the surrounding 15 USGS quadrangles (CDFW 2015), this species has low potential to occur in the detention basin on site due to its isolation from other water resources. No pond turtles were observed during the focused 2013 California red-legged frog surveys or the marsh nesting bird surveys. If present, it would have been observed during these surveys.
Ensatina eschscholtzii croceater	yellow-blotched salamander	None	SSC	Evergreen and deciduous forests, shaded canyons, oak woodlands, and chaparral	Low potential to occur on site. Some of the drainages in the southern foothill portions of the study area have some, but low, potential to support the species. It has been recorded on TMV, in the surrounding 15 USGS quadrangles (CDFW 2015), and is known to occur near Fort Tejon and in the Tehachapi Mountains (Nafis 2013). However, the study area lacks substantial drainages and canyons that support perennial water and moist herbaceous understories.
Rana draytonii	California red-legged frog	FT	SSC	Lowland streams, wetlands, riparian woodlands, and livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Not expected to occur due to small amount of suitable habitat on site. The study area does not occur within the current range of the species, and there are no recent documented occurrences in this region. Federal protocol surveys (USFWS 2005b) were conducted for this species; results were negative.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Salvadora hexalepis virgultea	coast patch-nosed snake	None	SSC	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Low potential to occur within the study area due to limited suitable shrubland habitat and because the site is likely outside this species' range. Two other subspecies of patch-nosed snake are present in the region, but both ranges appear to be located to the east of the Tehachapi Mountains in desert regions.
Thamnophis gigas	giant garter snake	FT	ST	Freshwater marsh habitat and low gradient streams; also uses canals and irrigation ditches	No potential to occur. The study area is outside the species' known range. USGS surveys conducted in 2006 in historical documented localities in the southern San Joaquin Valley were negative (USFWS 2012). Also, open aquatic habitat required by this species for foraging is absent from the project area.
Xantusia sierrae	Sierra night lizard	None	SSC	Rocky outcrops in open grassland with scattered oaks and shrubs	No potential to occur. The study area is outside the known range of this species, which is limited to a very small area in northern Kern County at the southwestern foothills of the Sierra Nevada (Nafis 2013).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Birds					
Accipiter gentilis (nesting)	northern goshawk	MBTA	SSC	Nests in most forest and woodland types from sea level to alpine, but primarily middle- and higher-elevation dense conifer forests; winters at lower elevations along coast, foothills, and northern deserts in riparian and pinyon/ juniper woodland	Low potential to nest on site. This species has not been detected during breeding raptor surveys, winter raptor surveys, but was observed anecdotally in November 2013 during other surveys. Its year-round range includes nearby mountain ranges (e.g., Mount Pinos–Frazier Mountain area (Keane 2008).
Ammodramus savannarum (nesting)	grasshopper sparrow	MBTA	SSC	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Low potential to occur. The site is heavily grazed and is dominated by non-native grasses and herbs; there are approximately 52 acres of native grasses scattered throughout the study area. The species occurs along coastal and valley foothills and has been recorded in the 15 USGS quadrangles surrounding the study area (CDFW 2015).
Asio flammeus (nesting)	short-eared owl	MBTA	SSC	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Low potential to nest on site. The study area is about 30 miles east of the current breeding range (Roberson 2008). It was not observed during breeding raptor surveys conducted during spring and summer 2013. The species may occur as a winter visitor.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Asio otus (nesting)	long-eared owl	MBTA	SSC	Nests in riparian habitat, live oak thickets, other dense stands of trees, and edges of coniferous forest; forages in nearby open habitats	Low potential to nest within the study area. The study area is on the edge of the species' current breeding range (Hunting 2008) and limited suitable nesting habitat is present within the study area. It has been recorded in the surrounding 15 USGS quadrangles. This species was not observed during breeding raptor surveys conducted during spring and summer 2013.
Aythya americana (nesting)	redhead	MBTA	SSC	Habitat generalist; opportunistic use of seasonally and semi-permanently flooded wetlands	Not expected to nest within the study area. The study area is north and west of current breeding range in the Antelope Valley and western Mojave Desert and about 65 miles south of its current breeding range in northwestern Kern County (Beedy and Deuel 2008). Very limited freshwater habitat exists on site. Nesting bird surveys were conducted within freshwater marsh habitat suitable for this species; results were negative.
Chaetura vauxi (nesting)	Vaux's swift	MBTA	SSC	Late stage conifer forest and mixed conifer/deciduous forest; nests in redwood, Douglas-fir, other conifers, and occasionally buildings and chimneys	The study area is outside of the known breeding and year-round range of this species (Bull and Collins 2007; Zeiner et al. 1990; Hunter 2008).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT; BCC; MBTA	SSC	Sandy marine and estuarine shores	No potential to nest within the study area, but may occur in project area during the winter. No suitable nesting habitat exists within the study area; the closest CNDDB record is by the Buena Vista Lake bed, approximately 18 miles northwest of the study area (CDFW 2015).
Charadrius montanus (wintering)	mountain plover	BCC; MBTA (Proposed FT listing withdrawn in May 2011)	SSC	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	Low potential to occur within the study area. Its nearest currently used winter range is 35 miles to west and in the Antelope Valley to the southeast (Hunting and Edson 2008).
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	PT (western DPS); BCC; MBTA	SE	Nests in dense, wide riparian woodlands and forests with well-developed understories	Not expected to nest within the study area. The species is very uncommon and riparian habitat on site is too small to support breeding by species. It was not observed during the 2013 federal protocol-level southwestern willow flycatcher and least Bell's vireo surveys.
Contopus cooperi (nesting)	olive-sided flycatcher	BCC; MBTA	SSC	Nests in mixed conifer, montane hardwood/conifer, Douglas-fir, redwood, red fir, and lodgepole pine, usually close to water	Observed during 2013 southwestern willow flycatcher and least Bell's vireo surveys, but not expected to nest on site. The study area lacks suitable nesting habitat. Its current breeding range in the region is limited to higher-elevation mountains south and east of the study area (Widdowson 2008).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Cypseloides niger (nesting)	black swift	BCC; MBTA	SSC	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats	No potential to nest within the study area. The study area lacks suitable habitat (waterfalls) and the project area is outside of its current known breeding range (Roberson and Collins 2008).
Dendrocygna bicolor (nesting)	fulvous whistling-duck	MBTA	SSC	Nests in freshwater wetlands, especially shallow impoundments managed for rice production and temporally flooded grasslands and pasture; also nests in pastures, hay lands, and small grain fields adjacent to rice fields	Not expected to nest within the study area. In California, this species is only known to regularly nest at the Salton Sea and irregularly at about 70 miles north of the study area (Hamilton 2008). A CNDDB record dated 1922 was near Buena Vista Lake (CDFW 2015), which was part of the species' historical breeding range. This species has not nested in the San Joaquin Valley since the 1970s (Hohman and Lee 2001).
***Elanus leucurus* (nesting)**	**white-tailed kite**	MBTA	**FP**	**Nests in upland and riparian woodland habitats, as well as in individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, woodland, savanna, and disturbed lands**	**Low potential to nest within the study area in suitable woodland nesting habitat in the foothills. High potential to forage over the study area. Nesting raptor surveys were conducted during spring and summer 2013; no active nests or individuals of this species were observed within the study area. Winter raptor bird surveys were conducted in winter 2013/2014; this species was not observed during these surveys. Potentially suitable habitat for this species is not expected to be directly impacted based on avoidance of suitable habitat and an additional buffer area.**

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Empidonax traillii brewsteri (nesting)	little willow flycatcher	BCC; MBTA	SE	Nests in riparian willow, montane meadows, and along streams	Not observed. The species is not expected to nest within the study area because its breeding range is well north of the study area. Moderate potential exists for the species to stop over in riparian habitat associated with the southernmost portion of Grapevine Creek within the study area during migration. This portion of the creek is fairly degraded. The species was not observed during focused willow flycatcher nesting surveys. Potentially suitable habitat for this species is not expected to be impacted based on avoidance of suitable habitat and an additional buffer area.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE; MBTA	SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses a variety of riparian and shrubland habitats during migration	Not observed. Federal protocol nesting surveys (Sogge et al. 2010) were conducted for this species. There is low potential for nesting and foraging within riparian habitat associated with the southernmost portion of Grapevine Creek within the study area. This portion of the creek is fairly degraded due to grazing. Potentially suitable habitat for this species is not expected to be impacted based on avoidance of suitable habitat and an additional buffer area.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Falco mexicanus (nesting)	prairie falcon	BCC; MBTA	None	Forages in grassland, savanna, rangeland, agriculture, desert scrub, and alpine meadows; nests on cliffs or bluffs	Not expected to nest within the study area. The species has been observed occasionally foraging in the study area, but there is no suitable nesting habitat on site.
Falco peregrinus anatum (nesting)	American peregrine falcon	DELISTED; BCC; MBTA	DELISTED; FP	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, and croplands, especially where waterfowl are present	Not expected to nest on site due to lack of nesting habitat, but moderate potential to forage within the study area during winter. Occurs as breeder predominantly along the coast and in montane regions of Northern California. May migrate through the region and study area. Not observed during breeding and winter raptor surveys conducted during spring and summer 2013 and winter 2013/2014.
Grus canadensis canadensis (wintering)	lesser sandhill crane	MBTA	SSC	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Low potential to winter within the study area. The study area lacks suitable roosting habitat. The species is currently known only to winter in Central California and at the Salton Sea (Littlefield 2008). No CNDDB records in Kern County exist (CDFW 2015). Its nearest known wintering sites are 50 to 60 miles north and northwest of the study area (Littlefield 2008).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Grus canadensis tabida (nesting and wintering)	greater sandhill crane	MBTA	ST; FP	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Not expected to nest or winter in the project area. The study area lacks suitable nesting and roosting habitat. The species is currently known to winter in the Central Valley and the Salton Sea, lower Colorado River, and Imperial Valley in southeastern California (Tacha et al. 1992; Patten et al. 2003; Rosenberg et al. 1991). It nests in California only in the extreme northeastern corner of the state. No CNDDB or U.S. Fish and Wildlife Service (USFWS) records in Kern County exist (CDFW 2015; USFWS 2013).
Hydroprogne caspia (nesting colony)	Caspian tern	BCC; MBTA	None	Coastal estuarine, saltmarsh, and barrier islands; nests on islands in rivers and salt lakes	Not expected to nest within the study area; requires sandy estuarine shores, levees, or islands for nesting.
Icteria virens (nesting)	yellow-breasted chat	MBTA	SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Low potential to nest within the study area. The study area is north of the species' current breeding range (Comrack 2008). Not detected during 2013 southwestern willow flycatcher and least Bell's vireo surveys.
Ixobrychus exilis (nesting)	least bittern	BCC; MBTA	SSC	Nests in freshwater and brackish marshes with dense, tall growths of aquatic and semi-aquatic vegetation	Low potential to occur. Very limited suitable nesting habitat exists within the study area. The study area is more than 50 miles from the nearest breeding sites in Santa Barbara County and more than 60 miles from breeding sites in northern Kern County (Sterling 2008). Nesting bird surveys were conducted within freshwater marsh habitat suitable for this species; results were negative.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Melanerpes lewis (nesting)	Lewis' woodpecker	BCC; MBTA	None	Winters in open woodland and savanna, open ponderosa pine forest, and logged or burned pine forest	Not expected to nest within the study area. The study area lacks pine trees used for nesting. Its known breeding range is outside of the study area and includes the Sierra Nevada and the Coast Ranges (Vierling et al. 2013). One individual observed in the project site in November 2013 may have been a migrant. The species could occur in woodland habitat on site during the winter (Zeiner et al. 1990).
Numenius americanus (nesting)	long-billed curlew	BCC; MBTA	None	Nests in grazed, mixed grass, and shortgrass prairies; localized nesting along the California coast; winters and forages in coastal estuaries, mudflats, open grassland and cropland	Not expected to breed within the study area due to its breeding range being limited to coastal areas of California and the northeastern corner of California.
Otus flammeolus (nesting)	flammulated owl	BCC; MBTA	None	Coniferous forest with low to intermediate canopy cover at 6,000–10,000 feet above mean sea level	Not expected to nest within the study area. The study area lacks suitable nesting habitat and is outside nesting elevation range. The species has a very limited breeding range in the area, which includes a couple of localities in the San Emigdio Mountains west of the Grapevine project site (Zeiner et al. 1990; Linkhart and McCallum 2013).
Pelecanus erythrorhynchos (nesting colony)	American white pelican	MBTA	SSC	Nests mainly on isolated islands in freshwater lakes; forages on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries	No potential to nest within the study area. The species only nests in Northern California and the site lacks suitable nesting habitat. Observed flying high over site.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Picoides albolarvatus (nesting)	white-headed woodpecker	BCC; MBTA	None	Nests and forages in coniferous forests with lodgepole pine and red fir; semi-open areas with large trees and 40%–70% cover	Not expected to nest within the study area. The study area lacks suitable nesting habitat and is outside the species' nesting elevation range. It has a very limited breeding range in the area, which includes a couple of localities in the San Emigdio Mountains west of the study area (Zeiner et al. 1990; Garrett et al. 1996).
Piranga rubra (nesting)	summer tanager	MBTA	SSC	Nests and forages in mature desert riparian habitats dominated by cottonwoods and willows	Not expected to nest within the study area. The study area is outside of the known nesting range, which includes the Colorado River and scattered locations in Southern California, including one small area of the southern Sierra Nevada more than 60 miles north of the study area (Robinson 2012; Unitt 2008a).
Pyrocephalus rubinus (nesting)	vermilion flycatcher	MBTA	SSC	Nests in riparian woodlands, riparian scrub, and freshwater marshes; typical desert riparian with cottonwood, willow, and mesquite adjacent to irrigated fields, ditches, or pastures	Not expected to nest within the study area. The study area is outside the species' documented breeding range, which is restricted to the Colorado River and scattered locations in the lowlands of Southern California, the Mojave Desert, and northeastern Santa Barbara County (Myers 2008; Ellison et al. 2009).
Riparia riparia (nesting)	bank swallow	MBTA	ST	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Not expected to nest within the study area. The study area lacks suitable nesting habitat and is outside the known breeding range, which includes a small portion of Northern California (Garrison 1999).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Selasphorus rufus (nesting)	rufous hummingbird	BCC; MBTA	None	Nests in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats; migrates in woodland and scrub habitats	No potential to nest within the study area. The species' breeding range is Northern California and the Sierra Nevada.
Spizella breweri (nesting)	Brewer's sparrow	BCC; MBTA	None	Nests in treeless shrub habitat with moderate canopy, especially sagebrush; winters in open desert scrub and croplands in southern Mojave and Colorado Deserts	Not expected to nest within the study area. The study area is outside the known breeding range, which includes the eastern Cascade Mountains, the Sierra Nevada, the Tehachapis, northern Ventura County, and eastern Santa Barbara and San Luis Obispo counties (Rotenberry et al. 1999; Zeiner et al. 1990). The species may occur occasionally during migration or as a winter visitor and was observed on site.
Strix occidentalis occidentalis	California spotted owl	BCC; MBTA	SSC	Nests and forages in oaks and conifers	Not expected to occur within the study area. The study area lacks suitable foraging and nesting habitat. The species was not observed during breeding raptor surveys conducted during spring and summer 2013 or during winter raptor bird surveys conducted in winter 2013/2014.

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Toxostoma lecontei	Le Conte's thrasher	BCC; MBTA	SSC	Nests and forages in desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree; nests in spiny shrubs or cactus	Not expected to occur within the study area. The study area is outside the current known range. The main population is widespread in the Mojave and Sonoran Deserts of Southern California. Five disjunct local populations are known from the San Joaquin Valley: McKittrick–Maricopa area in Kern County; Lost Hills in Kern County; Kettleman Hills in Fresno and Kings Counties; and Carrizo–Elkhorn Plains, San Luis Obispo County, and Cuyama Valley in Santa Barbara, Ventura, and San Luis Obispo Counties, which is approximately 35 miles west of the study area (Fitton 2008).
Vireo bellii pusillus **(nesting)**	**least Bell's vireo**	**FE;** MBTA	**SE**	**Nests and forages in low, dense native riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season**	**Federal protocol surveys per USFWS (2001) were conducted for this species; results were negative. Low potential exists for nesting and foraging within riparian habitat associated with the southernmost portion of Grapevine Creek within the study area. This portion of the creek is fairly degraded due to grazing. Suitable habitat for this species is not expected to be impacted based on avoidance of suitable habitat and an additional buffer area.**

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Vireo vicinior (nesting)	gray vireo	BCC; MBTA	SSC	Nests and forages in pinyon/juniper woodland, oak, and chamise and redshank chaparral	Not expected to nest within the study area. The study area lacks suitable nesting habitat and the species has a restricted breeding range in California outside of the study area (Barlow et al. 1999; Unitt 2008b). A few very scattered breeding locations are located south of the study area in Los Angeles County, with a broader breeding area located along the desert slopes of San Bernardino Mountains (Unitt 2008b).
Xanthocephalus xanthocephalus (nesting)	yellow-headed blackbird	MBTA	SSC	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat	Low potential to nest within the study area in marsh habitat in the detention basin due to marginal habitat suitability. Nesting bird surveys were conducted within freshwater marsh habitat suitable for this species; results were negative, but this species does not use the same nesting sites every year. Potentially suitable habitat for this species is not expected to be directly impacted based on avoidance of suitable habitat and an additional buffer area.
Mammal					
Bassariscus astutus	ringtail	None	FP	Mixed forests and shrublands near rocky area or riparian habitats; forages near water and is seldom found more than 0.62 mile from a water source	Not expected to occur; no ringtail were detected during ringtail camera surveys. Very low potential to occur in southern portion of the study area based on limited riparian habitat. Also, was not detected during focused camera studies on TMV (Dudek 2009).

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
Dipodomys ingens	giant kangaroo rat	FE	SE	On fine sandy loam soils with sparse forb vegetation and low-density alkali desert scrub	Not expected to occur. The study area is outside of species' known range. The closest records of giant kangaroo rat are located near the Buena Vista Lake bed, approximately 18 miles northwest of the study area (USFWS 2010a; CDFW 2015). Additionally, no sign of this species (e.g., large burrow systems or large diagnostic scat) has been observed during surveys. This species was not captured during live-trapping surveys at Wind Wolves Preserve (west of the study area), and the study noted that the Wind Wolves Preserve may be outside the historical range for this species (Cypher et al. 2011).
Dipodomys nitratoides brevinasus	short-nosed kangaroo rat	None	SSC	Friable soils on flat or gently rolling terrain in grassland and desert-shrub vegetation	No individuals were captured during 2014 small mammal trapping and this species is unlikely to occur within the project site (Germano 2014). Recorded in the USGS quadrangles that encompass the study area[3] (Germano, pers. comm. 2013).
Dipodomys nitratoides nitratoides	Tipton kangaroo rat	FE	SE	Alluvial fan and floodplain soils; habitat with one or two species of sparsely scattered shrubs and a ground cover of introduced and native annual grasses and forbs.	Not expected to occur. The study area is outside species' known range. The closest occupied habitat is located at the Coles Levee Ecosystem Preserve (located approximately 25 miles northwest of the study area), and in the southwest portion of the Metropolitan Bakersfield Habitat

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
					Conservation Plan (HCP) Study Area and to the southwest of the HCP Study Area (approximately 18 miles northwest of the study area) (USFWS 2010b; City of Bakersfield 1994). This species is recorded in the USGS quadrangles encompassing the study area (CDFW 2015); however, D. Germano confirmed that this specimen was incorrectly identified and should be short-nosed kangaroo rat (Germano, pers. comm. 2013).
Euderma maculatum	spotted bat	None	SSC	Foothills, mountains, and desert regions of Southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Low potential to roost within the study area due to lack of suitable roosting areas. The species may forage within the study area. This species was not detected at any of the bat stations during the July/August 2013 surveys. Some rock crevices suitable for bats were identified near the study area that could be used by this species. The species may forage on site.
Onychomys torridus tularensis	Tulare grasshopper mouse	None	SSC	Low, open scrub, and semi-scrub habitats in Lower Sonoran associations	No individuals observed within the study area or by small mammal trapping conducted in spring 2014. This species has been captured in the past at the Wind Wolves Preserve (Cypher et al. 2011), located west of the study area. Based on pre-trapping site-specific habitat assessments by Dudek biologists and Dr. Germano, and Dr. Germano's 25 years of

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
					experience conducting trapping studies of small rodents, it was concluded that it was unlikely for the grasshopper mouse to occur in other areas of the study area and that trapping these other areas would not yield useful information regarding the grasshopper mouse's status on site. Collins (1998) reported a failure to trap grasshopper mouse in 15 years of intensive trapping in various locations on the valley floor and cited Dr. Daniel Williams (Emeritus Professor of Zoology, California State University, Stanislaus, and founder of the Endangered Species Recovery Program) that "Based on these surveys, there are apparently no fragmented islands of native scrub habitat on the valley floor, either large or small, where grasshopper mice still persist (D. Williams, pers. comm.)." While the lack of captures for this species during the trapping program cannot definitively rule out the potential for Tulare grasshopper mouse to occur on the project site, based on the negative trapping results at sites Dr. Germano considered to have the highest potential for the species, and the opinion of species experts that the grasshopper mouse has been extirpated from the valley floor, it

Species	Common Name	Federal Status[1]	State Status[2]	Habitat	Potential to Occur
					is concluded that the Tulare grasshopper mouse has very low potential to occur within the study area.
Perognathus alticolus inexpectatus	Tehachapi pocket mouse	None	SSC	Grassland, Joshua tree woodland, pinyon/juniper woodland, yellow pine woodland, and oak savanna	Not expected to occur. The study area is outside the species' known range and site lacks suitable habitat. Live trapping in the TMV Planning Area found it only occurring along the southern slopes of the Tehachapi range (Dudek 2013).

Note: Bold formatting indicates listed species.

1 **Federal Designations:**
- BCC U.S. Fish and Wildlife Service Birds of Conservation Concern
- Delisted Federally delisted
- FE Federally listed as endangered
- FT Federally listed as threatened
- MBTA Migratory Bird Treaty Act
- PT Proposed threatened

2 **State Designations:**
- Delisted State delisted
- FP California Department of Fish and Wildlife protected and fully protected species
- SE State listed as endangered
- SSC California Species of Special Concern
- ST State listed as threatened

3 Dr. David Germano of California State University, Bakersfield, stated that the CNDDB records (element occurrence index numbers 65421 and 65415) located within and directly adjacent to the project site are short-nosed kangaroo rat and not Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) as recorded (Germano, pers. comm. 2013).

REFERENCES

Barlow, J.C., S.N. Leckie, and C.T. Baril. 1999. "Gray Vireo (*Vireo vicinior*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/447.

Beedy, E.C., and B.E. Deuel. 2008. "Redhead (*Aythya americana*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 85–90. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Bull, E.L., and C.T. Collins. 2007. "Vaux's Swift (*Chaetura vauxi*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology.http://bna.birds.cornell.edu/bna/species/077

CDFW (California Department of Fish and Wildlife). 2015. Rarefind. Version 5.0. CNDDB. Accessed October 2015.

City of Bakersfield. 1994. *Metropolitan Bakersfield Habitat Conservation Plan*. SCH No. 89020264. Prepared by Metropolitan Bakersfield Habitat Conservation Plan Steering Committee. April 1994.

Collins, P.W. 1998. "Tulare Grasshopper Mouse, *Onychomys torridus tularensis*." In *Terrestrial Mammal Species of Special Concern in California*, edited by B.C. Bolster, 127–129.

Comrack, L.A. 2008. "Yellow-Breasted Chat (*Icteria virens*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 351–358. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Cypher, B., C. Van Horn Job, E. Tennant, A. Madrid, T. Westall, and S. Phillips. 2011. *Surveys for Rare Species at Wind Wolves Preserve, California*. January 6, 2011.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared by Dudek for Tejon Mountain Village LLC.. May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan*. Final version. Prepared for Tejon Ranchcorp by Dudek with technical assistance from U.S. Fish and Wildlife Service. April 2013.

Ellison, K., B.O. Wolf, and S.L. Jones. 2009. "Vermilion Flycatcher (*Pyrocephalus rubinus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/484.

Fitton, S.D. 2008. "Le Conte's Thrasher (*Toxostoma lecontei*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 321–326. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/ wildlife/nongame/ssc/birds.html.

Garret, K.L., M.G. Raphael, and R.D. Dixon. 1996. "White-Headed Woodpecker (*Picoides albolarvatus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/252.

Garrison, B.A. 1999. "Bank Swallow (*Riparia riparia*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/414.

Germano, D. 2013. Potential for special-status small mammals and blunt-nosed leopard lizards to occur in Grapevine planning area. In-person conversation between D. Germano, PhD, B. Ortega (Dudek), and K. Babcock (Dudek).

Germano, D. 2014. "Small Mammal Trapping – Grapevine Project Site." Letter report from D. Germano, PhD, to C. Ford (Dudek). May 29, 2014.

Hamilton, A.R. 2008. "Fulvous Whistling-Duck (*Dendrocygna bicolor*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 68–73. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/ wildlife/nongame/ssc/birds.html.

Hohman, W.L., and S.A. Lee. 2001. "Fulvous Whistling-Duck (*Dendrocygna bicolor*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/562.

Hunter, J.E. 2008. "Vaux's Swift (*Chaetura vauxi*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 254–259. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Hunting, K. 2008. "Long Eared Owl (*Asio otus*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 234–241. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Hunting, K.H., and L. Edson. 2008. "Mountain Plover (*Charadrius montanus*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 180–186. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Keane, J. 2008. "Northern Goshawk (*Accipiter gentilis*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 156–162. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG.

Linkhart, B.D., and D.A. Mccallum. 2013. "Flammulated Owl (*Otus flammeolus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology.http://bna.birds.cornell.edu/bna/species/093.

Littlefield, C.D. 2008. "Lesser Sandhill Crane (*Grus Canadensis canadensis*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 167–172. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Myers, S.J. 2008. "Vermilion flycatcher (*Pyrocephalus rubinus*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 266–270. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Nafis, G.. 2013. *A Guide to the Amphibians and Reptiles of California*. Accessed September 2013. http://www.californiaherps.com.

Patten, M.A., G. McCaskie, and P. Unitt. 2003. *Birds of the Salton Sea, Status, Biogeography and Ecology*. Berkeley, California: University of California Press.

Roberson, D. 2008. "Short-Eared Owl *(Asio flammeus*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 242–248. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Roberson, D., and C. Collins. 2008. "Black Swift (*Cypseloides niger*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 249–253. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Robinson, W.D. 2012. "Summer Tanager (*Piranga rubra*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/248.

Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. *Birds of the Lower Colorado River Valley*. University of Arizona Press.

Rotenberry, J.T., M.A. Patten, and K.L. Preston. 1999. "Brewer's Sparrow (*Spizella breweri*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/390.

Sogge, M.K., D. Ahlers, and S.J. Sferra. 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. U.S. Geological Survey Techniques and Methods 2A-10.

Sterling, J. 2008. "Least Bittern (*Ixobrychus exilis*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 136–142. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Tacha, T.C., S.A. Nesbitt, and P.A. Vohs. 1992. "Sandhill Crane (*Grus canadensis*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/031.

Unitt, P. 2008a. "Summer Tanager (*Piranga rubra*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 359–364. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Unitt, P. 2008b. "Gray Vireo (*Vireo vicinior*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 284–288. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

USFWS (U.S. Fish and Wildlife Service). 2001. *Least Bell's Vireo Survey Guidelines*. USFWS, Carlsbad Field Office. January 2001. http://www.fws.gov/Pacific/ecoservices/endangered/recovery/documents/LBVireo.2001.protocol.pdf.

USFWS. 2005a. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. December 15, 2005. http://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/es_recovery_vernal-pool-recovery.htm.

USFWS. 2005b. *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog (*Rana aurora draytonii*)*. August 2005. http://www.dfg.ca.gov/wildlife/nongame/docs/CRF-Survey-Guidance%20Aug2005_FINAL.pdf.

USFWS. 2007. *Kern Primrose Sphinx Moth (*Euproserpinus euterpe*) 5-Year Review: Summary and Evaluation*. September 2007.

USFWS. 2009. *Arroyo Southwestern Toad (*Bufo californicus (=microscaphus)*) 5-Year Review: Summary and Evaluation*. Ventura, California: U.S. Fish and Wildlife Service. August 2009.

USFWS. 2010a. *Giant Kangaroo Rat (*Dipodomys ingens*) 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2010b. *Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*) 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2012. *Giant Garter Snake (*Thamnophis gigas*) 5-Year Review: Summary and Evaluation*. June 2012.

USFWS. 2013. Kern County Species. Environmental Conservation Online System. Accessed September 19, 2013. http://www.fws.gov/endangered/.

Vierling, K.T., V.A. Saab, and B.W. Tobalske. 2013. "Lewis's Woodpecker (*Melanerpes lewis*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/284.

Widdowson, W.P. 2008. "Olive-Sided Flycatcher (*Contopus cooperi*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 260–265. *Studies of Western Birds 1*. Camarillo, California: Western Field Ornithologists and Sacramento, California: CDFG. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White (eds). 1990. *California's Wildlife, Volume 2: Birds*. Sacramento, California: California Department of Fish and Game.

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APPENDIX I

Wildlife Compendium

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Wildlife Compendium

1 WILDLIFE SUMMARY

A total of 170 wildlife species have been observed or otherwise detected (e.g., by sign such as tracks) in the Grapevine study area, including 12 invertebrates, 3 amphibians, 10 reptiles, 110 birds, and 35 mammals. These are summarized below by taxonomic group and a complete list of wildlife species observed is provided in Section 2.

1.1 Amphibians and Reptiles

Ten reptiles and three amphibians were audibly detected or visually observed during on-site wildlife surveys, including western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard (*Uta stansburiana*), and western rattlesnake (*Crotalus viridis*). The three amphibians observed on site were western toad (*Anaxyrus boreas*), Baja California treefrog (*Pseudacris hypochondriaca*), and American bullfrog (*Lithobates catesbeianus*).

1.2 Birds

A total of 110 bird species were observed in the study area during surveys from February 2013 to August 2015. Of the observed bird species, golden eagle (*Aquila chrysaetos)*, burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis)*, California condor (*Gymnogyps californianus)*, bald eagle (*Haliaeetus leucocephalus)*, loggerhead shrike (*Lanius ludovicianus)*, tricolored blackbird (*Agelaius tricolor*), northern harrier (*Circus cyaneus*), purple martin (*Progne subis*; observed adjacent to site), Lawrence's goldfinch (*Spinus lawrencei*), olive-sided flycatcher (*Contopus cooperi*), Nuttall's woodpecker (*Picoides nuttallii*), yellow warbler (*Setophaga petechia*), prairie falcon (*Falco mexicanus*), Lewis' woodpecker (*Melanerpes lewis*), and American white pelican (*Pelecanus erythrorhynchos*) have special status under the California Environmental Quality Act (CEQA), as summarized in Table 2-6A, Table 2-6B, and Appendix H in the Biological Resources Technical Report (BTR).

Examples of valley floor and foothills grassland species include western meadowlark (*Sturnella neglecta)* and horned lark (*Eremophila alpestris)*, and raptors that forage in grasslands such as red-tailed hawk (*Buteo jamaicensis)*, American kestrel (*Falco sparverius)*, prairie falcon (*Falco mexicanus)*, and merlin (*Falco columbarius*).

Several of the bird species observed in the study area are species that are urban-tolerant or attracted to urban settings, including rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos)*, common raven (*Corvus corax*), song sparrow (*Melospiza melodia*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), cliff swallow (*Petrochelidon pyrrhonota*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), northern mockingbird (*Mimus *polyglottos*), European starling (*Sturnus vulgaris*), Anna's hummingbird (*Calypte anna*), American robin (*Turdus migratorius*), black phoebe (*Sayornis nigricans*), and western kingbird (*Tyrannus verticalis)*.

Examples of foothills shrubland species include California towhee (*Melozone crissalis*), spotted towhee (*Pipilo maculatus*), California quail (*Callipepla californica*), western scrub-jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), wrentit (*Chamaea fasciata*), and phainopepla (*Phainopepla nitens*).

Examples of riparian, wetland, and/or woodland species include ash-throated flycatcher (*Myiarchus cinerascens*), olive-sided flycatcher, white-breasted nuthatch (*Sitta carolinensis*), western wood-pewee (*Contopus sordidulus*); herons and bitterns such as black-crowned night-heron (*Nycticorax nycticorax*) and great egret (*Ardea alba*); American coot (*Fulica americana*) and sora (*Porzana carolina*); waterfowl such as cinnamon teal (*Anas cyanoptera*) and mallard (*Anas platyrhynchos)*; woodpeckers such as acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), and Nuttall's woodpecker; warblers such as Wilson's warbler (*Cardellina pusilla*), common yellowthroat (*Geothlypis trichas*), yellow warbler, and yellow-rumped warbler (*Setophaga coronata*); and red-winged blackbird (*Agelaius phoeniceus*).

Some less common species observed in the study area that indicate high avian diversity and high habitat quality include white-throated swift (*Aeronautes saxatalis*), black-headed grosbeak (*Pheucticus melanocephalus*), greater roadrunner (*Geococcyx californianus*), Bullock's oriole (*Icterus bullockii*), hooded oriole (*Icterus cucullatus*), western tanager (*Piranga ludoviciana*), mountain bluebird (*Sialia currucoides*), and canyon wren (*Catherpes mexicanus*).

1.3 Mammals

A total of 35 mammal species were detected during on-site wildlife surveys. Of the observed mammal species, American badger (*Taxidea taxus)*, Townsend's big-eared bat (*Corynorhinus townsendii;* detected just north of the study area), western mastiff bat (*Eumops perotis californicus)*, western red bat (*Lasiurus blossevillii)*, and black-tailed jackrabbit (*Lepus californicus*), have special status under CEQA, as summarized in Table 2-6A in the BTR.

Commonly observed species include California ground squirrel (*Spermophilus (Otospermophilus) beecheyi)*, desert cottontail (*Sylvilagus audubonii)*, black-tailed jackrabbit, coyote (*Canis latrans)*, mule deer (*Odocoileus hemionus)*, gray fox (*Urocyon cinereoargenteus*), and raccoon (*Procyon lotor*). A western spotted skunk (*Spilogale gracilis*), which is probably relatively uncommon in the area, was also detected near Grapevine Creek. The study area also supports several non-native or domestic species, including red fox (*Vulpes vulpes*), domestic dog (*Canis lupus familiaris)*, domestic cat (*Felis catus)*, domestic cattle (*Boa Taurus)*, and wild pig

(*Sus scrofa*), which is hunted on Tejon Ranch. These types of non-native or domestic species are indicative of an urban or rural environment and can reduce the population of native wildlife species through predation and competition for resources. Wild pig can disturb native habitat areas and reduce suitability for some native species. Urban-adapted native species (e.g., raccoon) can also impede certain species from using areas (e.g., culverts) and prey on eggs and small wildlife species. These non-native, domestic, or urban-related species were observed or detected regularly on and near the study area.

Thirteen species of bats, which accounted for the large mammal taxon, were also recorded during bat surveys in 2013, including big brown bat (*Eptesicus fuscus)*, hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum)*, Yuma myotis (*Myotis yumanensis)*, long-legged myotis (*Myotis volans*), canyon bat (*Parastrellus Hesperus)*, little brown myotis (*Myotis lucifugus)*, and Brazilian free-tailed bat (*Tadarida brasiliensis*). Bats that are afforded status under CEQA are summarized in Table 2-6A in the BTR.

1.4 Invertebrates

Twelve invertebrate insect species, including various butterflies and dragonflies were detected on the site. Observed butterfly species included blues, ladies, swallowtails, whites, and sulfurs. None of the observed invertebrates have special status under CEQA.

1.5 Fish

No fish were observed during surveys and little suitable aquatic habitat is present on site. There is no habitat for special-status fish species.

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2 WILDLIFE COMPENDIUM

AMPHIBIAN

FROGS

RANIDAE—TONGUELESS FROGS

* *Lithobates catesbeianus*—American bullfrog

HYLIDAE—TREEFROGS

Pseudacris hypochondriaca—Baja California treefrog

TOADS

BUFONIDAE—TRUE TOADS

Anaxyrus boreas—Western toad

BIRD

BLACKBIRDS, ORIOLES AND ALLIES

ICTERIDAE—BLACKBIRDS

Agelaius phoeniceus—Red-winged blackbird
Agelaius tricolor—Tricolored blackbird
Euphagus cyanocephalus—Brewer's blackbird
Icterus bullockii—Bullock's oriole
Quiscalus mexicanus—Great-tailed grackle
Sturnella neglecta—Western meadowlark
* *Molothrus ater*—Brown-headed cowbird
Icterus cucullatus—Hooded oriole

BUSHTITS

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—Bushtit

CARDINALS, GROSBEAKS AND ALLIES

CARDINALIDAE—CARDINALS AND ALLIES

Piranga ludoviciana—Western tanager
Passerina caerulea—Blue grosbeak
Pheucticus melanocephalus—Black-headed grosbeak

CORMORANTS

PHALACROCORACIDAE—CORMORANTS

Phalacrocorax auritus—Double-crested cormorant

EMBERIZINES

EMBERIZIDAE—EMBERIZIDS

Chondestes grammacus—Lark sparrow
Melospiza melodia—Song sparrow
Melozone crissalis—California towhee
Passerculus sandwichensis—Savannah sparrow
Pipilo maculatus—Spotted towhee
Pooecetes gramineus—Vesper sparrow
Zonotrichia leucophrys—White-crowned sparrow
Aimophila ruficeps—rufous-crowned sparrow
Junco hyemalis—Dark-eyed junco
Spizella passerina—Chipping sparrow
Artemisiospiza belli—Bell's sparrow
Artemisiospiza nevadensis—Sagebrush sparrow

FALCONS

FALCONIDAE—CARACARAS AND FALCONS

Falco columbarius—Merlin
Falco mexicanus—Prairie falcon
Falco sparverius—American kestrel

FINCHES

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Carpodacus mexicanus—House finch
Spinus psaltria—Lesser goldfinch
Spinus tristis—American goldfinch
Spinus lawrencei—Lawrence's goldfinch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Contopus cooperi—Olive-sided flycatcher
Contopus sordidulus—Western wood-pewee

Myiarchus cinerascens—Ash-throated flycatcher
Sayornis nigricans—Black phoebe
Sayornis saya—Say's phoebe
Tyrannus verticalis—Western kingbird
Tyrannus vociferans—Cassin's kingbird

GOATSUCKERS

CAPRIMULGIDAE—GOATSUCKERS
Chordeiles acutipennis—Lesser nighthawk

GREBES

PODICIPEDIDAE—GREBES
P*odilymbus podiceps*—Pied-billed grebe

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES
Accipiter cooperii—Cooper's hawk
Accipiter striatus—Sharp-shinned hawk
Aquila chrysaetos—Golden eagle
Buteo jamaicensis—Red-tailed hawk
Buteo lineatus—Red-shouldered hawk
Buteo regalis—Ferruginous hawk
Circus cyaneus—Northern harrier
Haliaeetus leucocephalus—Bald eagle

HERONS AND BITTERNS

ARDEIDAE—HERONS, BITTERNS, AND ALLIES
Ardea alba—Great egret
Nycticorax nycticorax—Black-crowned night-heron

HUMMINGBIRDS

TROCHILIDAE—HUMMINGBIRDS
Archilochus alexandri—Black-chinned hummingbird
Calypte anna—Anna's hummingbird
Calypte costae—Costa's hummingbird

JAYS, MAGPIES AND CROWS

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—Western scrub-jay
Corvus brachyrhynchos—American crow
Corvus corax—Common raven

KINGLETS

REGULIDAE—KINGLETS

Regulus calendula—Ruby-crowned kinglet

LARKS

ALAUDIDAE—LARKS

Eremophila alpestris—Horned lark

MOCKINGBIRDS AND THRASHERS

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—Northern mockingbird

NEW WORLD QUAIL

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

NEW WORLD VULTURES

CATHARTIDAE—CARDINALS AND ALLIES

Gymnogyps californianus—California condor

NUTHATCHES

SITTIDAE—NUTHATCHES

Sitta carolinensis—White-breasted nuthatch

OLD WORLD SPARROWS

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—House sparrow

OWLS

TYTONIDAE—BARN OWLS

Tyto alba—Barn owl

STRIGIDAE—TYPICAL OWLS

Athene cunicularia—Burrowing owl
Bubo virginianus—Great horned owl

PELICANS

PELECANIDAE—PELICANS

Pelecanus erythrorhynchos—American white pelican

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—Mourning dove
* *Columba livia*—Rock pigeon (rock dove)
* *Streptopelia decaocto*—Eurasian collared-dove

RAILS, GALLINULES AND COOTS

RALLIDAE—RAILS, GALLINULES, AND COOTS

Fulica americana—American coot
Porzana carolina—Sora

ROADRUNNERS AND CUCKOOS

CUCULIDAE—CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus—Greater roadrunner

SHOREBIRDS

CHARADRIIDAE—LAPWINGS AND PLOVERS

Charadrius vociferus—Killdeer

SHRIKES

LANIIDAE—SHRIKES

Lanius ludovicianus—Loggerhead shrike

SILKY FLYCATCHERS

PTILOGONATIDAE—SILKY-FLYCATCHERS
Phainopepla nitens—Phainopepla

STARLINGS AND ALLIES

STURNIDAE—STARLINGS
* *Sturnus vulgaris*—European starling

SWALLOWS

HIRUNDINIDAE—SWALLOWS
Hirundo rustica—Barn swallow
Petrochelidon pyrrhonota—Cliff swallow
Progne subis—Purple martin
Stelgidopteryx serripennis—Northern rough-winged swallow
Tachycineta thalassina—Violet-green swallow

SWIFTS

APODIDAE—SWIFTS
Aeronautes saxatalis—White-throated swift

THRUSHES

TURDIDAE—THRUSHES
Catharus guttatus—Hermit thrush
Sialia currucoides—Mountain bluebird
Sialia mexicana—Western bluebird
Turdus migratorius—American robin

WAGTAILS AND PIPITS

MOTACILLIDAE—WAGTAILS AND PIPITS
Anthus rubescens—American pipit

WATERFOWL

ANATIDAE—DUCKS, GEESE, AND SWANS
Anas cyanoptera—Cinnamon teal
Anas platyrhynchos—Mallard

WAXWINGS

BOMBYCILLIDAE—WAXWINGS

Bombycilla cedrorum—Cedar waxwing

WOOD WARBLERS AND ALLIES

PARULIDAE—WOOD-WARBLERS

Geothlypis trichas—Common yellowthroat
Icteria virens—Yellow-breasted chat
Setophaga nigrescens—Black-throated gray warbler
Oreothlypis celata—Orange-crowned warbler
Cardellina pusilla—Wilson's warbler
Setophaga coronata—Yellow-rumped warbler
Setophaga petechia—Yellow warbler

WOODPECKERS

PICIDAE—WOODPECKERS AND ALLIES

Melanerpes formicivorus—Acorn woodpecker
Melanerpes lewis—Lewis's woodpecker
Picoides nuttallii—Nuttall's woodpecker
Picoides pubescens—Downy woodpecker
Picoides villosus—Hairy woodpecker
Colaptes auratus—Northern flicker

WRENS

TROGLODYTIDAE—WRENS

Catherpes mexicanus—Canyon wren
Salpinctes obsoletus—Rock wren
Thryomanes bewickii—Bewick's wren
Troglodytes aedon—House wren

WRENTITS

TIMALIIDAE—BABBLERS

Chamaea fasciata—Wrentit

INVERTEBRATE

BUTTERFLIES

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Danaus plexippus—Monarch
Vanessa annabella—West coast lady
Vanessa cardui—Painted lady

PAPILIONIDAE—SWALLOWTAILS

Papilio eurymedon—Pale swallowtail

PIERIDAE—WHITES AND SULFURS

Colias eurytheme—Orange sulphur
Pieris rapae—Cabbage white
Pontia protodice—Checkered white

DRAGONFLIES AND DAMSELFLIES

COENAGRIONIDAE—POND DAMSELS

Argea nahuana—Aztec dancer

LIBELLULIDAE—SKIMMERS, EMERALDS, AND BASKETTAILS, AND CRUISERS

Libellula croceipennis—Neon skimmer
Pachydiplax longipennis—Blue dasher
Tramea lacerata—Black saddlebags

TARANTULA HAWKS

POMPILIDAE—SPIDER WASPS

Pepsis sp.—Tarantula hawk

MAMMAL

BATS

VESPERTILIONIDAE—EVENING BATS

Antrozous pallidus—Pallid bat
Corynorhinus townsendii—Townsend’s big-eared bat
Lasiurus blossevillii—Western red bat
Lasiurus cinereus—Hoary bat
Myotis californicus—Californian myotis

Myotis ciliolabrum—Western small-footed myotis[1]
Myotis lucifugus—Little brown myotis
Myotis yumanensis—Yuma myotis
Eptesicus fuscus—Big brown bat
Myotis volans—Long-legged myotis
Parastrellus hesperus—Canyon bat

MOLOSSIDAE—FREE-TAILED BATS

Eumops perotis californicus—Western mastiff bat
Tadarida basiliensis—Brazilian free-tailed bat

CANIDS

CANIDAE—WOLVES AND FOXES

Canis latrans—Coyote
Urocyon cinereoargenteus—Gray fox
* *Vulpes vulpes*—Red fox

CATS

FELIDAE—CATS

Lynx rufus—Bobcat

DOMESTIC

CANIDAE—WOLVES AND FOXES

* *Canis lupus familiaris*—Domestic dog

FELIDAE—CATS

* *Felis catus*—Domestic cat

BOVIDAE—BISON, GOATS AND SHEEP

* *Boa taurus*—Domestic cattle

[1] Dudek also identified *Myotis melanorhinus* in the study area. The taxonomy of this species is uncertain. According to Wilson and Reeder (2005) some authors include it as *M. ciliolabrum* or *M. leibii* or as a subspecies of *ciliolabrum*. Given that CDFG (2011) includes *ciliolabrum* on the Special Animals list for California, the "*melanorhinus*" individuals identified by Dudek are treated as *ciliolabrum* in this BTR.

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Sylvilagus audubonii—Desert cottontail
Sylvilagus bachmani—Brush rabbit
Lepus californicus—Black-tailed jackrabbit

KANGAROO RATS

HETEROMYIDAE—POCKET MICE AND KANGAROO RATS

Dipodomys sp.—Kangaroo rat

MUSTELIDS

MUSTELIDAE—WEASELS, SKUNKS, AND OTTERS

Mustela frenata—Long-tailed weasel
Taxidea taxus—American badger

MEPHITIDAE—SKUNKS

Mephitis mephitis—Striped skunk
Spilogale gracilis—Western spotted skunk

POCKET GOPHERS

GEOMYIDAE—POCKET GOPHERS

Thomomys bottae—Botta's pocket gopher

RACCOONS

PROCYONIDAE—RACCOONS AND RELATIVES

Procyon lotor—Raccoon

RATS AND MICE

MURIDAE—RATS AND MICE

Neotoma sp.—woodrat

SQUIRRELS

SCIURIDAE—SQUIRRELS

Sciurus griseus—Western gray squirrel
Spermophilus (Otospermophilus) beecheyi—California ground squirrel

UNGULATES

CERVIDAE—DEERS

Odocoileus hemionus—Mule deer

SUIDAE—PIGS

* *Sus scrofa*—Wild boar

REPTILE

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—Western fence lizard
Urosaurus graciosus—Long-tailed brush lizard
Uta stansburiana—Common side-blotched lizard

ANGUIDAE—ALLIGATOR LIZARDS

Elgaria multicarinata—Southern alligator lizard

SCINCIDAE—SKINKS

Plestidon gilberti—Gilbert's skink

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis tigris—Tiger whiptail

SNAKES

COLUBRIDAE—COLUBRID SNAKES

Coluber flagellum ruddocki —San Joaquin coachwhip
Pituophis catenifer—Gophersnake

VIPERIDAE—VIPERS

Crotalus atrox—Western diamond-backed rattlesnake
Crotalus oreganus—Western rattlesnake

* signifies introduced (non-native) species

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3 REFERENCES

CDFG (California Department of Fish and Game). 2011. “Special Animals (898 taxa).” California Natural Diversity Database (CNDDB). CDFG, Biogeographic Data Branch. January 2011. Accessed October 2014. http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference*, 3rd ed. Baltimore, Maryland: Johns Hopkins University Press.

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APPENDIX J

2013 Least Bell's Vireo and Southwestern Willow Flycatcher Focused Survey Report

DUDEK

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September 12, 2013 7667-16

Attn: David Kelly
U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605,
Sacramento, California 95825

Subject: 2013 Least Bell's Vireo and Southwestern Willow Flycatcher Focused Survey Report for the Grapevine Study Area, Kern County, California

Dear Mr. Kelly:

This report documents the results of eight protocol-level presence/absence surveys for the state- and federally listed endangered least Bell's vireo (*Vireo bellii pusillus*; vireo), and the state- and federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher). The surveys were conducted in areas of suitable vireo and flycatcher habitat within the Grapevine study area.

This survey report is prepared in accordance with reporting requirements described in *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). The survey protocol for the flycatcher includes survey activities that require a Section 10(a)(1)(A) permit through the U.S. Fish and Wildlife Service (USFWS). Additional annual reporting by the federal permit holders is done separately. This survey report includes the following information, based on the reporting requirements and information provided in the Willow Flycatcher Survey and Detection Forms, which are attached as Appendix A.

- Site name, which is the Grapevine study area
- Site location and information (Section 1.0)
- Vegetation characteristics (Section 1.1)
- Methods (Section 2.0)
- Survey dates and hours (Section 2.0, Table 1)
- Overall site summary
- Figures (at the end of this letter) showing the site location, survey area, and survey routes
- Photos of the survey areas (Appendix B).

1.0 SITE LOCATION AND SITE INFORMATION

Focused surveys were conducted in portions of the Grapevine study area, located in the west-central portion of Tejon Ranch. The approximately 270,000-acre Tejon Ranch is currently held in private ownership by Tejon Ranchcorp. The survey areas within the Grapevine study area lie in the Grapevine U.S. Geological Survey (USGS) 7.5-minute quadrangle (Figures 1 and 2). The latitude and longitude of the approximate center of the site is 34°57'24" N and 118°53'21" W. The Universal Transverse Mercator (UTM) coordinates for the approximate center are UTM Easting (meters) 327509 and UTM Northing (meters) 3869867 in Zone 11. The survey areas within the Grapevine study area range in elevation from 416 to 609 meters (1,364 feet to 1,997 feet) above mean sea level.

1.1 Vegetation Characteristics

The survey areas for focused least Bell's vireo and southwestern willow flycatcher surveys were based on vegetation mapping provided by Tejon Ranch Company (TRC 2013) and mapping conducted by Dudek in 2013. Approximately 29 acres of riparian communities suitable for flycatchers and/or vireos were surveyed (see Figures 3 through 5) and each community is described below.

1.1.1 Red Willow Thickets Alliance

The red willow thickets alliance, or *Salix laevigata* alliance, occurs in survey areas A and B (Figures 3 and 4). The structure of this community has an open to continuous tree canopy cover less than 20 meters (66 feet) in height, open to intermittent cover in the shrub layer, and a variable herbaceous layer. Within the survey areas, this alliance is characterized as having 50% to 70% relative cover of red willow in the tree canopy. The understory of this alliance includes common sunflower (*Helianthus annuus*), saltcedar (*Tamarix ramosissima*), annual rabbitsfoot grass (*Polypogon monspeliensis*), tree tobacco (*Nicotiana glauca*), cardoon (*Cynara cardunculus*), and saltgrass (*Distichlis spicata*).

Red willow thickets includes areas mapped in canyon bottoms with no surface flow present during the surveys, and one small area adjacent to the Grapevine detention basin (Figures 3 and 4).

1.1.2 Mulefat Thickets Alliance

The mulefat thickets alliance, or *Baccharis salicifolia* alliance, occurs in survey areas A and E (Figures 3 and 5). The structure of this community has a continuous canopy cover with two tiers at less than 2 meters (7 feet) and less than 5 meters (16 feet) in height. Within the survey area, mulefat thickets is characterized as having 75% to 100% relative cover of mulefat (*Baccharis salicifolia* ssp. *salicifolia*) in the shrub layer. In some areas, Fremont cottonwood (*Populus fremontii*) and red willow are present at low cover (less than 5%), and common understory species include saltgrass, red brome (*Bromus madritensis* ssp. *rubens*), annual rabbitsfoot grass, and seep monkeyflower (*Mimulus guttatus*). Other species noted in this alliance include Douglas' sagewort (*Artemisia douglasiana*) and black mustard (*Brassica nigra*).

This vegetation community was mapped along Grapevine Creek (Figure 3), which was the only creek with surface flow during the surveys. No surface flow was present during the surveys in the mulefat thickets alliance in Live Oak Creek (survey area E; Figure 5).

1.1.3 Fremont Cottonwood Forest Alliance

The Fremont cottonwood forest alliance, or *Populus fremontii* alliance, occurs in survey areas A and C (Figures 3 and 4). This community has a continuous to open canopy cover less than 25 meters (82 feet) in height, intermittent to open shrub layer, and variable herbaceous layer. Within the survey areas, the Fremont cottonwood forest alliance is characterized as having greater than 25% to 50% relative cover of Fremont cottonwood in the tree canopy. Additional common species in the tree and shrub layer include red willow, valley oak (*Quercus lobata*), and mulefat; saltcedar and tree of heaven (*Ailanthus altissima*) are present at low cover. The understory includes Pacific poison oak (*Toxicodendron diversilobum*), giant reed (*Arundo donax*), seep monkeyflower, and ripgut brome (*Bromus diandrus*).

This vegetation community was mapped along Grapevine Creek (Figure 3), which was the only creek with surface flow during the surveys. No surface water was present during the surveys in the Fremont cottonwood forest in survey area C (Figure 4).

1.1.4 Valley Oak Woodland Alliance

Valley oak woodland alliance, or *Quercus lobata* alliance, occurs in survey areas C and D (Figures 4 and 5). This community has varying canopy cover less than 30 meters (98 feet) in height. Shrubs can be common to occasional in this alliance, and the understory may be grassy (Sawyer et al. 2009). Within the survey areas, the valley oak woodland alliance is characterized as having approximately 50% relative cover of valley oak in the tree canopy and approximately 50% relative cover of arroyo willow in the tree canopy. The understory of this association is characterized by blue elderberry (*Sambucus nigra* ssp. *caerulea*) and Pacific poison oak.

Valley oak woodland is mapped in canyon bottoms and no surface flow was present during the surveys.

2.0 METHODS

A total of 11 riparian habitat areas and a total of 4.0 kilometers were surveyed during each pass. One additional area was included in the original survey areas; however, after one survey pass it was determined unsuitable because the narrowleaf willow (*Salix exigua*) was relatively sparse and the area was small and isolated. In addition, there was no surface flow. Suitable flycatcher and vireo habitat areas within the project study area were surveyed eight times by Dudek wildlife biologists Paul M. Lemons (Permit No. TE051248), Brock Ortega (Permit No. TE813545-5), Callie Ford, and Danielle Mullen. Focused surveys for these species were initiated on May 7, 2013, and continued through July 31, 2013. Weather conditions, time of day, and season were appropriate for the detection of flycatcher and vireo (Table 1).

Table 1
Survey Conditions

Date	Hours	Personnel	Focus	Riparian Survey Area	Conditions
05/07/13	0930–1800[a]	Callie Ford	Vireo	A, B, C	70%–50% cc, 0–1.6 kph wind, 13°C–17°C (1 mph wind, 56°F–62°F)
05/08/13	0635–1235	Callie Ford	Vireo	C, D, E	90%–50% cc, 0 kph wind, 13°C–17°C (0 mph wind, 58ºF–62ºF)
05/17/13	0620–1240	Callie Ford	Vireo	A, C	100%–10% cc, 2–8 kph wind, 14°C–18°C (1–5 mph wind, 57ºF–64ºF)
05/17/13	0635–1100	Danielle Mullen	Vireo	B, D, E	100%–10% cc, 2–8 kph wind, 14°C–18°C (1–5 mph wind, 57ºF–64ºF)
05/28/13	0605–1050	Paul Lemons, Danielle Mullen	Vireo/ flycatcher	A, B, C, D, E	100% cc, 6–11 kph wind, 13°C–17°C (4–7 mph wind, 56ºF–63ºF)
06/10/13	0600–1050	Paul Lemons, Danielle Mullen	Vireo/ flycatcher	A, B, C, D, E	0% cc, 5–10 kph wind, 19°C–24°C (3–6 mph wind, 66ºF–76ºF)
06/20/13	0600–1145	Paul Lemons, Danielle Mullen	Vireo/ flycatcher	A, B, C, D, E	0% cc, 8–11 kph wind, 13°C–22°C (5–7 mph wind, 58ºF–72ºF)
07/01/13	0625–1220	Paul Lemons	Vireo/ flycatcher	A, D, E	100%–80% cc, 2–8 kph wind, 18°C–34°C (1–5 mph wind, 65°F–93°F)
07/02/13	0545–1045	Paul Lemons	Vireo/ flycatcher	B, C	30%–60% cc, 2–16 kph wind, 18°C–33°C (1–10 mph wind, 65°F–91°F)
07/14/13	0400–1130	Brock Ortega	Vireo/ flycatcher	A, D, E	0% cc, 0–5 kph wind, 21°C–32°C (0–3 mph wind, 70°F–90°F)
07/15/13	0445–1040	Brock Ortega	Vireo/ flycatcher	B, C	0% cc, 5–8 kph wind, 21°C–31°C (3–5 mph wind, 70°F–88°F)
07/30/13	0640–1115	Paul Lemons	Vireo	A, D, E	0%–10% cc, 3–11 kph wind, 18°C–33°C (2–7 mph wind, 64°F–92°F)
07/31/13	0535–1040	Paul Lemons	Vireo	B, C	0% cc, 0–16 kph wind, 17°C–34°C (0–10 mph wind, 63°F–94°F)

% cc = percent cloud cover; kph = kilometers per hour; mph = miles per hour; °C = degrees Celsius; °F = degrees Fahrenheit
[a] This survey was pushed back until later in the day due to inclement weather conditions (i.e., rain). The survey was conducted once the rain ceased and bird activity was observed. Surveys continued until approximately 1300 hours and then habitat assessments of the remaining areas were conducted until 1800 hours. Typical co-occurring species were still active through at least 1300 hours.

Surveys for flycatcher were conducted concurrently with the vireo surveys. All surveys consisted of slowly walking a methodical, meandering transect within and adjacent to all suitable riparian habitat. This route was arranged to cover all suitable riparian habitat and maximize detection of species within the Grapevine study area (Figures 3 through 5). Aerial maps (2.5 centimeters = 90 meters (1 inch = 300 feet)) of suitable riparian habitat within the Grapevine study area were available to record the locations of any detected vireo or flycatcher. Binoculars (10×50 and 8×42) were used to aid in detecting and identifying wildlife species.

A Section 10(a)(1)(A) permit is required to conduct presence/absence surveys for flycatcher. The surveys conducted for flycatcher followed the USFWS-required survey methods described in accordance with *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). A total of five surveys for flycatcher were conducted within suitable habitat, with one visit between May 15 and May 31, two visits between June 1 and June 24, and two visits between June 25 and July 17. The surveys during the final period were separated by more than 5 days, per protocol requirements. A tape of recorded flycatcher vocalizations was used, approximately every 50–100 feet within suitable habitat, to induce flycatcher responses. If a flycatcher had been detected, playing of the tape would have ceased to avoid harassment.

A Section 10(a)(1)(A) permit is not required to conduct presence/absence surveys for vireo. The eight surveys for vireo followed the currently accepted *Least Bell's Vireo Survey Guidelines* (USFWS 2001), which states that a minimum of eight survey visits should be made to all riparian areas and any other potential vireo habitats during the period from April 10 to July 31. The site visits are required to be conducted at least 10 days apart to maximize the detection of early and late arrivals, females, non-vocal birds, and nesting pairs. In accordance with the survey guidelines, taped playback of vireo vocalizations were not used during the surveys. Surveys were generally conducted between dawn and noon and were not conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather.

3.0 RESULTS

No southwestern willow flycatchers or least Bell's vireos were detected during the focused surveys. Brown-headed cowbirds (*Molothrus ater*) were observed during the surveys. A list of wildlife species detected during these surveys is included as Appendix C. Data forms (USFWS 2010) for willow flycatcher are included as Appendix A. Photos of the vegetation communities surveyed are included as Appendix B.

Please feel free to contact me at 760.479.4254 with questions or if you require additional information.

Sincerely,

____

Brock Ortega, Senior Wildlife Biologist

Att: Figures 1–5
Appendices A–C

REFERENCES

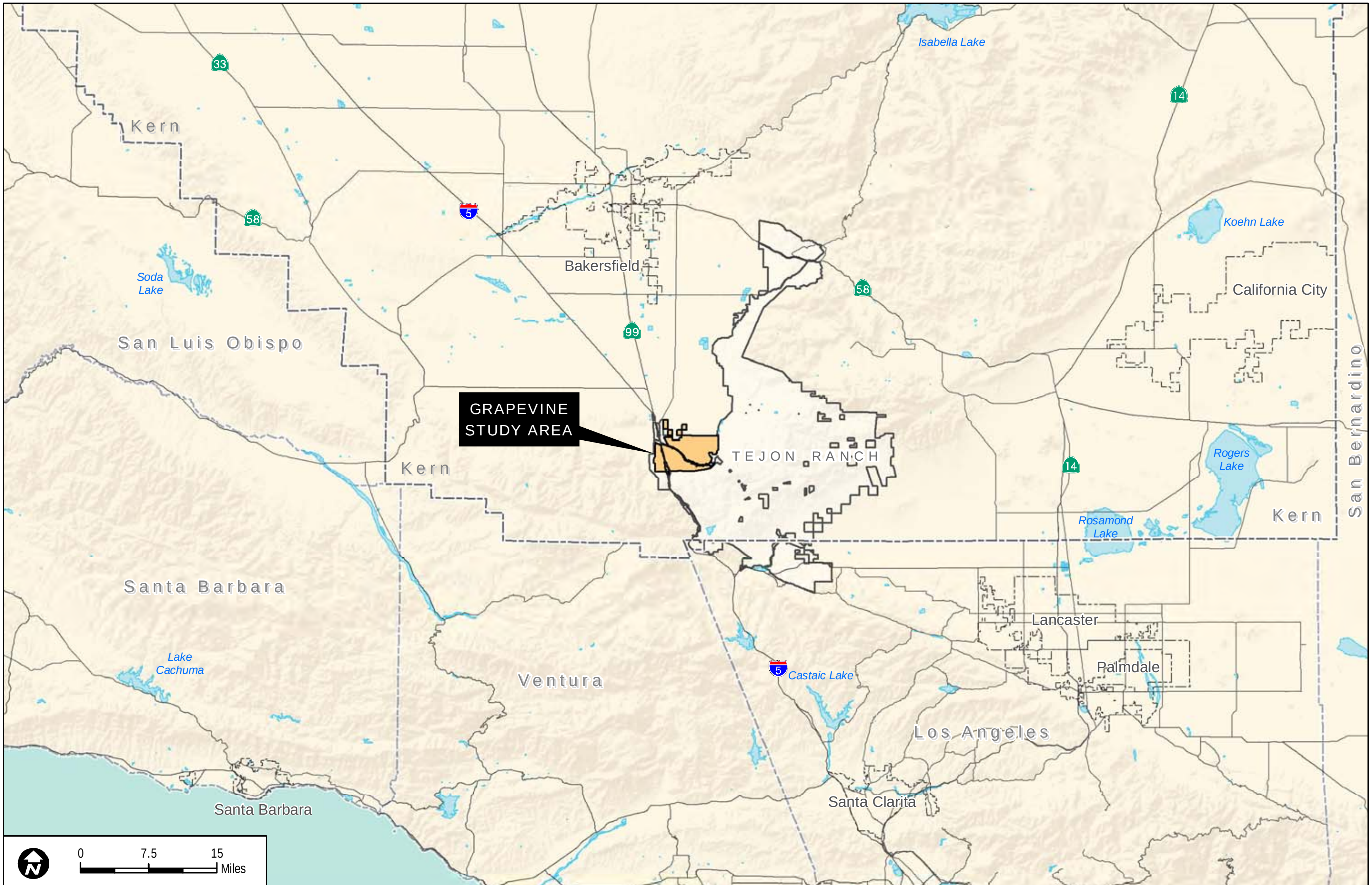
Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. Sacramento, California: California Native Plant Society.

Sogge, M.K., D. Ahlers, and S.J. Sferra. 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. Chapter 10 of Section A, Biological Science, Book 2, Collection of Environmental Data. U.S. Geological Survey, prepared in cooperation with the Bureau of Reclamation and the U.S. Fish and Wildlife Service. Techniques and Methods 2A-10. http://pubs.usgs.gov/tm/tm2a10/.

TRC (Tejon Ranch Company). 2013. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

USFWS. 2001. *Least Bell's Vireo Survey Guidelines*. January 19, 2001.

USFWS. 2010. *Willow Flycatcher Survey and Detection Form* (revised). April 2010.

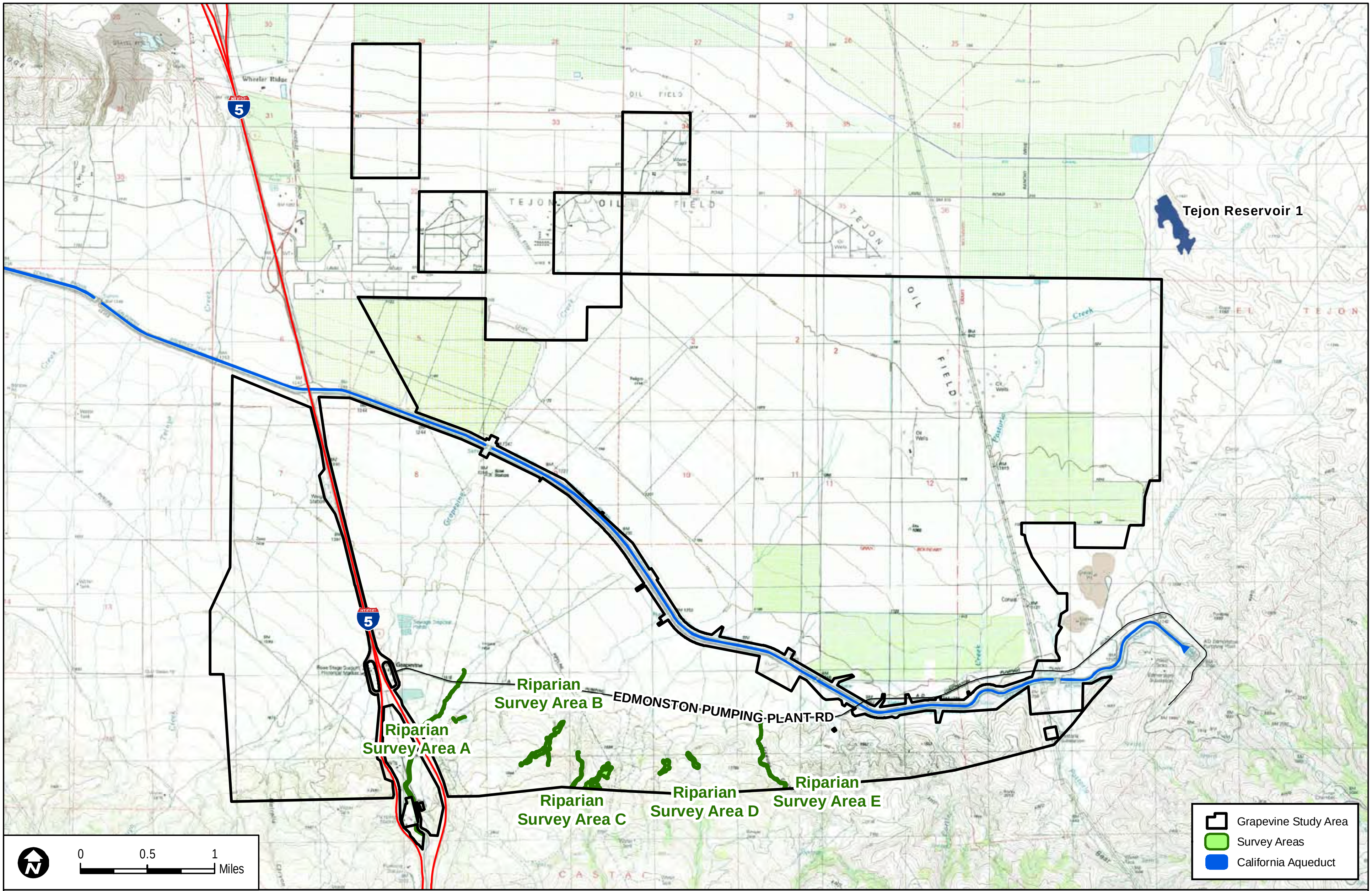


SOURCES: USGS, ESRI

FIGURE 1

Regional Map

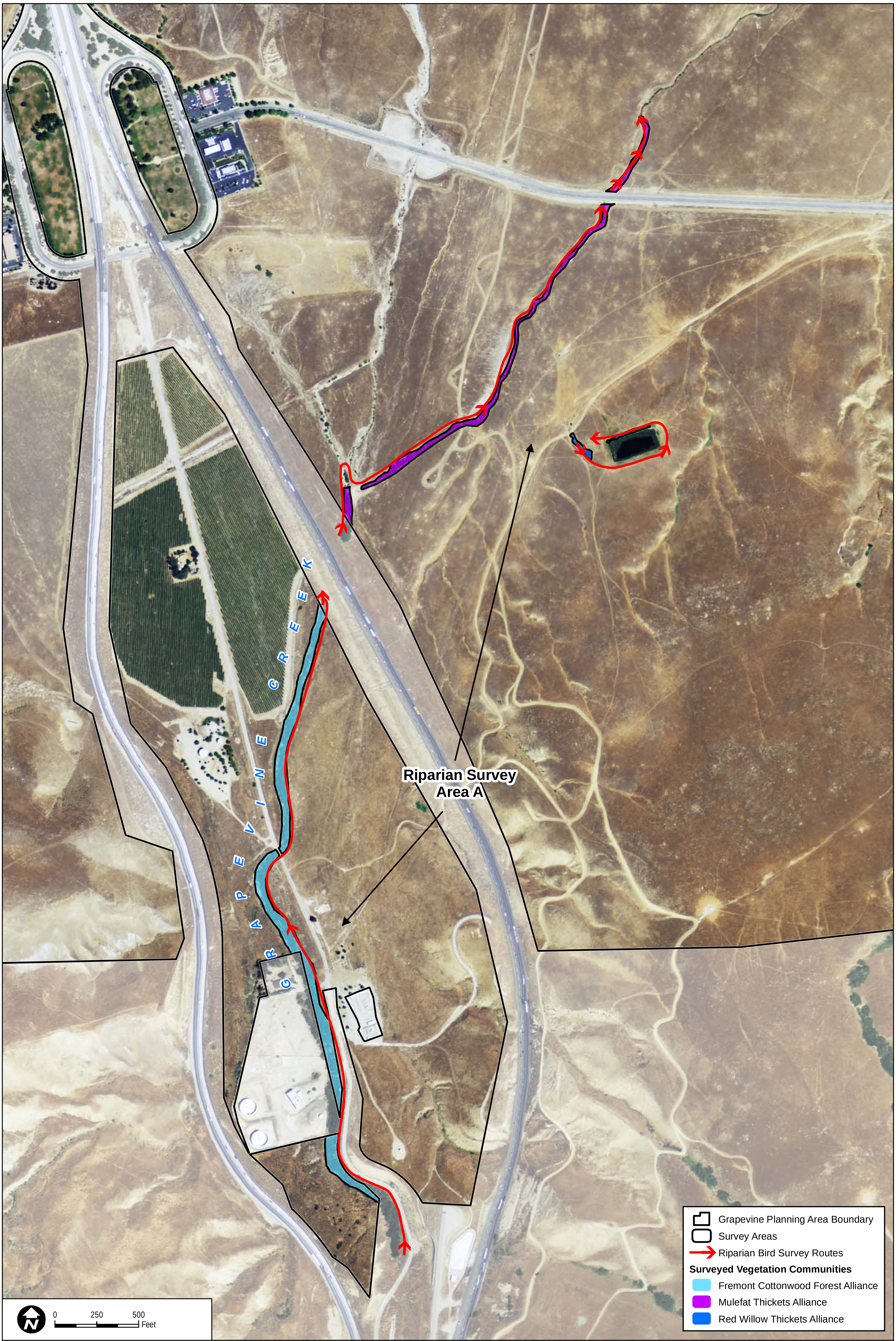
LEAST BELL'S VIREO AND SOUTHWESTERN WILLOW FLYCATCHER FOCUSED SURVEY REPORT FOR THE GRAPEVINE STUDY AREA



SOURCES: USGS 7.5-Minute Series Grapevine, Mettler, Pastoria Creek and Tejon Hills Quadrangles; TRC 2013a

FIGURE 2

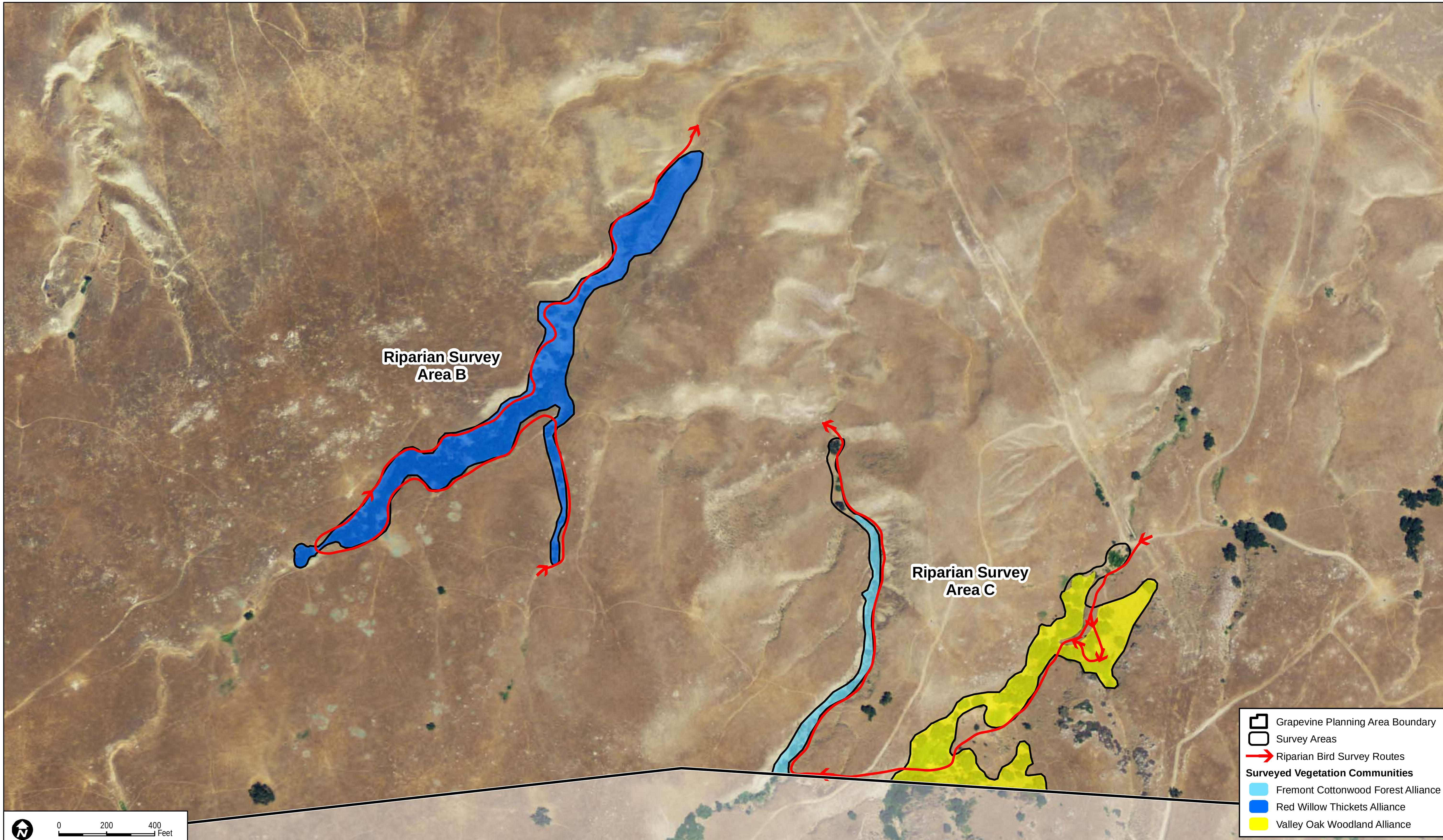
Vicinity Map



SOURCES: TRC 2013; NAIP 2012

FIGURE 3

Riparian Survey Area A

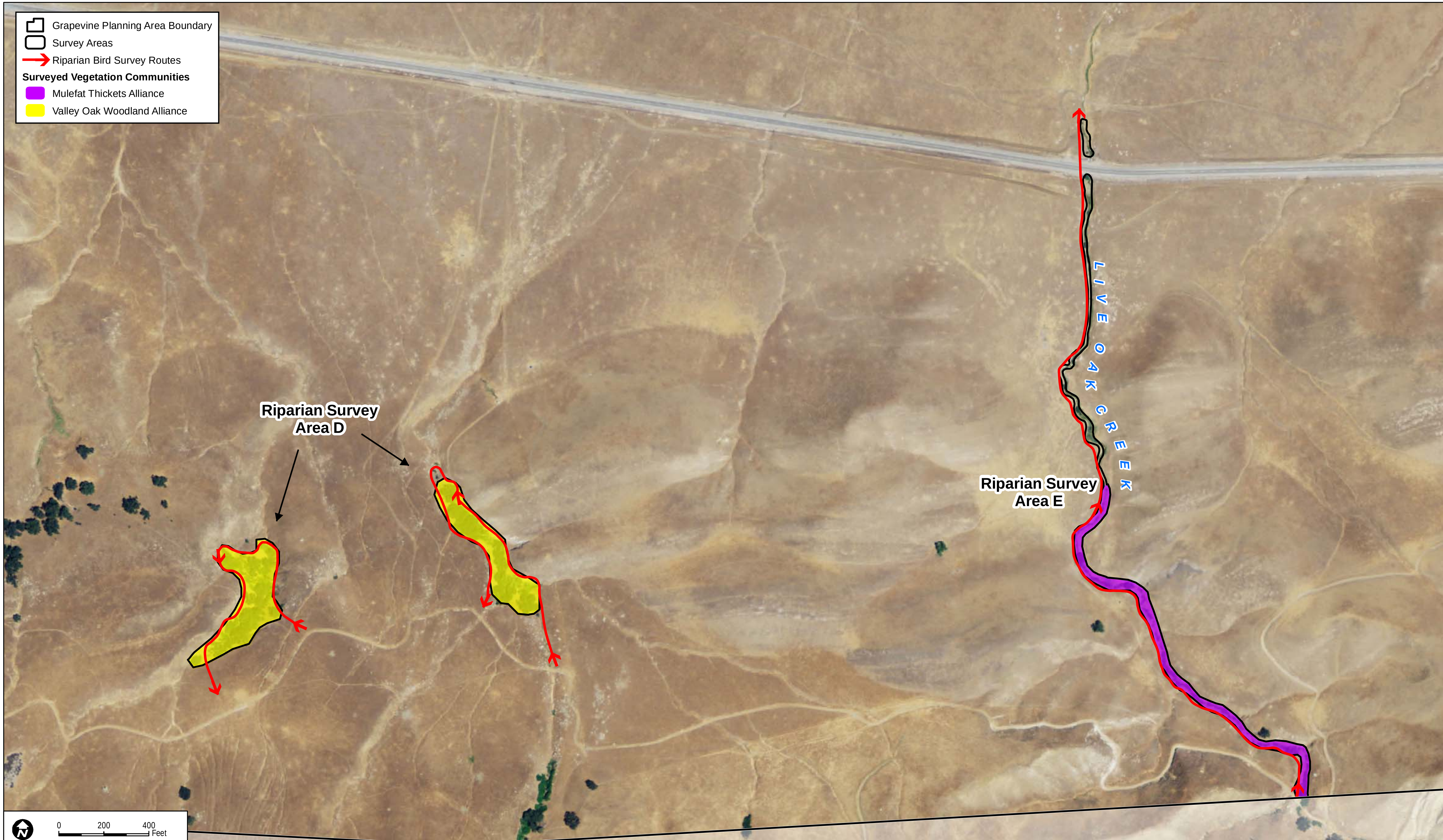


SOURCES: TRC 2013; NAIP 2012

FIGURE 4

Riparian Survey Areas B and C

LEAST BELL'S VIREO AND SOUTHWESTERN WILLOW FLYCATCHER FOCUSED SURVEY REPORT FOR THE GRAPEVINE STUDY AREA



SOURCES: TRC 2013; NAIP 2012

FIGURE 5
Riparian Survey Areas D and E

APPENDIX A

Willow Flycatcher Survey and Detection Forms

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Grapevine Study Area (A) State CA County Kern
USGS Quad Name Grapevine Elevation 457-564 (meters)
Creek, River, Wetland, or Lake Name Grapevine Creek
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* ✓ *No*___

Survey Coordinates: Start: E 505 675809 N 3866201 UTM Datum NAD83 (See instructions)
Stop: E 506 675340 N 3868164 UTM Zone 5
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

***** Fill in additional site information on back of this page *****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior, evidence of pairs or breeding, potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary. # Birds / Sex / UTM E / UTM N
Survey # 1 Observer(s) Paul Lemons	Date 5/28/13 Start 0605 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	
Survey # 2 Observer(s) Paul Lemons	Date 6/10/13 Start 0600 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	
Survey # 3 Observer(s) Paul Lemons	Date 6/20/13 Start 0600 Stop 1145 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	
Survey # 4 Observer(s) Paul Lemons	Date 7/1/13 Start 0625 Stop 1220 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	
Survey # 5 Observer(s) Brock Ortega	Date 7/14/13 Start 0400 Stop 1130 Total hrs 7.5	Ø	Ø	Ø	Ø	NO WIFL detected	

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Ø	Ø	Ø	Ø	Were any Willow Flycatchers color-banded? Yes___ No___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual P. Lemons, B. Ortega Date Report Completed 9/13/13
US Fish and Wildlife Service Permit 091248, 813545-5 State Wildlife Agency Permit #___

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Paul Lemons, Brock Ortega Phone # 760.942.5147
Affiliation DUDEK E-mail PLEMONS@DUDEK.COM
Site Name Grapevine Study Area Date Report Completed 9/13/13
Was this site surveyed in a previous year? Yes___ No ✓ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable ✓
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County___ State ___ Tribal___ Private ✓
Name of Management Entity or Owner (e.g., Tonto National Forest) Tejon Ranch Corporation

Length of area surveyed: 1.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

✓ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Populus fremontii, Baccharis salicifolia, Salix laevigata

Average height of canopy (Do not include a range): 12 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

See survey report

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
Ø	Ø	Ø	Ø	Ø	Ø	Ø

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Grapevine Study Area (B) State CA County Kern
USGS Quad Name Grapevine Elevation 464 - 567 (meters)
Creek, River, Wetland, or Lake Name N/A
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* ✓ *No* ___

Survey Coordinates: Start: E 50674650 N: 3867103 ___ UTM Datum NAD83 (See instructions)
Stop: E 50674158 N: 3867587 ___ UTM Zone 5
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

***** Fill in additional site information on back of this page *****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary
Survey # 1 Observer(s) Paul Lemons	Date 5/28/13 Start 0605 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 2 Observer(s) Paul Lemons	Date 6/10/13 Start 0600 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 3 Observer(s) Paul Lemons	Date 6/20/13 Start 0600 Stop 1145 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 4 Observer(s) Paul Lemons	Date 7/2/13 Start 0545 Stop 1045 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 5 Observer(s) Brock Ortega	Date 7/15/13 Start 0445 Stop 1040 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Ø	Ø	Ø	Ø	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual P. Lemons, B. Ortega Date Report Completed 9/13/13
US Fish and Wildlife Service Permit 051248, 813545-5 State Wildlife Agency Permit # ___

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Paul Lemons, Brock Ortega Phone # 760.942.5147
Affiliation DUDEK E-mail PLEMONS@DUDEK.COM
Site Name Grapevine Study Area Date Report Completed 9/13/13
Was this site surveyed in a previous year? Yes___ No ✓ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable ✓
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County___ State___ Tribal___ Private ✓
Name of Management Entity or Owner (e.g., Tonto National Forest) Tejon Ranch Corporation

Length of area surveyed: 0.9 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

✓ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Salix laevigata, Toxicodendron diversilobum, Populus fremontii

Average height of canopy (Do not include a range): 12 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

See survey report

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
Ø	Ø	Ø	Ø	Ø	Ø	Ø

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Grapevine Study Area (C) State CA County Kern
USGS Quad Name Grapevine Elevation 492-609 (meters)
Creek, River, Wetland, or Lake Name N/A

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes*___ *No*___

Survey Coordinates: Start: E 505 674073 N 3866753 UTM Datum NAD83 (See instructions)
Stop: E 505 673609 N 3867083 UTM Zone 5

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

***** Fill in additional site information on back of this page *****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior, evidence of pairs or breeding, potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary
Survey # 1 Observer(s) Paul Lemons	Date 5/28/13 Start 0605 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 2 Observer(s) Paul Lemons	Date 6/10/13 Start 0600 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 3 Observer(s) Paul Lemons	Date 6/20/13 Start 0600 Stop 1145 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 4 Observer(s) Paul Lemons	Date 7/2/13 Start 0545 Stop 1045 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 5 Observer(s) Brock Ortega	Date 7/15/13 Start 0445 Stop 1040 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Overall Site Summary. Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs		Total Adult Residents: Ø	Total Pairs: Ø	Total Territories: Ø	Total Nests: Ø	Were any Willow Flycatchers color-banded? Yes___ No ✓ If yes, report color combination(s) in the comments section on back of form and report to USFWS.	

Reporting Individual P. Lemons, B. Ortega Date Report Completed 9/13/13
US Fish and Wildlife Service Permit 051248, 813545-5 State Wildlife Agency Permit #

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Paul Lemons, Brock Ortega Phone # 760.942.5147
Affiliation DUDEK E-mail PLEMONS@DUDEK.COM
Site Name Grapevine Study Area Date Report Completed 9/13/13
Was this site surveyed in a previous year? Yes___ No ✓ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable ✓
If site name is different, what name(s) was used in the past?___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County___ State ___ Tribal ___ Private ✓
Name of Management Entity or Owner (e.g., Tonto National Forest) Tejon Ranch Corporation

Length of area surveyed: 0.7 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

✓ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Populus fremontii, Quercus lobata, Baccharis salicifolia

Average height of canopy (Do not include a range): 12 ___ (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

See survey report

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
Ø	Ø	Ø	Ø	Ø	Ø	Ø

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Grapevine Study Area (D) State CA County Kern
USGS Quad Name Grapevine Elevation 465 - 539 (meters)
Creek, River, Wetland, or Lake Name N/A

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* ✓ *No* ___

Survey Coordinates: Start: E 505 673002 N 3866979 UTM Datum NAD83 (See instructions)
Stop: E 505 672668 N 3867219 UTM Zone 5

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

*** Fill in additional site information on back of this page ***

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior, evidence of pairs or breeding, potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.
Survey # 1 Observer(s) Paul Lemons	Date 5/28/13 Start 0605 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 2 Observer(s) Paul Lemons	Date 6/10/13 Start 0600 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 3 Observer(s) Paul Lemons	Date 6/20/13 Start 0600 Stop 1145 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 4 Observer(s) Paul Lemons	Date 7/1/13 Start 0625 Stop 1220 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N
Survey # 5 Observer(s) Brock Ortega	Date 7/14/13 Start 0400 Stop 1130 Total hrs 7.5	Ø	Ø	Ø	Ø	NO WIFL detected	# Birds / Sex / UTM E / UTM N

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.	Ø	Ø	Ø	Ø	Were any Willow Flycatchers color-banded? Yes ___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.
Total Survey Hrs					

Reporting Individual P. Lemons ; B. Ortega Date Report Completed 9/13/13
US Fish and Wildlife Service Permit 051248, 813545-5 State Wildlife Agency Permit # ___

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Paul Lemons, Brock Ortega Phone # 760.942.5147
Affiliation DUDEK E-mail PLEMONS@DUDEK.COM
Site Name Grapevine Study Area Date Report Completed 9/13/13
Was this site surveyed in a previous year? Yes___ No ✓ Unknown ____
Did you verify that this site name is consistent with that used in previous years? Yes ____ No ____ Not Applicable ✓
If site name is different, what name(s) was used in the past?____
If site was surveyed last year, did you survey the same general area this year? Yes ____ No ____ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ____ No ____ If no, summarize below.

Management Authority for Survey Area: Federal____ Municipal/County____ State____ Tribal____ Private ✓
Name of Management Entity or Owner (e.g., Tonto National Forest) Tejon Ranch Corporation

Length of area surveyed: 0.4 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

✓ Native broadleaf plants (entirely or almost entirely, > 90% native)

____ Mixed native and exotic plants (mostly native, 50 - 90% native)

____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Quercus lobata, Salix lasiolepis, Toxicodendron diversilobum

Average height of canopy (Do not include a range): 12 ________ (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

See survey report

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
Ø	Ø	Ø	Ø	Ø	Ø	Ø

Attach additional sheets if necessary

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Grapevine Study Area (E) State CA County Kern
USGS Quad Name Grapevine Elevation 416 - 457 (meters)
Creek, River, Wetland, or Lake Name Live Oak Creek
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes*___ *No*___

Survey Coordinates: Start: E 505 671508 N 3866797 UTM Datum NAD83 (See instructions)
Stop: E 506 671796 N 3867665 UTM Zone 5
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

***** Fill in additional site information on back of this page *****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior, evidence of pairs or breeding, potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary. # Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Paul Lemons	Date 5/28/13 Start 0605 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected				
Survey # 2 Observer(s) Paul Lemons	Date 6/10/13 Start 0600 Stop 1050 Total hrs 5	Ø	Ø	Ø	Ø	NO WIFL detected				
Survey # 3 Observer(s) Paul Lemons	Date 6/20/13 Start 0600 Stop 1145 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected				
Survey # 4 Observer(s) Paul Lemons	Date 7/1/13 Start 0625 Stop 1220 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected				
Survey # 5 Observer(s) Brock Ortega	Date 7/14/13 Start 0445 Stop 1040 Total hrs 6	Ø	Ø	Ø	Ø	NO WIFL detected				

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Ø	Ø	Ø	Ø	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual P. Lemons ; B. Ortega Date Report Completed 9/13/13
US Fish and Wildlife Service Permit 051248 ; 813545-5 State Wildlife Agency Permit #____

***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Paul Lemons, Brock Ortega Phone # 760.942.5147
Affiliation DUDEK E-mail PLEMONS@DUDEK.COM
Site Name Grapevine Study Area Date Report Completed 9/13/13
Was this site surveyed in a previous year? Yes___ No ✓ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable ✓
If site name is different, what name(s) was used in the past?___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County___ State___ Tribal___ Private ✓
Name of Management Entity or Owner (e.g., Tonto National Forest) Tejon Ranch Corporation

Length of area surveyed: 1.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

✓ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Baccharis salicifolia, Tamarix ramosissima, Populus fremontii

Average height of canopy (Do not include a range): 5 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

See survey report

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
Ø	Ø	Ø	Ø	Ø	Ø	Ø

Attach additional sheets if necessary

APPENDIX B

Site Photographs

APPENDIX B
Photos

<table>
<tr><td></td><td></td></tr>
<tr><td>Fremont Cottonwood Forest – Grapevine Creek</td><td>Fremont Cottonwood Forest – Grapevine Creek (interior)</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Fremont Cottonwood Forest – Unnamed Canyon</td><td>Mulefat Thickets – Live Oak Creek</td></tr>
</table>

	
Mulefat Thickets – Grapevine Creek	Mulefat Thickets – Live Oak Creek
	
Red Willow Thickets – Unnamed Canyon	Red Willow Thickets – Unnamed Canyon

	
Red Willow Thickets – Unnamed Canyon	Valley Oak Woodland – Unnamed Canyon
	
Valley Oak Woodland – Unnamed Canyon	Valley Oak Woodland – Unnamed Canyon

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APPENDIX C

Wildlife Compendium

APPENDIX C
Wildlife Compendium

AMPHIBIAN

FROGS

***RANIDAE*—TONGUELESS FROGS**

* *Lithobates catesbeianus*—American bullfrog

***HYLIDAE*—TREEFROGS**

Pseudacris hypochondriaca—Baja California treefrog

TOADS

***BUFONIDAE*—TRUE TOADS**

Anaxyrus boreas—Western toad

BIRD

BLACKBIRDS, ORIOLES AND ALLIES

***ICTERIDAE*—BLACKBIRDS**

* *Molothrus ater*—Brown-headed cowbird
Agelaius phoeniceus—Red-winged blackbird
Euphagus cyanocephalus—Brewer's blackbird
Icterus bullockii—Bullock's oriole
Icterus cucullatus—Hooded oriole
Quiscalus mexicanus—Great-tailed grackle
Sturnella neglecta—Western meadowlark

BUSHTITS

***AEGITHALIDAE*—LONG-TAILED TITS AND BUSHTITS**

Psaltriparus minimus—Bushtit

CARDINALS, GROSBEAKS AND ALLIES

***CARDINALIDAE*—CARDINALS AND ALLIES**

Passerina caerulea—Blue grosbeak
Pheucticus melanocephalus—Black-headed grosbeak
Piranga ludoviciana—Western tanager

EMBERIZINES

***EMBERIZIDAE*—EMBERIZIDS**

Aimophila ruficeps canescens—Southern California rufous-crowned sparrow
Chondestes grammacus—Lark sparrow
Melospiza melodia—Song sparrow
Melozone crissalis—California towhee
Pipilo maculatus—Spotted towhee

FALCONS

***FALCONIDAE*—CARACARAS AND FALCONS**

Falco sparverius—American kestrel

FINCHES

***FRINGILLIDAE*—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES**

Carpodacus mexicanus—House finch
Spinus lawrencei—Lawrence's goldfinch
Spinus psaltria—Lesser goldfinch

FLYCATCHERS

***TYRANNIDAE*—TYRANT FLYCATCHERS**

Contopus cooperi—Olive-sided flycatcher
Contopus sordidulus—Western wood-pewee
Myiarchus cinerascens—Ash-throated flycatcher
Sayornis nigricans—Black phoebe
Tyrannus verticalis—Western kingbird
Tyrannus vociferans—Cassin's kingbird

HAWKS

***ACCIPITRIDAE*—HAWKS, KITES, EAGLES, AND ALLIES**

Accipiter cooperii—Cooper's hawk
Aquila chrysaetos—Golden eagle
Buteo jamaicensis—Red-tailed hawk
Buteo lineatus—Red-shouldered hawk

HUMMINGBIRDS

***TROCHILIDAE*—HUMMINGBIRDS**

Archilochus alexandri—Black-chinned hummingbird
Calypte anna—Anna's hummingbird

JAYS, MAGPIES AND CROWS

***CORVIDAE*—CROWS AND JAYS**

Aphelocoma californica—Western scrub-jay
Corvus brachyrhynchos—American crow
Corvus corax—Common raven

LARKS

***ALAUDIDAE*—LARKS**

Eremophila alpestris—Horned lark

NEW WORLD QUAIL

***ODONTOPHORIDAE*—NEW WORLD QUAIL**

Callipepla californica—California quail

OWLS

***TYTONIDAE*—BARN OWLS**

Tyto alba—Barn owl

***STRIGIDAE*—TYPICAL OWLS**

Athene cunicularia—Burrowing owl

PIGEONS AND DOVES

***COLUMBIDAE*—PIGEONS AND DOVES**

Zenaida macroura—Mourning dove

RAILS, GALLINULES AND COOTS

***RALLIDAE*—RAILS, GALLINULES, AND COOTS**

Fulica americana—American coot

ROADRUNNERS AND CUCKOOS

***CUCULIDAE*—CUCKOOS, ROADRUNNERS, AND ANIS**

Geococcyx californianus—Greater roadrunner

SHOREBIRDS

***CHARADRIIDAE*—LAPWINGS AND PLOVERS**

Charadrius vociferus—Killdeer

SILKY FLYCATCHERS

***PTILOGONATIDAE*—SILKY-FLYCATCHERS**

Phainopepla nitens—Phainopepla

STARLINGS AND ALLIES

***STURNIDAE*—STARLINGS**

* *Sturnus vulgaris*—European starling

SWALLOWS

***HIRUNDINIDAE*—SWALLOWS**

Hirundo rustica—Barn swallow
Petrochelidon pyrrhonota—Cliff swallow
Stelgidopteryx serripennis—Northern rough-winged swallow
Tachycineta thalassina—Violet-green swallow

THRUSHES

***TURDIDAE*—THRUSHES**

Sialia mexicana—Western bluebird

WOOD WARBLERS AND ALLIES

***PARULIDAE*—WOOD-WARBLERS**

Cardellina pusilla—Wilson’s warbler
Geothlypis trichas—Common yellowthroat
Icteria virens—Yellow-breasted chat
Setophaga petechia—Yellow warbler

WOODPECKERS

***PICIDAE*—WOODPECKERS AND ALLIES**

Melanerpes formicivorus—Acorn woodpecker
Picoides nuttallii—Nuttall's woodpecker

WRENS

***TROGLODYTIDAE*—WRENS**

Catherpes mexicanus—Canyon wren
Salpinctes obsoletus—Rock wren
Thryomanes bewickii—Bewick's wren

INVERTEBRATE

BUTTERFLIES

***NYMPHALIDAE*—BRUSH-FOOTED BUTTERFLIES**

Danaus plexippus—Monarch

***PAPILIONIDAE*—SWALLOWTAILS**

Papilio eurymedon—Pale swallowtail

***PIERIDAE*—WHITES AND SULFURS**

Pieris rapae—Cabbage white
Pontia protodice—Checkered white

MAMMAL

CANIDS

***CANIDAE*—WOLVES AND FOXES**

Canis latrans—Coyote

CATS

***FELIDAE*—CATS**

Lynx rufus—Bobcat

HARES AND RABBITS

***LEPORIDAE*—HARES AND RABBITS**

Sylvilagus audubonii—Desert cottontail

MUSTELIDS

***MEPHITIDAE*—SKUNKS**

Mephitis mephitis—Striped skunk

POCKET GOPHERS

***GEOMYIDAE*—POCKET GOPHERS**

Thomomys bottae—Botta's pocket gopher

RACCOONS

***PROCYONIDAE*—RACCOONS AND RELATIVES**

Procyon lotor—Raccoon

SQUIRRELS

***SCIURIDAE*—SQUIRRELS**

Spermophilus(Otospermophilus) beecheyi—California ground squirrel

UNGULATES

***CERVIDAE*—DEERS**

Odocoileus hemionus—Mule deer

***SUIDAE*—PIGS**

* *Sus scrofa*—Wild boar

REPTILE

LIZARDS

***PHRYNOSOMATIDAE*—IGUANID LIZARDS**

Sceloporus occidentalis—Western fence lizard

Urosaurus graciosus—Long-tailed brush lizard

Uta stansburiana—Common side-blotched lizard

***ANGUIDAE*—ALLIGATOR LIZARDS**

Elgaria multicarinata—Southern alligator lizard

SNAKES

***VIPERIDAE*—VIPERS**

Crotalus oreganus—Western rattlesnake

* signifies introduced (non-native) species

APPENDIX K

Condor Technical Report

Condor Technical Report
Grapevine Project

Prepared for:

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APPENDIX K
Grapevine Condor Technical Report

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Meaning
AB	Assembly Bill
APLIC	Avian Power Line Interaction Committee
BMP	best management practice
BTR	Biological Resources Technical Report
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
FESA	federal Endangered Species Act
GIS	geographic information system
GMT	Greenwich Mean Time
GPS	Global Positioning System
GSM	Global System for Mobile
I-	Interstate
NMFS	National Marine Fisheries Service
PCE	primary constituent element
PST	Pacific Standard Time
Ranch	Tejon Ranch
Ranchwide Agreement/RWA (on figures)	Tejon Ranch Land Use and Conservation Agreement
Recovery Plan	California Condor Recovery Plan
SR-	State Route
TMV	Tejon Mountain Village
TRC	Tejon Ranch Company
TU MSHCP	Tehachapi Uplands Multiple Species Habitat Conservation Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

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1 INTRODUCTION

1.1 Purpose and Scope

This document is an appendix to the Biological Resources Technical Report (BTR) for the proposed Grapevine project (proposed project). Additional information regarding biological resources in the Grapevine study area and the overall setting is provided in the BTR. The purpose of this technical report is to address the California condor (*Gymnogyps californianus*) and the potential effect of the proposed project on the condor's use of the study area, which includes the 8,010-acre Grapevine Specific Plan Area and 77 acres of proposed off-site impact areas, after proposed project buildout.

Section 1 describes the purpose and scope of this technical report, the location of the study area, and an overview of the proposed project. Section 2 provides background information for the California condor, including natural history and occurrence, regulatory status and history, population trends, and reason for decline and ongoing threats. Section 3 discusses the California condor's occurrence on and use of Tejon Ranch (the Ranch), particularly in relation to the study area. Section 4 discusses the potential impacts of the proposed project on California condor. Section 5 summarizes the biological resource protection measures that will reduce any potential impacts to less than significant and avoid take of individuals (listed in Appendix A, Biological Resources Protection Measures, to the BTR). Section 6 describes measures that contribute to the conservation and recovery of the condor. Section 7 summarizes findings and concludes this report. Section 8 lists references cited.

1.2 Location

The study area is located in the west-central portion of Tejon Ranch. The approximately 270,000-acre Ranch is currently held in private ownership by Tejon Ranchcorp. The Ranch includes a large portion of the Tehachapi Mountains and smaller portions of the San Joaquin and Antelope Valleys. Generally, the Ranch extends from Interstate 5 (I-5) on the western side to State Route 58 (SR-58) on the northern side and SR-138 on the southern side (see Figure 1, Regional Location).

The study area is entirely within unincorporated Kern County, just south of the junction of I-5 and SR-99. Downtown Bakersfield is approximately 25 miles north of the study area. The majority of the study area is on the east side of I-5, but a smaller portion lies on the west side of I-5. The study area is bisected by the California Aqueduct (see Figure 1, Regional Location, and Figure 2, Vicinity Map).

The study area lies mainly in the Grapevine and Pastoria Creek U.S. Geological Survey (USGS) 7.5-minute quadrangles (USGS n.d.). One parcel, a portion of two other parcels, and a portion of the proposed off-site impact areas lie entirely within the Mettler USGS 7.5-minute quadrangle. The latitude and longitude of the approximate center of the study area is 34°57′9″ N and 118°55′39″ W. The Universal Transverse Mercator (UTM) coordinates for the approximate center are UTM Easting (meters) 323999 and UTM Northing (meters) 3869472 in Zone 11.

1.3 Proposed Project Overview

The 8,010-acre Grapevine Specific Plan Area is within a 15,644-acre area identified for development in Tejon Ranch Land Use and Conservation Agreement (Ranchwide Agreement; TRC et al. 2008), known as the Ranchwide Agreement Grapevine Development Area. The Ranchwide Agreement, a landmark agreement reached in 2008 with leading environmental organizations (including the Sierra Club, Natural Resources Defense Council, California Audubon Society, Endangered Habitats League, and Planning and Conservation League) to permanently preserve over 90% of the Ranch as open space and limit development to designated areas near existing infrastructure such as I-5. The precise boundaries of the proposed project footprint may be further adjusted based on the results of the ongoing environmental review and permitting process for the proposed project, but would remain within the Ranchwide Agreement Grapevine Area, except where off-site impacts are necessary, such as off-site traffic improvements.

The Specific and Community Plan (collectively referred to as the “Specific Plan”) designates approximately 3,232 acres (or about 40%) for ongoing open space uses (with grazing and open space as the predominant land uses) and approximately 4,778 acres (about 60%) for development of a new residential community and employment center to complement the economic expansion and job growth that has occurred on the Tejon Ranch Commerce Center, which is located immediately north of the study area (see Figure 2, Vicinity Map). The proposed project would feature a series of compact neighborhoods linked by bicycle and pedestrian trails that provide convenient access to grocery and drugstores, professional services, schools, and parks, while also preserving extensive open space and agricultural uses. See the BTR for additional information regarding the proposed project.

SOURCES: McIntosh & Associates (2013); TRC 2013a, 2013b

The Grapevine project site (McIntosh & Associates 2013) and Tejon Ranch (2013a) boundaries appear on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1

Regional Location

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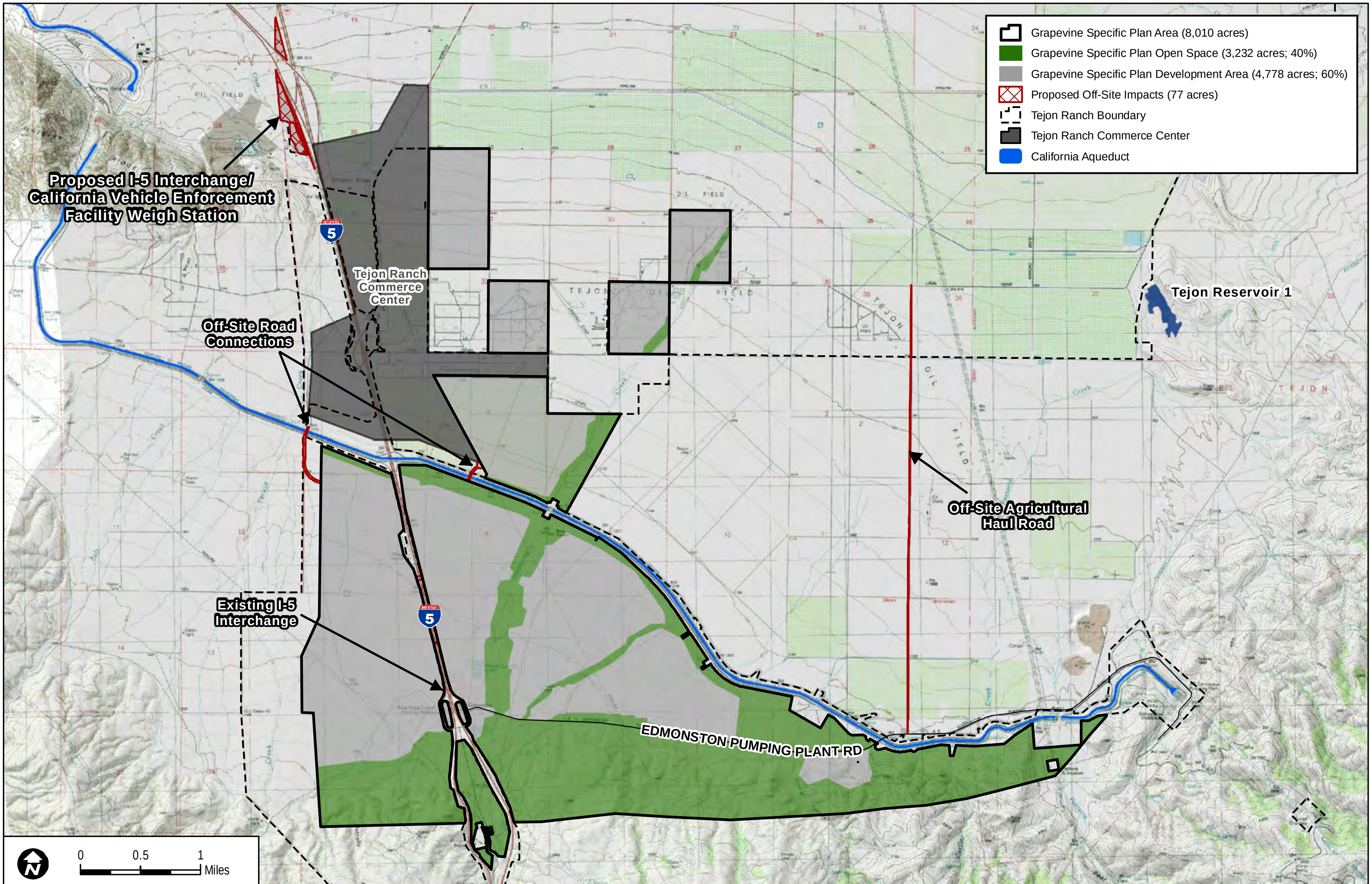

SOURCES: McIntosh & Associates 2014; TRC 2013c
The California aqueduct (TRC 2013c) appears on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 2
Vicinity Map

GRAPEVINE PROJECT

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1.4 Relevant Site Information

Section 2 (Existing Setting) of the BTR describes the biological resources within the study area. The vast majority (86%) of the study area is non-native grassland and 11% of the site is non-natural land covers (orchards and vineyards, disturbed habitat, and urban/developed lands). The remaining 3% of the lands, which are primarily in the foothills, consist of scrubs, native grasslands, wash, riparian/marsh, riparian woodland, and savannah.

Livestock grazing occurs Ranch-wide on approximately 240,000 acres of the Ranch's approximately 270,000 acres. Under the current management regime, the number of cattle on the Ranch ranges from 8,000 to 17,000; in an average year, the number of cattle is approximately 14,500. Numerous improvements for grazing, including fences, watering systems, and corrals, are present throughout the Ranch. The specific livestock practices vary from year to year based upon a number of factors, including the climate, which can affect the forage quantity and quality. With respect to the study area, in general, on the west of I-5, the area is grazed by livestock from winter to spring (depending on foraging production), and on the east side of I-5, livestock are moved to the area for birthing and processing in late fall to early winter before returning to higher elevations based on forage production and operational considerations.

Commercial hunting, regulated by the California Department of Fish and Wildlife (CDFW), is permitted in on-Ranch portions of the study area. However, very little hunting actually occurs on there for several reasons. First, because of the general lack of suitable habitat for game species, hunting on the east side of the I-5 is restricted to the foothill areas south of Edmonston Pumping Plant Road where there is no proposed development. Furthermore, access to the area is controlled, and during the winter months access roads are fairly inaccessible due to rain and snow. On the west side of I-5, hunting is typically limited to upland and small game and deer hunting primarily in the foothill regions where more suitable habitat for game species occurs; no development is proposed in this area. Because the Ranch is closed to the general public for hunting and permission from Tejon Ranch Company (TRC) must be granted to access these areas as part of TRC's commercial hunting program, use by hunters is minimal. Additionally, the study area is essentially a "dead end" as there is no hunting north of the study area and hunters must turn around and head south to continue hunting. Consequently, the areas of the study area proposed for development experience very little hunting pressure thus providing few, if any, food sources for California condors.

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2 BACKGROUND INFORMATION

2.1 Natural History and Occurrence

The California condor is a member of the family Cathartidae or New World vultures, a family of seven species, including the closely related Andean condor (*Vultur gryphus*) and the sympatric turkey vulture (*Cathartes aura*). Although the family has traditionally been placed in the Order Falconiformes, most contemporary taxonomists believe that New World vultures are members of the Order Ciconiiformes, which includes bitterns, herons, egrets, ibises, and storks (Ligon 1967; Rea 1983; Sibley and Ahlquist 1990; AOU 2006).

California condors are among the largest flying birds in the world. It is the largest of the North America vultures, as well as the largest soaring land bird on the North American continent. Adults weigh approximately 22 pounds and have a wingspan up to 9.5 feet. They are generally black, with prominent white underwing linings, and with naked skin on the head and neck that ranges from gray to shades of yellow, red, and orange. Juveniles and subadults lack the distinct white wing linings and head colorations of adults. By the time individuals are 5 or 6 years of age, they have developed yellow to red heads and distinctive wing linings (Koford 1953; Wilbur 1975; Snyder et al. 1987), although full development of adult wing patterns may not be completed until 7 or 8 years of age (Snyder and Schmitt 2002).

2.1.1 Natural History

The following details of California condor life history are based largely on studies of the wild population prior to 1987, principally those of Carl Koford (1939–1947), Fred Sibley (1965–1969), Sanford Wilbur (1969–1980), and Noel Snyder and his associates (1980–1985). This information is categorized into distribution, nesting, foraging, roosting and movement. Mapping of historical and current use of the Ranch, including the study area, by California condors is discussed in Section 3.

Much of the information on California condor biology in the following discussion is derived from the California Condor Recovery Plan (Recovery Plan) (USFWS 1996). This discussion also incorporates more recent studies of the released populations of the California condor undertaken by Dr. Pete Bloom. Dr. Bloom is a scientist with extensive expertise with wild and released California condors on the Ranch, as well as many other raptors. Recently he was a member of the condor scientific advisory panel that was assembled to provide technical support for the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) that was approved in 2012 (Dudek 2012). The TU MSHCP condor scientific advisory panel also included Dr. Robert W. Risebrough, a member of the California Condor Recovery Team and director of the

Bodega Bay Institute of Pollution Ecology, and Lloyd Kiff, a former leader of the California Condor Recovery Team.

2.1.1.1 Distribution

Fossil evidence of the California condor is known from the late Pleistocene (40,000 years before present) and has been found throughout North America. The historical disappearance from most of its range may have been the result of the extinction of the terrestrial mammalian megafauna or depredation by Native Americans (Emslie 1987). In the early 19th century, the species occurred in California; Oregon; Washington; southern British Columbia, Canada; and Baja California, Mexico. By the mid-20th century, California condors were largely confined to Southern California (Koford 1953; Wilbur 1978a).

California condors were historically found in habitat with large populations of ungulates and other large vertebrates (Koford 1953; Snyder and Snyder 2000; Grantham 2007a). As large scavengers, they are evolutionarily adapted for feeding on the carcasses of deer, elk, whales, mastodons, and other large animals (more than 20 kilograms or 44 pounds) more prevalent in the Pleistocene (Emslie 1987). As such, the availability of large dead prey was often unpredictable, leading condors to develop a wide-ranging search behavior. Foraging flights occurred, and continue to occur, over vast areas encompassing hundreds of linear miles of travel each day (Meretsky and Snyder 1992).

Both nest sites and roost sites are generally located in remote areas, such as the Los Padres National Forest in Ventura County. The foraging range for condors in California until 1987 (when the last wild condor was trapped for captive breeding purposes) spanned a wishbone-shaped mountainous area that generally extended from the Coastal Range (San Benito and Monterey Counties in the north, to Ventura and Los Angeles Counties in the south), to the Transverse Range, including the Tehachapi Mountains of Kern and Los Angeles Counties, and the southern Sierra Nevada Range (Fresno and Madera Counties in the north through Tulare and Kern Counties in the south). Since the release of captive-bred condors beginning in the late 1990s, and based on an analysis conducted by the USGS (Johnson et al. 2010) of condor use in Southern California from 2004 to 2009, condors have begun to use much of their historical range (i.e., prior to all wild condors being brought into captivity for breeding purposes), though not as extensively into the southern Sierras as in the 1980s. Similarly, Cogan et al. (2012) states that roost data from 2012 and 2011 suggest that the condor’s range is continuing to expand in the historical habitats in northern Kern and Tulare Counties. Roost records in the remote wilderness areas of Santa Barbara County suggest that these historical nesting and roosting areas may be repopulated in the near future (Cogan et al. 2012).

See Section 2.1.1.5 for a more thorough discussion of the movement of released condors and Section 3 with respect to occurrence on Tejon Ranch, including the study area.

2.1.1.2 Nesting

Researchers had once concluded that California condors did not reach sexual maturity until 6 years of age; however, it is now known that the birds may begin courtship behaviors as early as 4 years old (USFWS 1996). California condors are thought to be monogamous, maintaining stable pair bonds over a period of multiple years (Snyder and Schmitt 2002). Courtship and nest site selection by breeding California condors occur from December through the spring months. The female of a reproductively mature California condor pair normally lays a single egg between late January and early April. Pairs not attending a dependent fledgling from the previous year may attempt breeding annually, but pairs successfully rearing a young typically nest every 2 years (Snyder and Hamber 1985). The egg is incubated by both parents and hatches after approximately 56 days. Both parents share responsibilities for feeding the nestling. Feeding usually occurs daily for the first 2 months, and then gradually diminishes in frequency. At 2 to 3 months of age, the California condor chick leaves the actual nest cavity but remains in the vicinity of the nest, where it is fed by its parents. The chick takes its first flight at about 6 to 7 months of age but may not become fully independent of its parents until the following year. Parent birds occasionally feed a fledgling even after it has begun to make longer flights to foraging grounds.

California condors nest in various types of rock formations, including crevices, overhung ledges, and potholes, and, more rarely, in cavities in giant sequoia trees (*Sequoiadendron giganteum*) (Snyder et al. 1986). Snyder et al. (1986) evaluated various factors of 72 nests, including types, elevations, compass orientation, entrance sizes, depths, chamber characteristics, substrates, use of nests by other species, accessibility to predators, presence of porches, and proximity to roost perches and sources of human disturbance. This evaluation found that all 72 California condor nest sites shared the following characteristics: the nest cavity had a ceiling height of at least 38 centimeters (15 inches) at the egg position and a fairly level floor with some loose surface substrate, the area around the nest was unobstructed for incubating adults, and the nest was a short distance from an accessible landing point.

Although apparently suitable California condor nesting habitat still exists over a relatively large portion of the coastal and interior mountains in central and Southern California, the occupied nesting range (prior to the start of the captive-breeding program) was quite limited. After 1910, all recorded nesting sites were located in the Coast, Transverse, and southern Sierra Nevada mountain ranges (Koford 1953; Meretsky and Snyder 1992). All but one of the nest sites used between 1979 and 1986 were in a narrow belt of chaparral and coniferous-forested mountains from central Santa Barbara County across northern and central Ventura County to northwestern Los Angeles County. The nest sites were located within a total area approximately 56 miles from west to east and only about 15 miles from north to south. The only nest outside this area was located in a giant sequoia in Tulare County in 1984. It is possible that California condors may have been nesting in the latter area for many years, since the nest was only a few miles from another giant sequoia nest that was active in 1951. All these California condor nest sites were (and still are) located on public lands within the Los Padres, Angeles, and Sequoia National Forests.

As discussed in more detail in Section 3, California condors have not historically nested, nor do they currently nest, on Tejon Ranch, including the study area.

2.1.1.3 Foraging

California condors are obligate scavengers, feeding only on the carcasses of dead animals, primarily medium- to large-sized mammals. Typical foraging behavior includes long-distance reconnaissance flights, lengthy circling flights over a carcass, and hours of waiting at a roost or on the ground near a carcass. Seasonal foraging behavior shifts may result from changes in climatic conditions (e.g., fog, thermal activity, wind intensities, rain) or in response to changes in food availability. California condors maintain wide-ranging foraging patterns throughout the year, an important adaptation for a species that may be subjected to unpredictable food supplies and weather conditions (Meretsky and Snyder 1992). Prior to the arrival of European man, California condor food items within interior California probably included mule deer (*Odocoileus hemionus*), tule elk (*Cervus elaphus nannodes*), pronghorn antelope (*Antilocapra americana*), and smaller mammals. Along the Pacific shore, the diet of the California condor may have included whales, sea lions, and other marine species (Koford 1953; Emslie 1987; USFWS 1984). Koford (1953) estimated that 95% of the California condor diet consisted of cattle, domestic sheep, California ground squirrels (*Spermophilus beecheyi*), mule deer, and horses. Over half of the observations Koford (1953) reported were of California condors feeding on cattle carcasses, and most of those were calves. California condors appear to feed only 1 to 3 days per week, but the frequency of adult feeding is variable and may show seasonal differences. Condors feed on decaying as well as fresh carcasses but are not known to feed on roadkill (Snyder and Schmitt 2002).

Most California condor foraging occurs in the foothills in open terrain of grassland and oak savannah habitats and occasionally in open scrub habitat. Although the California condor is not as ungainly on the ground as portrayed in popular literature, it does require fairly open spaces for feeding. This ensures easy take-off and approach and makes finding food easier. As mentioned above, mule deer are a typical food item, yet deer tend to drift toward canyon bottoms to die (Taber and Dasmann 1958), where steep terrain and brush may interfere with California condor foraging.

The principal foraging regions used by California condors from the late 1970s to 1987 were the foothills bordering the southern San Joaquin Valley and axillary valleys in San Luis Obispo, Santa Barbara, Kern, and Tulare Counties. After 1982, most observations of feeding by the small remaining wild population of California condors occurred in the Elkhorn Hills–Cuyama Valley–Carrizo Plain complex and in the foothills of the southern San Joaquin Valley (Meretsky and Snyder 1992). The majority of important foraging areas were on private cattle-grazing lands.

In Kern County, California condors foraged extensively in the foothills adjacent to the northern boundary of Los Padres National Forest, to Reyes Station in the west, to the Pleito Hills west of I-5, and eastward throughout much of the region from the Tehachapi Mountains (including portions of the Ranch) north to the slopes of Cummings Mountain (Studer 1983). This entire region, like the similar foraging country in the Carrizo and Elkhorn Plains, is fairly close to traditional nesting sites (USFWS 1984).

An important foraging area in Kern County was the foothill rangelands around Glennville. There, California condors roosted primarily on Sequoia National Forest lands in the Greenhorn Mountains and foraged daily in the Cedar Creek and upper Pozo Creek drainages as far west as Blue Mountain and the old Granite Station crossroads south of Woody, California. In Tulare County, California condors foraged extensively through the oak savannah and grassland hill country north from the Kern County border and west of the Sequoia National Forest boundary, including the Tule River Indian Reservation (USFWS 1984). California condors recently foraged as far north as the Lake Kaweah region, with the White River, Deer Creek, Lake Success, and Yokohl Valley areas being of special importance (USFWS 1984).

Although these foraging regions have been identified as important to California condors, they should not be considered as all-inclusive. Like most scavenging birds, California condors are opportunistic. During research on the wild birds prior to 1987, California condors were observed feeding on carcasses found in many locations. California condors were known to feed at U.S. Fish and Wildlife Service (USFWS) baiting stations on Tejon Ranch, the Beard Ranch in Glennville, and the Hopper Mountain and Bitter Creek National Wildlife Refuges. The birds may be expected to take advantage of local abundance of food almost anywhere within their normal range (USFWS 1996). However, after the mid-1980s, California condors were not reported in many areas of the foraging range they occupied in previous decades, especially north in the Coastal Range to Monterey and San Benito Counties, but also east into the San Gabriel Mountains in Los Angeles County.

Based on reviews of extensive vegetation maps developed for the TU MSHCP and ground-truthing of Ranch vegetation community characteristics, the USFWS determined the type and extent of habitat areas that are most conducive to successful condor foraging and feeding on the Ranch, given the presence of a consistent supply of carrion. With this information, the USFWS prepared a model of suitable condor foraging habitat for Tejon Ranch, and determined that the foothill grassland and oak savannahs of the Ranch provide the easiest access to food, protection from predators, and lowest risk of injury during feeding. The suitable foraging habitat model excluded dense understory vegetation communities, including black oak woodland; Brewer's oak scrub; chaparral; incense cedar stand; intermixed conifer; lake; mixed oak woodland; riparian scrub; undetermined chaparral; scrub oak; wetland; white fir/mixed oak; and developed areas, including areas within 0.5 mile of the I-5 corridor (USFWS 2013b).

No important foraging habitat is located within or immediately adjacent to the proposed project footprint; higher-value foraging habitat, where more hunting and grazing occurs, is located in the foothills portion of the study area, which will be avoided by development activities, and in the higher elevations of the Ranch. See Section 3 for specific information with respect to condor foraging within the study area and surrounding area.

2.1.1.4 Roosting

Depending on weather conditions and the hunger of the bird, a California condor may spend most of its time perched at a roost. California condors often use traditional roosting sites near important foraging grounds (USFWS 1984). Although California condors usually remain at roosts until mid-morning, and generally return in mid- to late afternoon, it is not unusual for a bird to stay perched throughout the day. While at roosts, California condors devote considerable time to preening and other maintenance activities. Roosts may also serve some social function, as it is common for two or more California condors to roost together and to leave a roost together (USFWS 1984). There may be adaptive as well as traditional reasons for California condors to continue to occupy a number of widely separated roosts, such as reducing food competition between breeding and non-breeding birds.

Cliff ledges, potholes, and tall conifers, including dead snags, are generally utilized as roost sites in nesting areas. Trees are more often used as night roosts near feeding areas. Although most roost sites are near nesting or foraging areas, scattered roost sites are located throughout the species' range.

There are no traditional or regularly used roost sites within the study area. Section 3 describes the occurrence information, including condor roosting on Tejon Ranch, inclusive of the study area.

2.1.1.5 Movement

Historical data on locations and movements of California condors are limited mainly to those collected between 1982 and 1987, as summarized by Meretsky and Snyder (1992). These data were obtained primarily from radio telemetry studies and the analysis of flight photographs of California condors, by which individual birds could be identified and tracked (Snyder and Johnson 1985; Meretsky and Snyder 1992). These studies showed that the last California condors remaining in the wild prior to 1987 consisted of a single population of birds occupying a range within California of approximately 2 million hectares (4,942,000 acres). Insofar as could be determined, every California condor in the wild used the entire area and was capable of soaring between any two points within the area in a single day. In addition to changes in climatic conditions, seasonal shifts that were noted seemed to be based generally on food availability. The majority of breeding birds forage within 50 to 70 kilometers (31 to 43 miles) of their nesting areas, with core foraging areas ranging from 2,500 to 2,800 square kilometers (965 to 1081 square miles). This wide-ranging foraging pattern may be an important adaptation to unpredictable food supplies (Meretsky and Snyder 1992).

The USFWS (2013b) describes the movement of condor as follows: "California condors are highly dependent on topography, which dictates prevailing wind patterns (Service 1996a). Their large body size and broad wings require California condors to soar rather than constantly flap their wings to cover long distances. Most flights by California condors follow mountains and foothills where they use topography and associated thermal updrafts to generate lift. The recent historical range of the species was restricted to a horseshoe-shaped portion of the Coast Range, Tehachapi and southern Sierra Nevada mountains surrounding the San Joaquin Valley. Only one California condor has been documented crossing over the San Joaquin Valley from the Coast Range to the southern Sierra Nevada (Snyder and Snyder 2000). California condors are able to freely cross flat agricultural regions that are much less extensive, such as the Cuyama and Salinas Valleys in California."

The free-flying condors in the Southern California subpopulation have been recorded flying over communities in the Tehachapi Mountains that have rural residential uses, including Pine Mountain Club and Frazier Park, Piñon Pines, Lake of the Woods, I-5, and even urbanized portions of Santa Clarita and the northern San Fernando Valley. A USGS condor study supports the conclusion that condors regularly fly over developed areas and that these areas, based on the Global Positioning System (GPS) data, are part of their estimated home ranges (Johnson et al. 2010). Such flyovers have resulted in no measurable ill effects with respect to continued condor use of historical and current foraging, roosting, and nesting areas, as evidenced by USFWS GPS tracking data (Johnson et al. 2010).

In addition, the TU MSHCP (Dudek 2012) looked at the dataset through 2011 and found patterns consistent with the results documented in the 2010 USGS report with respect to condor movements and use patterns within the Southern California region. The most recent GPS data from 2005–2013 (USFWS 2013a) represent 33 individual condors with GPS transmitters and shows continuous consistent movement patterns with what was analyzed in the TU MSHCP (Dudek 2012) and in the USGS report.

California condors are opportunistic scavengers and the recent analysis of GPS-tracked condors confirms that movement patterns tend to be influenced by food availability and nesting/roosting sites. As can be seen in Figure 3, California Condor GPS Locations in Southern California (2005–2013), the preponderance of points (all behavior groups including stationary and flying) for GPS-tracked birds are located on the Hopper Mountain National Wildlife Refuge, where historical and current nesting and roosting sites are located, and Bitter Creek National Wildlife Refuge, where most individuals that are captive-bred are released and where supplemental feeding stations are located to trap condor for health checkups and transmitter updates. A second area exhibiting high numbers of location points is the Wind Wolves Preserve, where supplemental feeding sites have been occasionally established and where Tule elk populations occur.

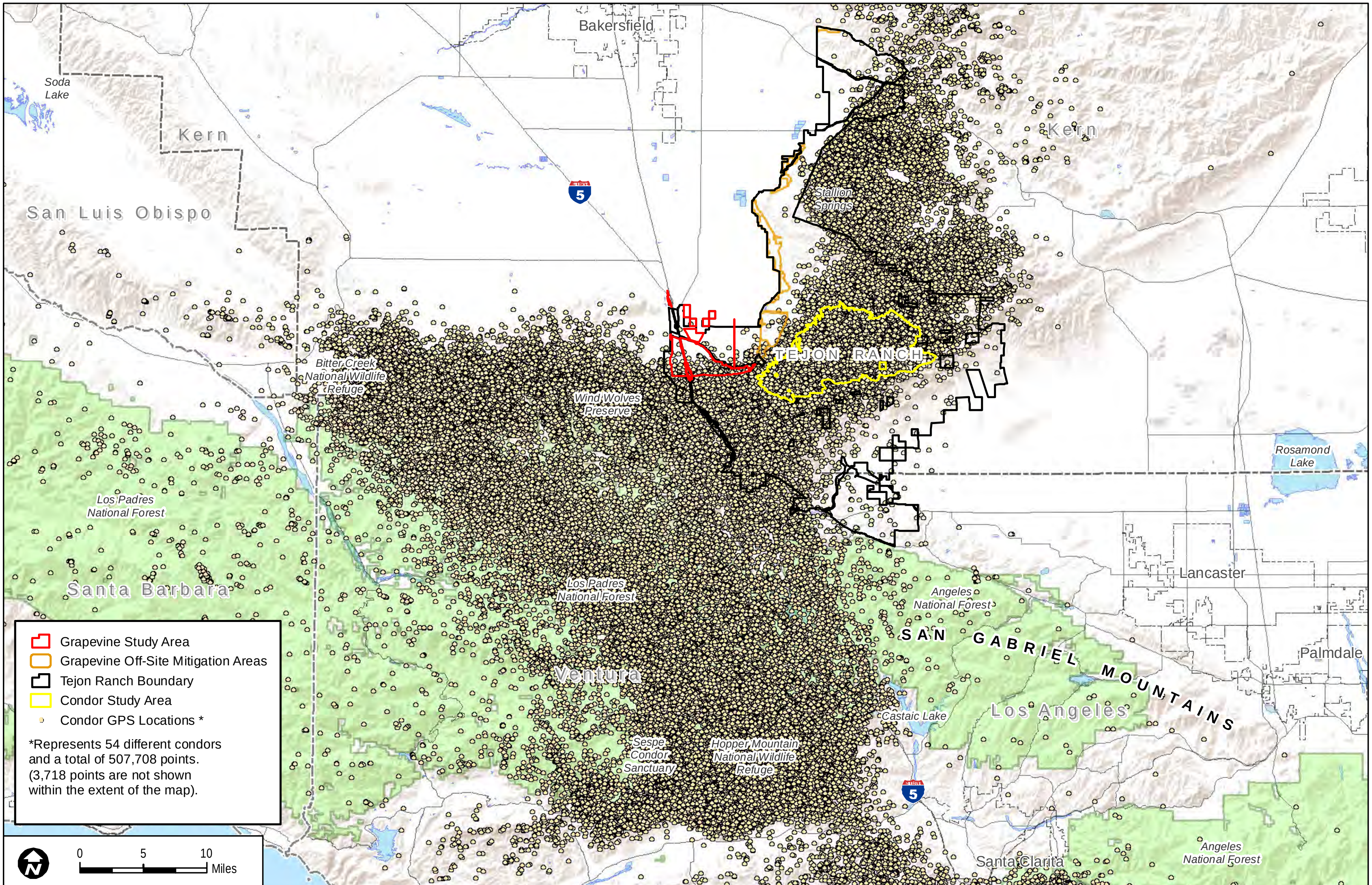
Consistent with these datasets, very little condor movement has been identified over the study area or over the San Joaquin Valley portions of Tejon Ranch. As previously noted, no nesting or regularly used roost sites occur within the study area or this area of the Ranch. In addition, due to the general lack of hunting and the lower levels of grazing, especially compared to the upper elevation areas of the Ranch where wind patterns are more favorable to condor foraging, food availability for California condors within the study area and surrounding areas is low. Consequently, and as discussed in more detail in Section 3, of all the condor flight data points recorded over Tejon Ranch from 2005-2013, only 0.2%, representing 32 individual condors, occurred over the study area. Therefore, the study area, as well as the immediately surrounding area of the Ranch within the San Joaquin Valley, is not considered an important east-west movement area for California condors.

2.1.2 Regulatory Status and History

2.1.2.1 Current Status and Critical Habitat

The California condor was listed as an endangered species under Section 4 of the federal Endangered Species Act (FESA) on March 11, 1967 (32 FR 4001), and is protected under the Migratory Bird Treaty Act (MBTA). The species is listed as endangered under the California Endangered Species Act and is also a Fully Protected bird species under California Fish and Game Code Section 3511 (California Fish and Game Code 3511 et seq.).

Critical habitat for the California condor was designated 9 years later from its federal listing in 1967 on September 24, 1976 (41 FR 41914–41916). Critical habitat is defined in Section 3(5) of FESA as the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical and biological features essential to the conservation of the species and which may require special management considerations or protections; and specific areas outside the geographical area occupied by the species at the time it is listed that are essential for the conservation of the species. According to FESA Section 7(a)(2), "each Federal agency shall in consultation with and with the assistance of the Secretary [of the Interior] insure that any action authorized, funded, or carried out by such agency ... is not likely to … result in the destruction or adverse modification of habitat of such species which is determined by the Secretary ... to be critical."



SOURCES: USFWS 2014

FIGURE 3

California Condor GPS Locations in Southern California (2005-2013)

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The designated critical habitat consists of nine critical habitat units disjunctly scattered in the Counties of Tulare, San Luis Obispo, Ventura, Kern, Santa Barbara, and Los Angeles encompassing approximately 570,400 acres (USFWS 2013b) (see Figure 4, California Condor Critical Habitat). The designation predated the identification of "primary constituent elements" (or PCEs),[1] essential for the conservation of the listed species currently used by USFWS to make critical habitat designations. The 1976 designation identified the conservation values of the nine critical habitat areas according to their contributions to condor nesting, roosting, or foraging functions. The Sespe–Piru, Matilija, Sisquoc–San Rafael, and Hi Mountain–Beartrap habitat units were considered critical for nesting and related year-long activity. The Mt. Pinos and Blue Ridge Condor portions of the designation were considered critical for roosting. Tejon Ranch (within habitat unit #7), other Kern County Rangelands, and Tulare County Rangelands were considered important for condor feeding.

Tejon Ranch was considered to be important because it contained the only significant feeding habitat remaining in close proximity to the Sespe–Piru condor nesting area. Specifically, as provided for in the critical habitat designation promulgated by USFWS:

> With regard to the California condor, the Sespe-Piru, Matilija, Sisquoc-San Rafael, and Hi Mountain-Beartrap condor areas, as described below, are considered critical for nesting and related year-long activity. The Mt. Pinos and Blue Ridge condor areas, as described below, are considered critical for roosting. The Tejon Ranch, Kern County rangelands, and Tulare County rangelands, as described below, are considered critical for feeding and related activities (41 FR 41914).

The "Tejon Ranch" critical habitat unit is approximately 134,871 acres (USFWS 2013b) in size, which includes some lands outside the property under Tejon Ranch ownership. Of this, approximately 130,647 acres occur within the boundaries of the Ranch (including approximately 2,873 acres of private/commercial inholdings not owned by Tejon Ranch) and includes the entire 37,000-acre Condor Study Area (see Figure 5, The Tejon Ranch Critical Habitat Unit for California Condor). In total, 102,098 acres (76%) of the 134,871 acres within the Tejon Ranch critical habitat unit, encompassing approximately 64,306 acres of foraging habitat and traditional roosting areas, will be conserved in perpetuity under the TU MSHCP and the Ranchwide Agreement (USFWS 2012a). Even more suitable foraging habitat—149,935 acres—will be

[1] A primary constituent element, or PCE, is a "A physical or biological feature essential to the conservation of a species for which its designated or proposed critical habitat is based on, such as space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species' historic geographic and ecological distribution" (http://www.fws.gov/nc-es/es/glossary.pdf).

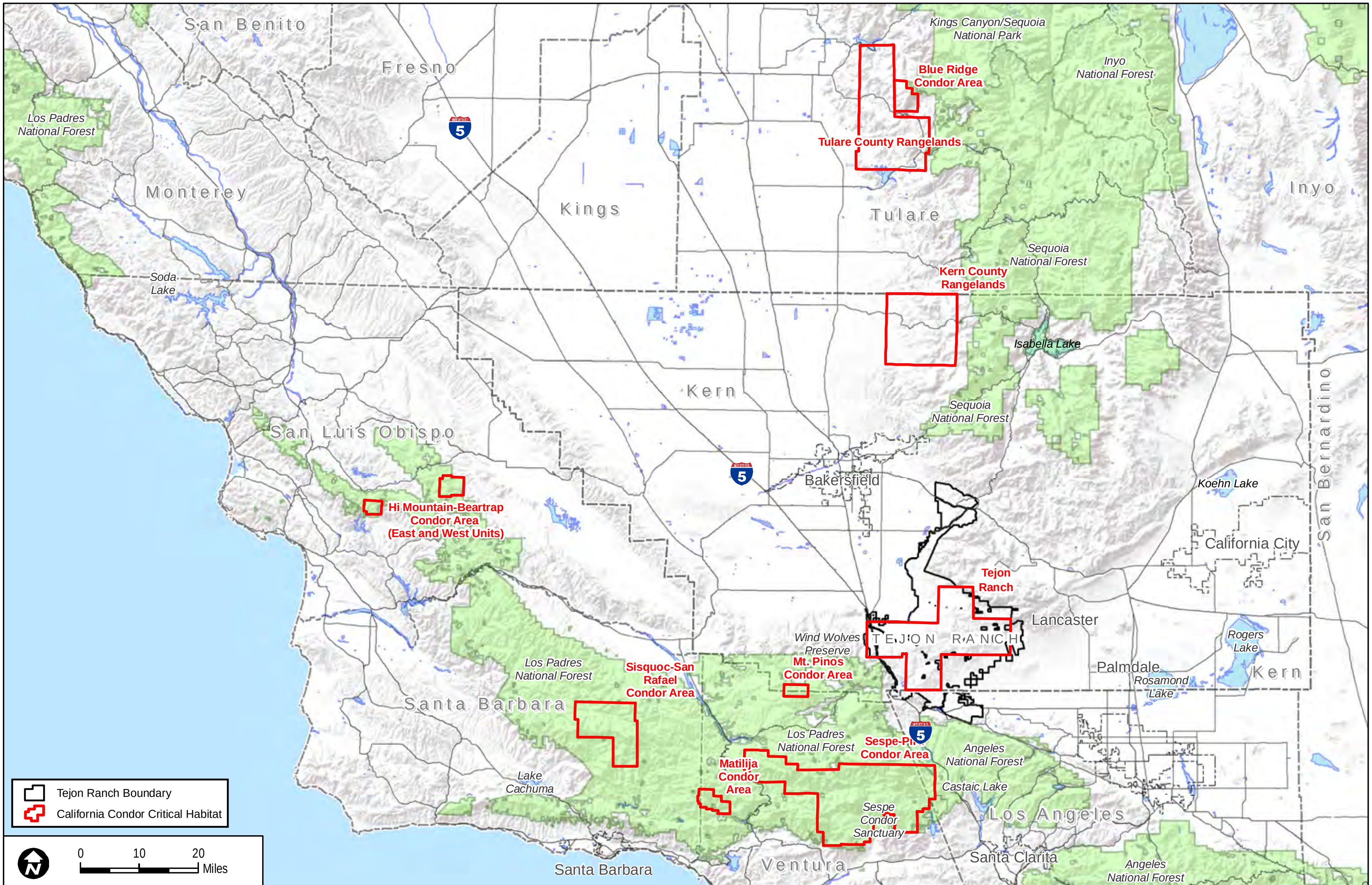
preserved on the Ranch (USFWS 2013b), located within lands identified for conservation in the Ranchwide Agreement and TU MSHCP, as shown on Figures 6A and 6B.

Approximately 7,146 acres of the designated critical habitat for condor are within the study area, of which 4,434 acres are within the on-site proposed project footprint. Within the proposed off-site impacts areas, there are 24 acres of designated critical habitat for condor (see Section 4.2.4 for potential impacts to critical habitat).

As noted above, the 1976 designation of condor critical habitat predated the identification of primary constituent elements (or PCEs) essential for conservation of listed species currently used by USFWS in critical habitat designations. However, the critical habitat designation recognized the importance of Tejon Ranch in supplying foraging and feeding opportunities in support of nearby nesting in the Sespe–Piru Condor Area farther to the west/southwest. As such, historical and current foraging habitat within Tejon Ranch was identified in the TU MSHCP (Dudek 2012).

Regarding the study area, no nesting or historical or regularly used roost sites occur within the proposed project footprint or within the open space areas of the site. No nesting occurs at all within Tejon Ranch due to the lack of suitable nest habitat, and known historical roost sites occur much further to the south of the study area within the upland areas of the ranch, in the preserved Condor Study Area.

Furthermore, because of the grazing and limited hunting that occurs within the study area (more hunting occurs within the foothill regions of the site that are outside of proposed development) and due to the flat topography of the study area (condors generally prefer to forage in more hilly/mountainous terrain where they can take advantage of updrafts), the proposed project footprint is considered of low foraging value to condors. This is verified by the extremely low use of the site (0.2% of Tejon Ranch condor flight records occurred over the study area and only 0.1% of stationary records) by California condors as determined from review of USFWS data points (see Figures 6A and 6B). Of the records collected for the entire southern population of condors, the stationary records within the study area represent 0.01% of the total and cumulative stationary records from 2005–2013; the flight records within the study area represent 0.11% of the total and cumulative flight records from 2005–2013 for the southern condor subpopulation. Of particular note, the majority of the stationary points (11 out of 12 in the development area) occurred within a 24-hour period, likely representative of a number of birds feeding on a carcass.



SOURCES: USFWS 2015; McIntosh & Associates 2013; TRC 2013a, 2013b

FIGURE 4

California Condor Critical Habitat

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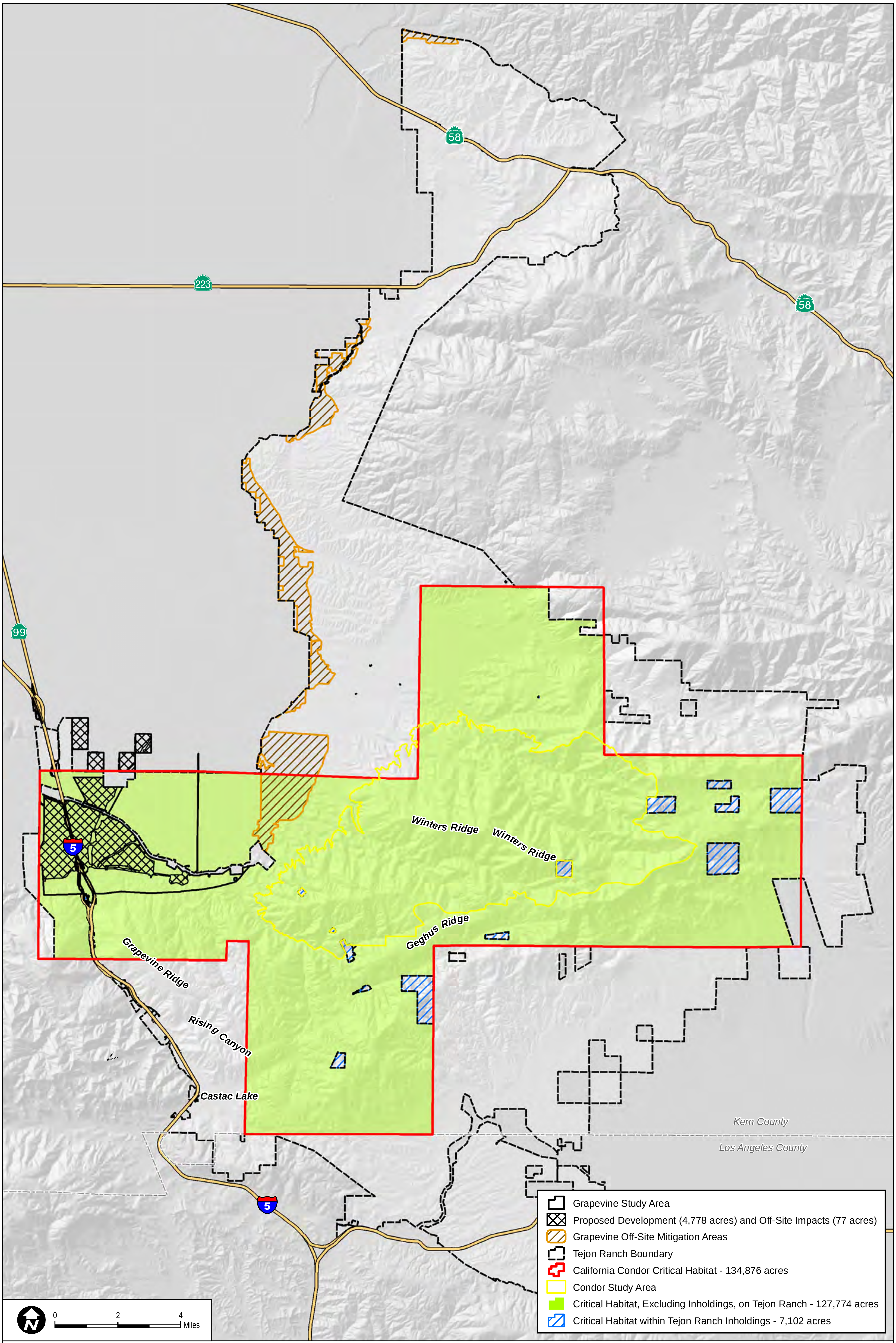

SOURCES: USFWS 2014; McIntosh & Associates 2014

FIGURE 5

The Tejon Ranch Critical Habitat Unit for California Condor

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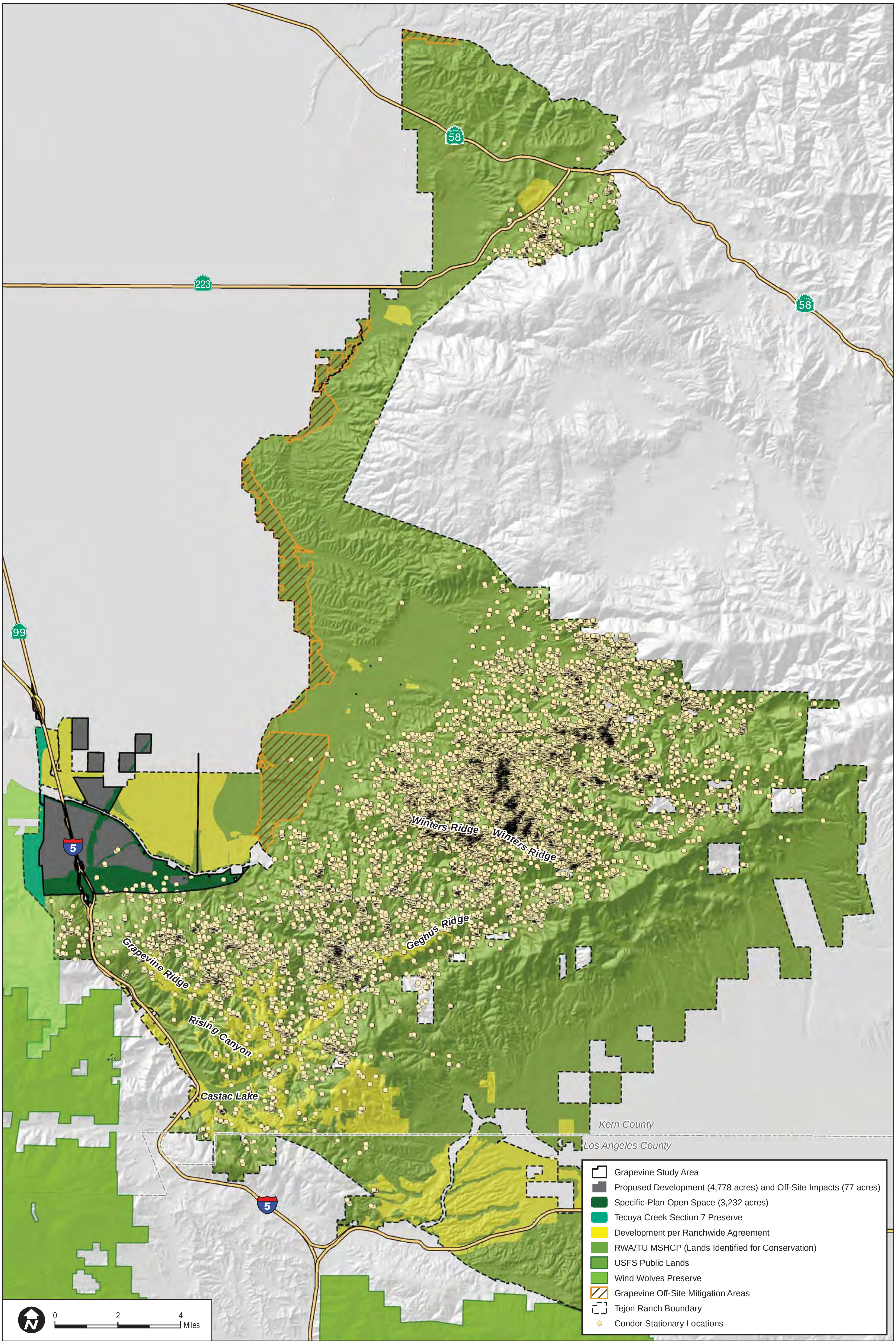

SOURCES: TRC 2008; USFWS 2014; McIntosh & Associates 2014

FIGURE 6A

California Condor GPS Stationary Locations onTejon Ranch (2005-2013) with Grapevine Project Footprint (45 individual birds recorded within Tejon Ranch)

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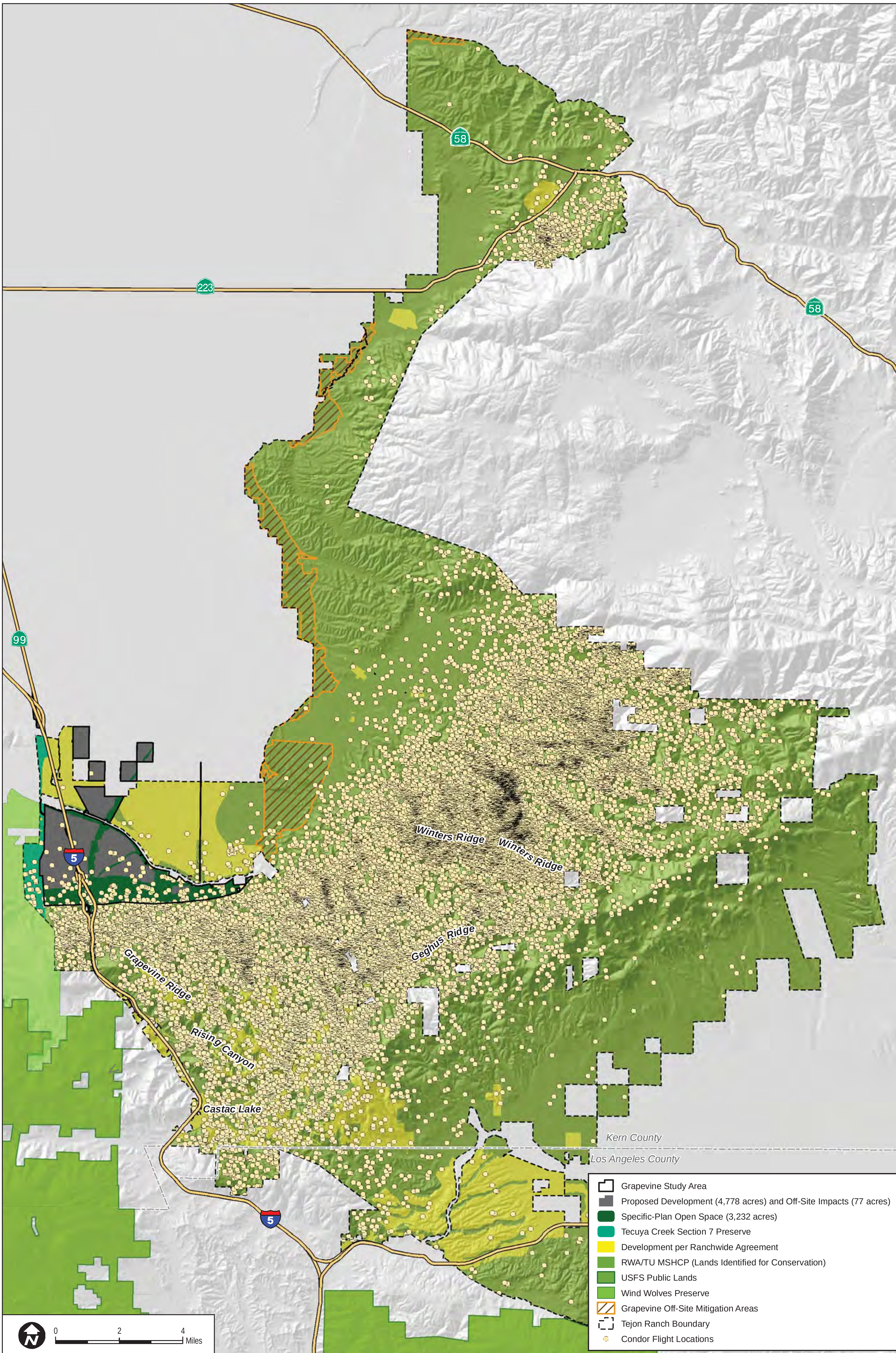

SOURCES: TRC 2008; USFWS 2014; McIntosh & Associates 2014

FIGURE 6B

California Condor GPS Flight Locations onTejon Ranch (2005-2013) with Grapevine Project Footprint (47 individual birds recorded within Tejon Ranch)

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Condors use the study area on a very limited basis as foraging habitat, primarily in the lower foothill regions in the southern portion of the site that will not be developed. However, as discussed in Section 3 of this report and in the TU MSHCP (Dudek 2012), the preponderance of condor activity on Tejon Ranch is within the higher-elevation upland areas of the Ranch, including the Condor Study Area, preserved as part of the TU MSHCP. Due to the California condor's very limited use of the study area for foraging since 2005 and during a period of substantial expansion of its foraging range since birds have been reintroduced into the wild, it can be concluded that the study area does not support the necessary habitat elements (i.e., nesting, roosting, and important foraging habitat) essential to the conservation and recovery of the California condor for which critical habitat was designated for this species.

2.1.2.2 California Condor Recovery Plan

The first California Condor Recovery Plan was approved in 1975 (USFWS 1974[2]). It focused on the reduction of mortality factors through habitat conservation and other relatively non-invasive techniques (e.g., supplemental feeding) since, at that time, it was thought that habitat protection alone would halt the species' decline and prevent its extinction. The Recovery Plan was revised in 1979 (USFWS 1980) and this revision continued the emphasis on habitat conservation. However, as the status of the California condor in the wild continued to decline, it became clear to federal and state agencies that more intensive management was needed. Consequently, in 1980, an accelerated California Condor Recovery Program was initiated by the USFWS and the National Audubon Society involving a variety of intensive "hands-on" techniques, including trapping and radio telemetry, manipulation of wild nesting birds to induce multiple clutches, and a captive breeding program with the ultimate goal of returning captive-reared California condors to the wild. In 1984, the Recovery Plan was again revised (USFWS 1984) to reflect the new emphasis on these techniques. However, when, by 1986, the California condor decline had continued nearly unabated and the wild population was down to fewer than 10 birds, the USFWS and the California Department of Fish and Game (CDFG) (which was subsequently renamed the CDFW in 2013) [3] decided to remove all remaining wild California condors and place them into the captive breeding program. The last wild California condor was captured in April 1987, and the emphasis of California condor recovery effectively changed at that time from management of the original wild California condor population to captive-breeding and eventual reintroduction of captured and captive-reared birds.

The Recovery Plan was revised yet again in 1996 to reflect the new demands on the program presented by captive breeding, captive-rearing, and reintroduction to the wild (USFWS 1996), and

[2] The California Condor Recovery Plan was published in December 1974 and was approved on April 9, 1975.
[3] On January 1, 2013, the California Department of Fish and Game was officially renamed the California Department of Fish and Wildlife.

is currently in effect. Reintroduction of captive-reared juvenile California condors began in 1992 and has continued to the present within the California condor's Southern California range. It also has included release of wild birds captured prior to 1992. Captive-reared California condors have also been released into the species' historical range in the Grand Canyon region in northern Arizona as an experimental non-essential population under Section 10(j) of FESA. The releases in Southern California and subsequent use of Tejon Ranch for foraging by released birds were the initial drivers for preparation of the TU MSHCP.

The recovery strategy for the California condor, as stated in the current Recovery Plan (USFWS 1996), focuses on: (1) increasing reproduction in captivity to provide California condors for release, (2) releasing California condors to the wild, (3) minimizing California condor mortality factors, (4) maintaining habitat for recovery of populations of the California condor, and (5) implementing California condor information and education programs. The USFWS recognizes that reestablished California condor populations in some areas may require continued artificial feeding to supplement natural food resources and/or to protect birds from exposure to contaminated carcasses. The Recovery Plan states that nesting, roosting, and foraging (feeding) functions are the most crucial functions required to achieve and maintain the recovery of the California condor:

> California condors require suitable habitat for nesting, roosting, and foraging. The recent range was restricted to chaparral, coniferous forests, and oak savannah habitats in Southern and central California. The species formerly occurred more widely throughout the southwest and also fed on beaches and large rivers along the Pacific coast. Nest sites are located in cavities in cliffs, in large rock outcrops, or in large trees. Traditional roosting sites are maintained on cliffs or large trees, often near feeding sites. Foraging occurs mostly in grasslands, including potreros within chaparral areas, or in oak savannahs. At present, sufficient remaining habitat exists in California and in southwestern states to support a large number of condors, if density-independent mortality factors, including shooting, lead poisoning, and collisions with man-made objects, can be controlled (USFWS 1996, p. v).

The Tejon Ranch critical habitat area is also discussed in Section 3 of the Recovery Plan, which observes that hunting activities within Tejon Ranch are beneficial to the condor because they provide food sources (carcasses), particularly during the fall months, which can support nesting populations in nearby areas. The Recovery Plan states that completion of an agreement with the Ranch to maintain uses that benefit the condor, such as hunting, is a conservation goal for the species. Thus, the TU MSHCP was prepared and subsequently approved to meet this specific conservation goal:

> The Tejon Ranch was an important condor feeding area throughout the annual cycle, but especially in the fall, when there is a high intensity of deer hunting on the ranch.

> A plan should be prepared with the consent and participation of the affected landowner to maintain its value for condors (USFWS 1996, Subsection 3325, p. 29).

The USFWS stated that the TU MSHCP will contribute to the species' recovery by securing the permanent protection of important, strategically situated foraging and roosting habitat for the species as recommended in the Recovery Plan (USFWS 2013b).

As noted above, the Recovery Plan states that nesting, roosting, and foraging functions are the most crucial functions required to achieve and maintain recovery of the California condor. However, and as discussed in Section 2.1.2.1, the study area does not support nesting habitat for California condor and no historical or actively used roost sites occur on the site. In addition, because of the limited hunting and grazing that occurs in the study area, and due to the flat topography of most of the site, the proposed project footprint is considered to have low foraging value for condors. Further, relatively little foraging has been documented even within the lower foothill regions that will occur within proposed open space areas of the project. In addition, as discussed in Section 3 and in the TU MSHCP (Dudek 2012), and clearly shown in Figure 3, the vast majority of condor use on Tejon Ranch occurs in the higher-elevation, upland portions of the Ranch south of the study area. Therefore, the study area is not considered to contain valuable nesting, roosting, or foraging habitat essential to the recovery of the California condor and is not considered habitat that meets the recovery standards as stated in the Recovery Plan.

2.1.2.3 Conservation and Management

A Condor Recovery Team was formed in 1973 by the USFWS to advise the Secretary of the Interior and to design continuing conservation actions for the condor. The team produced the original California Condor Recovery Plan (discussed in Section 2.1.2.2), which was approved in 1975, with subsequent revisions in 1979, 1984, and 1996.

Following initiation of captive breeding at the Los Angeles Zoo and San Diego Zoo Safari Park, the first two releases of captive-bred California condors took place in the Sespe–Piru California condor critical habitat unit in 1992. The third and fourth releases were conducted approximately 8.1 kilometers (5 miles) north of the Sisquoc–San Rafael California condor critical habitat unit later the same year. Soon after, captive-reared condors were also released into the species' historical range near the Grand Canyon of Arizona as an "experimental nonessential population." By 1998, there were over 50 California condors in the wild. A release site has also been established recently in Baja California, Mexico. All free-flying condors are currently outfitted with either VHF radio transmitters or GPS transmitters (many now with Global System for Mobile (GSM) features that allow data to be downloaded to cellular towers) allowing tracking of foraging, roosting, and feeding locations.

Young birds initially released early in the program exhibited excessive attraction to humans and artificial structures, particularly power poles. Condors were observed raiding picnic coolers, perching on houses and aerials, and, in one instance, breaking into a summer cabin and ransacking the interior (Grantham, pers. comm. 2008). Acclimation potentially draws condors to areas where human activities can inadvertently harm individual birds and it can also modify their behavior in the wild in negative ways. Although condors are naturally curious and often fly near human activity areas, such as the visitor center in the Grand Canyon National Park, habituated birds have higher risks of injury and mortality resulting from factors such as ingestion of microtrash, collisions with transmission lines, and illegal shootings. The behavioral differences between young condors initially released from the captive breeding program and those hatched and fledged in the wild have been attributed to the lack of parents or of older, more experienced mentors for the captive birds (Grantham, pers. comm. 2008). Consequently, the early release younger birds were much more tolerant of human presence and were even attracted to manmade structures, such as houses and decks. To address the behavior of perching on power poles, which increased collision and electrocution risks, specific aversion training was conducted on captive condors, which has resulted in a reduction of this behavior (Grantham, pers. comm. 2008). In addition, in an effort to minimize habituation by recently released condors to manmade structures (homes, buildings) and high human activity areas, captive husbandry techniques have been introduced to minimize this behavior. In particular, older, experienced mentor birds are routinely assigned to young condors not raised by their parents. This mentoring of younger, newly released birds has helped to significantly reduce negative habituation behaviors previously observed in released condors (Grantham, pers. comm. 2008). Snyder and Schmitt (2002) described the problems presented by the tendency of captive-bred California condors, once released, to become habituated to humans and human structures, and the efforts of the USFWS and breeding facilities to remedy this problem.

As previously noted, an additional problem faced by released birds is lead contamination in hunter-killed carcasses. To counteract this risk, supplemental feeding to provide food sources free of lead and other contaminants was an integral component of the California condor release program during the first several years. However, the subsequent lead ammunition ban under the Ridley-Tree Condor Conservation Act and Tejon Ranch's voluntary ban on lead ammunition within the condor's range in California are expected to help reduce mortality rates from lead poisoning. Further, released condors are now foraging in much wider patterns, which precludes effective management (through supplemental feeding) by USFWS to protect condors from potentially harmful food sources, including lead-contaminated carcasses. Therefore, USFWS is no longer using supplemental feeding for large-scale management of food sources, but only to facilitate trapping birds during biannual health checks, to replace and/or maintain radio and GPS transmitters, and to provide food sources for recently released, captive-bred juvenile condors that do not have parents to feed them.

2.1.2.4 Tejon Ranch History of Conservation and Management

TRC has a long history of assisting with efforts to save the California condor in the years prior to the species' removal from the wild in 1987. Before official protection efforts began, Ranch managers provided warnings to hunters and other Ranch visitors, and established rules and regulations for such persons admonishing them not to shoot large birds and not to engage in activities that put California condors at risk.

In cooperation with the National Audubon Society, TRC sponsored California condor and raptor censuses, allowing numerous volunteer observers at strategic locations within the upland areas on Tejon Ranch. Scientists studying the California condor used Tejon Ranch as their "laboratory," and Tejon Ranch was made available to USFWS and other persons interested in the species' recovery. Tejon Ranch staff assisted with efforts to locate and rescue injured or lost California condors. Some of the last California condors removed from the wild were taken at a capture site provided on Tejon Ranch near Tunis Ridge. Although TRC believed the USFWS release program condors should have been designated as an experimental population under the FESA, the USFWS and TRC resolved this dispute by agreeing to create a habitat conservation plan on Tejon Ranch for the condor. In that process, the USFWS and TRC examined the appropriate boundaries for such a plan and designated the Tehachapi Uplands area of Tejon Ranch, resulting in the TU MSHCP approved by the USFWS in 2013. None of these conservation or management activities occurred within the study area or immediately surrounding areas due to the lack of condor activity on the site.

2.1.3 Population Trends

The fossil record shows that California condors once occupied much of the area that comprises the southern United States and into Mexico and British Columbia; however, coincident with the extinction of numerous large mammals, the species' distribution began to shrink. By the time Europeans arrived in western North America, California condors occurred only in a narrow Pacific coastal strip from British Columbia, Canada, to Baja California Norte, Mexico (Koford 1953; Wilbur 1978a). California condors were observed until the mid-1800s in the northern portion of the Pacific coast region (Columbia River Gorge) and until the early 1930s in the southern extreme (northern Baja California) (Koford 1953; Wilbur 1973; Wilbur and Kiff 1980).

Despite intensive conservation efforts, as discussed above, the wild California condor population declined steadily until 1987, when the last free-flying California condors were captured. During the 1980s, captive California condor flocks were established at the San Diego Zoo Safari Park and the Los Angeles Zoo, and the first successful captive breeding was accomplished at the former facility in 1988. Following several years of increasingly successful captive breeding, captive-produced California condors were first released back to the wild in early 1992.

California condor censusing through the years has varied in intensity and accuracy. This has led to conflicting estimates of historical abundance, but prior to captive breeding efforts all such censuses and estimates indicated an ever-declining California condor population. Koford (1953) estimated a population of about 60 individuals in the late 1930s through the mid-1940s, apparently based on observed flock size. A field study by Eben and McMillan in the early 1960s suggested a population of about 40 individuals, again based in part on the validity of Koford's estimates of flock size (Miller et al. 1965). In 1965, CDFG began an annual October California condor survey (Mallette and Borneman 1966), which continued for 16 years. This effort typically involved a 2-day simultaneous observation and count of California condors at prominent observation points in areas of known concentration. Interpretation of these survey results was made difficult by variations from year to year in weather conditions, number of observers, and other factors, but the results supported an estimate of 50 to 60 California condors in the late 1960s (Sibley 1969). Wilbur (1980) continued the survey efforts into the 1970s and concurred with the interpretations of the earlier October surveys. He further estimated that by 1978 the population had dropped to between 25 and 30 individuals.

Snyder and Johnson (1985) later reassessed the earlier California condor population estimates of Koford (1953) and Miller et al. (1965) and concluded that they may have underestimated the size of the population by a factor of two or three. In 1981, the USFWS, in cooperation with California Polytechnic State University, San Luis Obispo, began census efforts based on individual identifications of California condors by photographing flight silhouettes (Snyder and Johnson 1985). Minimum summer counts from these photocensusing efforts showed a steady decline from an estimated minimum of 21 wild California condors in 1982, to 19 individuals in 1983, 15 individuals in 1984, and 9 individuals in 1985. Although the overall California condor population increased slightly after 1982 as a result of double clutching, the wild population continued to decline. By the end of 1986, all but two California condors had been captured and placed into the captive breeding program. On April 19, 1987, the last wild California condor was captured and taken to the San Diego Zoo Safari Park.

Based on the successes of the captive breeding program, the ability of released condors to once again breed in the wild, and increased numbers of captive condors being released, the population of California condors has been steadily increasing (notwithstanding the fact that mortality due to lead poisoning continues to occur with released birds). As of June 30, 2014, there are 232 condors in the wild including 124 birds in central and Southern California (67 free-flying birds in a Southern California sub-population that forage on Tejon Ranch) (USFWS 2014a).

2.1.4 Reasons for Decline and Ongoing Threats

Causes of the California condor population decline have probably been numerous and variable through time. Historically, relatively few dead California condors have been found, and definitive conclusions on causes of death were made in only a small number of cases (Miller et al. 1965; Wilbur 1978a; Snyder and Snyder 1989).

Lead poisoning is thought to be a major cause of mortality in the decline of the California condor (Janssen et al. 1986; Bloom et al. 1989; Pattee et al. 1990; Snyder and Snyder 2000; Cade 2007; Grantham 2007b; Hall et al. 2007). Reintroduced birds also suffer from lead poisoning (Meretsky et al. 2000, 2001; Cade 2007; Grantham 2007b; Hall et al. 2007; Hunt et al. 2007; Sullivan et al. 2007; Woods et al. 2007). Lead poisoning is considered to be the most significant current cause of condor mortality (Grantham 2007a, 2007b; Hall et al. 2007).

High lead levels, presumably from ingesting lead bullet fragments in shot mammal carcasses, may be a pervasive problem throughout the historical foraging range of California condor. For example, Bloom et al. (1989) and Pattee et al. (1990) found elevated levels of lead in one-third of 162 golden eagle blood samples taken in the range of the California condor in 1985 and 1986. Wiemeyer et al. (1988) concluded that lead exposure was the major factor having an adverse impact on the wild California condor population from 1982 to 1986. In the recent 5-Year Review for the condor, the USFWS concluded that lead exposure is still the leading cause of condor deaths in California (USFWS 2013c). From 1992 through 2012, 42 (34%) of the 123 deaths for which cause of death was known were a result of lead poisoning.

Effective January 1, 2008, the Ranch established and continues to enforce a voluntary ban on lead ammunition. In cooperation with USFWS, TRC also voluntarily implemented a 30-day ban on all hunting on the Ranch from June 9, 2008, to July 9, 2008, as a result of reported elevated lead levels discovered by the USFWS in the Southern California population of condors. California subsequently enacted the Ridley-Tree Condor Conservation Act, which banned the use of lead ammunition within the state range of the California condor effective July 1, 2008.

Microtrash, including small bits of plastic and metal, such as bottle caps, pop-tops, PVC (polyvinyl chloride) pipe fragments, and broken glass that are inadvertently fed to hatchlings by their parents, is an important factor affecting condor breeding success (Grantham 2007b; Mee et al. 2007). Because bone chips are a normal part of a growing condor’s diet and provide an important source of calcium to mineralize growing bones, it is generally assumed that adult condors inadvertently feed bits of microtrash to young believing the hard pieces to be bone (Houston et al. 2007). Although the digestive systems of young condors might be well adapted to digesting bone fragments, they are not suited to handling plastic, metal, and glass. Other possible reasons for microtrash ingestion include aiding in the production of food pellets that contain other indigestible items, such as hair and horns from carcasses, and possibly as a mistaken source of short-term energy when carrion sources are scarce (Houston et al. 2007). Microtrash may come from several possible sources, including roadsides, camp sites, and scattered refuse piles. Microtrash killed at least five wild-hatched California condor chicks between 2001 and 2006 (Mee et al. 2007).

A potential emerging threat to California condors is the proliferation of wind farms and associated transmission lines (USFWS 2013c). Several proposed wind energy projects intersect or are in close proximity to currently used areas and the historical range of the condor, including the Tehachapi Mountains, Sierra Nevada mountain range, and Salinas River valley (USFWS 2013c). Rotating turbine blades during normal operations are a continuous threat to condors flying in the rotor sweep area. Also, because of their communal feeding patterns, several birds could be killed or injured during a single feeding event that exposes them to wind turbines (USFWS 2013c).

As previously discussed, another challenge to recovery of the species is the potential for condors to be attracted to human activity and artificial structures. Maintaining California condors in the wild remains the principal conservation objective and will continue to require advances in training birds prior to release to avoid interactions with humans and artificial structures. Captive husbandry techniques have already been modified to reduce these effects, resulting in a substantial reduction of the negative habituation and acclimation behaviors previously observed in released condors (Grantham, pers. comm. 2008).

Other causes of mortality in reintroduced birds have included collisions with power lines, drowning, anti-freeze poisoning, and shootings. Aversion training methods have been applied that eventually led to reductions in the tendency of released condors to land on power poles (Grantham, pers. comm. 2008).

3 OCCURRENCE ON TEJON RANCH

The occurrence of California condor on Tejon Ranch covers two distinct periods: historical use from 1850-1987 and recent use (1992-Present). These periods correspond to the period prior to removal of the birds from the wild in 1987 to their reintroduction in 1992, described in Section 2.1.2. This section describes the occurrence of condor on the Ranch for these two periods. Historical use (1850–1987) of the Ranch is based on a narrative discussion of the available literature for this period, including anecdotal reports of condors by Ranch personnel prior to the 1950s and more recent work by condor biologists on the Ranch prior to capture and removal of birds from the wild. The discussion of the recent use of the Ranch is based primarily on satellite-based GPS telemetry data collected by the USFWS between 2005 and 2013.

3.1 Methods for Recent Occurrence Data Collection

In 2005, reliable satellite-based telemetry that incorporated GPS was available to collect temporal and spatial data on individual condors, including hourly position reports during the daytime. Starting June 16, 2005, condors released were fitted with GPS telemetry units (Cogan et al. 2012). In February 2014, the USFWS provided Dudek geographic information system (GIS) data for condor occurrences based on the telemetry data collected from June 16, 2005, through December 31, 2013. Each hourly record includes a transmitter number, location (latitude and longitude), flight speed, and date and time (reported in Greenwich Mean Time (GMT)). Dudek converted the GMT dates and times to Pacific Standard Time (PST). The dataset includes 507,708 records representing 54 individuals. Because the number of individual birds tracked over the years increased as more birds were released into the wild, the cumulative database reflects both an increase in the volume of data and the number of individuals equipped with GPS units (Cogan et al. 2012, Figure 2).

In general, the GPS units transmit location data at 1-hour time intervals during daytime hours (approximately 06:00 to 19:00). The units are programmed to not transmit during nighttime hours because it is assumed that condors are stationary during the night or very near their last recorded position at night. The position data are further refined to distinguish between flight and stationary behavior (including feeding, perching, roosting, and loafing, as well as nesting activity in the Sespe Condor Sanctuary nesting areas). On Tejon Ranch, stationary behavior would only include feeding, perching, roosting, and loafing. Data points with ground speeds below 10 kilometers/hour are treated as stationary or stationary activities. Of the stationary activities, roosting was defined as an individual condor with a position record in the evening matched with the same position or within 40 meters of that position by the first record of the next day (Cogan et. al 2012).

3.2 Grapevine Study Area

The 2005–2013 USFWS dataset includes a total of 206 records, comprised of 33 individual condors, within the Grapevine study area. A total of 55 of these data points (37%, representing 20 individual condors) are stationary (perching) points (Table 1). The large majority of these records (151 points, or 73%, representing 32 individual condors) are flight points. More specifically, of the cumulative flight and stationary records (79,247 records) for condor use of Tejon Ranch between 2005 and 2013, the 55 stationary records in the study area represent 0.1% of the total stationary records (55,333 records) on Tejon Ranch; the 151 flight records in the study area represent 0.6% of the total flight records (23,914 records) on Tejon Ranch. Of the 507,708 records collected for the entire southern population of condor, the stationary records in the study area represent 0.01% of the cumulative stationary records from 2005–2013 (i.e., 374,055 stationary records); the flight records in the study area represent 0.11% of the cumulative flight records from 2005–2013 (i.e., 133,653 flight records) for the Southern California condor subpopulation.

Condor occurrence within the Grapevine study area is very uncommon compared to occurrences in the upland areas on the Ranch (Figures 6A and 6B). Condor use that has been identified within the Grapevine study area has primarily occurred in the lower foothill regions in the southern portion of the site proposed as open space. Table 1 summarizes the flight and stationary GPS condor data for the Grapevine study area and categorizes the data by points in proposed open species and points in the proposed project footprint.

Table 1
GPS Condor Data for the Grapevine Study Area

Year	Proposed Grapevine Open Space (No. of Points)		Proposed Project Footprint (No. of Points)[1]		Grapevine Study Area (No. of Points)	
	Stationary[2]	*Flight*	*Stationary*	*Flight*	*Stationary*	*Flight*
2005	—	—	—	—	—	—
2006	—	—	—	—	—	—
2007	—	—	—	—	—	—
2008	1	6	—	1	1	7
2009	6	11	—	5	6	16
2010	15	26	11	11	26	37
2011	12	29	—	10	12	39
2012	8	32	1	12	9	44
2013	1	8	—	—	1	8
Total	**43**	**112**	**12**	**39**	**55**	**151**

Notes:
1 The points located within the proposed project footprint are included in the totals for the Grapevine study area.
2. Stationary are speeds ≤ 9 kilometers per hour (km/h); Flight are speeds ≥ 10km/h).

Table 2 provides more detailed information on stationary GPS condor data for the study area and includes the date of each record and the bird identification number. Based on an analysis of the time stamps associated with the GPS data, only three condors likely have roosted overnight (and for one night only) on the Grapevine study area—two birds (bird ID 180 and 509) with overnight matched records on September 10 and 11, 2010, and one bird (bird ID 370) with overnight matched records on February 12 and 13, 2011. Additionally, two different birds perched during the day on December 1, 2011 (bird ID 369), and on January 17, 2012 (bird ID 156), but these individuals did not roost overnight. Of the 55 stationary data points, 10 data points represent single day, bird, and hour events. Often, numerous data points occurred on a single day (e.g., 17 points, representing 9 individual condors, occurred on September 10, 2010), likely associated with a group feeding on an animal carcass (assumed to be livestock given the general lack of hunting in this area). Of the 55 stationary points on the Grapevine study area, 43 stationary points, representing 15 individual condors, occurred within the proposed open space areas to the south within the lower foothill regions of the site contiguous with the much more heavily used higher-elevation foothills of the Ranch and only 12 points (representing 9 individual condors on 3 days) occurred within the proposed project footprint (Table 1). Of the 12 points within the proposed project footprint, 1 data point represents a single day, bird, and hour event and the other 11 points represent 9 individual condors on September 10 and 11, 2010. As mentioned, these points likely represent part of a group feeding on an animal carcass (assumed to be livestock).

These data show that occurrence within the Grapevine study area is very uncommon compared to occurrences in the upland areas on the Ranch. Condor use that has been identified within the Grapevine study area has primarily occurred in the lower foothill regions in the southern portion of the site proposed as open space. Over the 8-year period (2005–2013) of data that were analyzed, only 12 stationary points (representing 9 individual condors on 3 days) occurred within the proposed project footprint, likely only in response to a livestock carcass (Table 2).

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Table 2
Detailed GPS Condor Data for Stationary Events for the Grapevine Study Area

Time		Proposed Grapevine Open Space		Proposed Project Footprint		Total No. of Points
Year	*Date (PST)*	*Bird ID No.*	*No. of Points*	*Bird ID No.*	*No. of Points*	
2008	5/18/2008	156	1	—	—	1
2008 Total No. of Points		*1 individual*	*1 point*	—	—	*1 point*
2009	8/6/2009	255	1	—	—	1
	8/13/2009	428	1	—	—	1
	9/7/2009	161, 192, 428	3	—	—	3
	11/22/2009	21	1	—	—	1
2009 Total No. of Points		*5 individuals*	*6 points*	—	—	*6 points*
2010	5/9/2010	79 (2 points)	2	—	—	2
	9/10/2010	180 (4 points); 509 (2 points) (one-night roost event	6	21; 98; 112; 180; 192 (2 points); 237; 365; 374; and 509	11	17
	9/11/2010	180 (3 points); 509 (3 points) (one-night roost event)	6	180; 192	2	6
	9/12/2010	428	1	—		1
2010 Total No. of Points		*4 individuals*	*15 points*	*9 individuals*	*11 points*	*26 points*
2011	2/12/2011	370 (4 points) (one night roost event)	4	—	—	4
	2/13/2011	370 (3 points) (one night roost event)	3	—	—	3
	2/17/2011	509 (1 point)	1	—	—	1
	12/1/2011	21 (1 point); 369 (3 points; day-perch event)	4	—	—	4
2011 Total No. of Points		*4 individuals*	*12 points*	—	—	*12 points*
2012	1/17/2012	156 (4 points; day-perch event)	4	—	—	4
	2/28/2012	513	1	—	—	1
	7/4/2012	370; 489	2	—	—	2
	9/6/2012	584	1	—	—	1
	9/25/2012	—	—	180	1	1
2012 Total No. of Points		*5 individuals*	*8 points*	*1 individual*	*1 point*	*9 points*
2013	11/4/2013	528	1	—	—	1
2013 Total No. of Points		*1 individual*	*1 point*	—	—	*1 point*
Grand Total		**15 individuals[1]**	**43 points**	**9 individuals[1]**	**12 points**	**55 points**

[1] There is overlap between individuals and in total 20 individual condors have data points in the study area

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3.3 Tejon Ranch

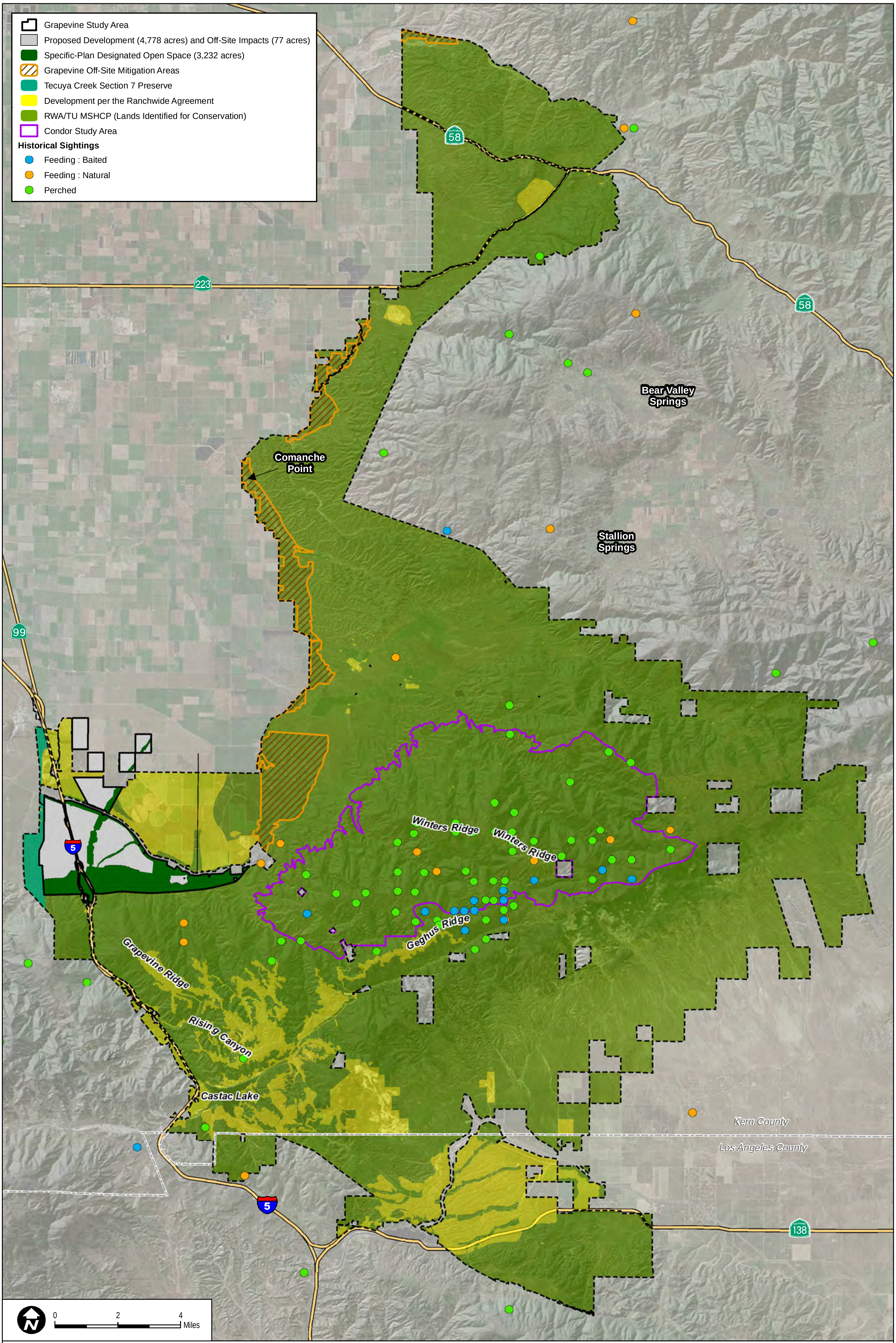
Tejon Ranch was historically a regular California condor foraging area. Most foraging occurred along the ridgelines and grasslands above the San Joaquin Valley floor, in the upland portions of Tejon Ranch (USFWS 2012b). The Ranch was also part of a flyway for California condors moving between Ventura County and the Sierra foothills. In addition to foraging, California condors historically roosted on Winters Ridge in the Condor Study Area in the TU MSHCP conserved lands, where patches of conifers occur in relatively undisturbed areas (USFWS 1974, 1984a). California condors did not typically frequent the northern or southern slopes of the Tehachapi Mountains perhaps because of the predominantly downslope wind patterns that are not conducive to their flight or because of limited carcass availability. The Antelope Valley floor to the south or the adjacent agricultural lands to the north also experienced very little use by California condors.

In the mid-1980s, areas of Tejon Ranch within the Condor Study Area were used by the California Condor Recovery Team as supplemental feeding/baiting areas (see Figure 7, Historical Sightings (through 1982) California Condor Use Data). California condor trapping sites, where both pit traps and cannon netting were employed, were also located in these areas. Carcasses were placed in these areas for supplemental feeding, and after California condors were observed feeding and feeling comfortable in these areas, the areas were stocked with carcasses to facilitate trapping. California condor use of the Ranch has continued to increase since the first captive bred reintroduction flights began in 1996. While condors use various areas of the Ranch, the predominant use, prior to 1996, was historically noted to occur within the Condor Study Area where a historical roost site (Winters Ridge) occurs and in which much of the hunting on the Ranch occurred and continues to occur (Figure 7). However, beginning in early to mid-2008, and as described in the 2010 USGS report (Johnson et al. 2010), more condors were being released into the wild by 2008 and condor use of the Ranch expanded, although the Condor Study Area continued to receive much of the use by condors at that time. According to the USGS report, the Condor Study Area was among the three land area units (along with Hopper and Bitter Creek National Wildlife Refuges) that received the highest "average likelihood of occurrence" by condors in 2009 and had a higher average likelihood of occurrence than the two other Tejon Ranch land area units. The availability of feral pig carcasses due to increasing year-round feral pig control throughout the upland areas of the Ranch, as well as continued ranching and hunting activities, may also have contributed to this increased use.

As evidenced by the 2005–2013 GPS data provided by the USFWS, various upland areas of the Ranch continue to be used by condors, with large amounts of use still occurring within the Condor Study Area (Figures 6A, California Condor GPS Stationary Locations on Tejon Ranch (2005–2013) with Grapevine Project Footprint, and 6B, California Condor GPS Flight Locations on Tejon Ranch (2005–2013) with Grapevine Project Footprint). The data points are primarily associated with foraging (both flight and stationary feeding) and occasional overnight roosting. Condors foraging on the Ranch feed on both hunter-killed mammals and naturally deceased livestock. In particular, because wild pigs essentially are hunted year-round, gut piles and discarded pig carcasses, as well as other hunted animals, are primary attractants to condors on the Ranch. The only known traditional condor roost site is located on the northeast face of Winters Ridge, within the Condor Study Area. No condors have attempted to nest within Tejon Ranch or anywhere within the Tehachapi Mountains, likely due to the relative lack of suitable nesting habitat in this area.

3.4 Southern California

The Southern California population of California condors has steadily increased since the release of captive-bred condors in the late 1990s. As noted above, as of June 30, 2014, a total of 124 condors occur in the wild in California, 67 of which compose the Southern California population (another 32 compose the Ventana/Big Sur population and 19 compose the Pinnacles National Park population) (USFWS 2014a).



SOURCES: TRC

FIGURE 7

Historical Sightings (through 1982) California Condor Use Data

GRAPEVINE PROJECT

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An analysis of condors in the Southern California population was recently conducted by the USGS in cooperation with the USFWS (Johnson et al. 2010). The analysis focused on use patterns of individual condors within six management units in Southern California (Hopper Mountain and Bitter Creek National Wildlife Refuges, Wind Wolves Preserve, and three units within Tejon Ranch, none of which included the Grapevine study area), based on GPS location data from 2004 through 2009.

From 2004 to 2007, the USGS report documented high amounts of condor use of both Hopper and Bitter Creek National Wildlife Refuge management units. By 2008 and 2009, condors with GPS units exhibited a more "multimodal distribution," with use concentrated in the Hopper National Wildlife Refuge unit in the south, the Bitter Creek and Wind Wolves units in the northwest, and on the three Tejon Ranch units (Condor Study Area, Tejon Mountain Village (TMV), and the remaining upland portions of the Ranch in the northeast). The average likelihood of occurrence was highest in the Bitter Creek and Hopper National Wildlife Refuges in 2008, and on the Bitter Creek, Hopper, and Condor Study Area (on Tejon Ranch) management units in 2009.

The TU MSHCP (Dudek 2012) analyzed the dataset from 2002–2011 and found condor use patterns within the Southern California region consistent with the results documented in the 2010 USGS report. Similarly, the most recent GPS data from 2005–2013 (USFWS 2013a) show continuous use patterns consistent with those analyzed in the TU MSHCP (Dudek 2012) and in the USGS report, with movement and use patterns tending to be highly influenced by food availability and nesting/roosting sites. As shown on Figure 3, the majority of points (all behavior groups including stationary and flying) for GPS-tracked birds are located in Hopper Mountain Wildlife Refuge (which supports historical and current nesting and roosting sites) and Bitter Creek National Wildlife Refuge, as well as where supplemental feeding stations are located to trap condor for health checkups and transmitter updates. A second area exhibiting high numbers of location points is Wind Wolves Preserve, where supplemental feeding sites have occasionally been established and where Tule elk populations occur. As discussed above, condor use on Tejon Ranch continues to be focused in the upland areas of the Ranch, in particular the area bounded by the Condor Study Area.

Table 3 shows condor data points collected from 2005 through 2013 for the Southern California population and of those points, the number of points collected on Tejon Ranch.

Table 3
GPS Condor Data in the Southern California Population, including Tejon Ranch

Year	Southern Population (No. of Points)		Tejon Ranch (No. of Points)[1]		% of Total Points of Southern Population on Tejon Ranch	
	Stationary[2]	*Flight*	*Stationary*	*Flight*	*Stationary*	*Flight*
2005	945	164	2	—	0%	0%
2006	3,446	1,132	—	1	0%	0%
2007	13,579	3,339	13	8	0%	0%
2008	36,339	12,333	958	678	3%	5%
2009	45,524	17,946	6,360	2,902	14%	16%
2010	63,719	23,572	15,696	5,451	25%	23%
2011	58,559	21,761	12,163	4,596	21%	21%
2012	86,920	30,783	9,219	5,307	11%	17%
2013	65,024	22,623	10,922	4,971	17%	22%
Total	**374,055**	**133,653**	**55,333**	**23,914**	**15%**	**18%**

Notes:
1 The points located on Tejon Ranch are included in the southern population totals.
2 Stationary are speeds ≤ 9 km/h; Flight are speeds ≥ 10km/h)

4 POTENTIAL IMPACTS OF PROPOSED PROJECT TO CALIFORNIA CONDOR

The USFWS believes that lead poisoning is currently the primary cause of mortality affecting the recovery of the species (USFWS 2013c). In the recent 5-Year Review for the condor, the USFWS concluded that lead exposure is still the leading cause of condor deaths in California (USFWS 2013c). This concern is supported by a recent study showing that 62% to 91% of birds sampled between 1997 and 2011 had elevated lead levels despite the ban on lead ammunition within the condor's foraging range (Kelly et al. 2014). The ingestion of microtrash and various contaminants (e.g., organochlorines), shooting, collisions with power lines, West Nile Virus, and habituation represent other threats to the species. In assessing the potential effects of the Grapevine project on the California condor, these principal causes of condor injury or mortality were used to determine whether and to what extent any of these effects may occur as a result of Grapevine project development.

The significance of impacts are assessed consistent with the California Environmental Quality Act (CEQA). Pursuant to the CEQA Statutes and Guidelines (14 CCR 15000 et seq.), significant impacts under CEQA include those that would "have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or FWS."

Section 4.1 addresses the proposed project's potential direct and indirect impacts on California condors, including the potential for take as defined by state and federal laws. It is illegal under California and federal law to take a condor (i.e., to attempt to "hunt, pursue, catch, capture, or kill" a condor or to actually do so). The federal definition of take also includes the concepts of "harm" and "harass" that are not addressed by state law. The FESA regulations define harm as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." "Harass" is defined to mean "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." In the case of the condor, "sheltering" would be interpreted to mean roosting.

Section 4.2 more specifically addresses the proposed project's impacts to critical habitat and Section 4.3 addresses cumulative impacts.

4.1 Direct and Indirect Impacts to California Condors

The following potential direct or indirect impacts to California condors are addressed: (1) ingestion of microtrash; (2) human disturbances; (3) loss of foraging habitat; (4) collisions with transmission lines; (5) habituation; and (6) increased wildfire risk. Table 3 in Section 5 includes biological resource protection measures designed to avoid and/or minimize potential adverse effects on the California condor to less than significant levels. Section 6 discusses measures implemented by the Ranch intended to benefit the species and contribute to the conservation and recovery of California condor in the wild.

4.1.1 Ingestion of Microtrash

Microtrash—small bits of plastic and metal such as bottle caps, pop-tops, and PVC pipe fragments that are inadvertently fed to hatchlings by their parents—is an important factor affecting condor breeding activity (Grantham 2007a; Mee et al. 2007). While adult condors can usually pass such materials without harm, it can cause injury or mortality to condor chicks.

Development and ongoing operations of the proposed project could result in the buildup of microtrash associated with development within condor foraging areas. An increase in microtrash in areas accessible to condors would represent a potentially significant impact under CEQA and could result in take (harm) of condors.

Several biological resource protection measures included in Table 3 of Section 5 would avoid and/or minimize impacts and the potential for "take" due to microtrash, including the following: (1) MM-BTR-T provides for a worker environmental awareness program training for construction/contractor personnel and on-site biological monitoring for the presence of any microtrash or potential condor disturbances at/near construction sites; (2) MM-BTR-C requires that all construction-related trash receptacles be animal and weather proof and that all work areas be kept clean of microtrash and other debris and food that could be consumed by condors; (3) MM-BTR-RMP provides for periodic maintenance patrols to remove litter, including microtrash; and (4) MM-BTR-TRASH provides for covenants, conditions, and restrictions (CC&Rs) to require property owners to use animal- and weather-resistant trash receptacles. With implementation of these biological resource protection measures, no take as a result of microtrash (harm) is expected to occur and potential effects of microtrash would be reduced to a less-than-significant level under CEQA.

4.1.2 Human Disturbances

The intentional or inadvertent harassment of condors feeding on carcasses, roosting in trees or on rock outcrops, or that are otherwise using areas within the Grapevine study area or adjacent areas, could cause substantial disruption of normal feeding or roosting behaviors at temporary roost or feeding sites in individual condors. Such disruption could occur as a result of noise and human interactions associated with passive recreational activities. Human disturbances to condors would represent a potentially significant impact under CEQA and could result in take (harassment) of condors.

A number of biological resource protection measures included in Table 3 of Section 5 would avoid and/or minimize impacts and the potential for take due to human disturbances, including the following: (1) MM-BTR-T, described above, also includes monitoring for condors potentially roosting within 0.5 mile of the construction area (based on USFWS data provided to Tejon Ranch) and measures to reduce impacts if they are found; (2) MM-BTR-C and MM-BTR-LIGHT provide for certain limitations on construction and operational lighting, respectively; (3) MM-BTR-ED provides for a conservation education and awareness program for Grapevine occupants; (4) MM-BTR-IF prohibits the intentional feeding of condor and other wildlife; (5) MM-BTR-TRAIL provides for trailhead and trail signage in project open space areas relating to pets and prohibitions on feeding wildlife; (6) MM-BTR-CONDOR provides for the reporting of any condor observations, restrictions on behavior that could adversely affect perched or roosting condors, and prohibitions on abnormally loud noises if condors are potentially present in the area; and (7) MM-BTR-RMP requires relocation of dead cattle or other animal carcasses within 1,000 feet of the edge of development to predetermined locations within an open space area. With implementation of these biological resource protection measures, no take as a result of human disturbance (harm) is expected to occur, and potential effects of human disturbance would be reduced to a less-than-significant level under CEQA.

4.1.3 Loss of Foraging Habitat

As described in the BTR, on April 29, 2013, the USFWS issued Incidental Take Permit No. TE198636 pursuant to the FESA for incidental take California condor and 24 other Covered Species, as described in the TU MSHCP. The TU MSHCP "Covered Lands" include 141,866 acres of the 270,365-acre Ranch. The TU MSHCP conservation analysis, which assumed the development of up to 12,400 acres in the Ranchwide Agreement Grapevine Development Area (USFWS 2012a, p. 4.0-7), included a condor foraging habitat model prepared by the USFWS. The USFWS model calculated 182,614 acres of suitable condor foraging habitat occurring on Tejon Ranch. A minimum of 66,117 acres, including 46,045 acres of designated critical habitat, will be conserved in perpetuity as part of the TU MSHCP (USFWS 2013b). These conserved lands will be managed for the benefit of the condor pursuant to a resource management plan implemented by Tejon Ranch Conservancy, as well as conservation easements approved by the USFWS. An additional 83,818 acres of foraging habitat are planned for conservation outside of the TU MSHCP study area under the Ranchwide Agreement. Therefore, the total amount of USFWS-modeled condor foraging habitat conserved will ultimately be 149,935 acres, or 82% of the Ranch (USFWS 2013b), located within lands identified for conservation in the Ranchwide Agreement and TU MSHCP, as shown on Figures 8A and 8B.

The proposed project footprint would result in a direct loss of 2,817 acres of habitat considered suitable for condor foraging (including off-site impact areas), all of which is located in designated critical habitat. As previously discussed, the proposed project footprint is limited to the San Joaquin Valley floor, where condors historically did not occur and currently only very infrequently occur. To date, only 12 (0.009%) out of 133,653 stationary points collected from 2005 to 2013 were within the proposed project footprint, representing only three different days of stationary activity (likely associated with a dead cow or other animal carcass). No nesting, roosting, or important foraging habitat, based on the very infrequent occurrence of condors on site relative to their main foraging range, is located within or immediately adjacent to the proposed project footprint; higher-value foraging habitat, where more hunting and grazing occurs, is located in the foothills portion of the study area and will be avoided by development activities. The only game hunting (that serves as an important source of food for condors on Tejon Ranch) in the study area occurs in the more wooded foothills (which will be preserved in open space) south of Edmonston Pumping Plant Road. Further, due to the flat and relatively treeless topography of the proposed project footprint (condors generally prefer to forage in more hilly/mountainous open terrain where they can take advantage of updrafts), the proposed project footprint is considered to have relatively low foraging value for condors.

Generally, condors may locate a food source adjacent to developed areas but will not land and feed because the carcass is close to development and associated disturbance; i.e., development can indirectly affect foraging behavior. To calculate and estimate the area of indirect effects to suitable condor foraging habitat as a result of the proposed TMV project (located within the TU MSHCP Covered Lands), the USFWS conservatively determined that suitable habitat within a distance of approximately 0.5 mile extending out from the edge of the proposed development envelope would not function as condor foraging habitat due to potential disturbances to feeding condors (USFWS 2013b). Applying this setback from the edge of the proposed development, an additional 4,534 acres of suitable condor foraging habitat will be indirectly impacted by the proposed project. These indirect impacts are limited in scope because suitable foraging habitat is only located south of Laval Road; therefore, such indirect impacts extend approximately to the boundary of the open space to the south and east, with minor off-site impacts to the west of I-5.

As previously discussed, and according to the USFWS GPS data, the predominant foraging activity of California condors on Tejon Ranch occurs much farther to the south of the study area in the upper elevations of the Ranch. Because of the extensive amount of high-quality foraging habitat that will remain in preserved areas of the Ranch (pursuant to the TU MSHCP and the Ranchwide Agreement) to the south, southeast, and southwest of the study area, and because hunting and grazing will continue at current levels and practices in these preserved areas, the Ranch will continue to meet the foraging and feeding needs of condors that currently forage on the Ranch and will accommodate the foraging and feeding needs of condors in the future as the population expands. The direct and indirect loss of foraging habitat associated with the proposed project is therefore not considered a substantially adverse impact that will significantly affect this species or rise to the level of causing “injury” or “harm” to condors or otherwise interfere with essential behavior patterns. Consequently, no “take,” as defined by FESA, as a result of habitat loss (harm) is expected to occur and loss of foraging habitat is not considered to be a significant impact on the species under CEQA. Biological resource protection measures listed in Table 3 in Section 5 would, nevertheless, minimize the effects of overall loss of this foraging habitat. This includes MM-BTR-OS, which provides for the dedication of open space in the foothills containing habitat of much higher foraging value to condors, and MM-BTR-OOS, which conserves 7,217 acres of suitable condor foraging habitat within the Off-Site Mitigation Areas. While both the proposed project impacts and Mitigation Area are in the San Joaquin Valley floor and neither provide important foraging habitat for condor, using the USFWS foraging habitat model, there is modeled suitable foraging habitat for condor in both. However, the Mitigation Area is adjacent to an extensive amount of high-quality condor foraging habitat within the lower and upper foothill regions of the Ranch that, together, serve as a very large and interconnected block of condor habitat that will be conserved in perpetuity pursuant to the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) and the Ranchwide Agreement. Furthermore, because hunting and grazing will continue within the Mitigation Area and in adjacent conserved areas on the Ranch at current levels and practices, these areas will continue to meet the foraging and feeding needs of condors that currently forage on the Ranch and will accommodate the foraging and feeding needs of condors in the future as the population expands.

4.1.4 Collisions with Transmission Lines

Since their reintroduction into the wild, California condor populations have been affected to some degree by collisions or electrocution with power lines and high voltage transmission lines. Specifically, five individuals were killed by collisions with power lines between 1993 and 1997 (Meretsky et al. 2000), and there have been an additional five mortalities since 2001 (Risebrough, pers. comm. 2008). Collisions remain a viable threat to released condors (Snyder and Snyder 2000, 2005; Snyder 2007), although aversion training given to captive condors prior to release appears to have reduced the potential for landing on power poles and transmission towers (Grantham, pers. comm. 2008). Of note, while some collision mortality of golden eagles has been observed in association with existing transmission lines along Edmonston Pumping Plant Road, no condors have ever collided with any of the existing transmission or other power lines on or adjacent to the study area, or on Tejon Ranch in general. This is likely because most of the existing lines and towers are situated in areas of the Ranch generally not used by condors for foraging or feeding.

Any new aboveground transmission towers or power lines installed in relation to development of the proposed project, depending on location, could impact condors as a result of collisions with transmission lines while attempting to land or take off or during low foraging flights. This is primarily a threat if transmission towers are located along the on-site foothills known to be used occasionally by condors during foraging. Installation of aboveground transmission lines in areas where condors occasionally forage would represent a potentially significant impact under CEQA and could also result in take (harm) of individual condors.

No new aboveground high voltage towers or transmission lines within the study area will be built as part of the proposed project. Relocation of existing towers and lines will be permitted within 1,000 feet of existing lines. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for the installation of underground utility lines, best management practices (BMPs) to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the Avian Protection Plan Guidelines prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (see MM-BTR-APLIC in Table 3 in Section 5). Consequently, and with implementation of this biological resource protection measure, no take as a result of collisions (harm) is expected to occur, and potential effects of collisions with transmissions lines would be reduced to a less-than-significant impact under CEQA.

4.1.5 Habituation

As previously discussed, the potential for California condors to be attracted to and/or habituated to areas of human development has decreased in recent years due to more effective aversion training regarding landing on power poles of captive-reared condors prior to release. California condors demonstrating habituation behavior must be deterred away from dwellings and/or human activity areas. Such deterrence is generally required to be conducted by persons trained for that purpose consistent with the requirements of FESA and CESA, as appropriate.

The USFWS has determined that California condors attracted to human activity and structures that are not deterred as a result of previous aversion training received while in captivity and that are not discouraged by deterrence efforts after becoming habituated to human structures or activities have been harmed and must be captured and relocated, undergo additional aversion training and be re-released, or be permanently removed from the wild. This level of habituation would require a federal permit and would also be a significant impact under CEQA.

A number of biological resource protection measures included in Table 3 in Section 5 would avoid impacts and the potential for take due to habituation. These include the same biological resource protection measures listed above for human disturbances. With implementation of these biological resource protection measures, no take associated with habituation issues is expected to occur and the potential effects of habituation would be reduced to a less-than-significant level under CEQA. In addition, the probability of interactions between condors and people on the ground, which sometimes results when condors discover carcasses near inhabited areas, will be managed by requiring the removal of dead carcasses, most likely associated with grazing, within 1,000 feet of the proposed project footprint per MM-BTR-RMP.

4.1.6 Wildfires

Wildfire was not considered a severe threat to the species when the condor was originally listed as endangered. Fire has been considered a natural component for the regeneration and maintenance of habitat within the range of the California condor throughout their existence. Depending on the location, fire can open up certain densely vegetated areas and allow condors more access to foraging habitat. The principal threat of wildfire to the California condor is to active nest sites where fires can pose a risk to eggs and chicks, depending on the nest location and other factors. Notably, the one chick in a redwood tree nest in the Big Sur area survived a large-scale, high-intensity fires in that region (Grantham, pers. comm. 2008).

Build-out of the proposed project will increase the level of human activity in the vicinity of the proposed project and could increase the risk of on-site and off-site wildfires. However, no condor nesting occurs within the study area or anywhere on Tejon Ranch, so no impacts to condor nests will occur with increased risk of wildfires. As a result, while wildfire occurrence within the study area or elsewhere within Tejon Ranch could have a potentially beneficial effect by opening up more foraging habitat for the species, it is not considered to be a significant impact on the species. Since no condors currently nest or are expected to nest anywhere on Tejon Ranch, no take (harm) as a result of wildfires on Tejon Ranch is expected to occur.

4.2 Destruction of or Adverse Modification to Condor Critical Habitat

This section discusses the following: the regulatory background regarding adverse modification to condor critical habitat (Section 4.2.1), an overview of condor critical habitat (Section 4.2.2), a discussion of the Tejon Ranch critical habitat unit (Section 4.2.3), potential direct and indirect project effects to critical habitat in the Tejon Ranch critical habitat unit (Section 4.2.4), and other actions likely to affect the Tejon Ranch critical habitat unit (Section 4.2.5).

4.2.1 Regulatory and Legal Background

Under the FESA, a federal agency must consult with the USFWS if a proposed action would adversely affect designated critical habitat to determine if the proposed activity might result in the "destruction or adverse modification" of critical habitat. The USFWS issues a biological opinion regarding effects to critical habitat (and other pertinent FESA matters) at the conclusion of the consultation process. Federal regulations define critical habitat destruction or adverse modification to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." However, several court cases, including *Gifford Pinchot Task Force v. United States Fish & Wildlife Service* (*Gifford Pinchot*) (2004), have invalidated the regulatory definition of "destruction or adverse modification" previously used to analyze critical habitat impacts during federal agency consultations. These cases require that the USFWS must consider whether a proposed activity would impermissibly affect the conservation value of critical habitat, which includes both recovery (the eventual downlisting or delisting of the species) or survival functions and values, to make an adverse modification determination.

In December 2004, the USFWS Director's office distributed a memorandum to the USFWS' regional directors, Application of the "Destruction or Adverse Modification" Standard under Section 7(a)(2) of the Endangered Species Act (Adverse Modification memorandum) (USFWS 2004). The Adverse Modification memorandum provides guidance to USFWS biologists conducting consultations under the FESA pending the adoption of a new regulatory definition of "destruction or adverse modification." Since that time, the regulation invalidated by *Gifford Pinchot* and other courts has not been revised or amended. The Adverse Modification memorandum represents the currently applicable approach used by the USFWS to address whether an action could destroy or adversely modify critical habitat. As least one federal court has indicated that compliance with the Adverse Modification memorandum avoids the legal concerns with the existing regulation that were identified in *Gifford Pinchot* and other court cases.[4]

[4] In *Center for Native Ecosystems v. Cables* (2007), the court considered whether the USFWS properly analyzed the risk that critical habitat for the Preble's jumping mouse would be adversely modified by certain grazing activities. The court reiterated that the adverse modification analysis must include consideration of recovery as well as survival functions and that the existing regulation defining "destruction or adverse modification" was invalid under *Gifford Pinchot* and other cases. The court found, however, that the issuance of the Adverse Modification memorandum demonstrated that the USFWS' determination was not based on the regulatory definition rejected by the courts ("[O]n December 9, 2004, the [US]FWS apparently instructed its biologists not to rely on the definition pending adoption of a new definition. Therefore, we need not consider the validity of the [invalidated] definition…"). Since the Preble's jumping mouse critical habitat determination did not rely on the regulation, and cited conservation criteria that include the concept of recovery as well as survival, the court upheld the USFWS' finding that no destruction or adverse modification of Preble's jumping mouse critical habitat would occur as a result of the proposed activities.

The Adverse Modification memorandum instructs the USFWS to not use or cite the current regulation to determine whether an action could destroy or adversely modify critical habitat.[5] In lieu of such citation or reliance, the memorandum identifies the following analytical framework for conducting adverse modification determinations during federal FESA consultations:

1. In the "Status of the Species/Critical Habitat" analysis in the biological opinion, discuss the entire designated critical habitat area in terms of the biological and physical features that are essential to the conservation (discussion of "survival" in this and other sections of the adverse modification analysis is not appropriate) of the species. This analysis should identify and discuss the primary constituent elements of the critical habitat (as described in the final rule) and, very importantly, the current condition, the factors responsible for that condition, and the conservation role of individual critical habitat units. Many critical habitat designations pre-date the requirement for identification of primary constituent elements that are essential for the conservation of the listed species. In consultations on actions that involve this type of critical habitat, the best available scientific and commercial data should be used to determine and document these elements or habitat qualities.
2. In the "Environmental Baseline" analysis, discuss the current condition of the critical habitat unit(s) in the action area, the factors responsible for that condition, and the conservation roles of the unit(s), with appropriate supporting documentation. In particular, discuss the relationship of the affected unit(s) in the action area to the entire designated or proposed critical habitat with respect to the conservation of the listed species, unless the proposed or final rule designating critical habitat has already clearly done so. Based on the results of this analysis, we will have a clear and credible basis for determining the significance of any adverse or beneficial effects of the action (and cumulative effects) on the function and conservation role of the affected unit(s).
3. In the "Effects of the Action" analysis, characterize the direct and indirect effects of the action and those of interrelated and interdependent actions on the proposed or designated critical habitat. Describe how the primary constituent elements or habitat qualities essential to the conservation of the species are likely to be affected and, in turn, how that will influence the function and conservation role of

5 The memorandum further recommends that USFWS staff expressly state in consultation documentation that the determination did not rely on the invalidated regulation and include the following statement: "This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the FESA to complete the following analysis with respect to critical habitat."

the affected critical habitat unit(s). This part of the analysis should focus exclusively on the effects to critical habitat. Conservation activities (e.g., management, mitigation, etc.) outside of critical habitat should not be considered when evaluating effects to critical habitat. Based on the analyses under (1) and (2) above, discuss the significance of anticipated effects to critical habitat.

4. In the "Cumulative Effects" analysis, characterize the effects of future, non-federal actions reasonably certain to occur in the action area in terms of how the primary constituent elements or habitat qualities essential to the conservation of the species are likely to be affected and, in turn, how that will influence the function and conservation role of the affected critical habitat unit(s). Based on the analyses under (1) and (2) above, discuss the significance of these anticipated effects to critical habitat.
5. In the "Conclusion" section, following the standard text, present the reasons why we reached our 7(a)(2) conclusion. Discuss whether, with implementation of the proposed federal action, critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve the intended conservation role for the species, based on the analyses under (1) through (4) above.

As discussed above, the regulatory definition of "destruction or adverse modification" previously used to analyze critical habitat impacts during federal agency consultations has been invalidated by several courts. The USFWS no longer uses this definition and instead applies the analytical framework identified in the Adverse Modification memorandum (discussed above).[6]

The FESA and USFWS regulations and regulatory guidance do not preclude development or other human use of designated critical habitat provided that the impacts associated with the proposed activities avoid the destruction or adverse modification of the affected critical habitat. According to the USFWS guidance, a "critical habitat designation does not

[6] On May 12, 2014, USFWS and the National Marine Fisheries Service (NMFS) proposed to amend the definition of "destruction or adverse modification" of critical habitat as follows: "a direct or indirect alteration that appreciably diminishes the conservation value of critical habitat for listed species. Such alterations may include, but are not limited to, effects that preclude or significantly delay the development of the physical or biological features that support the life-history needs of the species for recovery" (79 FR 27060–27066). The final rule on this proposed definition has not been published, but is intended to reflect current practice. "The proposed definition reflects the approach the Services have employed since 2004, when the current definition was invalidated, and we do not expect it to be substantially more or less protective of critical habitat than the guidance used in recent years." (USFWS 2014c). The Adverse Modification memorandum represents the currently applicable approach used by the USFWS to address whether an action could destroy or adversely modify critical habitat, which is consistent with the currently proposed rule in that whether an activity would affect the recovery of the species.

necessarily restrict further development. It is a reminder to federal agencies that they must make special efforts to protect the important characteristics of these areas" (USFWS 2014b). The 1976 designation of condor critical habitat, which was one of the first designations under the FESA, specifically observed that critical habitat was not intended to identify areas that must be avoided by human activity:

> [T]here may be many kinds of actions which can be carried out within the Critical Habitat of a species which would not be expected to adversely affect that species. This last point has not been well understood by some persons. There has been widespread and erroneous belief that a Critical Habitat designation is something akin to establishment of wilderness area or wildlife refuge and automatically closes an area to most human uses. Actually, a Critical Habitat designation applies only to federal agencies, and is a notification to such agencies that their responsibilities pursuant to Section 7 of the Act are applicable in a certain area (41 FR 41915).

This report implements the requirements of *Gifford Pinchot* and related cases, and the USFWS' Adverse Modification memorandum by (1) discussing the condor's entire designated critical habitat area in terms of the biological and physical features that are essential to the conservation of the species; (2) discussing the current condition and conservation roles of the Tejon Ranch area of critical habitat, which includes the proposed project; (3) characterizing the direct and indirect effects of the proposed project and how the habitat qualities essential to the conservation of the species and the function and conservation role of the critical habitat are likely to be affected; (4) characterizing how future, non-federal actions reasonably certain to occur in the action area are likely to affect habitat qualities essential to the conservation of the species and the function and conservation role of the critical habitat; and (5) presenting conclusions based on this analysis demonstrating that the project will not cause the destruction or adverse modification of condor critical habitat.

4.2.2 Condor Critical Habitat Overview

The USFWS has designated approximately 570,400 acres (USFWS 2014b) as condor critical habitat in nine separate areas: (1) the Sespe–Piru Condor Area, (2) the Matilija Condor Area, (3) the Sisquoc–San Rafael Condor Area, (4) the Hi Mountain–Beartrap Condor Area, (5) the Mt. Pinos Condor Area, (6) the Blue Ridge Condor Area, (7) the Tejon Ranch area, (8) the Kern County rangelands, and (9) the Tulare County rangelands (Figure 4). The condor was one of the very first species listed under FESA and critical habitat for the condor was one of the very first designations under FESA. Consequently, the condor critical habitat designation occurred prior to the amendment of Section 4 of FESA to include detailed critical habitat designation requirements (i.e., "primary constituent elements") and prior to the development of detailed critical habitat regulations and guidance. Thus, the descriptions of the condor critical habitat areas (units) in the condor critical habitat rule are brief and general and follow coarse township and range coordinates. As such, the 1976 designation identified the conservation values of the nine critical habitat areas according to their contributions to condor nesting, roosting, or foraging functions:

> With regard to the California condor, the Sespe–Piru, Matilija, Sisquoc–San Rafael, and Hi Mountain–Beartrap condor areas, as described below, are considered critical for nesting and related year-long activity. The Mt. Pinos and Blue Ridge condor areas, as described below, are considered critical for roosting. The Tejon Ranch, Kern County rangelands, and Tulare County rangelands, as described below, are considered critical for feeding and related activities (41 FR 41914).

The USFWS has adopted a recovery plan under the FESA for the California condor. The most recent revision was completed in 1996 (USFWS 1996), discussed in detail in Section 2.1.2.2. A recovery plan sets forth "reasonable actions that are believed to be required to recover and/or protect listed species" (USFWS 1996, page ii). The Recovery Plan states that nesting, roosting, and foraging (feeding) functions are the most crucial functions required to maintain and achieve the recovery of the California condor:

> California condors require suitable habitat for nesting, roosting, and foraging. The recent range was restricted to chaparral, coniferous forests, and oak savanna habitats in Southern and central California. The species formerly occurred more widely throughout the Southwest and also fed on beaches and large rivers along the Pacific coast. Nest sites are located in cavities in cliffs, in large rock outcrops, or in large trees. Traditional roosting sites are maintained on cliffs or large trees, often near feeding sites. Foraging occurs mostly in grasslands, including potreros within chaparral areas, or in oak savannas. At present, sufficient remaining habitat exists in California and in southwestern states to support a large number of condors, if density-independent mortality factors, including shooting, lead poisoning, and collisions with man-made objects, can be controlled (USFWS 1996, page v).

An additional foraging habitat requirement, which is not explicitly discussed in the 1976 designation (41 FR 41914–41916) or the Recovery Plan (USFWS 1996), is preservation of sufficient airspace for condor movement within the species' historical range. Large, high structures that intrude into condor flyways can cause collisions that could harm or disrupt the normal foraging behaviors of the condor.

4.2.3 The Tejon Ranch Critical Habitat Unit

The Tejon Ranch critical habitat unit is approximately 134,871 acres in size (USFWS 2013b). Of this, approximately 130,647 acres occur within the boundaries of Tejon Ranch (inclusive of approximately 2,873 acres of private/commercial inholdings not owned by Tejon Ranch) and includes the entire 37,000-acre Condor Study Area (Figure 5). There are approximately 7,122 acres of designated critical habitat within the Grapevine Specific Plan Area and 24 acres within the proposed off-site impact area, for a total of 7,146 acres. Approximately 4,367 acres of designated critical habitat are within the proposed project footprint, including off-site impact areas, and 2,780 acres are within the on-site open space.

The USFWS' 1976 critical habitat designation stated that the Tejon Ranch area primarily provides foraging functions that support condors nesting to the west in the designated Sespe–Piru Area:

> The Tejon Ranch is very important because it contains the only significant feeding habitat remaining in close proximity to the Sespe–Piru Condor nesting area (41 FR 41914).

The Tejon Ranch critical habitat area is also discussed in Section 3 of the Recovery Plan, which observes that hunting activities within Tejon Ranch are beneficial to the condor because they provide food sources (carcasses) particularly during the fall months that can support condor populations in nearby areas such as those that breed in the Sespe–Piru Area to the southwest (USFWS 1996). The Recovery Plan states that the completion of an agreement with the Ranch to maintain uses, such as hunting, that benefit the condor is a conservation goal for the species:

> The Tejon Ranch was an important condor feeding area throughout the annual cycle, but especially in the fall, when there is a high intensity of deer hunting on the ranch. A plan should be prepared with the consent and participation of the affected landowner to maintain its value for condors (USFWS 1996, Subsection 3325, p. 29).

Condors in transit from the southwest or northeast and nesting condors or fledglings from the Sespe–Piru nesting area have been and continue to be attracted to Tejon Ranch, including areas of critical habitat. Condors are attracted to animal carcasses and gut piles resulting from the Ranch hunting program. In addition, the occasional natural deaths of livestock and native animals such as deer, elk, and other larger mammals provide other food sources for condors. In the past, condors also were drawn to historical feeding and bait sites maintained by the USFWS in the 1980s in the vicinity of Tunis Ridge. Foraging activity within the Tejon Ranch critical habitat area is facilitated by large areas of open grasslands and oak savannahs in the foothills that allow condors to easily detect carcasses from the air or to land and access carcasses that may be under tree canopies.

Consistent with the Recovery Plan, a habitat conservation plan addressing the California condor on Tejon Ranch – the TU MSHCP – was approved by the USFWS in 2013. In total, 102,098 acres (76%) of the 134,871 acres within the Tejon Ranch critical habitat unit, encompassing approximately 64,306 acres of foraging habitat and traditional roosting areas, will be conserved in perpetuity under the TU MSHCP and the Ranchwide Agreement (USFWS 2012a). Even more suitable foraging habitat—149,935 acres—will be preserved on the Ranch (USFWS 2013b), located within lands identified for conservation in the Ranchwide Agreement and TU MSHCP, as shown on Figures 8A and 8B.

4.2.4 Potential Direct and Indirect Project Effects to Tejon Ranch Area Critical Habitat

The proposed project will directly impact approximately 4,367 acres of designated critical habitat, representing 3% of the total Tejon Ranch critical habitat unit and 0.8% of the total acreage of designated critical habitat for the species. Not all of that area is suitable foraging habitat.

Within the 4,367 acres of critical habitat in the proposed project footprint, the proposed project would result in the direct loss of 2,817 acres of low-quality foraging habitat (based on the very infrequent occurrence of condors) within the Tejon Ranch critical habitat unit. Development of the proposed project would result in the indirect loss (i.e., within 0.5 mile of development) of an additional 3,696 acres of low-quality suitable condor foraging habitat in the critical habitat unit. In total, approximately 6,513 acres of condor critical habitat that is considered foraging habitat would be directly or indirectly impacted by the proposed project.[7] See Section 4.1.3 for a discussion of loss of foraging habitat for condor in general.

As previously discussed, the specific conservation function of the Tejon Ranch critical habitat unit is to provide essential feeding (foraging) areas for the California condor (41 FR 41914–41916). Pursuant to the TU MSHCP and the RWMP, hunting and grazing would continue throughout the Tejon Ranch critical habitat unit, as well as in other areas of suitable foraging habitat on the Ranch outside the critical habitat unit. Ranching would continue to occur at historical grazing levels, i.e., up to 14,500 head of cattle. Consequently, grazing and hunting in these areas would continue to provide important sources of carrion for condors.

Also, as previously discussed, the proposed project footprint is limited to the San Joaquin Valley floor and condors historically did not and currently do not frequently use the San Joaquin Valley floor. Based on the very few observations of condors in the Valley floor portion of the study area from 2005 to 2013, no important foraging habitat is located in the proposed project footprint. To

7 This is consistent with the prior USFWS cumulative effects analysis conducted for the TU MSHCP. Specifically, the USFWS quantified that there were 6,653 acres of suitable foraging habitat for condor in portions of the critical habitat unit located on the 15,700-acre Grapevine Planning Area and that those acres would be directly lost to development (USFWS 2013b). The Grapevine project was analyzed in the cumulative effects analysis for the TU MSHCP, where the USFWS found that the cumulative condor suitable foraging habitat loss on the Ranch and throughout the range was not likely to jeopardize the continued existence, impede the recovery of the California condor, or destroy or adversely modify its designated critical habitat (USFWS 2013b).

date, only 12 (0.009%) out of 133,653 stationary points collected from 2005 to 2013 were within the proposed project footprint, representing only three different days of stationary activity. Higher-value potential foraging habitat in the foothills portion of the study area will be avoided by development activities. Because the only game hunting (which serves as a primary source of food for condors on Tejon Ranch) in the study area occurs in the more wooded foothills south of Edmonston Pumping Plant Road (which will be conserved as open space and remain open to guided hunting), and due to the flat and relatively treeless topography of the proposed developed portion of the study area (condors generally prefer to forage in more hilly/mountainous terrain where they can take advantage of updrafts), the proposed project footprint is considered to have relatively low foraging value for condors. Furthermore, and as noted by the USFWS in their Biological Opinion for the issuance of the incidental take permit for the TU MSHCP, condors did not historically feed exclusively on Tejon Ranch, do not exclusively feed on the Ranch currently, and it is not expected that all condors in a future population of free-flying condors in California would feed exclusively on Tejon Ranch (USFWS 2013b). Large areas of suitable foraging habitat currently occur elsewhere in the historical range of the condor, including lands in public and private ownership such as grasslands and savannahs in the Coast range, Transverse Range and southern Sierra Nevada foothills (i.e., National Forest and National Wildlife Refuge lands, private ranches, and private conservation lands). As shown on Figure 3, the Southern California condor population forages over extensive areas of habitat beyond the Tejon Ranch boundary.

None of the Tejon Ranch critical habitat area contains condor nest sites and the proposed project will have no direct effect on condor nesting or roosting activity within designated critical habitat. One traditional roosting site is located in the preserved Condor Study Area within designated critical habitat on the northeast face of Winters Ridge. The nearest development proposed by the Grapevine project is physically separated by approximately 8 miles and is visually shielded from this roosting site by several ridgelines. Therefore, the proposed project will have no effect on traditional condor roost sites.

As previously discussed, the USFWS GPS data confirm that condors fly over areas of moderate urban development between suitable foraging and roosting habitats. California condor home ranges already include developed areas (Johnson et al. 2010) and it is anticipated that condors will continue to expand into their historical foraging range, despite the presence of developed areas, as the population continues to increase. As such, proposed project footprint, which is located on the very northern edge of their foraging range in the Tehachapi Mountains, is not expected to inhibit local or regional condor movements. Furthermore, the proposed project does not allow for construction of new utility[8] or communication towers within the project boundaries

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8 Certain existing utility lines could be relocated up to 1,000 feet from current locations. Any such relocation, if it occurs, would be situated to ensure that no new airspace hazards would be created that could affect condors.

except within existing locations and therefore would not adversely affect low-level airspace within designated critical habitat.

In summary, even though acreage of critical habitat on Tejon Ranch would decrease somewhat in absolute numbers with development of the proposed project, the Ranch, including areas within designated critical habitat, will continue to support comparable historical levels of grazing and existing commercial and private hunting activities, both of which provide important sources of food for condors. Considering the large amount of critical habitat and suitable foraging habitat that will remain on Tejon Ranch after development of the proposed project, the low value of habitat potentially used for foraging by condors that would be lost to development, and the ample food supply for condors that will continue to be produced from ongoing grazing and hunting within preserved areas, the Ranch will continue to function effectively as an essential and viable foraging area for the existing and expanding condor population. With preservation of the traditional roost site on Winters Ridge in the Condor Study Area, as well as extensive roost habitat within preserved areas under the TU MSHCP and Ranchwide Agreement, and because there are no traditional or even regularly used roost sites that will be impacted by the proposed project, the Tejon Ranch critical habitat unit will continue to support roosting habitat essential for the conservation and recovery of condors using the Ranch. Finally, development of the proposed project will not restrict condor movements or affect their use of their historical range.

The condor critical habitat rule itself expressly states that not all of the land designated as critical habitat within a condor critical habitat unit, including Tejon Ranch, is necessary to conserve the condor. The rule states with reference, in part, to the Tejon Ranch critical habitat unit:

> In most cases, condor feeding habitat is not so restricted as nesting and roosting sites, and only certain portions of the [Tejon Ranch critical habitat area] are needed at any one time (USFWS 1976).

Allowing limited development within the Tejon Ranch critical habitat unit while permanently protecting the vast majority of critical habitat on the Ranch is consistent with the California condor critical habitat rule. Therefore, the loss of critical habitat within the Tejon Ranch critical habitat unit as a result of the proposed project is not expected to result in a reduction of condor reproduction or adversely affect condor recovery. Consequently, the conservation role and function of the Tejon Ranch critical habitat unit to provide essential foraging habitat for an expanding population of condors and connectivity to other portions of the condor's range would be maintained with implementation of the proposed project.

4.3 Cumulative Effects

The following addresses the cumulative effects of recently approved and foreseeable projects within the area occupied by the Southern California subpopulation of the California condor. The analysis includes potential effects as a result of collisions, loss of foraging habitat, habituation/human disturbances, increased levels of microtrash, and loss of critical habitat, consistent with the analysis of impacts described above for the proposed project.

4.3.1 Collisions

Wind farms can pose a threat to condors as rotating blades can strike a condor in flight. Wind turbines tend to be placed in areas (i.e., ridgetops, upper elevation slopes) that are often attractive to condors; the same strong winds that drive the turbines are also a source of lift for these large birds. As described earlier, transmission lines also pose collision risks to condors in flight, as well as electrocution risks for condors that may perch on transmission poles and towers. Wind and transmission projects reviewed include the following:

Wind Projects. Kern County is currently considering applications for six different wind energy projects in the Tehachapi Wind Resource Area. Since 2005, Kern County has approved 23 new wind power projects, and 2 repower projects. For the purposes of this analysis, it is assumed that all wind energy projects within the Tehachapi Wind Resource Area are within the range of condors. There are no reasonably foreseeable wind projects in Monterey and San Benito Counties.

Tehachapi Renewable Transmission Project. A 173-mile transmission line project is proposed to run from San Bernardino County to Kern County, portions of which occur near areas used by condors.

Solar Projects. A total of 13 solar project are currently pending approval by Kern County. Many of these projects will require installation of new transmission lines, which could pose collisions risks to condors.

Discussion. As stated above, no new high-voltage towers or aboveground transmission lines would be constructed anywhere in the study area. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the Avian Protection Plan Guidelines. No wind turbines would be constructed anywhere within the study area. The TU MSHCP and Ranchwide Agreement also preclude development of wind energy facilities anywhere on Tejon Ranch or the adjacent Gorman-Post Ranch through a negative easement that TRC holds over this property. Under the TU MSHCP, only individual wind turbines intended to serve individual sites are allowed, and siting and design of these turbines is subject to review and approval by the USFWS.

Detailed avian protection plans are required for wind projects to reduce adverse effects on raptors and condors from collisions, and would similarly be required for the Tehachapi Renewable Transmission Project and other proposed transmission lines. Requirements to comply with these plans and to construct all transmission facilities, towers, poles, and lines to minimize avian electrocutions, are expected to substantially reduce the potential for significant adverse cumulative effect on condors. Implementation of the proposed project is not expected to substantially contribute to the overall cumulative potential for collisions by condors with wind turbines and/or transmission lines in the region for the following reasons: required avoidance and minimization measures are expected to significantly reduce the potential for collisions associated with reasonably foreseeable wind projects, the Tehachapi Renewable Transmission Project, and other transmission lines associated with the various proposed solar projects in the region; biological resources protection measures will be implemented by the proposed project; and very low number of condors have historically visited the site and are expected to visit the site in the future.

4.3.2 Loss of Foraging Habitat

Larger projects within areas frequented by the Southern California condor subpopulation reviewed and that would result in loss of suitable foraging habitat include the following:

- **Newhall Ranch Development Project**. The Newhall Ranch development project would include construction of residential, commercial and public facilities on approximately 3,500 acres, and preservation of approximately 10,200 acres of open space in Los Angeles and eastern Ventura Counties.
- **Oil and Gas Lease Expansion Project Los Padres National Forest**. In compliance with the Onshore Oil and Gas Leasing Reform Act of 1987, the U.S. Forest Service has delineated three specific high oil and gas potential areas within the Los Padres National Forest where oil and gas exploration, development, and production may be authorized for the next 10 to 15 years for activities to be conducted over a likely 50-year period. These three areas encompass 106,584 acres and are located adjacent to areas where oil and gas operations are already occurring on Los Padres National Forest lands.
- **Tejon Mountain Village**. Kern County approved the development of this 5,082-acre mixed used project in 2012 for which an EIR was prepared under CEQA. The project was included as a covered activity in the TU MSHCP that was approved by the USFWS in 2013.

As previously discussed, very few condors have historically visited the study area, likely because of the low foraging value (due to lack of hunting and low grazing levels) of the existing habitat and lack of updrafts and other environmental factors, particularly within the proposed project footprint. In addition, over 129,000 acres of open space, most of it considered to be suitable condor foraging habitat, would be preserved under the TU MSHCP, with an additional 141,000 acres preserved under the Ranchwide Agreement. Existing livestock grazing and hunting would continue to occur within these preserved areas, thus providing a continuing source of carrion for condors.

Substantial acreage of suitable foraging habitat would be preserved as permanent open space within the Los Padres National Forest, as well as approximately 10,200 acres in open space associated with the Newhall Ranch development project. Open space areas for both projects would continue to provide potential food sources for condors.

Consequently, although these projects could result in direct and indirect effects on suitable condor foraging habitat, given the extensive amount of foraging habitat preserved within open space areas for each project and the continuation of food sources that would still be available, these projects are not anticipated to substantially affect the condor's ability to continue to find food. Additionally, given the very low quality of foraging habitat associated with the study area, the extensive amount of foraging habitat preserved within Tejon Ranch and the continuation of ranching and hunting as food sources for condors, the additional loss of foraging habitat as a result of the proposed project is not expected to substantially contribute to the overall cumulative loss of foraging habitat for condors in the region.

4.3.3 Habituation/Human Disturbances

The proposed project will implement a number of measures to avoid and minimize the potential for habituation/human disturbances including environmental awareness training to construction workers and construction monitoring (MM-BTR-T and MM-BTR-C), conservation education and awareness programs for residents (MM-BTR-ED), prohibitions on the intentional feeding of condors and other wildlife (MM-BTR-IF), and signage (MM-BTR-TRAIL).

From a cumulative perspective, given the potential for human interaction, the same projects identified above for loss of foraging habitat have the potential to also result in habituation of, and/or human disturbances to condors. The USFWS has exempted take (i.e., habituation) of one condor under the Newhall Ranch project and one condor for the oil/gas lease project, and up to four condors for the TMV project. Each of these projects includes measures to avoid and/or minimize the potential for habituation and human disturbance to condors, and the associated biological opinions for each include measures to minimize the effects of this take.

Consequently, and given the very low number of condors that have historically visited the site and that are expected to visit the site in the future, implementation of the proposed project is not expected to substantially contribute to the cumulative potential for habituation/human disturbances of condors.

4.3.4 Microtrash

The proposed project will implement a number of measures to avoid and minimize the potential for microtrash accumulation, including environmental awareness training for construction workers with particular emphasis on microtrash and construction monitoring (MM-BTR-T and MM-BTR-C), requirements for work areas to be kept free of debris and trash that could contribute to microtrash (MM-BTR-C), conservation education and awareness programs for residents (MM-BTR-ED), requirements for weather- and animal-resistant trash receptacles (MM-BTR-TRASH), and periodic maintenance patrols of open space areas to remove litter, including microtrash (MM-BTR-RMP).

From a cumulative perspective, the same projects identified above for collisions and loss of foraging habitat have the potential for increases in microtrash that could be consumed by condors. Similar mitigation measures would be implemented by the Newhall and TMV projects to avoid and minimize the potential for microtrash accumulation, and it is assumed that the wind turbine and transmission line projects would also be subjected to similar measures.

Consequently, and given the very low number of condors that have historically visited the study area and that are expected to visit the study area in the future, implementation of the proposed project is not expected to substantially contribute to the cumulative potential for microtrash accumulation.

4.3.5 Loss of Critical Habitat

As previously discussed, the proposed project footprint is limited to the San Joaquin Valley floor where condors historically did not, and currently do not, frequently occur. No important foraging habitat is located in the proposed project footprint and higher-value potential foraging habitat in the foothills portion of the study area will be avoided by development activities. Because the only game hunting (that serves as a primary source of food for condors on Tejon Ranch) in the study area occurs in the more wooded foothills south of Edmonston Pumping Plant Road that will be preserved, and due to the flat and relatively treeless topography of the proposed project footprint (condors generally prefer to forage in more hilly/mountainous terrain where they can take advantage of updrafts), the proposed project footprint area is considered to have relatively low foraging value for condors. Furthermore, the proposed project will have no direct or indirect effect on condor nesting or roosting activity within the Tejon Ranch critical habitat unit.

In June 2008, TRC and several major environmental groups completed the Ranchwide Agreement outlining the preservation of approximately 240,000 acres of the 270,000-acre Ranch. The Ranchwide Agreement will result in several actions that will protect and conserve the conservation functions and values of the Tejon Ranch critical habitat area, including the following:

- **Ranchwide Agreement Conservation Easement and Conservancy Management**. Under the Ranchwide Agreement, preserved critical habitat within Tejon Ranch will be subject to a permanent conservation easement managed by the Tejon Ranch Conservancy. The conservancy will preclude any new commercial or residential development in the lands subject to the easement, and will only allow new ranch-related structures or infrastructure if such activity preserves and protects the conservation values of the affected land. The Ranchwide Agreement will provide additional, permanent protections for the Tejon Ranch critical habitat area, including all of the Tunis-Winters ridge area that has been heavily used by condors in the past.
- **Ranchwide Agreement development activity**. Under the Ranchwide Agreement, future development within the Tejon Ranch critical habitat area will be limited to the proposed project and another project located on the San Joaquin Valley floor to the north of the Tehachapi range, and a project within the Tehachapi Mountains, the TMV project including the following:

  The Tejon Ranch Commerce Center

  The southernmost portion of the Tejon Ranch Commerce Center development area (approximately 2,000 acres) is located in the far northern extreme of the Grapevine USGS quadrangle within the Tejon Ranch area of designated critical habitat. All of the land is below an elevation of 2,000 feet above mean sea level, and condors historically did not, and currently do not, frequently use this area of the valley floor. No nesting, roosting, or significant foraging habitat is located in this area, especially in light of the agricultural uses in this area, which do not support the grazing, hunting, or natural ungulate populations to provide a consistent food supply. As a result, the Tejon Ranch Commerce Center project will have no cumulative effects to the conservation values of condor critical habitat.

  Tejon Mountain Village Planning Area

  The potential effect of the entitled development in the TMV Planning Area, which includes the TMV project, on critical habitat for the condor was evaluated in the TU MSHCP. The Biological Opinion (USFWS 2013b) found that the TMV project would result in the direct permanent loss of no more than 6,656 acres and indirect effects to approximately 11,339 acres of potential foraging habitat. No condor nesting or roosting impacts would result. However, taking into account the development considered in the

Ranchwide Agreement (including direct impacts from the Grapevine project), the amount of modeled suitable foraging habitat remaining on the Ranch, along with the continuation of historical and current grazing levels and practices, feral pig and game hunting, and the natural population of native ungulates that provide consistent food sources, the Ranch will continue to meet the foraging and feeding needs of condors that currently forage on site and will accommodate the foraging and feeding needs of condors in the future as the population expands. As a result, the TMV project will have no adverse cumulative effects to the conservation functions and values of the Tejon Ranch condor critical habitat unit.

- **Covered Lands Preservation**. Under the proposed TU MSHCP, all development within the Covered Lands will be restricted to the TMV Planning Area and to the Lebec/Existing Headquarters Area adjacent to I-5, which is not located within designated critical habitat. Approximately 66,117 acres of suitable condor foraging habitat will be preserved within TU MSHCP Covered Lands, including 23,040 acres of the approximately 37,099-acre Condor Study Area. Approximately 46,045 acres of suitable foraging habitat within critical habitat and also within Covered Lands will be preserved. Consequently, approximately 94% of all Covered Lands within designated critical habitat will be preserved under the TU MSHCP and the Ranchwide Agreement and managed to avoid impacts to the condor.

No loss of critical habitat within other designated condor critical habitat units within California have been proposed at this time. Therefore, given the relatively low foraging habitat value for condors of the area to be impacted by the proposed project footprint and preservation of the highest-quality foraging habitat on Tejon Ranch through the Ranchwide Agreement and the TU MSHCP, the direct loss of 2,817 acres of low-quality suitable foraging habitat within designated critical habitat as a result of the proposed project is not expected to substantially contribute to the overall cumulative loss of critical habitat within the Tejon Ranch critical habitat unit.

5 MEASURES TO AVOID, MINIMIZE, AND MITIGATE POTENTIAL IMPACTS

Biological resource protection measures will be implemented to avoid and minimize the effects of the proposed project on California condors. Avoidance and minimization measures address the following potential effects (as described in Section 4.1) of the proposed project on California condor: exposure to microtrash, disturbances to condors, loss of foraging habitat, collisions with artificial structures, and habituation to human activities and artificial structures. All of the biological resource protection measures for the proposed project are located in Appendix A of the BTR. Table 3 includes a summary of the elements of the biological resource protection measures that apply to condor and Appendix A of the BTR should be consulted for the full text of each biological resource protection measure.

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
Microtrash	**Construction-Related**: The abandonment of microtrash during construction. **Operation-Related**: The abandonment of microtrash during operations as described in the Grapevine Specific and Community Plan and Grapevine Special Planning District Plan.	**MM-BTR-T (Environmental Awareness Training, Biological Monitoring, and Compliance)** The project biologist shall perform Worker Environmental Awareness Program (WEAP) training for all construction/contractor personnel. The project biologist shall disseminate a condor educational curriculum that shall include information concerning the life history of the California condor, where condors potentially occur within the Grapevine site, and prohibited behaviors related to condors, such as pursuit, capture, harassment, and all other potential direct interaction with the species. The information shall also identify types of microtrash that could be ingested by adult breeding condors and describe measures to eliminate microtrash on and near all construction sites, recreational areas, roads, and backcountry locations where human presence has occurred. The focus will be to educate all Grapevine construction and work crews, particularly those engaging in activities that could put them in close proximity to areas that provide foraging habitat for California condors. The project biologist will note any evidence of microtrash and, if present, communicate the presence and requirement to remove the microtrash to the construction manager. **MM-BTR-C (General Construction-Related Avoidance and Minimization Measures)** The following avoidance and minimization measures shall be implemented during project construction. ***Debris / Non-Native Vegetation / Pollution*** Fully covered trash receptacles that are animal and weather resistant will be installed and used by construction personnel to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Trash contained within the receptacles should be removed at least once a week from the project site. Construction work areas shall be kept clean of debris, such as cable, trash, and construction materials. All construction/contractor personnel shall collect all microtrash and litter (anything shiny, such as broken glass), vehicle fluids, and food waste from the project area on a daily basis. **MM-BTR-CONDOR (Required Notification of Condor Observations, Restrictions on Occupant Behavior and Activities, and Community Service)** Tejon Ranch staff and Grapevine occupants and their guests shall be required to cease any behavior that constitutes an attractive nuisance (including microtrash) or otherwise presents an unreasonable and avoidable danger to California condors upon direction by the Property Owners' Association (POA) manager, in consultation with the project biologist. The POA manager shall provide for routine community maintenance activities that will include regular efforts to eliminate microtrash on and near all roads where human presence has occurred.

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-TRASH (Requirement for Residents to Use Animal- and Weather-Resistant Trash Receptacles) The covenants, conditions, and restrictions (CC&Rs) shall provide that property owners keep trash in covered containers that are fitted with animal- and weather-resistant lids in order to prevent condors from attempting to forage on trash. The POA manager shall also periodically monitor receptacles for compliance. Kern County will verify that the CC&Rs require property owners to keep trash in covered containers that are fitted with animal- and weather-resistant lids. **MM-BTR-RMP (Resource Management Plan)** Periodic maintenance patrols will be required in order to remove litter, including microtrash, within project open space.
Human Disturbances/ Habituation to Humans and Artificial Structures	**Construction-Related:** The intentional or inadvertent inappropriate interaction between condors and construction workers or construction equipment, could occur. Construction noise or vibration, night lighting, and the presence of people and vehicles could disruption of normal behavior in individual condors. **Operations-Related:** The intentional or inadvertent harassment of condors feeding on carcasses, roosting in trees or on rock outcrops, or that are otherwise using areas within the Grapevine Specific Plan Area or adjacent areas by humans could cause significant disruption of normal feeding or roosting behaviors at temporary roost sites in individual condors. Such disruption could occur as a result of noise, nighttime lighting, and passive recreation.	**MM-BTR-T (Environmental Awareness Training, Biological Monitoring, and Compliance)** ***Worker Environmental Awareness Program and Ongoing Training*** The project biologist shall perform WEAP training for all construction/contractor personnel. The project biologist shall disseminate a condor educational curriculum that shall include information concerning the life history of the California condor, where condors potentially occur within the Grapevine site, and prohibited behaviors related to condors, such as pursuit, capture, harassment, and all other potential direct interaction with the species. The focus will be to educate all Grapevine construction and work crews, particularly those engaging in activities that could put them in close proximity to areas that provide foraging habitat for California condors. ***Biological Monitoring and Compliance Documentation prior to and during Construction*** The project biologist shall perform the biological monitoring and compliance documentation for the Grapevine project, including the following: If condors are observed landing in the project area, construction within 500 feet of the sighting will cease until the bird(s) have left the area, or as otherwise authorized by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS). Should condors be found roosting within 0.5 mile of the construction area (based on USFWS data provided to Tejon Ranch), no construction activity shall occur between 1 hour before sunset to 1 hour after sunrise, or until the condors leave the area, or as otherwise directed by the USFWS. The USFWS and CDFW will be notified with 24 hours of any encounter of a condor. The USFWS contact is the Chief of the Division of Endangered Species, at 2800 Cottage Way, Suite W-2605, Sacramento, California 95825-1846, 916.414.6620 or 916.414.6600. The CDFW Central Region office is at 1234 East Shaw Avenue, Fresno, California 93710, 559.243.4005

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-C (General Construction-Related Avoidance and Minimization Measures) The following avoidance and minimization measures shall be implemented during project construction. ***Construction Work Hours*** Construction activities within 50 feet of the outside edge of the project footprint containing foraging habitat for condor will be prohibited between sunset and sunrise, and all construction-related lighting will be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the project footprint containing foraging habitat for condor will be directed away from natural areas. **MM-BTR-ED (Conservation Education and Awareness Program for Occupants)** The POA manager shall develop and implement a conservation education and awareness program informing the occupants of the special-status biological resources present within the Grapevine project site and providing information on common threats posed by the presence of people and pets to those resources. The conservation education and awareness program shall include the following topics and information: • The requirement that people and their animals stay on existing trails at all times • The requirement that pets be leashed at all times while in project open space • The requirement that dog owners pick up and pack out their animals' feces when on trails • The negative impacts of intentionally feeding wildlife and the unauthorized capture of wildlife, both of which are prohibited • The benefits of trash receptacles fitted with animal- and weather-resistant lids • The restriction and reason that pets must be leashed when on trails in or adjacent to open space • Prohibited behaviors related to condors, such as the pursuit, capture, and harassment of condors and all other potential direct interaction with the species and the negative effects of microtrash on the species • Mandatory reporting by occupants of any California condors seen on or near developed areas, including any condor seen perching on structures, drinking from standing water (e.g., swimming pools), or feeding on carcasses within an estimated 1,000 feet of development **MM-BTR-IF (Prohibition on the Intentional Feeding of Wildlife**) Intentional feeding of condor shall be prohibited on the Grapevine project site. The CC&Rs shall provide that the feeding of condor on the Grapevine project is prohibited.

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-TRAIL (Trail Signage) Prior to the approval of grading plans for trail systems, trailhead and trail signage indicating that the project open space is a biological conservation area will be installed. At a minimum, the following information will be provided at trailheads and/or on-trail signage: • Pets must be leashed at all times while in project open space. • Dog owners are required to pick up and pack out their animals' feces. • Intentional feeding of wildlife is prohibited. • People and their animals must stay on existing trails at all times. **MM-BTR-CONDOR (Required Notification of Condor Observations, Restrictions on Occupant Behavior and Activities, and Community Service)** If any California condor is observed on or near developed areas (i.e., perched or on the ground within 1,000 feet of the project footprint), the POA manager must notify the USFWS immediately. The POA manager must call the Hopper Mountain National Wildlife Refuge office (phone: 805.644.5185) and the Ventura Fish and Wildlife Office (phone: 805.644.1766) to report the incident. The USFWS will likely be concurrently monitoring the movements of any California condor that moves toward the Grapevine area (using Global Positioning System (GPS) units or telemetry). If the USFWS has data to indicate that any California condor is in the vicinity of the Grapevine area, the USFWS shall be allowed access to the project to make visual observations of the bird(s). Additionally, the POA must allow the USFWS access to attempt to haze the bird away from the area. Residents and people other than USFWS-designated personnel are not authorized to haze the condors. The USFWS shall be allowed to attempt hazing as often as it deems necessary to prevent habituation or other injury to a condor. Tejon Ranch staff, Grapevine occupants and their guests shall be required to cease any behavior that constitutes an attractive nuisance or otherwise presents an unreasonable and avoidable danger to California condors upon direction by the POA manager, in consultation with the project biologist. The CC&Rs shall provide examples and authorize the project biologist to respond to changing California condor behaviors, human activities, and other conditions with restrictions that are the least intrusive necessary to provide the protection intended. Fireworks, explosions (louder than gunshots), or other abnormally loud noises are prohibited on Grapevine open space unless the USFWS determines that no condors are present or would otherwise be adversely affected by the fireworks, explosions, or noise.

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		The POA manager shall also provide for routine community maintenance activities that will include regular efforts to eliminate microtrash on and near all roads where human presence has occurred. **MM-BTR-LIGHT (Restrictions on Operation-Related Lighting)** Exterior lighting shall comply with Kern County's dark sky ordinance. All lighting along the perimeter of the open space areas exterior to the project footprint, including the project-related open space adjacent to the California Aqueduct, Grapevine Creek, and tributary to Cattle Creek, shall be fully shielded and directed downward in a manner that will prevent light spillage or glare into the adjacent open space. Prior to issuance of external electrical lighting permits, the Kern County Building Inspection Department will verify that all exterior lighting is compliant with the Kern County dark sky ordinance. **MM-BTR-RMP (Resource Management Plan)** Prior to recordation of the final tract maps for each project phase, a resource management plan shall be prepared that specifically identifies required resource management activities and the entities that shall be responsible for managing those activities within each project phase. The following elements applicable to condor will be included in the resource management plan: Monitoring and management actions will be required that will avoid and minimize impacts to open space from off-trail use, unleashed pets, pet feces, and intentional feeding of wildlife. Hunting will be limited to guided hunts on an as-needed basis for ongoing resource management or pest control (e.g., feral pig control). Recreational hunting will become a restricted activity by phase upon recordation of the final tract maps for each project phase. Dead cattle, or other carcasses that are found or reported within 1,000 feet of a development shall be relocated to a predetermined location within an open space area. The locations where carcasses shall be relocated shall be a minimum of 1,000 feet from the edge of the project footprint. Appropriate locations for transfer of carcasses include open grasslands and savannahs where condors can readily detect carcasses and easily land and take off without encountering physical obstacles such as power lines and other utility structures. Pursuant to this measure, a telephone number for reporting dead cattle shall be provided and actively maintained. Any cattle carcasses transferred to the relocation areas shall be reported to the USFWS Condor group.

Table 3
Summary of Biological Resource Protection Measures That Apply to Condor

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
Loss of Foraging Habitat	No nesting, roosting, or important foraging habitat is located in the proposed project footprint and higher-value potential foraging habitat in the foothills will be avoided by proposed development activities. While loss of foraging habitat is not a significant impact, implementation of biological resource protection measures MM-BTR-OS and MM-BTR-OOS would further reduce effects to the condor by providing substantial available foraging habitat for condor.	**MM-BTR-OS (Dedication of On-Site Open Space, Restrictions on Allowable Uses, and Resource Management)** Approximately 3,232 acres of the Grapevine project site will continue to be zoned as Exclusive Agriculture. This open space area will be managed by Tejon Ranch Company, including activities described under MM-BTR-RMP. **MM-BTR-OOS (Conservation of Off-Site Mitigation Area)** Approximately 7,233 acres of lands on Tejon Ranch that include lands with 7,217 acres of suitable condor foraging habitat will be conserved for off-site mitigation.
Collisions with Power Lines and Utility Structures	**Operations-Related:** Potential long-term indirect impacts to condor may include an increased risk of collisions or electrocutions with power lines.	**MM-BTR-APLIC (Bird Collision Avoidance Measures for Aboveground Utilities)** No new aboveground high-voltage towers or power lines shall be built as part of the project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the Avian Protection Plan Guidelines prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC and USFWS 2005). The Avian Protection Plan Guidelines shall be used in conjunction with Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012), Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006), and Mitigating Bird Collisions with Power Lines: The State of the Art in 1994 (APLIC 1994), or the most current editions of these documents at the time of the installation or construction of these structures. Implementation of these guidelines is the responsibility of the project biologist during construction of master improvements. During the County's review of the tentative tract map for each project phase, the applicant shall provide evidence to the County Planning Department either that no new aboveground high-voltage towers or power lines shall be built as part of the project phase or, if existing utilities are to be relocated, that construction specifications are consistent with the APLIC guidance (APLIC and USFWS 2005; APLIC 2012, 2006, 1994).

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6 MEASURES THAT CONTRIBUTE TO THE CONSERVATION AND RECOVERY OF THE CONDOR

The Ranch lies at a key location within the historical California condor range, connecting California condor habitat in the southern Sierra Nevada to habitat within the Coastal and Transverse Ranges. The USFWS believes that portions of the Ranch have been and will continue to be essential California condor foraging and roosting areas for condors released in the future. Reestablishment of this pattern of movement is identified in the California Condor Recovery Plan (USFWS 1996) as essential for the species' recovery. Portions of the Ranch are, therefore, considered by the USFWS to be important to eventual reestablishment of a viable wild California condor population and to ultimate recovery of the species.

To this end, TRC and the Tejon Ranch Conservancy also committed to certain measures that are collaborative in nature and intended to contribute to the conservation and recovery of the California condor in the wild. These measures are described in detail in the TU MSHCP. In brief, in collaboration with the USFWS, TRC is responsible for funding and implementing a supplemental feeding program, if needed, to provide an ongoing source of clean, lead-free and contaminant-free food for California condors using Tejon Ranch as foraging habitat. Additionally, to ensure that the ban on lead ammunition will successfully contribute to reducing the incidence of lead poisoning to condors, TRC has embarked on an aggressive hunter awareness and enforcement program. TRC has committed to providing funding to install 25 GPS satellite tracking transmitters, or other state-of-the-art tracking systems, as appropriate, on additional condors currently not carrying such transmitters to allow for the continuous, real-time monitoring of the location of wild, free-flying California condors. Finally, as part of the TU MSHCP, TRC will hire a full-time biologist whose primary function will be to assist TRC in minimizing and mitigating any unfavorable interactions between humans and California condors.

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7 CONCLUSION

The proposed project, with the proposed project footprint restricted to the valley floor and with the implementation of the biological resource protection measures set forth in Sections 5 and 6, will avoid take of a California condor as defined by California law and take as defined by the FESA as a result of habituation or habitat loss (harm). Potentially significant impacts under CEQA will also be mitigated by the implementation of these biological resource protection measures. Further, as discussed in the TU MSHCP, TRC's permanent ban on the use of lead ammunition, permanent preservation and management of crucial condor flyway and upper-elevation foraging habitats, funding of a state-of-the-art condor tracking system and support for other condor conservation efforts, and the maintenance of grazing and lead-free hunting that improves the functions and values of the preserved foraging habitats for the condor will generate significant benefits for the species.

Finally, the critical habitat within the study area (representing only 3% of the total critical habitat within Tejon Ranch and 0.8% of all condor critical habitat) has relatively low foraging value compared to the higher-elevation preserved critical habitat on the Ranch, as borne out by the very infrequent occurrence of condor in the study area from 2005 to 2013. No nesting and roosting substrates are present within the study area and higher-value potential foraging habitat in the foothills of the study area will be avoided by development activities and preserved as open space. Off-site conservation of an additional 7,233 acres on Tejon Ranch includes lands with 7,217 acres of suitable condor foraging habitat, 1,661 acres of which is within condor critical habitat. For these reasons, the development of the proposed project will not result in the "destruction or adverse modification," as defined in the FESA, of condor critical habitat and will not adversely affect the conservation values of critical habitat.

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8 REFERENCES

14 CCR 15000 et seq. *California Environmental Quality Act (CEQA) Statutes and Guidelines*

32 FR 4001. Notice: Office of the Secretary, Native Fish and Wildlife, lists the California condor as an endangered species. March 11, 1967.

41 FR 41914–41916. "Determination of Critical Habitat for American Crocodile, California Condor, Indiana Bat, and Florida Manatee." September 24, 1976.

41 FR 41914–41916. Determination of Critical Habitat for American Crocodile, California Condor, Indiana Bat, and Florida Manatee. September 24, 1976.

79 FR 27060–27066. Proposed rule: "Interagency Cooperation—Endangered Species Act of 1973, as Amended; Definition of Destruction or Adverse Modification of Critical Habitat." May 12, 2014.

AOU (American Ornithologists Union). 2006. Check-list of North American Birds (7th edition, as revised through 47th Supplement). Washington, D.C.: AOU. http://www.aou.org/checklist/index.php3.

APLIC (Avian Power Line Interaction Committee). 1994. *Reducing Avian Collisions with Power Lines: State of the Art in 1994*.

APLIC. 2006. *Reducing Avian Collisions with Power Lines: State of the Art in 2006*.

APLIC. 2012. *Reducing Avian Collisions with Power Lines: State of the Art in 2012*.

APLIC and USFWS (Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service). 2005. *Avian Protection Plan Guidelines*.

Bloom, P.H., J.M. Scott, O.H. Pattee, and M.R. Smith. 1989. "Lead Contamination of Golden Eagles *Aquila chrysaetos* within the Range of the California Condor *Gymnogyps californianus*." In *Raptors in the Modern World*, edited by B.U. Meyburg and R.D. Chancellor, 481–482. London, U.K.: World Working Group on Birds of Prey.

Cade, T.J. 2007. "Exposure of California Condors to Lead from Spent Ammunition." *Journal of Wildlife Management* 71:2125–2133.

Cogan, C.B., J. D'Elia, K. Convery, J. Brandt, and T. Bulgerin. 2012. "Analysis of California Condor (*Gymnogyps californianus*) Activity Using Satellite Telemetry Data." *Open Ornithology Journal* 5:82–93.

Dudek. 2012. *Tehachapi Uplands Multiple Species Habitat Conservation Plan*. January 2012.

Emslie, S.D. 1987. "Age and Diet of Fossil California Condors in Grand Canyon, Arizona." *Science* 237:768–770.

Gifford Pinchot Task Force v. United States Fish & Wildlife Service. 378 F.3d 1059. 9th Cir. 2004.

Grantham, J. 2007a. "Reintroduction of California Condors into their Historic Range: The Recovery Program in California." In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall, 123–128. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

Grantham, J. 2007b. "The State of the Condor." *Western Tanager* 73:1–3.

Grantham, J. 2008. Personal communication from J. Grantham (USFWS).

Hall, M., J. Grantham, R. Posey, and A. Mee. 2007. "Lead Exposure among Reintroduced California Condors in Southern California." In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

Hunt, W.G., C.N. Parish, S.C. Farry, T.G. Lord, and R. Seig. 2007. "Movements of Introduced California Condors in Arizona in Relation to Lead Exposure." In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

Houston, D.G., A. Mee, and M. McGrady. 2007. "Why Do Condors and Vultures Eat Junk? The Implications for Conservation." *Journal of Raptor Research* 41(3): 235–238.

Johnson, M., J. Kern, and S.M. Haig. 2010. *Analysis of California Condor (*Gymnogyps Californianus*) Use of Six Management Units Using Location Data from Global Positioning System Transmitters, Southern California, 2004–09—Initial Report*. Open-File Report 2010–1287. Reston, Virginia: U.S. Geological Survey.

Janssen, D.L., J.E. Oosterhuis, J.L. Allen, M.P. Anderson, D.G. Kelts, and S.N. Wiemeyer. 1986. "Lead Poisoning in Free Ranging California Condors." *Journal of the American Veterinary Medicine Association* 189:1115–1117.

Kelly, T.R., J. Grantham, D. George, A. Welch, J. Brandt, L.J. Burnett, K.J. Sorenson, M. Johnson, R. Poppenga, D. Moen, J. Rasico, J.W. Rivers, C. Battistone, and C.K. Johnson. 2014. "Spatiotemporal Patterns and Risk Factors for Lead Exposure in Endangered California Condors during 15 Years of Reintroduction." *Conservation Biology* 28(6): 1721–1730.

Koford, C.B. 1953. "The California Condor." *National Audubon Society Research Report* 4:1–154.

Ligon, J.D. 1967. "Relationships of the Cathartid Vultures." *Occasional Paper of the Museum of Zoology, University of Michigan* 651:1–26.

Mallette, R.D., and J.C. Borneman. 1966. "First Cooperative Survey of the California Condor." *California Fish and Game* 52:185–203.

Mee, A., J.A. Hamber, and J. Sinclair. 2007. *Low Nest Success in a Reintroduced Population of California Condors. In California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

Meretsky, V.J., N.F. Snyder, S.R. Beissinger, D.A. Clendenen, and J.W. Wiley. 2000. "Demography of the California Condor: Implications for Re-establishment." *Conservation Biology* 14:957–967.

Meretsky, V.J., and N.F.R. Snyder. 1992. "Range Use and Movements of California Condors." *Condor* 94:313–335.

Meretsky, V.J., N.F. Snyder, S.R. Beissinger, D.A. Clendenen, J.W. Wiley. 2001. "Quantity Versus Quality in California Condor Reintroduction: Reply to Beres and Starfield." *Conservation Biology* 15:1449–1451.

Miller, A.H., I.I. McMillan, and E. McMillan. 1965. "The Current Status and Welfare of the California Condor." *National Audubon Society Research Report* 6:1–61.

Pattee, O.H., P.H. Bloom, J.M. Scott, and M.R. Smith. 1990. "Lead Hazards within the Range of the California Condor." *Condor* 92:931–937.

Rea, A.M. 1983. "Cathartid Affinities: A Brief Overview." In *Vulture Biology and Management*, edited by S.R. Wilbur and J.A. Jackson, 26–54. Berkeley and Los Angeles, California: University of California Press.

Risebrough, R. 2008. Personal communication.

Sibley, F. 1969. *Effects of the Sespe Creek Project on the California Condor*. Laurel, Maryland: U.S. Fish and Wildlife Service.

Sibley, C.G., and J.E. Ahlquist. 1990. *Phylogeny and Classification of Birds: A Study in Molecular Evolution*. New Haven, Connecticut: Yale University Press.

Snyder, N.F.R. 2007. "Limiting Factors for Wild California Condors." In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

Snyder, N.F.R., R.R. Ramey, and F.C. Sibley. 1986. "Nest-Site Biology of the California Condor." *Condor* 88:228–241

Snyder, N.F.R., E.V. Johnson, and D.A. Clendenen. 1987. "Primary Molt of California Condors." *Condor* 89:468–485.

Snyder, N.F.R., and E.V. Johnson. 1985. "Photographic Censusing of the 1982–1983 California Condor Population." *Condor* 87:1–13.

Snyder, N.F.R., and J.A. Hamber. 1985. "Replacement-Clutching and Annual Nesting of California Condors." *Condor* 87:374–378.

Snyder, N.F.R., and H. Snyder. 1989. "Biology and Conservation of the California Condor." In *Current Ornithology*, edited by D.M. Powers, 175–267. Santa Barbara, California: Santa Barbara Museum of Natural History.

Snyder, N., and H. Snyder. 2000. *The California Condor: A Saga of Natural History and Conservation*. San Diego, California: Academic Press.

Snyder, N.F.R., and H. Snyder. 2005. *Introduction to the California Condor*. Berkeley, California: University of California Press.

Snyder, N.F.R., and N.J. Schmitt. 2002. "California Condor (*Gymnogyps californianus*)." In *The Birds of North America*, No. 610, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Birds of North America Inc.

Studer, C.D. 1983. "Effects of Kern County Cattle Ranching on California Condor Habitat." Master's thesis; Michigan State University, East Lansing.

Sullivan, K., R. Sieg, and C. Parish. 2007. “Arizona’s Efforts to Reduce Lead Exposure in California Condors.” In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists’ Union.

Taber, R.D., and R.F. Dasmann. 1958. “The Black-Tailed Deer in the Chaparral.” *California Department of Fish and Game Bulletin* 8:1–163.

TRC (Tejon Ranch Company), Sierra Club, National Audubon Society, National Resources Defense Council, Endangered Habitats League, Planning and Conservation League, Tejon Ranch Conservancy, and Centennial Founders LLC, Tejon Industrial Corp., and Tejon Mountain Village LLC. 2008. *Tejon Ranch Conservation and Land Use Agreement*. June 17, 2008. http://www.sec.gov/Archives/edgar/data/96869/000119312508138009/dex1028.htm.

USFWS (U.S. Fish and Wildlife Service). 1974. *California Condor Recovery Plan*. Washington, D.C.: California Condor Recovery Team, U.S. Fish and Wildlife Service.

USFWS. 1980. *California Condor Recovery Plan*. Washington, D.C.: California Condor Recovery Team, U.S. Fish and Wildlife Service.

USFWS. 1984. *California Condor Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service.

USFWS. 1996. *California Condor Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service.

USFWS. 2004. Application of the “Destruction or Adverse Modification” Standard under Section 7(a)(2) of the Endangered Species Act (Adverse Modification memorandum). Distributed to the USFWS regional directors by the USFWS Director’s office. December 9, 2004.

USFWS. 2012a. *Final Environmental Impact Statement for the Tehachapi Uplands Multiple Species Habitat Conservation Plan*. October 2012.

USFWS. 2012b. *Supplemental Draft Environmental Impact Statement for the Tehachapi Uplands Multiple Species Habitat Conservation Plan*. Volume 1. January 2012.

USFWS. 2013a. “Final_2013—Known locations of California condors fitted with GPS tracking devices” [digital GIS data]. Ventura, California: USFWS, Hopper Mountain National Wildlife Refuge Complex. Received February 11, 2014.

USFWS. 2013b. *Biological Opinion on the Proposed Issuance of an Incidental Take Permit for the Tehachapi Uplands Multiple Species Conservation Plan* (8-8-12-FW-55). April 26, 2013.

USFWS. 2013c. 5-Year Review: *Summary and Evaluation of California Condor* (Gymnogyps californianus). U.S. Fish and Wildlife Service Pacific Southwest Region. June 2013.

USFWS. 2014a. "Condor Monthly Status Report and Locations 2014-3-31." Accessed June 13, 2014. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/condor/docs/StatusReport.pdf.

USFWS. 2014b. "Critical Habitat Fact Sheet." Accessed June 13, 2014. http://www.fws.gov/midwest/endangered/saving/CriticalHabitatFactSheet.html..

USFWS. 2014c. "Federal Agencies Propose Revised Rules to Improve Implementation of the Endangered Species Act." May 9, 2014. Accessed January 28, 2015. http://www.fws.gov/news/ShowNews.cfm?ID=E1D52343-D32C-9385-D56A972A7738C7EE

USGS (U.S. Geological Survey). n.d. 7.5-Minute Series, Grapevine and Pastoria Creek Quadrangles.

Wiemeyer, S.N., J.M. Scott, M.P. Anderson, P.H. Bloom, and C.J. Stafford. 1988. "Environmental Contaminants in California Condors." *Journal of Wildlife Management* 52:238–247.

Wilbur, S.R. 1973. "The California Condor in the Pacific Northwest." *Auk* 90:196–198.

Wilbur, S.R. 1975. "California Condor Plumage and Molt as Field Study Aids." *California Fish and Game* 61:144–148.

Wilbur, S.R. 1978. "The California Condor, 1966–76: A Look at Its Past and Future." *U.S. Fish and Wildlife Service North American Fauna* 72.

Wilbur, S.R. 1980. "Estimating the Size and Trend of the California Condor Population, 1965–1978." *California Fish and Game* 66:40–48.

Wilbur, S.R., and L.F. Kiff. 1980. "The California Condor in Baja California, Mexico." *American Birds* 34:856–859.

Woods, C.P., W.R. Heinrich, S.C. Farry, C.N. Parish, S.A.H. Osborn, and T.J. Cade. 2007. "Survival and Reproduction of California Condors Released in Arizona." In *California Condors in the 21st Century*, edited by A. Mee and L.S. Hall. Cambridge, Massachusetts: Nuttall Ornithological Club and Washington, D.C.: American Ornithologists' Union.

APPENDIX L

Golden and Bald Eagle Technical Report

Golden and Bald Eagle Technical Report
Grapevine Project

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APPENDIX L
Golden and Bald Eagle Technical Report: Grapevine Project

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ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
amsl	above mean sea level
APLIC	Avian Power Line Interaction Committee
BAGEPA	Bald and Golden Eagle Protection Act
BCC	bird of conservation concern
BTR	Biological Resources Technical Report
CC&Rs	Covenants, Conditions and Restrictions
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
DDT	dichlorodiphenyltrichloroethane
FEIR	Final Environmental Impact Report
FESA	federal Endangered Species Act
HMANA	Hawk Migration Association of North America
I-	Interstate
IPM	Integrated Pest Management Plan
NOAA	National Oceanic and Atmospheric Administration
MBTA	Migratory Bird Treaty Act
mph	miles per hour
NCCP	Natural Communities Conservation Plan
POA	Property Owners Association
Ranch	Tejon Ranch
SR-	State Route
TIC	Tejon Industrial Complex
TMV	Tejon Mountain Village
TRC	Tejon Ranch Company
TU MSHCP	Tehachapi Upland Multiple Species Habitat Conservation Plan
USFWS	U.S. Fish and Wildlife Service
VFHCP	Valley Floor Habitat Conservation Plan

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1 INTRODUCTION

1.1 Purpose

This document is an appendix to the Biological Resources Technical Report (BTR) for the proposed Grapevine Project (proposed project). Additional information regarding other biological resources in the Grapevine study area and the overall setting is provided in the BTR.

The purpose of this appendix is to address the bald eagle (*Haliaeetus leucocephalus*; federally delisted and a U.S. Fish and Wildlife Service (USFWS) bird of conservation concern (BCC), Migratory Bird Treaty Act (MBTA) protected species, state-listed endangered, and California Department of Fish and Wildlife (CDFW) fully protected species) and golden eagle (*Aquila chrysaetos*, BCC, MBTA fully protected), and the potential effect of the proposed project on these eagles' use of the study area, which includes the 8,010-acre Grapevine Specific Plan Area and off-site impact areas, after project buildout.

Section 1 describes the purpose and scope of this appendix, the location of the study area, and an overview of the proposed project. Section 2 describes the regulatory setting. Section 3 provides background information for these two species, including regulatory status and history, natural history and occurrence, population trends, reason for decline and ongoing threats, and conservation/management efforts. Section 4 describes the eagles' occurrence on and use of Tejon Ranch (or the Ranch), particularly in relation to the study area, and the methods and results for these surveys. Section 5 discusses the potential direct and indirect impacts of the proposed project on bald and golden eagles and existing nests and nesting and foraging habitat. Section 6 identifies biological resource protection measures that would avoid, minimize, and mitigate potential impacts to bald and golden eagles. Section 7 analyzes the potential for take of individuals under the Bald and Golden Eagle Protection Act (BAGEPA) with implementation of biological resource protection measures and other measures (listed in Appendix A to the BTR). Section 8 lists references cited in this report.

1.2 Project Background

The study area is located in the west-central portion of the Ranch and includes adjacent off-site impact areas. The approximately 270,000-acre Ranch includes a large portion of the Tehachapi Mountains and smaller portions of the San Joaquin and Antelope Valleys. Generally, the Ranch extends from Interstate 5 (I-5) on the western side to State Route 58 (SR-58) on the northern side and SR-138 on the southern side (see Figure 1, Regional Location). The study area is entirely within unincorporated Kern County, just south of the junction of I-5 and SR-99. Downtown Bakersfield is approximately 25 miles north of the study area. The majority of the study area is on the east side of I-5, but smaller portions lie on the west side of I-5 (Figure 1). The study area is bisected by the California Aqueduct (see Figure 2, Vicinity Map).

The 8,010-acre Grapevine Specific Plan Area is within a 15,644-acre area identified for development in the Tejon Ranch Land Use and Conservation Agreement (Ranchwide Agreement; TRC et al. 2008), known as the Ranchwide Agreement Grapevine Development Area. The Ranchwide Agreement, a landmark agreement reached in 2008 with leading environmental organizations (including the Sierra Club, Natural Resources Defense Council, California Audubon Society, Endangered Habitats League, and Planning and Conservation League) to permanently preserve over 90% of Tejon Ranch as open space and limit development to designated areas near existing infrastructure such as I-5. The precise boundaries of the proposed project footprint may be further adjusted based on the results of the ongoing environmental review and permitting process for the proposed project, but would remain within the Ranchwide Agreement Grapevine Development Area, except where off-site impacts are necessary, such as off-site traffic improvements.

The Specific and Community Plan (collectively referred to as the "Specific Plan") designates approximately 3,232 acres (or about 40%) for ongoing open space uses (with grazing and open space as the predominant land uses) and approximately 4,778 acres (about 60%) for development of a new residential community and employment center to complement the economic expansion and job growth that has occurred on the Tejon Ranch Commerce Center, which is located immediately north of the study area (see Figure 2). The proposed project would feature a series of compact neighborhoods linked by bicycle and pedestrian trails that provide convenient access to grocery and drugstores, professional services, schools, and parks, while also preserving extensive open space and agricultural uses. See the BTR for additional information regarding the proposed project.

The proposed project's impacts are categorized as either on-site impacts, which are impacts that occur within the 8,010-acre Grapevine Specific Plan Area, or off-site impacts, which are impacts that are outside of the 8,010-acre Grapevine Specific Plan Area but are associated with the proposed project. The proposed project footprint is the area in which all of the currently defined ground-disturbing direct impacts would occur and totals 5,268 acres. Of the 5,268 acres of land that would be subject to ground-disturbing activities, such as grading, 5,191 acres would occur on site and 77 acres would occur off site. After buildout, there would be approximately 4,778 acres of development-zoned uses; thus, approximately 414 acres of land in the proposed project footprint would be disturbed during construction of the proposed project, but would be designated as open space after proposed project buildout. For example, trails and detention basins in open space are included in the 5,268-acre proposed project footprint along with graded areas that would be restored following construction. See Section 1 of the BTR for additional information.

2 REGULATORY SETTING

Several federal and state laws pertain to the protection of bald and golden eagles and their associated habitat. These are summarized below.

2.1 Federal

2.1.1 Bald and Golden Eagle Protection Act

BAGEPA (16 U.S.C. 668–668(d)) is the primary law protecting bald and golden eagles. BAGEPA prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. "Take" under this statute is defined as to, "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." "Disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3).

In addition to immediate impacts to individuals or occupied nests, the "take" definition also covers impacts from human alterations to an area around a previously used nest site during a time when eagles are not present, "if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment" (USFWS 2012a).

The take analysis under BAGEPA is narrower than the federal Endangered Species Act (FESA) as take under BAGEPA is defined to mean harm caused by actions directed at eagles themselves and not harm resulting from modifications to eagle habitat (72 FR 31132). However, to the extent that a loss of, or other effects to, habitat cause effects on an eagle within the definition of *take* under BAGEPA and its implementing regulations, such effects are prohibited without authorization. To constitute take under the BAGEPA definition of *disturb*, a loss of habitat must agitate or bother an eagle to the extent that the loss causes or is likely to cause an injury to, a decrease in the productivity of, or nest abandonment by, an eagle.

In 2009, USFWS finalized a new rule under BAGEPA that allows authorizes the limited "take" of bald and golden eagles, including active eagle nests where the take to be authorized is associated with otherwise lawful activities[1]. Take authorizations are limited to 5 years and must include mitigation that will result in net benefits to the affected eagle species (74 FR 46836–46879).

2.1.2 Federal Endangered Species Act

U.S. Congress FESA in 1973 (16 U.S.C. 1531 et seq.), as amended, and the implementing regulations (50 CFR 17.1 et seq.) are administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service for certain marine species, to provide a means for listing and protecting endangered and threatened species and their designated critical habitats, if applicable. Neither the bald nor golden eagle are currently federally listed.

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973." The USFWS' Birds of Conservation Concern list is the most recent effort to carry out this mandate. USFWS states that "the overall goal of the Birds of Conservation Concern is to accurately identify the migratory and non-migratory bird species (beyond those already designated as Federally threatened or endangered) that represent the [USFWS's] highest conservation priorities" (USFWS 2015). Both bald and golden eagle are on the USFWS' Birds of Conservation Concern list (USFWS 2008).

2.1.3 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703–712) protects migratory birds and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, export, and take. For purposes of the MBTA, take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). The MBTA applies to migratory birds identified in 50 CFR 10.13. In general, the MBTA protects all birds occurring in the United States except for house (English) sparrow (*Passer domesticus*), European starlings (*Sturnus vulgarisi*), rock doves (pigeons; *Columba livia*), any recently

1 On December 9, 2013, the USFWS further revised the 2009 rule and modified the legal standards for obtaining and operating under an authorized incidental take permit for bald or golden eagles. The revised regulations, called the "Tenure Rule," extended the permit duration from 5 years up to 30 years. On June 19, 2014, the American Bird Conservancy and other individual plaintiffs filed a lawsuit against the USFWS challenging that the agency's determination to extend the maximum term for an incidental eagle take permit to 30 years violated the National Environmental Policy Act (NEPA) and BAGEPA. On August 11, 2015, the U.S. District Court concluded that USFWS violated NEPA's procedural requirements by not preparing an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) and that the 30-year Tenure Rule must, therefore, be set aside and remanded to USFWS.

listed unprotected species in the Federal Register, and non-migratory upland game birds. The USFWS has regulatory authority over implementation and enforcement of the MBTA.

2.2 State

2.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) is administered by the CDFW. CESA prohibits the take of plant and animal species designated by the Fish and Game Commission as endangered or threatened in the State of California. CDFW regulations are set forth in the Fish and Game Code. Under CESA, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species 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 or its habitat which would prevent jeopardy." Animal species designated as endangered or threatened under CESA are listed in Title 14 of the California Code of Regulations, Section 670.5 (14 CCR 670.5). Section 2081 of CESA authorizes the take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. A CESA permit may not authorize the take of fully protected species that are protected in other provisions of the Fish and Game Code.

2.2.2 California Fish and Game Code

California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) designate certain species as fully protected and provide that those species may not be taken or possessed except pursuant to an approved Natural Communities Conservation Plan (NCCP) or a permit from CDFW for "necessary scientific research, including efforts to recover fully protected, threatened, or endangered species." CDFW cannot authorize take or possession of fully protected species for necessary scientific research if that research is conducted in connection with mitigation for a project (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515).

In addition to CESA and Section 3511, the Fish and Game Code includes other provisions for protection of birds, nests, and eggs. It is generally unlawful to take, possess, or needlessly destroy the nests or eggs of any bird and to take or possess any migratory nongame bird designated in the MBTA, except as allowed by the MBTA (California Fish and Game Code, Sections 3503 and 3513). It is unlawful to take, possess, or destroy any birds of prey, or to take, possess, or destroy nests or eggs of such birds (California Fish and Game Code, Section 3503.5). Birds of prey refer to species in the orders Falconiformes, including bald and golden eagle, and Strigiformes.

2.2.3 California Environmental Quality Act

CEQA, as applied to biological resources, requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. CEQA also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guideline Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guideline Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline Section 15380(c).

Section IV, Appendix G (Environmental Checklist Form) of the CEQA Guidelines (14 CCR 15000 et seq.) provides a range of questions for each environmental resource issue listed in the appendix to be considered by lead agencies when evaluating the potential impacts of a project on these resources. For biological resources, one question is if the project would "have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service." Furthermore, Section 15065 of the CEQA Guidelines states, relative to impacts on special-status species, that a lead agency shall find that a project may have a significant effect on the environment if the project has the potential to "substantially reduce the habitat of a fish or wildlife species" or to "substantially reduce the number or restrict the range of an endangered, rare, or threatened species."

3 BALD AND GOLDEN EAGLE BACKGROUND INFORMATION

3.1 Bald Eagle

3.1.1 Status and Regulatory History

The bald eagle received initial federal protection with the passage of BAGEPA of 1940 (16 U.S.C. 668 et seq.). On March 11, 1967, all bald eagles south of 40 degrees (°) north latitude were listed as endangered under the Endangered Species Preservation Act of 1966 (32 FR 4001). On February 14, 1978, under FESA, the bald eagle was listed as "endangered" in all of the 48 contiguous states except Michigan, Minnesota, Wisconsin, Washington, and Oregon (43 FR 6230–6233). On July 12, 1995, all bald eagles in the contiguous 48 states were federally down-listed as "threatened" (60 FR 36000–36010) and delisted entirely in 2007 (64 FR 36454; 72 FR 37346–37372). The State of California designated the bald eagle an fully protected species in the 1960s and listed it as endangered on June 27, 1971 (CDFG 2011). Bald eagle is also protected under the MBTA and is considered a USFWS BCC species.

3.1.2 Natural History

Bald eagles typically nest in large trees in forested areas, often in conifers, but also in hardwoods, such as sycamores and oaks, or on cliff faces (Anthony et al. 1982; USFWS 1986; CDFG 2012b). They usually nest within 2 kilometers (approximately 1.24 miles) of water, often much closer, and are generally isolated from human activity and disturbance; they also often nest in one of the largest trees in a stand and in a prominent location providing vistas over the surrounding area (Buehler 2000; USFWS 1986). In winter, bald eagles typically inhabit areas less than 500 meters (1,625 feet) in elevation, but may be found up to 2,500 meters (8,125 feet) in some western states (Buehler 2000). They roost communally in stands of both hardwoods and conifers that provide access to foraging habitat and protection from the weather (Anthony et al. 1982).

The quality of foraging habitat associated with large bodies of water depends on such factors as abundance of the fish that bald eagles prey upon; the presence of shallow water such as tidal flats, which may increase the availability of prey; and the level of human disturbance (Buehler 2000; Stalmaster and Kaiser 1998; Watson et al. 1991; Garrett et al. 1993). The presence of suitable perch sites is also an important factor. In addition to being near water with ample prey, perch sites tend to be those that provide good views of the surrounding area and are often the highest site available (USFWS 1986). In arid climates of Southern and Central California, reservoirs provide important foraging habitat during both the breeding season and winter (CDFG 2012b; Lehman 1994; Roberson 2002; Unitt 2004).

The bald eagle prefers to feed on fish in most parts of its range, although food preferences vary according to region and season, and may reflect locally available resources. Diet may consist of waterfowl, gulls, and other birds; a variety of mammals, reptiles, and amphibians; carrion; and even garbage (Buehler 2000; USFWS 1986; Ewins and Andress 1995; Mabie et al. 1995). Bald eagles in the Pacific states rely heavily on runs of anadromous fish such as salmon. At reservoirs in California, warm water and nongame fish species are the most important dietary items for breeding bald eagles (USFWS 1986). In some areas, birds such as American coots (*Fulica americana*) and mallards (*Anas platyrhynchos*) may sometimes provide a more important food source than fish (Jackman et al. 1999), but prey items collected at California nests also include a variety of other water-dependent birds, as well as ring-necked pheasants (*Phasianus colchicus*), American crows (*Corvus brachyrhynchos*), muskrats (*Ondatra zibethica*), jackrabbits (*Lepus* spp.), and ground squirrels (*Spermophilus* spp.) (USFWS 1986).

Bald eagles visually locate prey while perched near or soaring over foraging habitat, then stoop (i.e., swoop) suddenly and attempt to capture prey with their talons. Eagles may stoop repeatedly on ducks and other birds on the water. They also steal prey from other bald eagles, osprey (*Pandion haliaetus*), herons, and sometimes mammals, or displace other scavengers, such as crows, coyotes (*Canis latrans*), or domestic dogs (*Canis lupus familiaris*), from carrion. Cooperative hunting of birds and mammals has been observed (Buehler 2000). In addition, bald eagles likely use the presence of other eagles as cues to find food, and may even follow other eagles to food sources (Knight and Knight 1983).

Migratory patterns of bald eagles are complex and reflect a variety of circumstances, including age of the individual, location of the breeding site, severity of climate, and food availability (Buehler 2000). Eagles from northern populations migrate south between August and January, with subadults leaving the breeding grounds earlier than adults (Buehler 2000). The migratory movements of salmon affect the movements of both adults and subadults in the Pacific Northwest, where many bald eagles move north in late summer to feed during the salmon run on the Chilkat River in Alaska. Adults from Alaska move south in fall, arriving in November and December. Adults in the southern part of the species' range are generally not migratory, but remain near the nest sites year-round (Buehler 2000). In inland areas of Central and Southern California, wintering bald eagles from northern latitudes generally arrive in October or November and remain until March or April (Lehman 1994; Roberson 2002; Unitt 2004; Linthicum et al 2007).

The size of defended territories varies with nesting density and food supply. Recorded densities have ranged from 0.5 to 4.0 square kilometers (0.2 to 1.5 square miles) (Buehler 2000). Bald eagles feed within home ranges that are larger than their defended territories. Home ranges are also larger in winter than in summer. One study of a pair of bald eagles found that the home ranges for a male and female in Saskatchewan during the breeding season were 7.0 and 4.0 square kilometers (2.7 and 1.5 square miles), respectively, while a study of home ranges in the Columbia River Estuary of Oregon and Washington recorded an average size of 22.0 square kilometers (8.5 square miles) (Gerrard et al. 1992; Garrett et al. 1993). By contrast, winter home ranges vary from 16.0 to more than 55,000 square kilometers (6.2 to more than 21,235 square miles), possibly suggesting that some individuals wander nomadically in response to changes in food availability (Buehler 2000).

Nest building or maintenance may begin as early as September in the southern part of the range and as late as spring farther north (Buehler 2000). Egg-laying also varies with latitude, beginning as early as October in Florida and as late as the end of May in Alaska and Yukon Territory. Clutches range from one to three eggs (Buehler 2000). Incubation lasts approximately 35 days, and young depart the nest anywhere from 8 to 14 weeks of age (Buehler 2000). Young associate with their parents for as long as 11 weeks after fledging, although pairs radio-tagged in Northern California left between 2 and 5 weeks after fledging, or 14 to 17 weeks after hatching (Buehler 2000; Hunt et al. 1992). Departure dates in Northern California ranged from July 19 to August 22 (Hunt et al. 1992).

Little information is available that suggests adult bald eagles are subject to predation, except when sick, injured, or suffering from starvation. Eggs, nestlings, and fledglings are vulnerable to predation from crows and ravens, gulls, black bears (*Ursus americanus*), and raccoons (*Procyon lotor*). Nestlings have also been recorded killed by hawks, owls, bobcats (*Lynx rufus*), and wolverines (*Gulo gulo*) (Buehler 2000).

3.1.3 Population Trends

Bald eagle populations were lower over much of the species' range when southern populations were federally listed in 1967 (Buehler 2000). Since the advent of federal protections, and the ban of the pesticide dichlorodiphenyltrichloroethane (DDT) in 1972, populations have greatly increased. The estimated number of pairs in the contiguous 48 states rose from 417 in 1963 to more than 5,000 by 1997 (Buehler 2000; 64 FR 36456–36464). At least some northern populations increased during the same period. For example, the estimated population in southeast Alaska rose from 7,230 in 1967 to 12,075 in 1987 (Jacobson 2008). In the seven-state Pacific recovery area, encompassing California, Oregon, Washington, Idaho, Nevada, Montana, and Wyoming, nesting populations increased dramatically between the 1970s and 1985. Increases were particularly notable in Oregon, where the number of occupied territories rose from 35 in 1978 to 132 in 1985, and in Montana, where the number rose from 9 to 51 during the same period. Gains in California were more modest, increasing from 40 occupied territories in 1977 to 65 in 1984, and then dropping to 59 in 1985 (USFWS 1986). Yearly estimates increased during the 1990s, from a low of 90 occupied territories in 1991 to a high of 151 in 1999, but fluctuated for much of the following decade, with 105 known territories in 2009 and 2010 (CDFG 2012a). Midwinter surveys conducted in California in 2011 and 2012 observed 179 and 274 adult bald eagles, respectively (Steenhof et al 2008).

3.1.4 Ongoing Threats

DDT was widely responsible for reproductive failure among bald eagles in the contiguous 48 states prior to the pesticide's banning in 1972 (Buehler 2000; 72 FR 37346–7372). More recently, many other pesticides and chemicals that likely contributed to bald eagle mortality have been banned. But other environmental contaminants, including the pesticides organophosphorus and carbamate, as well as various heavy metals, continue to threaten bald eagle populations (Buehler 2000). In addition, lead poisoning from scavenged waterfowl and secondary poisoning due to vertebrate pest control may contribute to some bald eagle deaths (Buehler 2000; USFWS 1986), although Kramer and Redig (1997) challenged the role of lead shot in lead poisoning of both bald eagles and golden eagles in Minnesota. In many parts of the species' range, such as Alaska, widespread shooting and trapping contributed to declines in bald eagle populations (Buehler 2000; Jacobson 2008). From 1917 to 1952, 128,273 bounties were paid for bald eagles by the Territory of Alaska to protect salmon fisheries (Robards and King 2008). Despite the lack of data documenting the current effects of intentional shooting and trapping, "human persecution" is believed to have declined since 1970 (Buehler 2000). However, USFWS (1986) cited widespread, if much reduced, shooting of bald eagles into the 1980s.

Currently, degradation of breeding and wintering habitat is considered an important threat to the bald eagle, particularly through loss of nesting, roosting, and perching habitat near shorelines and of aquatic foraging habitat (Buehler 2000). A variety of studies also demonstrate how human activities can disrupt bald eagle foraging, roosting, nesting, and perching (USFWS 2007a). Recreational activities that can negatively affect eagles include hiking, boating, tubing, and off-road vehicle operation (Brown and Stevens 1997; Grubb and King 1991; Stalmaster and Kaiser 1998). In addition, USFWS (2013) has identified renewable development as a new and important threat to bald eagles, especially as a result of collisions with wind turbines. Electrocution through contact with power lines has long been, and still remains, a threat to bald eagles (USFWS 1986; Buehler 2000). Other threats to bald eagles include ingestion of microtrash, collisions with motor vehicles, and entanglement in fishing nets (Buehler 2000).

3.1.5 Conservation and Management

During the period when the bald eagle was listed, a variety of management activities were undertaken to protect the species. These included efforts in both the United States and Canada to reduce shooting of bald eagles, incorporation of new designs to limit electrocution from power lines, population monitoring in the form of midwinter counts, cooperation between agencies and timber companies to preserve bald eagle nests, restrictions on land use within designated protective buffer zones around eagle nests, purchase of habitat by organizations such as the Nature Conservancy, "hacking" projects to aid in the reestablishment of bald eagles in historic parts of their range such as on the Channel Islands of California, and extensive research (USFWS 1986; Buehler 2000). Currently, bald eagles receive protections through at least 131 different habitat conservation plans in the United States (USFWS 2012b), including the TU MSHCP on Tejon Ranch.

Although the bald eagle was federally delisted in 2007, the USFWS continues to monitor the status of the species, under the *Post-Delisting Monitoring Plan for the Bald Eagle (*Haliaeetus leucocephalus*) in the Contiguous 48 States* (USFWS 2009). This plan involves states, tribes, federal agencies, and other stakeholders in a nationwide effort to conduct periodic sampling of bald eagle nesting populations, review data on significant changes in bald eagle habitat, develop and maintain a database on investigations of effects of contaminants on bald eagles and other birds of prey, and track causes of mortality among bald eagles (USFWS 2009). In addition, USFWS (2013) has issued new guidelines under BAGEPA relating to protections of bald and golden eagles from impacts due to wind energy development. In 2009, USFWS also finalized a new rule that allows authorization of "take" of bald eagles by issuing permits under BAGEPA. Authorizations of limited take will include mitigation that will result in net benefits to bald eagles (74 FR 46836–46879).

3.2 Golden Eagle

3.2.1 Status and Regulatory History

Golden eagles are listed as fully protected in California. The classification of fully protected was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. fully protected species may not be "taken" or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Similar to bald eagles, golden eagles are also protected by BAGEPA (16 U.S.C. 668 et seq.). The golden eagle is also protected under the MBTA and is a USFWS BCC.

3.2.2 Natural History

The golden eagle is the most widespread species of the genus *Aquila*, "booted eagles." There are five recognized subspecies of golden eagle, but the variations appear to be only clinal (Brown and Amadon 1968; Dunstan 1989), meaning variations are slight and likely correlated with differing environmental transitions such as altitude, temperature, and/or moisture. *Aquila chrysaetos canadensis* is the subspecies resident to North America. Predominantly a western North American species, its nesting range extends from northern and western Alaska east to Labrador and south to southern Alaska, Baja California, western and central Texas, western Oklahoma, western Kansas, and the highlands of northern Mexico (AOU 2014; DeGraaf et al.

1991). The golden eagle has never been a common nesting species in the eastern United States. A remnant eastern population of golden eagles extends from Quebec into the Appalachian Mountains (Dunstan 1989). Fewer than 30 historical breeding territories are documented in the northeast, primarily in New York, New Hampshire, and Maine (Todd 1989).

The golden eagle is a partial migrant, with the northern nesting birds migrating south in winter and those in more temperate climates remaining within nesting territories year round (Brown and Amadon 1968). Golden eagles migrate from the Canadian provinces and northern tier and northeastern states to areas that are milder in the winter and/or may have less snow cover. Wintering golden eagles have been noted in all states in the continental United States (Wheeler 2003, 2007).

Most golden eagles in California are year-round residents, generally inhabiting mountainous and hilly terrain throughout the open areas of the state and can occur at elevations ranging from sea level up to 3,833 meters (11,500 feet) above mean sea level (amsl) (Grinnell and Miller 1944). However, migrants also occur in California, which can complicate the understanding of golden eagle populations in California.

The golden eagle inhabits open country from barren areas to open coniferous forests. They occur primarily in hilly and mountainous regions, but also in rugged deserts, on the plains, and in tundra. Golden eagles prefer cliffs and large trees with large horizontal branches and for roosting and perching (DeGraaf et al. 1991). Golden eagles are an upper-trophic aerial predator and eat small to mid-sized reptiles, birds, and mammals up to the size of mule deer (*Odocoileus hemionus*) fawns and coyote pups (Bloom and Hawks 1982). They are also known to scavenge and feed on carrion (Kochert et al. 2002).

Golden eagles only produce one brood per season; however, they will re-nest if the first nesting attempt fails (Kochert et al. 2002). Clutch sizes are typically from one to three eggs, with an incubation time of 43 to 45 days (Beebe 1974). A study in southwestern Idaho showed that out of 11 nesting attempts, female golden eagles did all nocturnal and 82.6% of diurnal incubation (Collopy 1984). Egg hatching is asynchronous (Watson 1997), with one study showing an interval between first and second eggs of 96.5 hours (or approximately 4 days) (Aoyama et al. 1988).

Nestlings fledge as early as 45 days of age and as late as 81 days (Gordon 1955). In a study in Denali National Park, Alaska, dispersal of fledglings and independence from their parents occurred between 32 and 70 days after fledging (Kochert et al. 2002). First-year eagles banded in Snake River Canyon, Idaho, dispersed from natal areas in nearly all directions (Steenhof et al. 1984). Most individuals did not move beyond boundaries of adjacent states; 78% of encounters were less than 100 kilometers (approximately 62 miles), and 1% of encounters were greater than 1,000 kilometers (approximately 620 miles) from banding locations (Steenhof et al. 1984).

There are no records of predation on golden eagle eggs. Predation on nestlings and adults is rare, and it was recorded in areas where wolverines and grizzly bears occur (Kochert et al. 2002).

Golden eagles avoid nesting near urban habitat (e.g., Scott 1985), and do not generally nest in densely forested habitat. Golden eagles nest on cliffs, in the upper one-third of deciduous and coniferous trees, or on artificial structures such as windmills, transmission towers, and artificial nesting platforms, etc. (Phillips et al. 1990; Kochert et al. 2002). Golden eagles build nests on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat (Beecham 1970; Menkens and Anderson 1987). Usually, sticks and soft material are added to existing nests, or new nests are constructed to create a strong, flat or bowl-shaped platform for nesting (Palmer 1988; Watson 1997; Kochert et al. 2002). Sometimes golden eagles decorate multiple nests in a single year, continuing to do so until they lay eggs in the selected nest. The completed nest structure(s) can vary from large and multilayered, or a small augmentation of sticks in caves with little material other than extant detritus (Ellis et al. 2009). Most golden eagle territories have up to 6 nests, but they have been found to contain up to 14 nests (Palmer 1988; Watson 1997; Kochert et al. 2002).

3.2.3 Population Trends

Uncertainty exists over the current population size and status of golden eagles in the United States. However, as human activity and development increases, particularly in the west, associated pressures on golden eagle populations are also expected to increase (Good et al. 2007).

Although such pressures are potentially increasing, it is not known at what level these pressures translate into a potential golden eagle population decline. A golden eagle population in California experienced declines in territory occupancy following extensive urbanization (Bittner and Oakley 1999, as cited in Kochert and Steenhof 2002). Nesting populations in San Diego County decreased from an estimated 85 pairs in 1900 to 40 occupied territories in 1999 due largely to the loss of habitat and territories as a result of extensive residential development (Kochert and Steenhof 2002). However, additional baseline population data are needed to more accurately assess the magnitude and potential effects of human-related threats to golden eagle populations in the future (Good et al. 2004). Approximately 200 breeding pairs were estimated to nest in California in 2005 (USFWS 2007b).

3.2.4 Ongoing Threats

Golden eagle declines, where they have occurred, are attributed primarily to habitat degradation and human-induced disturbances and mortality (Kochert et al. 2002). Shooting, poisoning, trapping, electrocution and/or collision with power lines, and pesticide contamination have all been identified as causes of the decline of golden eagle populations. However, habitat loss and encroachment of development pose the greatest threat to golden eagles. Individuals will occasionally nest near semi-urban areas where housing density is low and in farmland habitat; however, golden eagles have been noted to be sensitive to some forms of anthropogenic presence (Palmer 1988; Scott 1985). Scott (1985) found that abandonment of nesting sites in San Diego County was correlated with the number of residences within a 1.6-kilometer radius of the site, but the causal factor(s) were not identified. Abandonment was, however, not related to loss of suitable habitat around the nest in this study; loss of foraging habitat around active nest sites was at least equal to, and sometimes greater, than loss of foraging habitat around abandoned sites.

Disturbance of nesting activity by human presence has been demonstrated. Steidl et al. (1993), for example, found that when observers were camped 1,300 feet from nests of golden eagles, adults spent less time near their nests, fed their juveniles less frequently, and fed themselves and their juveniles up to 67% less food than when observers were camped 2,600 feet from nests. In studies of golden eagle populations in the southwest (New Mexico and Texas) and the Front Range of the Rocky Mountains (New Mexico, Colorado, and Wyoming), Boeker and Ray (1971) reported that human disturbance accounted for at least 85% of all known nest losses. Breeding adults are sometimes flushed from the nest by recreational climbers and researchers, sometimes resulting in the loss of the eggs or juveniles due to nest abandonment, exposure of juveniles or eggs to the elements, collapse of the nest, eggs being knocked from the nest by startled adults, or juveniles fledging prematurely. However, golden eagles rarely flushed from the nest during close approaches by fixed-wing aircraft and helicopters during various surveys in Montana, Idaho, and Alaska (Kochert et al. 2002).

Many types of development such as energy exploration, pipeline and road construction, and development of recreational facilities on public lands remove vegetation from small areas. If important prey concentrations such as ground squirrel colonies are avoided, golden eagles should be able to coexist with these developments provided nest sites are undisturbed (Suter and Joness 1981). However, conversion of larger areas of open grassland habitat can substantially affect the prey base for golden eagles. Conversion and fragmentation of foraging habitat can affect how prey moves across the landscape, which can alter prey composition, abundance, and availability. Fragmentation can also increase the duration of foraging and the likelihood of foraging success, which can be especially deleterious during nesting and feeding of juvenile golden eagles.

Golden eagles, particularly immature birds, are the most commonly electrocuted raptor in the United States (Harness and Wilson 2001; Lehman et al. 2007, 2010). Many power pole designs place conductors and ground wires close enough together that a large bird like a golden eagle can touch them simultaneously with its wings or other body parts causing electrocution (Lehman et al. 2007). The majority of electrocutions are associated with low-voltage power lines or those with transformers, rather than high-voltage power lines (Lehman 2001; Lehman et al. 2007). Vehicle collisions have also been documented as a cause of mortality (Phillips 1986).

Climate change may affect golden eagles through habitat degradation. Increased fire frequencies or intensities, while potentially opening up foraging habitat areas, may reduce reproductive success, potentially through reducing available prey. Kochert et al. (1999) found that burned territories in Idaho had lower reproductive success, because eagles were significantly less successful in raising young. Increases in severe weather such as drought severity and frequency may reduce prey populations that rely on herbaceous vegetation such as ground squirrels, gophers, and rabbits. For example, Steenhof et al. (1997) found that the percentage of golden eagles that laid eggs in the Snake River Birds of Prey Area was related to jackrabbit abundance, which was related to severe winter weather.

Climate change may also have direct physiological effects on golden eagles. Studies have documented heat stress as a significant mortality factor for nestlings (Mosher and White 1976), and an inverse correlation exists between nesting success and the number of days with temperatures greater than 89.6°F (Steenhof et al. 1997).

3.2.5 Conservation and Management

Golden eagle management and conservation generally includes habitat management, population enhancement, hazard management, controlling human activity in sensitive raptor areas, and education. Cattle ranching throughout the central coastal ranges can be beneficial to the golden eagle if grazing is maintained at moderate levels that stimulate growth of herbaceous foods used by primary prey species, including ground squirrels and rabbits (Hunt et al. 1995). Ground squirrel populations are reported to reach their highest densities in areas of low grass height typical of grazed lands. Cattle ranching also provides eagles with a source of carrion from dead cows, stillborn calves, and placentas.

Management of healthy eagle populations also involves sustaining native shrub communities, which are prime habitat for black-tailed jackrabbits (*Lepus californicus*) (Marzluff et al. 1997; Kochert et al. 1999). Shrub communities should be protected within 3 kilometers (2 miles) of nests, and communities can be maintained primarily through active fire suppression and secondarily by restoring shrubs in burned areas (Kochert et al. 1999).

The USFWS has released Eagle Conservation Plan Guidance (USFWS 2013) for wind energy development that provides recommendations for the development of eagle conservation plans to support issuance of eagle programmatic take permits for wind facilities. Programmatic take permits authorize limited, incidental mortality and disturbance of eagles at wind facilities, provided effective offsetting conservation measures that meet regulatory requirements are carried out.

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4 OCCURRENCE ON TEJON RANCH

4.1 Methods

4.1.1 Literature/Database Review

Dudek reviewed a variety of resources and documents to determine the potential for bald and golden eagles to occur in the study area. Dudek reviewed the Tejon Mountain Village (TMV) BTR (Dudek 2009), Tehachapi Upland Multiple Species Habitat Conservation Plan (TU MSHCP; Dudek 2013), Tejon Industrial Complex (TIC) West Final Environmental Impact Report (FEIR) (Kern County 2000), TIC East FEIR (Kern County 2002), Valley Floor Habitat Conservation Plan (VFHCP; Kern County 2006), and TIC Habitat Preserve Resource Management Plan (Impact Sciences Inc. 2000).

Dudek also reviewed wildlife occurrence locations provided by Tejon Ranch Company (2013), Tejon Ranch Conservancy (2013), and bald and golden eagle records in the California Natural Diversity Database (CNDDB; CDFW 2015) for Kern County. Additional literature review conducted is described in Appendix B of the BTR.

It is important to note that the CNDDB is a positive-detection database. Records in the database exist only where species were detected. This means there is a bias in the database towards locations that have had more development pressures, and thus more survey work has been conducted. Places that are empty or have limited information in the database often signify that little survey work has been done there, as is the case with areas on the Ranch identified for conservation in the Ranchwide Agreement. In these cases, it cannot be implied that there is less diversity in these areas due to lack of surveys. Thus, information on species collected as part of proposed projects, such as TMV, TIC, and the proposed project, will have more species data available due to the intensive survey efforts in those areas as compared to the areas on the Ranch identified for conservation where fewer field surveys have been conducted.

4.1.2 Initial Field Assessments

Dudek biologists Keith Babcock, Callie Ford, and Brock Ortega conducted a reconnaissance-level site visit in February 2013 to gain an on-the-ground understanding of the vegetation communities, suitability of habitat for eagles, and the general biological resources on and adjacent to the study area.

4.1.3 Vegetation and Land Cover Mapping

As described in Section 1.2, vegetation mapping was conducted in the 8,010-acre Grapevine Specific Plan Area during April through June 2013. During this time, vegetation communities were also mapped on approximately 7,300 acres of adjacent lands on the Ranch. Subsequent vegetation mapping was conducted in proposed off-site impact areas in October 2013, February and October 2014, and July 2015. Appendix B of the BTR provides a detailed description of the survey methods used to map vegetation communities.

4.1.4 Winter Raptor Surveys

The focus of the winter raptor surveys was to determine the use of the study area by special-status wintering raptors. Winter raptor surveys were conducted with a focus on special-status raptors, including bald eagle, American peregrine falcon (*Falco peregrinus anatum*), golden eagle, ferruginous hawk (*Buteo regalis*), merlin (*Falco columbarius*), and prairie falcon (*Falco mexicanus*).

Dudek biologists Keith Babcock, Traci Caddy, and Dave Compton conducted winter raptor surveys following methods described by the Hawk Migration Association of North America (HMANA n.d.). Per HMANA suggested methods, the study area was visited once each month during the winter season (November through February) for a total of four visits (2 days for each visit). Dudek conducted these surveys on November 13 and 14 and December 11 and 12, 2013, and January 9 and 10 and February 10 and 11, 2014. At least 3 weeks elapsed between the 2-day surveys.

The surveys were conducted throughout the study area. At least two biologists (driver and data recorder) conducted road surveys along pre-established routes within the woodland habitat, non-native grassland, and agricultural lands, with periodic stops to scan the larger landscape for raptors. The survey route was established primarily in open country that allowed views over a large area. Roads chosen for the survey routes were widely spaced to avoid double counting of raptors, but extended to all parts of the study area. All surveyors used high-quality binoculars (10×42) and at least one spotting scope was available for each survey. Surveys were conducted during daylight hours, beginning no earlier than 8 a.m. and ending no later than 4:30 p.m. No surveys were conducted during periods of heavy fog, heavy rain, snow, or winds of 18 miles per hour (mph) or greater that would reduce or preclude raptor activity. Surveyors followed the route in the same direction (i.e., same start and endpoint) during each survey. Surveyors stopped approximately every 1 mile for approximately 10 minutes per stop, in locations providing good views of raptor habitat. Biologists walked or drove slowly (5 mph or less) in wooded habitats where necessary for complete coverage of the study area. Additional stops were made to identify raptors observed while driving between pre-selected survey routes (i.e., in-transit observations). For each raptor observed, surveyors recorded location, species, age, sex (if identifiable), morph (if applicable), and perching or flying behaviors. Other recorded notes on behavior, as applicable, included direction of flight, height at which perched, species or object on which the individual was perched, and capture or consumption of prey.

During the habitat assessments on the proposed off-site impact areas, Dudek biologists evaluated the area's potential to provide suitable foraging habitat for wintering raptors, including bald eagle.

4.1.5 Nesting Raptor Surveys

Nesting raptor surveys were conducted with a focus on special-status raptors, including golden eagle, white-tailed kite (*Elanus leucurus*), short-eared owl (*Asio flammeus*), northern harrier (*Circus cyaneus*), and Swainson's hawk (*Buteo swainsoni*). Bald eagle is not known to nest in the region. Nesting raptor surveys were conducted within the 8,010-acre Grapevine Specific Plan Area and approximately 7,300 acres of adjacent lands on the Ranch (including portions of the proposed off-site impact areas). The surveys focused on oak woodland habitats and planted trees occurring singly or in groves as well as on transmission towers that could be used as raptor nesting sites. The grassland habitat on and adjacent to the site was also evaluated as potential foraging habitat near nesting sites. In addition, incidental raptor observations were recorded during other biological surveys, particularly during least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) surveys along Grapevine Creek and other drainages.

Dudek conducted two driving/road surveys on May 15 and 16, 2013, and two walking surveys on July 17 and 18, 2013, which coincide with the nesting season for the focal special-status raptors (see Table B-1 of Appendix B to the BTR for survey schedule). Teams of two biologists conducted both the spring and summer surveys. During the first set of surveys, Dudek biologists drove throughout the Grapevine Specific Plan Area and adjacent lands (including portions of the proposed off-site impact areas), stopping at areas with trees that were suitable for raptor nesting. Sites where raptor observations were made during the least Bell's vireo and southwestern willow flycatcher surveys were also visited to determine whether nesting was occurring at these sites.

Potential nesting habitat was scanned from roads or surveyors walked to nesting habitat that could not be directly surveyed from roads. Observers used spotting scopes and high-quality binoculars (10×42) to search for nests. Biologists also searched for whitewash, feathers, and prey debris in nesting habitat as evidence of raptor presence. The surveys were conducted during periods without persistent precipitation or fog and when wind speeds were less than 15 mph.

The second set of surveys (July 2013) targeted suitable nesting habitat identified during the May 2013 survey, particularly in areas where less focus was directed during the initial survey. All areas in woodlands and savannahs were visited or visually scanned with binoculars during surveys. Biologists walked through wooded areas, inspecting trees for active nests and suitable nest structures. All raptors and raptor sign observed were recorded, and any behaviors indicative of nesting, such as presence of juveniles or carrying prey over long distances, were noted.

During the habitat assessments on the proposed off-site impact areas, Dudek biologists evaluated the area's potential to provide suitable habitat for nesting or foraging raptors, including golden eagle.

4.1.6 Golden Eagle Nest Surveys

Dudek reviewed available literature from CNDDB and the Tejon Ranch Conservancy for historical nest data on site. Aerial surveys for potential golden eagle nest sites were conducted in February 2014 by Bloom Biological Inc. within and adjacent to the study area. The survey area was determined by Dudek and Bloom Biological through delineating an approximate 2-mile buffer around the proposed limits of development where it intersected with potential nest habitat areas (i.e., foothills and mountains as opposed to the valley floor) and within the potential viewshed of the study area. Bloom Biological Inc. surveyed this area via helicopter surveys over a 3-day period in February; the survey methods followed the protocols described by the USFWS (Pagel et al. 2010). During these surveys, biologists searched for large stick nests on rocky outcrops, transmission towers, and trees that could be used by golden eagle. Each raptor or suspected common raven (*Corvus corax*) nest (raven nests can appear similar in size and structure to some raptor species nests) was mapped and information recorded included nest status, contents, condition, substrate, etc.; photographs of each nest were also taken.

In April 2014, Dudek biologists Dave Compton and Traci Caddy surveyed each of the nests mapped during the golden eagle aerial surveys in order to confirm or otherwise determine their status (i.e., active or inactive) and to document active eagle territories. Each nest previously identified by Bloom Biological Inc. was visited from an appropriate distance so as not to harass any actively nesting eagles but close enough to be able to determine nest status. Several criteria, including nest structure integrity, presence/absence of adult eagles, and behavior of any adult eagles observed was evaluated prior to making a determination on nest status. The location of active versus non-active nests were incorporated into the GIS database.

The proposed off-site impact areas are located in the valley floor where there is no suitable nesting habitat for golden eagle; therefore, no golden eagle nest surveys were conducted in these areas.

4.2 Results

4.2.1 Vegetation and Land Cover Mapping

4.2.1.1 Foothills

The foothills located in the Grapevine study area are dominated by non-native grasslands (91%). Approximately 3% of the foothills area contains the purple needle grass grasslands alliance and the giant wild rye grasslands alliance, both of which include some native grasses and neither of which occurs on the valley floor. Approximately 4% of the foothills in the study area consists of scrub and three of the alliances in the study area are restricted to the foothills. Riparian vegetation, including scrub and woodlands, and unvegetated channels are scattered throughout the foothills and comprise 1% of the foothills. Additionally, the 15 acres of valley oak alliance in the study area is limited to the foothills. Unvegetated, non-natural areas are limited (comprising less than 1% of the foothill area), and are generally limited to existing trails, access roads, and infrastructure development areas (e.g., power line towers).

4.2.1.2 Valley Floor

The majority of the study area (78%) is within the San Joaquin Valley floor and 98% of the proposed project development is also within the valley floor, which is dominated by non-native grassland (84%). The second most prevalent type of land cover in the valley floor area (14%) consists of non-natural land cover, which includes urban/developed lands, orchards and vineyards, access roads and infrastructure, and oil and gas structures. Orchards and vineyards as well as oil and gas areas are entirely restricted to the valley floor.

Valley Floor Riparian

The valley floor contains ephemeral and intermittent channels. The vegetated riparian areas on the valley floor are limited to the Fremont cottonwood forest and mulefat thicket alliances, and semi-natural stands of tamarisk thickets.

4.2.2 Bald Eagle Occurrence

Within mainland Southern California, the species primarily winters at larger bodies of water in the lowlands and mountains (Garrett and Dunn 1981). It is fairly common as a local winter migrant at a few favored inland waters in Southern California. The greatest numbers occur at Big Bear Lake, Cachuma Lake, Lake Mathews, Nacimiento Reservoir, San Antonio Reservoir, and along the Colorado River (Zeiner et al. 1990). Recent breeding attempts on the mainland south of Santa Barbara County (e.g., Silverwood Lake, Lake Skinner, Lake Perris) have been unsuccessful (Cleary-Rose, pers. comm. 2002).

The historical breeding range of the bald eagle is probably similar to the present breeding distribution with both losses and gains of breeding areas in the twentieth century. The distribution reported by Oberholser (1906) is very similar to the present distribution (Buehler 2000).

4.2.2.1 Tejon Ranch

Past Use

Past use includes occurrence records that are more than 10 years old. Thus, this section describes occurrence records from 2003 and prior. A search of the CNDDB did not result in any bald eagle records on the Ranch besides those in the study area (discussed in Section 4.2.2.2). There are two bald eagle records from 1999 and 2003 southeast of Comanche Point (Tejon Ranch Conservancy 2013) (Figure 3). No bald eagles were observed during other surveys of portions of the Ranch between 1999 and 2004 (Impact Sciences Inc. 2004) or in 2005 (Jones & Stokes 2006).

Recent Use

Recent use includes occurrence records from 2004 to present. Bald eagle is not known to nest in the region and no bald eagles have been recorded on the Ranch during the nesting season. Since 2004, bald eagles have been observed during the winter at a few areas on the Ranch. The Tejon Ranch Conservancy has recently recorded bald eagles perching southeast of Comanche Point during the winter months (Tejon Ranch Conservancy 2013) (see Figure 4).

Bald eagles were also observed on the TMV site within the Ranch irregularly during the winter months in 2007 and 2008 (see Figure 4). No routinely used wintering congregation sites or communal roosts were observed. During the February 2007 focused survey, a single bald eagle was detected once on two different days perching on the north side of Castac Lake. A single adult and up to five immature bald eagles were also observed adjacent to Castac Lake in January 2008 (see Figure 4). Based on these results, it is assumed that bald eagles only use the Castac Lake area in low numbers irregularly during the winter.

Bald eagles have been observed during the winter months in the study area, as discussed below.

4.2.2.2 Grapevine

Past Use

Bald eagles have been observed regularly in low numbers in the study area during the winter season (Babcock 2013), and the Tejon Ranch Conservancy has observed bald eagles perched on a snag along Edmonston Pumping Plant Road on a regular basis since 2009 (Tejon Ranch Conservancy 2014). The CNDDB has two records of bald eagle use along Edmonston Pumping Plant Road from 2000 and 2001 (CDFW 2015). No nesting bald eagles have been recorded in the study area (Figure 3).

Recent Use

Within the study area, bald eagles were observed during the winter raptor surveys of 2013 and 2014, including at least two adults and three subadults. Two adult bald eagles were observed regularly in the study area during winter perched in a snag adjacent to a few eucalyptus trees located 400 feet north of Edmonston Pumping Plant Road on the southern portion of the valley floor (Figure 4). The snag is approximately 40 to 50 feet in height, and appears to be used by this pair as a roost and foraging perch during the winter. These two individuals were observed in February 2013, and again during the winter raptor surveys in December 2013 through February 2014. The pair was also observed foraging in the lower foothills on occasion. While it is assumed to be the same pair each year, this could not be confirmed by visual observations alone. One single adult was observed along Edmonston Pumping Plant Road near the center portion of the study area and one juvenile was perched in a tree near the southern boundary of the study area during the winter raptor surveys in January 2014; two subadults were perched on a power pole adjacent to the California Aqueduct in January 2014; and one subadult was observed again near the California Aqueduct in February 2014 (Figure 4). Based on the past use and the recent survey results, bald eagles appear to be limited to a few, but regularly occurring, winter visitors in this area. While successful nesting appears to be occurring at some locations in Southern California (e.g., Ramona in 2013 and 2014 (WRI 2014), Lake Hemet since 2004 and Big Bear Lake in 2012 (USFS 2013)), this species is not expected to nest on and in the immediate vicinity of the study area due to a lack of large water bodies with nesting habitat.

4.2.3 Golden Eagle Occurrence

Potential nesting areas for golden eagle on and adjacent to the study area are limited to the valley oak alliances in the southern foothills area of the study area that are located in proposed open space, and off site further south of the study area in areas that would be conserved as part of the Ranchwide Agreement. Suitable golden eagle foraging habitat on the study area includes grasslands, savannah, scrubs, washes, and wetland areas in the foothills and valley floor, as well as the open tamarisk scrub in the valley floor riparian habitat (Figure 5).

4.2.3.1 Tejon Ranch

Past Use

There are no CNDDB records of golden eagles within the Ranch (CDFW 2015). Golden eagles have been reported regularly on the Ranch based on data collected since 1999, including a nesting golden eagle southeast of Comanche Point in 2000 (Tejon Ranch Conservancy 2013), and individuals were observed foraging in 2003 and 2004 (Impact Sciences Inc. 2004) (Figure 3).

Recent Use

Golden eagles have been recorded in the mountains and foothills of the Ranch, and to a lesser degree in the valley floor. Tejon Ranch Conservancy recorded two potential golden eagle nests in oak woodland habitat in 2010: one located in the northeast portion of the Ranch and one in the Old Headquarters area (Tejon Ranch Conservancy 2013) (Figure 6).

On TMV, golden eagle surveys were conducted in 2007 (Dudek 2009). Three active golden eagle breeding nests and one inactive nest were documented on the TMV site in 2007. All three active nests were located in large oak trees in canyon live oak woodlands and forests (Figure 7). Most golden eagle foraging, perching, and flying observations were concentrated around the active nest sites, especially in Rising Canyon and Squirrel Canyon.

4.2.3.2 Grapevine

Past Use

There are no CNDDB records of golden eagles within the Ranch, and no historical data for golden eagles within the study area. Golden eagles have been reported regularly on the Ranch, including on Grapevine, based on data collected since 1999 (Babcock 2014).

Recent Use

Golden eagles were detected during nesting raptor surveys conducted in May and July 2013, and during winter raptor surveys conducted November 2013 through February 2014. As described in Section 4.1.6, Bloom Biological Inc. and Dudek conducted golden eagle surveys in February and April 2014, respectively. Bloom Biological Inc. recorded inactive golden eagle nests, possible golden eagle nests (inactive), and active golden eagle nests on the Ranch south of the Grapevine study area. Dudek visited the nests within the survey area in April 2014 to determine their status (i.e., active or inactive) and to document active eagle territories. This survey resulted in the detection of two active occupied nests, four active unoccupied nests, six potentially active unoccupied nests, and three inactive/abandoned nests. Based on these surveys, it is estimated that there are four golden eagle territories off site in the foothills and mountains south of the study area, the closest of which is 0.9 mile south of the study area and over 1 mile south of proposed hiking trails and proposed development (Figure 7).

The on-site nesting surveys and aerial golden eagle surveys did not document golden eagle nesting within the study area boundaries. Golden eagles are known to nest in woodlands in the region, but suitable nesting habitat in the study area is very limited, present primarily in the woodlands in the foothills along the southern flank of the study area.

Golden eagles were observed foraging in the valley floor uplands and the foothills of the study area in all seasons (Figure 6). Over 70 foraging, perching, or soaring (i.e., non-breeding) observations of golden eagle were recorded, although many of these likely were observations of the same individual. Foraging and other non-breeding observations occurred throughout the site, but were generally in grasslands and open woodlands.

Although individual golden eagles were detected within the study area twice during nesting raptor surveys, neither individual was confirmed to be of breeding age, and no golden eagle nests were detected on site during the nesting raptor surveys in 2013 or the aerial nest survey in 2014. Golden eagles were more abundant during the winter raptor surveys, with an average of eight golden eagles seen per 2-day survey, with a maximum count of 12 individuals during the November 13–14, 2013, survey. An average of two adults and a maximum of three adults were seen per 2-day survey. Observations of the eagles were concentrated in the southern part of the study area in the foothills and near the California Aqueduct east of I-5 (Figure 6).

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5 POTENTIAL PROPOSED PROJECT IMPACTS

This section describes the potential direct and indirect impacts of proposed development on bald and golden eagles.[2]

As described in Section 4.2, the foothills area of the study area is located in proposed open space. The foothills are dominated by non-native grasslands and oak savannah and are more diverse in habitat types compared to the valley floor. For example, all oak alliances are restricted to the foothill areas (i.e., do not occur on the valley floor portion of the study area), and much of the riparian scrub/marsh and riparian woodland are also restricted to the foothills. Golden eagles were most frequently observed foraging in the foothills and further south of the study area in the mountains compared to the valley floor, and bald eagles were observed foraging in the foothills during the winter. The proposed project was designed to avoid impacts to the foothills, including valley oak savannah, valley oak woodland, and riparian habitat, as well as unvegetated channels and washes.

Ninety-eight percent of the proposed development is sited in the valley floor which is dominated by non-native grasslands (84%) and non-natural land cover (14%) which includes urban/developed lands, orchards and vineyards, access roads and infrastructure, and oil and gas equipment; the remaining 2% consists of riparian scrub/marsh, riparian woodland and wash, which would be largely avoided (96% would be conserved) and a very small amount of scrub (less than 0.05%).

5.1 Bald Eagle

Potential direct and/or indirect impacts to wintering bald eagles are discussed below.

5.1.1 Direct Impacts

Direct impacts to bald eagles are those associated with harm or loss of individual eagles and/or active nests, or temporary disturbance to and/or permanent loss of their habitat, from grading, clearing, and other construction-related activities. Because bald eagles are highly mobile, it is extremely unlikely that the proposed project-related construction activities would result in mortality of adults and/or juveniles foraging in the study area. In addition, because bald eagles do not nest on Tejon Ranch, no loss of eagles, and therefore eagle productivity, as a result of destruction/removal of active nests would occur. Therefore, direct impacts on bald eagles are only associated with impacts to winter roost trees and foraging habitat, as discussed below.

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2 An analysis of cumulative impacts is provided in Appendix O of the BTR.

Loss of Wintering Roost Tree(s)

Construction and grading activities associated with the proposed project would result in the loss of at least one wintering roost tree that was observed by Dudek in use by a pair of wintering bald eagles in 2013 and 2014. Based on CNDDB records, Tejon Ranch Conservancy, and previous observations, bald eagles have perched at this location on a regular basis during the winter months. However, there are available trees and snags in the proposed project open space south of the development, some of which have been observed to be used by the same bald eagle pair that use the roost tree along Edmonston Pump Station Road. Because the existing roost tree is not located in a unique habitat area (i.e., near a large body of water or in dense trees), it is expected that the bald eagles overwintering in the area could use other trees and snags within the proposed project open space for roosting. However, the loss of a winter roost tree could impact bald eagles. The biological resource protection measures described in Section 6.1 and in Appendix A of the BTR would minimize potential impacts associated with removal of the winter roost tree. Specifically, MM-BTR-BALD provides measures to preserve a suitable winter roost site for bald eagles, and MM-BTR-OS would conserve more than 3,232 acres of on-site open space, including areas with suitable roosting habitat. Implementation of MM-BTR-BALD and MM-BTR-OS would reduce permanent direct impacts to winter roosting habitat to less-than-significant levels because these measures would ensure suitable alternative roost sites and provide more than a 1:1 mitigation ratio of suitable upland foraging habitat. The “take” analysis pursuant to BAGEPA is provided in Section 7.

Loss of Foraging Habitat

The study area does not include large bodies of water, which is more typical foraging habitat for bald eagle, as described in Section 3.1. There is a small potential for bald eagle to forage outside of the study area within the California Aqueduct—bald eagles have been observed perching near the California Aqueduct in the vicinity of the study area (Babcock 2013), and the aqueduct supports a limited number of fish species, such as striped bass and catfish (California Department of Water Resources 2014). Based on observations made during winter surveys, it appears that much of the foraging conducted by the bald eagles wintering in the area is on California ground squirrels (*Spermophilus [Otospermophilus] beecheyi*) and other small mammals within the open upland portions of the study area. However, because the study area supports only a few wintering individuals at any given time, foraging is probably limited to a few favorite locations rather than spread across the landscape, and therefore, the total amount of suitable foraging habitat was not quantified. Nevertheless, impacts associated with the proposed project may result in the loss of some upland foraging habitat for overwintering bald eagles. In the absence of biological resource protection measures, these long-term direct impacts to the bald eagle winter roost site and foraging habitat would be significant. MM-BTR-OS would conserve more than 3,232 acres of on-site open space, including areas with suitable foraging habitat, and MM-BTR-OOS would conserve approximately 7,233 acres in off-site valley floor areas that include suitable foraging habitat for bald eagle. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce permanent direct impacts to suitable winter foraging habitat to less-than-significant levels because these measures would ensure suitable alternative roost sites and provide more than a 1:1 mitigation ratio of suitable upland foraging habitat. The "take" analysis pursuant to BAGEPA is provided in Section 7. Additionally, the proposed project would conserve approximately 85 acres along the north side of the aqueduct (MM-BTR-WLM), which could benefit bald eagle when it forages along the aqueduct, further reducing the effects of permanent direct impacts to its suitable winter foraging habitat.

5.1.2 Indirect Impacts

Indirect impacts include those not directly related to construction activities or the loss of habitat but that would occur as direct consequences of the proposed project. For bald eagle, potential indirect impacts include human disturbances; collisions with vehicles, power lines, and utility structures; pesticides; and increased fire risk, as described in detail later in this section. In the absence of biological resource protection measures, potential indirect impacts to bald eagles would be significant. With implementation of biological resource protection measures described in Section 6.1 and in Appendix A of the BTR, these impacts would be less than significant. The "take" analysis pursuant to BAGEPA is provided in Section 7.

To further explain how the indirect impacts would be avoided, minimized, and mitigated to less-than-significant levels with incorporation of the biological resource protection measures, the potential short- and long-term indirect impacts are listed and described in this section and a brief explanation of how the measures would avoid and minimize the potential indirect impacts is provided. Environmental awareness training, biological monitoring, and compliance (MM-BTR-T), in addition to other identified measures, would avoid, minimize, and mitigate all of the identified potential indirect construction-related impacts to less-than-significant levels and are described separately under Worker Environmental Awareness Program (WEAP).

Human Disturbances

The intentional or inadvertent harassment of bald eagles foraging or feeding on prey, perching in trees, or that are otherwise using areas within the study area or adjacent areas, could cause significant disruption of normal feeding or perching behaviors in individual bald eagles or wintering bald eagle pairs. Disturbance of wintering bald eagles results in both increased energy expenditure due to avoidance flights and decreased energy intake due to interference with feeding activities (Stalmaster 1983). Such disruption could be caused by noise, nighttime lighting, and human interactions associated with passive recreational activities near foraging or perching sites. General construction-related avoidance and minimization measures (MM-BTR-C) would minimize the potential effects of increased human activity on bald eagles by limiting work to designated construction areas. Limiting construction work to designated construction areas would provide areas for wildlife to relocate away from construction areas and clearly demarcate where workers must not enter to minimize the effects of human activities, such as trampling habitat. Construction activities within 50 feet of the outside edge of the proposed project footprint containing habitat for special-status wildlife would be prohibited between sunset and sunrise, and all construction-related lighting would be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the proposed project footprint containing habitat for special-status wildlife would be directed away from natural areas. Limiting construction activities to daytime hours within 50 feet of habitat for special-status wildlife would minimize the effects that light pollution has on nocturnal and diurnal species. Additionally, if lighting is necessary during nighttime hours for maintenance, security patrols, and emergencies, the lighting would be directed away from natural areas, which would also minimize the effects that light pollution has on species. Limiting construction work to designated construction areas would provide areas for wildlife to relocate away from construction areas and lower vehicle speeds (less than 15 mph) would reduce the noise emitted and vibrations from construction-related vehicles and equipment.

Conserving 3,232 acres of open space (MM-BTR-OS) in the Grapevine Specific Plan Area would avoid and minimize the risks of increased human activity by providing substantial suitable habitat away from the urban–open space interface. Additionally, as required in MM-BTR-TRAIL, trailhead and/or on-trail signage in the open space would state that (1) pets must be leashed at all times while in project open space; (2) dog owners are required to pick up and pack out their animals' feces; (3) intentional feeding of wildlife is prohibited; and (4) people and their animals must stay on existing trails at all times. The trail signage would inform and remind trail users of the restrictions related to trail use that are in place to avoid and minimize of trampling of vegetation; creation of unauthorized trails; increased human presence around, and potential harassment of or harm to, wildlife species; and potential harassment of or harm to wildlife by pets in open space.

MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources and reinforce the restrictions associated with trail use outlined in MM-BTR-TRAIL. MM-BTR-ED would also provide education on the fact that wildlife may prey on pets, and no actions would be taken against native animals should they prey on pets allowed outdoors by their owners. MM-BTR-IF prohibits the intentional feeding of bald eagle, golden eagle, and other species in the study area, which would reduce potential habituation of wildlife species and minimize human–wildlife interactions.

Additionally, a resource management plan (MM-BTR-RMP) would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space. The resource management plan would require adequate setbacks from bald eagle perch sites.

Implementation of MM-BTR-C, MM-BTR-ED, MM-BTR-LIGHT, MM-BTR-OS, MM-BTR-RMP, and MM-BTR-TRAIL would reduce potential human-related disturbances through biological monitoring, limitations on construction work activities and time periods, educational awareness for residents and visitors, prohibition of intentional feeding of wildlife, trail signage to reduce human and pet-related disturbances, and restrictions on nighttime lighting. Biological resource protection measures are fully described in Section 6.1 and in Appendix A of the BTR.

Collisions

Increased human presence associated with the proposed project would increase the chances for collision of bald eagles with vehicles. Bald eagles have been known to opportunistically scavenge carrion from roadways, making them vulnerable to such strikes. In addition, any new aboveground transmission towers or power lines installed for the proposed project, depending on location, could impact bald eagles as a result of collisions with transmission lines while attempting to land or during low foraging flights. This is primarily a threat if such towers or power lines are located along the foothill grasslands potentially used by bald eagles during foraging. The installation of additional aboveground transmission lines in areas that bald eagles are likely to forage would represent a potentially significant impact under CEQA and could also result in take (harm) of individual bald eagles.

However, no new aboveground high voltage towers or transmission lines within the study area would be built as part of the proposed project. Relocation of existing towers and lines would be permitted within 333 meters (1,000 feet) of existing lines. If existing utilities are relocated within 333 meters (1,000 feet) of existing overhead structures for the proposed project or if the proposed project requires aboveground structures for the installation of underground utility lines, best management practices (BMPs) to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles would be implemented using the Avian Protection Plan Guidelines prepared by the Edison Electric Institute’s Avian Power Line Interaction Committee (APLIC) and USFWS (MM-BTR-APLIC). Additionally, MM-BTR-C limits vehicle speeds to 15 mph during construction activities, which allows drivers adequate braking time to avoid collisions with wildlife. Biological resource protection measures are fully described in Section 6.1 and in Appendix A of the BTR.

Pesticides

Bald eagles have been observed foraging in some of the grasslands and open terrestrial habitat in the study area. Although their preferred prey is fish, they are known to prey on small mammals such as California ground squirrels. The use of pesticides in or around the proposed project could result in indirect poisoning if bald eagles ingest poisoned prey. Compliance with weed and pest control regulations (MM-BTR-PCR) would minimize the effects of pesticides on bald eagles, such as improper use that could harm the species through a reduction in pollinators, allowing establishment of non-native species in edge areas, through direct poisoning from consuming contaminated prey, or indirectly by reducing prey abundance. Compliance with U.S. Environmental Protection Agency (EPA) and California Department of Pesticide Regulation requirements would avoid and minimize potential misuse of pesticides by ensuring, for example, that pesticides are applied by a certified licensed pest control applicator trained in the type, amount, and schedule of application. Additionally, the use of anticoagulants used for rodent control would be prohibited (MM-BTR-IMP); this would avoid the risk of secondary poisoning of wildlife by anticoagulants. Because poisoned rodents are less wary and more likely to be preyed upon, and the ground squirrel average straight-line movement is approximately 450 feet (137 meters) or less (Chapman and Feldhamer 1982), rodenticides shall not be used in areas within 450 feet of areas zoned Exclusive Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety (MM-BTR-IMP). This restriction on the use of rodenticides would minimize the potential effects of secondary poisoning by reducing the likelihood that a poisoned rodent would enter open space areas. Implementation of MM-BTR-IPM and MM-BTR-PCR would avoid and minimize the potential effects related to pesticides that could harm the species through indirect poisoning through prey. Biological resource protection measures are fully described in Section 6.1 and Appendix A to the BTR.

Fire

Fuel management activities could result in an increased fire risk for vegetation around open space areas, and roost areas as well as some foraging habitat could be affected by fires. The majority of the development is located within the valley floor, which is primarily grassland with low fuel loads. However, recreational activities, such as hiking or other activities, within the open space areas increases the risk of fire to the scrub, native grassland, and woodland vegetation communities in the foothills. MM-BTR-FIRE would implement fuel modification described in the *Fire Safety Plan for the Grapevine Project* (Dudek 2014), which would reduce fuel loads and fire risk in open space areas. In addition, conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of fire by providing substantial suitable habitat away from the urban–open space interface. Biological resource protection measures are fully described Section 6.1 and Appendix A to the BTR.

Worker Environmental Awareness Program

Environmental awareness training, biological monitoring, and compliance (MM-BTR-T) would minimize the potential effects of the indirect construction-related impacts described by requiring all construction/contractor personnel to attend WEAP training, which would explain each of the construction-related requirements, and by conducting monitoring during construction activities to ensure that construction/contractor personnel are complying with these requirements. In addition to reinforcing the requirements of the construction-related measures through monitoring and compliance reporting, the WEAP training aids in avoiding and minimizing indirect impacts.

5.2 Golden Eagle

Potential direct and/or indirect impacts on golden eagles are discussed below.

5.2.1 Direct Impacts

Direct impacts to golden eagles are generally those associated with harm or loss of individual eagles and/or active nests, and temporary disturbance to and/or permanent loss of their habitat, from grading, clearing, and other construction-related activities. Because golden eagles are highly mobile and tend to avoid human activities, it is extremely unlikely that the proposed project-related construction activities would result in mortality of adults and/or juveniles foraging on site. However, direct impacts to golden eagles could occur as a result of physical loss of existing nest trees, nest abandonment, and loss of foraging habitat within the limits of development.

Loss of Nests

No golden eagles have been documented nesting within the study area. Some suitable nesting habitat is present within the study area but is outside the proposed project footprint and in the proposed open space in the foothills. No active nests were located within these areas. However, two active and occupied nest territories, and two active but unoccupied territories were documented in 2014 off-site south of the study area (Bloom Biological Inc. 2014) (Figure 7). Because the closest active nest is more than 1 mile to the south of proposed hiking trails and development and is surrounded by open space land per the Ranchwide Agreement (Figure 8), no disturbance to any of the active nests south of the study area would occur as a result of construction-related activities. Therefore, construction of the proposed project would not result in direct loss of active golden eagle nests and, because of the substantial distance of the closest active nest to the proposed development envelope, is not expected to have an impact on the nesting productivity of any nesting eagle pairs currently occurring south of the proposed development. Consequently, no significant impacts under CEQA would occur to active golden eagle nests.

Loss of Foraging Habitat

A total of 4,454 acres of suitable golden eagle foraging habitat would be impacted as a result of the proposed project, representing 62% of suitable foraging habitat in the study area (Figure 8). The four active eagle territories identified in the survey area are located in the San Emigdio Mountains and Tehachapi Mountains outside of the Grapevine study area (Figure 8). The three territories within Tejon Ranch are surrounded on all sides by open space land that will be conserved through dedicated conservation easements per the Ranchwide Agreement. The fourth territory is located in the San Emigdio Mountains adjacent to Tejon Ranch to the east and Wind Wolves to the west. With the permanent conservation of foraging habitat throughout the grassland and open habitat within on-site open space as well as the surrounding Ranch (as shown on Figure 8), the four golden eagle territories are expected to have sufficient foraging habitat within their normal breeding home range so that the proposed project would not result in the loss of nest productivity.

Biological resource protection measures described in Section 6.2 and in Appendix A of the BTR would minimize potential impacts associated with the loss of foraging habitat. MM-BTR-OS would conserve more than 3,232 acres of on-site open space, including 2,687 acres of suitable foraging habitat, and MM-BTR-OOS would conserve approximately 7,233 acres in off-site valley floor areas that include 7,203 acres of modeled suitable foraging habitat for golden eagle. Implementation of MM-BTR-OS and MM-BTR-OOS would reduce permanent direct impacts to suitable foraging habitat to less-than-significant levels because these measures include the preservation of more than a 1:1 mitigation ratio of suitable upland foraging habitat adjacent to existing active eagle nests south of the proposed study area. Additionally, the proposed project would conserve approximately 85 acres along the north side of the aqueduct (MM-BTR-WLM), which could benefit golden eagle if it forages along the aqueduct, further reducing the effects of permanent direct impacts to its suitable foraging habitat.

5.2.2 Indirect Impacts

Indirect impacts include those not directly related to construction activities or the loss of habitat but that would occur as direct consequences of the proposed project. For golden eagle, potential indirect impacts include human disturbances; collisions with vehicles, power lines, and utility structures; pesticides; and increased fire risk, as described in detail in this section. In the absence of biological resource protection measures, potential indirect impacts to golden eagles would be significant. With implementation of biological resource protection measures described in Section 6.2 and in Appendix A of the BTR, these impacts would be less than significant. The “take” analysis pursuant to BAGEPA is provided in Section 7.

To further explain how the indirect impacts would be avoided, minimized, and mitigated to less-than-significant levels with incorporation of the biological resource protection measures, the potential short- and long-term indirect impacts are listed and described in this section and a brief explanation of how the measures would avoid and minimize the potential indirect impacts is provided. Environmental awareness training, biological monitoring, and compliance (MM-BTR-T), in addition to other identified measures, would avoid, minimize, and mitigate all of the identified potential indirect construction-related impacts to less-than-significant levels and are described separately under Worker Environmental Awareness Program.

Human Disturbances

The intentional or inadvertent harassment of golden eagles incubating or brooding on active nests, feeding on prey, perching in trees, or that are otherwise using areas within the study area or adjacent areas, could cause significant disruption of normal breeding, feeding, or perching behavior by individual golden eagles or nesting pairs. No active or potentially active golden eagle nests have been detected within 1 mile of proposed hiking trails and proposed project development (Figure 7). The approximate outer range of no-disturbance buffer zones listed in the literature as appropriate for golden eagles is 1 mile (Richardson and Miller 1997). Therefore, no indirect impacts to active golden eagle nests are expected to occur as a result of construction activities associated with the proposed project.

However, human activities, particularly those associated with passive recreation, are known to adversely affect breeding raptors, including golden eagles. Such impacts include desertion of eggs or young by parent birds, prolonged absences from a nest with eggs or young, or nestlings leaving a nest prematurely (Postovit and Postovit 1987; Knight and Skagen 1988; Richardson and Miller 1997; Hamann et al. 1999). Golden eagles have been documented to flush from nests at a range of 105–390 meters (344–1,280 feet) for pedestrian disturbance, and 14–190 meters (46–623 feet) for vehicle disturbance (Holmes et al. 1993). Such flushing can expose eggs or young to chilling, overheating, or possible predation by ravens or other predators; premature fledging; or ejection of eggs or young from the nest (Boeker and Ray 1971; Suter and Jones 1981). Repeated flushing can lead golden eagles to abandon a nest site. However, the closest planned trail in on-site open space is located approximately 1 mile north of the closest active nest. Consequently, the active nests south of the proposed project are not expected to be impacted by human-related recreational or other activities. Potential indirect impacts to golden eagle could primarily be associated with increased human activity within foraging areas. General construction-related avoidance and minimization measures (MM-BTR-C) would minimize the potential effects of increased human activity on golden eagles by limiting work to designated construction areas. Limiting construction work to designated construction areas would provide areas for wildlife to relocate away from construction areas and clearly demarcate where workers must not enter to minimize the effects of human activities, such as trampling habitat. Limiting construction work to designated construction areas would provide areas for wildlife to relocate away from construction areas and lower vehicle speeds (less than 15 mph) would reduce the noise emitted and vibrations from construction-related vehicles and equipment.

Conserving 3,232 acres of open space (MM-BTR-OS) within the Grapevine Specific Plan Area would avoid and minimize the risks of increased human activity by providing substantial suitable habitat away from the urban–open space interface. Additionally, as required in MM-BTR-TRAIL, trailhead and/or on-trail signage in the open space would state that (1) pets must be leashed at all times while in project open space; (2) dog owners are required to pick up and pack out their animals' feces; (3) intentional feeding of wildlife is prohibited; and (4) people and their animals must stay on existing trails at all times. The trail signage would inform and remind trail users of the restrictions related to trail use that are in place to avoid and minimize of trampling of vegetation; creation of unauthorized trails; increased human presence around, and potential harassment of or harm to, wildlife species; and potential harassment of or harm to wildlife by pets in open space.

MM-BTR-ED, which requires the development and implementation of a conservation education and awareness program for residents and other occupants, would educate occupants on the common threats to biological resources and reinforce the restrictions associated with trail use outlined in MM-BTR-TRAIL. MM-BTR-ED would also provide education on the fact that wildlife may prey on pets, and no actions would be taken against native animals should they prey on pets allowed outdoors by their owners. MM-BTR-IF would prohibit the intentional feeding of bald eagle and golden eagle, as well as other species in the study area, which would reduce potential habituation of wildlife species and minimize human–wildlife interactions.

Additionally, a resource management plan (MM-BTR-RMP) would be prepared that identifies required resource management activities and the entities that shall be responsible for managing those activities in open space. The resource management plan would also prohibit new trail construction within 0.25 mile of active golden eagle nests and restrict recreational and trail use within 0.25 to 0.5 mile of the viewshed of an eagle nest during the nesting season. Implementation of MM-BTR-C, MM-BTR-ED, MM-BTR-OS, MM-BTR-RMP, and MM-BTR-TRAIL would reduce potential human-related disturbances through biological monitoring, limitations on construction work activities, educational awareness for residents and visitors, prohibition of intentional feeding of wildlife, and trail signage to reduce human and pet-related disturbances. Biological resource protection measures are fully described in Section 6.2 and in Appendix A of the BTR.

Collisions

Increased human presence associated with the proposed project would increase the chances for collision of golden eagles with vehicles. Golden eagles are also highly vulnerable to electrocution and collisions with utility lines associated with expansion of suburban development, as well as energy development (Franson et al. 1995; Lehman et al. 2007, 2010). Any new aboveground transmission towers or power lines installed for the proposed project, depending on location, could impact golden eagles as a result of collisions with transmission lines while attempting to land or during low foraging flights. This is primarily a threat if such towers or power lines are located along the on-site foothills potentially used by golden eagles during foraging. The installation of additional aboveground transmission lines in areas that golden eagles are likely to forage would represent a potentially significant impact under CEQA and could also result in take (harm) of individual golden eagles.

However, no new aboveground high voltage towers or transmission lines within the study area would be built as part of the proposed project. Relocation of existing towers and lines would be permitted within 333 meters (1,000 feet) of existing lines. If existing utilities are relocated within 333 meters (1,000 feet) of existing overhead structures for the proposed project or if the proposed project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles would be implemented using the Avian Protection Plan Guidelines prepared by the Edison Electric Institute's APLIC and USFWS (MM-BTR-APLIC). Additionally, MM-BTR-C would limit vehicle speeds to 15 mph during construction activities, which would allow drivers adequate braking time to avoid collisions with wildlife. Biological resource protection measures are fully described in Section 6.2 and in Appendix A of the BTR.

Pesticides

Golden eagles have been observed foraging in some of the grasslands and open terrestrial habitat in the study area. Their preferred prey are small mammals such as California ground squirrels or lagomorphs. The use of pesticides in or around the proposed project could result in indirect poisoning if golden eagles ingest poisoned prey. Compliance with weed and pest control regulations (MM-BTR-PCR) would minimize the effects of pesticides on golden eagles, such as improper use that could harm the species through a reduction in pollinators, allowing establishment of non-native species in edge areas, through direct poisoning from consuming contaminated prey, or indirectly by reducing prey abundance. Compliance with EPA and California Department of Pesticide Regulation requirements would avoid and minimizes potential misuse of pesticides by ensuring, for example, that pesticides are applied by a certified licensed pest control applicator trained in the type, amount, and schedule of application. Additionally, the use of anticoagulants used for rodent control would be prohibited (MM-BTR-

IMP); this would avoid the risk of secondary poisoning of wildlife by anticoagulants. Because poisoned rodents are less wary and more likely to be preyed upon, and the ground squirrel average straight-line movement is approximately 450 feet (137 meters) or less (Chapman and Feldhamer 1982), rodenticides shall not be used in areas within 450 feet of areas zoned Exclusive Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety (MM-BTR-IMP). This restriction on the use of rodenticides would minimize the potential effects of secondary poisoning by reducing the likelihood that a poisoned rodent would enter open space areas. Implementation of MM-BTR-IPM and MM-BTR-PCR would avoid and minimize the potential effects related to pesticides that could harm the species through indirect poisoning through prey. Biological resource protection measures are fully described Section 6.2 and Appendix A to the BTR.

Fire

Fuel management activities could result in an increased fire risk for vegetation around open space areas and roost areas, and some foraging habitat could be affected by fires. The majority of the development is located within the valley floor, which is primarily grassland with low fuel loads. However, recreational activities, such as hiking or other activities, within the open space areas increases the risk of fire to the scrub, native grassland, and woodland vegetation communities in the foothills. MM-BTR-FIRE would implement fuel modification described in the *Fire Safety Plan for the Grapevine Project* (Dudek 2014), which would reduce fuel loads and fire risk in open space areas. In addition, conserving 3,232 acres of open space (MM-BTR-OS) would avoid and minimize the risk of fire by providing substantial suitable habitat away from the urban–open space interface. Biological resource protection measures are fully described Section 6.2 and Appendix A to the BTR.

Worker Environmental Awareness Program

Environmental awareness training, biological monitoring, and compliance (MM-BTR-T) would minimize the potential effects of the indirect construction-related impacts described by requiring all construction/contractor personnel to attend WEAP training, which would explain each of the construction-related requirements, and by conducting monitoring during construction activities to ensure that construction/contractor personnel are complying with these requirements. In addition to reinforcing the requirements of the construction-related measures through monitoring and compliance reporting, the WEAP training aids in avoiding and minimizing indirect impacts.

6 BIOLOGICAL RESOURCE PROTECTION MEASURES TO AVOID, MINIMIZE, AND MITIGATE POTENTIAL IMPACTS

6.1 Bald Eagle

6.1.1 Biological Resource Protection Measures

The following biological resource protection measures would be implemented to reduce potential direct impacts to bald eagles including loss of winter roost site and loss of foraging habitat within the proposed project footprint. Biological resource protection measures that would reduce potential indirect impacts are described in Table 1.

6.1.1.1 Preservation of Winter Roost Site(s) within Open Space

MM-BTR-BALD Bald Eagle Perch Relocation

A pair of bald eagles were observed regularly during the 2013/2014 winter season perched in a snag near Edmonston Pumping Plant Road. Bald eagles have been observed using this snag during the winter months in the past as a roost and foraging perch. As a result of proposed development, the snag and associated live trees adjacent to the snag will be removed. The following measures will be implemented to mitigate the loss of this roost/perch area:

Avoidance Measures

- This roost and foraging area shall not be removed between October 15 and March 15, when bald eagles winter in this region.

Roost Relocation/Creation

- An assessment of the feasibility of relocating the snag tree shall be conducted. The assessment will include an evaluation of the integrity of the snag to withstand relocation, potential relocation sites, and methodology of relocation. If relocation of the snag is determined to be feasible and have a high degree of success, the snag shall be relocated to an appropriate on-site open space or a suitable off-site location as close to the existing snag as feasible, as approved by a qualified eagle biologist, but at a minimum distance of 200 meters (656 feet) from development and potential human disturbance areas, particularly foot traffic (e.g., trails) (Grubb and

King 1991, as cited in NatureServe 2014; Richardson and Miller 1997). The snag shall be relocated prior to the bald eagle wintering season (generally October 15 through March 15 in this region).

- If relocating the existing snag is considered not to be practical and not to have a high probability of success, a new roosting/perching area shall be created that shall meet the following criteria:

  1. The created roost and foraging area shall be installed prior to the bald eagle wintering season (generally October 15 through March 15 in this region).
  2. Because bald eagles prefer dead trees for daytime perches (Stalmaster and Newman 1979), at least one snag along with deciduous trees (at a 1:1 ratio to the trees being removed near the existing snag) shall be installed. The snag and deciduous trees shall replicate as closely as possible the dimensions, structure, and overall characteristics of the existing snag and deciduous trees to both provide unobstructed views and serve as a stable perch/roost site for the eagles.
  3. The snag and associated deciduous trees shall be located at an appropriate on-site open space or a suitable off-site location as close to the existing snag as feasible, as approved by a qualified eagle biologist, and at a minimum in a location that maximizes flight clearance, visibility of foraging grounds, and proximity to foraging habitat (USFWS 2004). In addition, the roosting/ perching area shall be located a minimum of 200 meters (656 feet) away from development and potential human disturbance, particularly foot traffic (e.g., trails) (Grubb and King 1991, as cited in NatureServe 2014; Richardson and Miller 1997).

6.1.1.2 Preserved Open Space

Substantial acreage of on-site and off-site open space would be permanently set aside within and in the vicinity of the study area through MM-BTR-OS and MM-BTR-OOS (Figure 8). These open space measures reduce direct and indirect impacts to bald eagle.

MM-BTR-OS On-site open space conservation of more than 3,232 acres of open space within the Grapevine Specific Plan Area.

MM-BTR-OOS Off-site conservation of 7,233 acres in proposed mitigation areas identified for conservation in the Ranchwide Agreement in the San Joaquin Valley Floor and adjacent foothills (see Appendix A-2 to the BTR).

Additionally, the proposed project would conserve approximately 85 acres along the north side of the aqueduct (MM-BTR-WLM), which could benefit bald eagle if it forages along the aqueduct, further reducing the effects of the proposed project on this species. Overall, per the Ranchwide Agreement, the Ranch will preserve approximately 240,000 acres of open space (Figure 8).

Table 1 includes a summary of the elements of the avoidance and minimization measures, other than conservation of suitable habitat, that address the following potential effects of the proposed project on bald eagles: human disturbances; collisions with vehicles, power lines, and utility structures; pesticides; and increased fire risk (as described in Section 5.1.2).

Table 1
Biological Resource Protection Measures Relevant to the Bald Eagle

Potential Effects	Summary of Potential Project Effects	Summary of Applicable Biological Resource Protection Measures
Human Disturbances	**Construction-Related:** The intentional or inadvertent inappropriate interaction between bald eagles and construction workers or construction equipment, could occur. Construction noise or vibration, night lighting, and the presence of people and vehicles could cause disruption of normal behavior in individual bald eagles. **Operations-Related:** The intentional or inadvertent harassment of bald eagles perched, foraging, feeding, or that are otherwise using areas within the proposed development or adjacent areas by humans could cause significant disruption of normal feeding or perching behaviors. Such disruption could occur as a result of noise, nighttime lighting, and passive recreation.	**MM-BTR-T (Environmental Awareness Training, Biological Monitoring, and Compliance)** ***Worker Environmental Awareness Program and Ongoing Training*** The project biologist shall perform Worker Environmental Awareness Program (WEAP) training for all construction/contractor personnel. The material shall include but not be limited to the measures and mitigation requirements for protected plant and wildlife species (e.g., avoidance and buffer requirements, nighttime construction limitations); the location and mitigation requirements for waters of the state; and any applicable fire protection measures. WEAP training will also include driver training to avoid and minimize collision risks with protected species, and reporting protocols in the event that any dead or injured wildlife are discovered. Copies of biological resource protection measures and permits from resource agencies will be available to personnel at the construction site. ***Biological Monitoring and Compliance Documentation prior to and during Construction*** The project biologist shall perform the biological monitoring and compliance documentation for the Grapevine project, including the following: • The project biologist will document that required pre-construction surveys and/or relocation efforts have been implemented prior to the initiation of any on-site grading and horizontal construction activities in each construction area. • If a listed species is encountered during construction work, activities that could cause direct harm to the species, as determined by the project biologist, will cease until the animal is allowed to leave the work site unless species relocation is authorized by U.S. Fish and Wildlife Service (USFWS) (for federal Endangered Species Act species) and/or California Department of Fish and Wildlife (CDFW) (for California Endangered Species Act species). The U.S. Fish and Wildlife Service (USFWS) and CDFW will be notified within 24 hours of encountering a listed species. The USFWS contact is the Chief of the Division of Endangered Species, at 2800 Cottage Way, Suite W-2605, Sacramento, California 95825–1846, 916.414.6620 or 916.414.6600. The CDFW Central Region office is at 1234 East Shaw Avenue, Fresno, California 93710, 559.243.4005. **MM-BTR-C (General Construction-Related Avoidance and Minimization Measures)** The following avoidance and minimization measures shall be implemented during project construction.

Table 1
Biological Resource Protection Measures Relevant to the Bald Eagle

Potential Effects	Summary of Potential Project Effects	Summary of Applicable Biological Resource Protection Measures
		Construction Work Hours Construction activities within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be prohibited between sunset and sunrise, and all construction-related lighting will be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be downcast luminaries with light patterns directed away from natural areas. **MM-BTR-ED (Conservation Education and Awareness Program for Occupants)** The Property Owners Association (POA) manager shall develop and implement a conservation education and awareness program informing the occupants of the special-status biological resources present within the Grapevine project site and provide information on common threats posed by the presence of people and pets to those resources. The conservation education and awareness program shall include the following topics and information: • The requirement that people and their animals stay on existing trails at all times • The requirement that pets be leashed at all times while in project open space and on trails • The requirement that dog owners pick up and pack out their animals' feces when on trails • The negative impacts of intentionally feeding wildlife and the unauthorized capture of wildlife, both of which are prohibited • The benefits of trash receptacles fitted with animal- and weather-resistant lids • Interpretive and educational signage will be installed at appropriate locations informing the public about bald eagles, their habitat requirements, and their sensitivity to human disturbance during the wintering season for the species (late October through March). **MM-BTR-IF (Prohibition on the Intentional Feeding of Wildlife**) Intentional feeding of condor, bald eagle, golden eagle, and San Joaquin kit fox (*Vulpes macrotis mutica*) shall be prohibited on the Grapevine project site. Ducks and other waterfowl that may occur in designated parks with water features can be intentionally fed. The covenants, conditions, and restrictions (CC&Rs) shall provide that the feeding of condor, bald and golden eagle, and San Joaquin kit fox on the Grapevine project is prohibited with the exceptions described.

Table 1
Biological Resource Protection Measures Relevant to the Bald Eagle

Potential Effects	Summary of Potential Project Effects	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-LIGHT (Restrictions on Operation-Related Lighting) Exterior lighting shall be limited in order to preserve the nighttime and shall be consistent with the dark sky guidelines. All lighting along the perimeter of the open space areas exterior to the project footprint, including the project-related open space adjacent to the California Aqueduct and Grapevine Creek, a tributary to Cattle Creek, shall be downcast luminaries and shall be downcast in a manner that will prevent light spillage or glare into the remaining open space. Prior to issuance of external electrical lighting permits, the Kern County Building Inspection Department will verify that all exterior lighting is compliant with the Kern County dark sky ordinance. **MM-BTR-RMP (Resource Management Plan)** Prior to recordation of the final tract maps for development adjacent to the Exclusive Agriculture, a resource management plan shall be prepared that specifically identifies required resource management activities and the entities that shall be responsible for managing those activities within Exclusive Agriculture. The following will be included in the resource management plan: • Periodic maintenance patrols will be required in order to remove litter and monitor trail conditions and fire hazards within the project open space. • Hunting will be limited to guided hunts on an as-needed basis for ongoing resource management or pest control (e.g., feral pig control). Recreational hunting will become a restricted activity by phase upon recordation of the final tract maps for each project phase. • Trail use near identified winter perch sites will be restricted between October 15 and March 15, and adequate setbacks from each perch site, considering location, viewshed, and other factors, will be determined by the biologist. Setbacks of 250 meters have been suggested for wintering eagles in open habitats as sufficient to buffer eagles from human activities (Stalmaster and Newman 1978). **MM-BTR-TRAIL (Trail Signage)** Prior to the approval of grading plans for trail systems, trailhead and trail signage indicating that the project open space is a biological conservation area will be installed. The following information will be provided at trailheads and/or on trail signage: • Pets must be leashed at all times while in project open space. • Dog owners are required to pick up and pack out their animals' feces. • Intentional feeding of wildlife is prohibited. • People and their animals must stay on existing trails at all times.

Table 1
Biological Resource Protection Measures Relevant to the Bald Eagle

Potential Effects	Summary of Potential Project Effects	Summary of Applicable Biological Resource Protection Measures
Collisions with Vehicles, Power Lines, and Utility Structures	**Construction-Related:** Potential short-term indirect impacts to bald eagles may include collisions with vehicles during construction activities. **Operations-Related:** Potential long-term indirect impacts to bald eagles may include an increased risk of collisions or electrocutions with power lines.	**MM-BTR-APLIC (Bird Collision Avoidance Measures for Aboveground Utilities)** No new aboveground high-voltage towers or power lines shall be built as part of the project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the *Avian Protection Plan Guidelines* prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC and USFWS 2005). The *Avian Protection Plan Guidelines* shall be used in conjunction with *Reducing Avian Collisions with Power Lines: State of the Art in 2012* (APLIC 2012), *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (APLIC 1994), or the most current editions of these documents at the time of the installation or construction of these structures. Implementation of these guidelines is the responsibility of the project biologist during construction of master improvements. During the County's review of the tentative tract map for each project phase, the applicant shall provide evidence to the County Planning Department either that no new aboveground high-voltage towers or power lines shall be built as part of the project phase or, if existing utilities are to be relocated, that construction specifications are consistent with the APLIC guidance (APLIC and USFWS 2005; APLIC 2012, 2006, 1994). **MM-BTR-C (General Construction-Related Avoidance and Minimization Measures)** This biological resource protection measure limits vehicle speeds to 15 miles per hour during construction activities, which allows drivers adequate braking time to avoid collisions with wildlife.

Table 1
Biological Resource Protection Measures Relevant to the Bald Eagle

Potential Effects	Summary of Potential Project Effects	Summary of Applicable Biological Resource Protection Measures
Pesticides	**Construction-Related:** The use of pesticides during construction could result in short-term indirect impacts to bald eagles through indirect poisoning of prey. **Operations-Related:** Potential long-term indirect impacts to bald eagles may include the use of pesticides resulting in indirect poisoning through prey.	**MM-BTR-IPM (Restrictions on the Use of Rodenticides)** Recorded CC&Rs shall inform future property owners of applicable requirements and include language that prohibits the use of anticoagulants (used for rodent control) at the Grapevine project site. Additionally, rodenticides shall not be used in areas within 450 feet of Exclusive Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety. Other control measures, such as trapping, will be evaluated and used, if appropriate, prior to the use of rodenticides with 450 feet of Exclusive Agriculture. The County Building Inspection Department shall verify that restrictions on the use of anticoagulants and pesticides have been included in the CC&Rs. **MM-BTR-PCR (Compliance with Weed and Pest Control Regulations)** All uses of such compounds should observe labels and other restrictions mandated by the U.S. Environmental Protection Agency and California Department of Pesticide Regulation.
Increased Fire Risk	**Operations-Related:** Potential long-term indirect impacts to bald eagles may include increased fire risk that could degrade habitat.	**MM-BTR-FIRE (Implementation of a Fire Safety Plan and Avoidance of Nesting Birds during Fuel Management Activities)** Prior to approval of landscape improvement plans for areas adjacent to the Exclusive Agriculture zone, the Kern County Building Inspection Department will verify that the fuel modification improvement plans are consistent with the requirements of the *Fire Safety Plan for the Grapevine Project* (Fire Safety Plan; Dudek 2014). Active fuel management measures shall occur outside of the nesting season of native birds in the region of the project site (typically March through August), if practicable. If the nesting season cannot be practicably avoided, prior to implementing active fuel modification measures during the nesting season of native birds in the region of the project site (typically March through August), surveys shall be conducted to determine the presence of nesting birds within the fuel modification zones. Any active nests shall be mapped. The fuel modification zones shall be modified to create a 300-foot buffer (500 feet for most raptors and tricolored blackbird (*Agelaius tricolor*) colonies) around these nests and avoid any clearing or grading within these buffer areas during the nesting season.

6.2 Golden Eagle

6.2.1 Biological Resource Protection Measures

The following biological resource protection measures would be implemented to reduce potential impacts to nesting golden eagles within approximately 2 miles of the proposed limits of development and direct impacts to suitable foraging habitat. Biological resource protection measures that would reduce potential indirect impacts are described in Table 1.

6.2.1.1 Nest Avoidance

Since all identified active nests of the four known golden eagle nest territories are beyond 1 mile from the proposed hiking trails and proposed development area and are located within a large expanse of open space that will be conserved per the Ranchwide Agreement, the focus of these measures is on avoiding indirect disturbance to any new active golden eagle nests that might be established in the future within or adjacent to project open space areas.

MM-BTR-RMP No new trails will occur within 0.25 mile of an active golden eagle nest, within or outside of the viewshed of that nest.

Trail use and recreational activities will be restricted within 0.25 to 0.5 mile of the viewshed of an active golden eagle nest during the nesting season (generally February 1 through July 30). Trail use may be allowed during the nesting season if the project biologist has determined that the nest has become inactive and trail use would not otherwise adversely affect golden eagles within the nest territory.

6.2.1.2 Conservation of Foraging Habitat within Open Space

Substantial acreage of on-site and off-site open space would be permanently set aside within and in the vicinity of the study area through MM-BTR-OS and MM-BTR-OOS (Figure 8). These open space measures reduce direct and indirect impacts to golden eagle.

MM-BTR-OS Conservation of more than 3,232 acres of open space within the Grapevine Specific Plan Area, 2,687 acres of which are suitable foraging habitat for golden eagle.

MM-BTR-OOS Off-site conservation of 7,233 acres in proposed mitigation areas identified for conservation in the Ranchwide Agreement in the San Joaquin Valley Floor and adjacent foothills, which includes 7,203 acres of modeled suitable foraging habitat for golden eagle.

Additionally, the proposed project would conserve approximately 85 acres along the north side of the aqueduct (MM-BTR-WLM), which could benefit golden eagle if it forages along the aqueduct, further reducing the effects of the proposed project on this species. Overall, per the Ranchwide Agreement, the Ranch will conserve approximately 240,000 acres of open space. Approximately 162,600 acres of this conserved land is considered suitable golden eagle foraging habitat. These areas include suitable foraging habitat within 10 miles (the general foraging distance for golden eagles) of the active nests in the south/southeast, east, and northeast portions of the Ranch.

Table 2 includes a summary of the elements of the avoidance and minimization measures, other than conservation suitable habitat, that address the following potential effects of the proposed project on golden eagles: human disturbances; collisions with vehicles, power lines, and utility structures; pesticides; and increased fire risk (as described in Section 5.2.2).

Table 2
Biological Resource Protection Measures Relevant to the Golden Eagle

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
Human Disturbances	**Construction-Related:** The intentional or inadvertent inappropriate interaction between golden eagles and construction workers or construction equipment, could occur. Construction noise or vibration, night lighting, and the presence of people and vehicles could cause disruption of normal behavior in individual bald eagles. **Operations-Related:** The intentional or inadvertent harassment of golden eagles nesting, perched, foraging, feeding, or that are otherwise using areas within the Grapevine study area or adjacent areas by humans could cause significant disruption of normal feeding or perching behaviors. Such disruption could occur as a result of noise, nighttime lighting, fire management, and passive recreation.	**MM-BTR-T (Environmental Awareness Training, Biological Monitoring, and Compliance)** ***Worker Environmental Awareness Program and Ongoing Training*** The project biologist shall perform Worker Environmental Awareness Program (WEAP) training for all construction/contractor personnel. The material shall include but not be limited to measures and mitigation requirements for protected plant and wildlife species (e.g., avoidance and buffer requirements, nighttime construction limitations); the location and mitigation requirements for waters of the state; and any applicable fire protection measures. WEAP training will also include driver training to avoid and minimize collision risks with protected species and reporting protocols in the event that any dead or injured wildlife are discovered. Copies of biological resource protection measures and permits from resource agencies will be available to personnel at the construction site. ***Biological Monitoring and Compliance Documentation prior to and during Construction*** The project biologist shall perform the biological monitoring and compliance documentation for the Grapevine project, including the following: • The project biologist will document that required pre-construction surveys and/or relocation efforts have been implemented prior to the initiation of any on-site grading and horizontal construction activities in each construction area. • If a listed species is encountered during construction work, activities that could cause direct harm to the species, as determined by the project biologist, will cease until the animal is allowed to leave the work site unless species relocation is authorized by USFWS (for federal Endangered Species Act species) and/or CDFW (for California Endangered Species Act species). The USFWS and CDFW will be notified within 24 hours of encountering a listed species. The USFWS contact is the Chief of the Division of Endangered Species, at 2800 Cottage Way, Suite W-2605, Sacramento, California 95825–1846, 916.414.6620 or 916.414.6600. The CDFW Central Region office is at 1234 East Shaw Avenue, Fresno, California 93710, 559.243.4005. **MM-BTR-C (General Construction-Related Avoidance and Minimization Measures)** The following avoidance and minimization measures shall be implemented during project construction.

Table 2
Biological Resource Protection Measures Relevant to the Golden Eagle

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		Construction Work Hours Construction activities within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be prohibited between sunset and sunrise, and all construction-related lighting will be turned off during that period, with the exception of lighting for maintenance, security patrols, and emergency (defined by an imminent threat to life or significant property) activities. Lighting for maintenance within 50 feet of the outside edge of the project footprint containing habitat for special-status wildlife will be downcast luminaries with light patterns directed away from natural areas and will preclude light from casting beyond the project footprint. **MM-BTR-ED (Conservation Education and Awareness Program for Occupants)** The Property Owners Association (POA) manager shall develop and implement a conservation education and awareness program informing the occupants of the special-status biological resources present within the Grapevine project site and provide information on common threats posed by the presence of people and pets to those resources. The conservation education and awareness program shall include the following topics and information: • The requirement that people and their animals stay on existing trails at all times • The requirement that pets be leashed at all times while in project open space and on trails • The requirement that dog owners pick up and pack out their animals' feces when on trails • The negative impacts of intentionally feeding wildlife and the unauthorized capture of wildlife, both of which are prohibited • The benefits of trash receptacles fitted with animal- and weather-resistant lids • Interpretive and educational signage will be installed at appropriate locations informing the public about golden eagles, their habitat requirements, and their sensitivity to human disturbance during the wintering season for the species (late October through March). **MM-BTR-IF (Prohibition on the Intentional Feeding of Wildlife)** Intentional feeding of condor, bald eagle, golden eagle, and San Joaquin kit fox (*Vulpes macrotis mutica*) shall be prohibited on the Grapevine project. Ducks and other waterfowl that may occur in designated parks with water features can be intentionally fed. The covenants, conditions, and restrictions (CC&Rs) shall provide that the feeding of condor, bald and golden eagle, and San Joaquin kit fox on the Grapevine project site is prohibited with the exceptions described.

Table 2
Biological Resource Protection Measures Relevant to the Golden Eagle

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-RMP (Resource Management Plan) Prior to recordation of the final tract maps for development adjacent to the Exclusive Agriculture, a resource management plan shall be prepared that specifically identifies required resource management activities and the entities that shall be responsible for managing those activities within Exclusive Agriculture. The following will be included in the resource management plan: • Periodic maintenance patrols will be required in order to remove litter and monitor trail conditions and fire hazards within the project open space. • Hunting will be limited to guided hunts on an as-needed basis for ongoing resource management or pest control (e.g., feral pig control). Recreational hunting will become a restricted activity by phase upon recordation of the final tract maps for each project phase. • No new trails will occur within 0.25 mile of an active golden eagle nest, within or outside of the viewshed of that nest. Trail use and recreational activities will be restricted within 0.25 to 0.5 mile of the viewshed of an active golden eagle nest during the nesting season (generally February 1 through July 30). Trail use may be allowed during the nesting season if the project biologist has determined that the nest has become inactive and trail use would not otherwise adversely affect golden eagles within the nest territory. **MM-BTR-TRAIL (Trail Signage)** Prior to the approval of grading plans for trail systems, trailhead and trail signage indicating that the project open space is a biological conservation area will be installed. The following information will be provided at trailheads and/or on trail signage: • Pets must be leashed at all times while in project open space. • Dog owners are required to pick up and pack out their animals' feces. • Intentional feeding of wildlife is prohibited. • People and their animals must stay on existing trails at all times.

Table 2
Biological Resource Protection Measures Relevant to the Golden Eagle

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
Collisions with Vehicles, Power Lines, and Utility Structures	**Construction-Related:** Potential short-term indirect impacts to bald eagles may include collisions with vehicles during construction activities. **Operations-Related:** Potential long-term indirect impacts to golden eagles may include an increased risk of collisions or electrocutions with power lines.	**MM-BTR-APLIC (Bird Collision Avoidance Measures for Aboveground Utilities)** No new aboveground high-voltage towers or power lines shall be built as part of the project. If existing utilities are relocated within 1,000 feet of existing overhead structures for the project or if the project requires aboveground structures for the installation of underground utility lines, BMPs to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles shall be implemented using the Avian Protection Plan Guidelines prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS (APLIC and USFWS 2005). The Avian Protection Plan Guidelines shall be used in conjunction with Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012), Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006), and Mitigating Bird Collisions with Power Lines: The State of the Art in 1994 (APLIC 1994), or the most current editions of these documents at the time of the installation or construction of these structures. Implementation of these guidelines is the responsibility of the project biologist during construction of master improvements. During the County's review of the tentative tract map for each project phase, the applicant shall provide evidence to the County Planning Department either that no new aboveground high-voltage towers or power lines shall be built as part of the project phase or, if existing utilities are to be relocated, that construction specifications are consistent with the APLIC guidance (APLIC and USFWS 2005; APLIC 2012, 2006, 1994). **MM-BTR-C (General Construction-Related Avoidance and Minimization Measures)** This biological resource protection measure limits vehicle speeds to 15 miles per hour during construction activities, which allows drivers adequate braking time to avoid collisions with wildlife.
Pesticides	**Construction-Related:** The use of pesticides during construction could result in short-term indirect impacts to golden eagle through indirect poisoning of prey. **Operations-Related:** Potential long-term indirect impacts to golden eagles may include the use of pesticides resulting in indirect poisoning through prey.	**MM-BTR-IPM (Restrictions on the Use of Rodenticides)** Recorded CC&Rs shall inform future property owners of applicable requirements and include language that prohibits the use of anticoagulants (used for rodent control) at the Grapevine project site. Additionally, rodenticides shall not be used in areas within 450 feet of Exclusive Agriculture, with the exception of areas where rodent activity threatens infrastructure or safety. Other control measures, such as trapping, will be evaluated and used, if appropriate, prior to the use of rodenticides with 450 feet of Exclusive Agriculture. The County Building Inspection Department shall verify that restrictions on the use of anticoagulants and pesticides have been included in the CC&Rs.

Table 2
Biological Resource Protection Measures Relevant to the Golden Eagle

Potential Effects	Summary of Potential Project Effect	Summary of Applicable Biological Resource Protection Measures
		MM-BTR-PCR (Compliance with Weed and Pest Control Regulations) All uses of such compounds should observe labels and other restrictions mandated by the U.S. Environmental Protection Agency and California Department of Pesticide Regulation.
Increased Fire Risk	**Operations-Related:** Potential long-term indirect impacts to golden eagles may include increased fire risk that could degrade habitat.	**MM-BTR-FIRE (Implementation of a Fire Safety Plan and Avoidance of Nesting Birds during Fuel Management Activities)** Prior to approval of landscape improvement plans for areas adjacent to the Exclusive Agriculture zone, the Kern County Building Inspection Department will verify that the fuel modification improvement plans are consistent with the requirements of the Fire Safety Plan for the Grapevine Project (Fire Safety Plan; Dudek 2014). Active fuel management measures shall occur outside of the nesting season of native birds in the region of the project site (typically March through August), if practicable. If the nesting season cannot be practicably avoided, prior to implementing active fuel modification measures during the nesting season of native birds in the region of the project site (typically March through August), surveys shall be conducted to determine the presence of nesting birds within the fuel modification zones. Any active nests shall be mapped. The fuel modification zones shall be modified to create a 300-foot buffer (500 feet for most raptors and tricolored blackbird (*Agelaius tricolor*) colonies) around these nests and avoid any clearing or grading within these buffer areas during the nesting season.

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7 POTENTIAL FOR TAKE UNDER BAGEPA

7.1 Bald Eagle

7.1.1 Analysis

The bald eagle nests throughout Canada and portions of the United States, and winters throughout the United States and portions of Canada and Mexico. According to Buehler (2000), there is a wintering population of over 20,000 individuals in North America. These individuals are dispersed across the United States, Canada, and northern Mexico, but most spend the winter in large expanses of waterfowl-rich landscapes, such as northeastern California, the Great Lakes states, northern Rockies states, and pothole regions. This species has been delisted by the federal government due to population increases but it is still listed by the State of California. No critical habitat or Recovery Plans are in effect for the bald eagle. The bald eagle is still covered by BAGEPA, as described in Section 2.1.1.

In California, nesting populations of bald eagles are now generally restricted mostly to Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties (Polite and Pratt 1999). Outside of the Channel Islands, nesting within Southern California has been restricted to only a few known locations: a pair has been observed nesting in Ramona in 2013 and 2014 (WRI 2014), at Lake Hemet since 2004, and at Big Bear Lake in 2012 (USFS 2013). Wintering individuals have been occasionally noted at various bays, lakes, and estuaries in Southern California, but known major wintering sites in Southern California are situated around Big Bear Lake, Cachuma Lake, Lake Mathews, Nacimiento Reservoir, San Antonio Reservoir, and Colorado River. Because of its broad North American distribution and wide-ranging migration patterns, the scale for analyzing the impacts of incidental take of the bald eagle considers the entire wintering range of the species, which includes the majority of the continental United States and coastal Alaska and Canada (Buehler 2000).

Tejon Ranch is within the known current winter range of the bald eagle. As previously discussed in Section 4.2.2, bald eagles have been observed regularly in low numbers on and adjacent to the study area during the winter season. In particular, eagles (usually one or two at a time) appear to regularly use a snag adjacent to a few eucalyptus trees adjacent to Edmonston Pumping Plant Road as a winter roost and foraging perch site during the winter months (Figure 4).

7.1.1.1 Direct/Indirect Impacts on Individual Eagles or Nests

As previously noted, no bald eagles have ever been known to nest within the Tejon Ranch boundary or within the general region, and no nests were identified during extensive raptor surveys conducted for the proposed project and surrounding areas. Therefore, no direct or indirect impacts, including injury to individual eagles, nest abandonment, or decrease in productivity, would occur to nesting bald eagle nests.

As discussed in Section 5.1.2, increased human activity, particularly associated with passive recreational activities in open space areas could result in the unintentional or inadvertent harassment of bald eagles feeding on prey or perching in trees. Disturbance of wintering bald eagles, including flushing eagles from foraging and/or roost sites, can result in both increased energy expenditure due to avoidance flights and decreased energy intake due to interference with feeding activities (Stalmaster 1983). Such disturbance, depending upon the extent, frequency, and distance from eagles, could cause disruption of normal feeding or perching behavior by individual bald eagles.

MM-BTR-RMP would minimize disturbance to wintering individuals through trail use restrictions near identified winter perch sites between October 15 and March 15, and adequate setbacks from each perch site, considering location, viewshed, and other factors, as determined by the project biologist. A full description of MM-BTR-RMP is provided in Appendix A of the BTR. With implementation of these measures, the proposed project is not expected to result in any direct impacts to eagles or their nests, or disturb these eagles to the extent that it is likely to cause an injury to, a decrease in the productivity of, or nest abandonment by an eagle.

7.1.1.2 Loss of Winter Roost Trees and Foraging Habitat

As previously noted, at least one pair of bald eagles, and perhaps other individual eagles, have utilized a particular tree snag as a winter roost/foraging perch on a regular basis. Implementation of the proposed project would result in the loss of this tree snag as well as nearby trees that are also occasionally used by bald eagles as perch sites.

While the study area does not include more typical bald eagle foraging habitat such as bodies of water or riverine habitat (it is assumed that bald eagles do forage opportunistically within the aqueduct), the few wintering bald eagles that have been observed on or adjacent to the study area have been observed preying on California ground squirrels within the upland portions of the site. However, because the site supports only a few wintering individuals at any given time, foraging is likely limited to a few favorite locations rather than spread across the landscape. The loss of foraging habitat is not quantified, but there may be impacts associated with the proposed project that result in the loss of some upland foraging habitat for bald eagle.

Biological resource protection measures proposed in Section 6.1 would conserve other available winter roost/perch sites and substantial foraging habitat for wintering bald eagles in the area. The applicable biological resource protection measures include the following:

- **MM-BTR-BALD:** Assessment of relocating the snag tree or creating a new roost/perch site for wintering bald eagles, as described in more detail in Section 6.1.
- **MM-BTR-OS:** Conservation of more than 3,232 acres of open space within the Grapevine Specific Plan Area (Figure 8).
- **MM-BTR-OOS:** Off-site conservation of 7,233 acres in proposed mitigation areas identified for conservation in the Ranchwide Agreement in the San Joaquin Valley Floor and adjacent foothills (see Appendix A-2 of the BTR) (Figure 8).

While MM-BTR-WLM is intended as a measure to benefit wildlife movement, this additional 85 acres of proposed open space along the aqueduct would provide additional foraging for this species. Overall, per the Ranchwide Agreement, the Ranch will preserve approximately 240,000 acres of open space that will provide suitable foraging habitat for wintering bald eagles (Figure 8). With implementation of these measures, the loss of wintering perch habitat and foraging habitat for a low number of bald eagles is not expected to result in any direct impacts to eagles or their nests, or disturb these eagles to the extent that the loss causes, or is likely to cause, an injury to, a decrease in the productivity of, or nest abandonment by an eagle.

7.1.1.3 Conclusion

The conservation of approximately 3,232 acres of open space within the Grapevine Specific Plan Area, and 7,233 acres off site, would provide adequate foraging and roosting habitat to support the small number of wintering bald eagles expected to use the Grapevine area in the future. Additionally, the proposed project would conserve approximately 85 acres along the north side of the aqueduct, which could benefit golden eagle if it forages along the aqueduct, providing even more foraging habitat. The bald eagle has an extremely broad range, breeding throughout Canada and portions of the United States, and wintering throughout the United States and portions of Canada and Mexico. In the context of the broad winter distribution of this species throughout North America, the estimated wintering population of 20,000 individuals (Buehler 2000), and with the incorporation of habitat conservation, the loss of wintering habitat associated with the proposed project would not substantially affect this species' use of the area as wintering habitat nor would it substantially affect the species within its broader wintering range. Further, under BAGEPA, habitat loss does not equate to take because BAGEPA is not a habitat management law, and with the measures described above, no lethal take or "disturbance" of bald eagle individuals or their nests would occur as a result of the proposed project.

Measures to avoid or minimize potential disturbance of wintering eagles include restrictions on trail use near winter perch sites between October and March, the distribution of educational information to avoid or minimize construction and operational impacts on individual eagles, lighting directed away from suitable nesting/foraging habitat, APLIC measures to prevent collisions with power lines and utility structures, pesticide regulations, water quality measures, and fire-related measures. Therefore, no decrease in the productivity of bald eagles is expected to occur.

With implementation of the measures described above, no take or disturbance of eagles, pursuant to BAGEPA, would occur as a result of proposed project implementation. These measures should avoid effects on and any take of bald eagles within the meaning of BAGEPA.

7.2 Golden Eagle

7.2.1 Analysis

The golden eagle primarily occurs in the western regions of North America and breeds locally from Alaska southward to northern Baja California, Mexico, northern central Mexico, and eastward to the western Great Plains. Although recent population estimates are lacking, Olendorff et al. (1981) estimated over 63,000 wintering individuals in 16 western states. Braun et al. (1975) estimated over 100,000 individuals in North America in the 1970s. Estimates of breeding pairs in two western states include 1,200 in Nevada (Herron et al. 1985) and 500 in California (Thelander 1974). Because there are no defined discrete "core" populations of golden eagles in California and suitable habitat for this species is more or less contiguous between California and neighboring areas, the scale for analyzing impacts of the take of golden eagle, from both a habitat and species perspective, includes the entire range of the species in the western United States.

As previously discussed in Section 4.2.3, four active (but unoccupied) nests, representing two eagle territories, were identified during focused surveys in 2014 that occur to the south of the proposed project; two additional active nests (occupied as of 2014), representing two separate eagle territories, occur further to the south and southeast of proposed development (Figure 7). However, and as previously noted, none of these nests occur within 1 mile of the limits of proposed hiking trails or development. The approximate outer range of no-disturbance buffer zones listed in the literature for golden eagles is 1 mile (Richardson and Miller 1997). Golden eagles were also observed foraging throughout much of the study area, primarily in the foothills, and in areas adjacent to the site during the winter months.

7.2.1.1 Direct/Indirect Impacts on Individual Eagles or Nests

Because no golden eagle nests were observed or located within the study area, no active nests (or any of the inactive nests observed in 2014) would be removed or otherwise directly affected by proposed development. In addition, because no construction activities, buildings, or other structures would occur within a 1-mile viewshed of known active nests, such activities would not cause inadvertent disturbance of nesting eagles. However, human activities, particularly those associated with passive recreation, are known to adversely affect nesting raptors, including golden eagles. As described in Section 5.2.2, golden eagles have been documented to flush from nests at a range of 105–390 meters (344–1,280 feet) for pedestrian disturbance and 14–190 meters (46–623 feet) for vehicle disturbance (Holmes et al. 1993).

Because no active nests occur within the proposed limits of development and proposed trails in open space areas are over 1 mile from active nests, no such nests would be removed or otherwise adversely impacted as a result of the proposed project. With the incorporation of biological resource protection measures (described in Section 6.2 and in Appendix A of the BTR), proposed avoidance and minimization measures would be incorporated to avoid lethal take of golden eagle and to prevent direct or indirect disturbance to individuals or their nests post development.

MM-BTR-RMP would minimize potential indirect effects from human disturbance in the event any new active golden eagle nests are established in the future within or adjacent to proposed project open space areas. No new trails would occur within 0.25 mile of an active golden eagle nest, within or outside of the viewshed of that nest. Trail use and recreational activities would be restricted within 0.25 to 0.5 mile of the viewshed of an active golden eagle nest during the nesting season (generally February 1 through July 30). Trail use may be allowed during the nesting season if the project biologist has determined that the nest has become inactive and trail use would not otherwise adversely affect golden eagles within the nest territory. A full description of MM-BTR-RMP is provided in Appendix A of the BTR. Additional biological resource protection measures that would minimize potential effects are described in Section 6.2 and Table 2. With implementation of these measures, the proposed project is not expected to result in any direct impacts to golden eagles or their nests, or disturb eagles to the extent that it is likely to cause an injury to, a decrease in the productivity of, or nest abandonment by an eagle.

7.2.1.2 Loss of Foraging/Breeding Habitat

Golden eagle home range size, which is probably the same as the territory (Zeiner et al. 1990), has been estimated to average 5,709 acres in Utah (Smith and Murphy 1973) and 8,092 acres in southwestern Idaho (Collopy and Edwards 1989). Radiotelemetry studies of golden eagles in the Snake River Birds of Prey National Conservation Area in Idaho, however, demonstrated that home ranges can be seasonally quite variable, ranging from 469 to 20,575 acres during the breeding season and from 3,384 to 419,900 acres during the non-breeding season (Marzluff et al. 1997). In studies that included a relatively high density of golden eagles, breeding season home ranges averaged anywhere from 5,600 to 8,000 acres (Marzluff et al. 1997; Kochert et al. 2002). Because of the relatively large prey base in the Grapevine area, including in the foothill areas within proposed open space to the south of the proposed project, and the proximity of the four known active nest territories south of the proposed project (Figure 8), it is assumed that the home range sizes of nesting pairs associated with these territories are at the lower end of the home range estimates provided in the literature and may possibly be similar to the average sizes noted by Smith and Murphy (1973) and Collopy and Edwards (1989); i.e., from 5,000 to 8,000 acres in size, or possibly smaller.

As discussed in Section 5.2.1, the proposed project would result in the permanent loss of 4,454 acres of suitable foraging habitat for golden eagle. Based on observations of golden eagles foraging within the study area, documented home range sizes of this species, the density of nesting pairs observed south of the study area, and assuming saturation of all suitable breeding habitat (primarily within oak woodlands and oak savannah in the foothills), this foraging habitat is assumed to be used to some degree by up to four active golden eagle territories south of the study area (Figure 7). However, as described in Section 6.2, the proposed project would conserve approximately 2,687 acres of suitable foraging habitat in on-site open space and 7,233 acres of off-site open space, including 7,203 acres of modeled suitable golden eagle foraging habitat. In total, per the Ranchwide Agreement, the Ranch will conserve approximately 162,600 acres of suitable foraging habitat for golden eagle (Figure 8).

The proposed project was also designed to conserve high-quality habitat in the foothill areas, and all potentially suitable nesting habitat is located in open space areas. Therefore, no loss of suitable nesting habitat would occur as a result of the proposed project and adequate foraging habitat would remain within and adjacent to the active nests to support nest productivity.

Biological resource protection measures proposed in Section 6.1 include the following:

- **MM-BTR-OS:** Conservation of 2,687 acres of suitable foraging habitat within the Grapevine Specific Plan Area (Figure 8).
- **MM-BTR-OOS:** Off-site conservation of 7,233 acres in proposed mitigation areas identified for conservation in the Ranchwide Agreement in the San Joaquin Valley Floor and adjacent foothills, including 7,203 acres of modeled suitable foraging habitat for golden eagle (Figure 8).

While MM-BTR-WLM is intended as a measure to benefit wildlife movement, this additional 85 acres of proposed open space area along the aqueduct would provide additional foraging for this species. Overall, per the Ranchwide Agreement, the Ranch will conserve approximately 240,000 acres of open space. Approximately 162,600 acres of this conserved land is considered suitable golden eagle foraging habitat. These areas include suitable foraging habitat within 10 miles (the general foraging distance for golden eagles) of the active nests in the south/southeast, east, and northeast portions of the Ranch. Assuming that home range sizes of nesting golden eagles on the Ranch are, as discussed previously, at the lower end of range size estimates in the literature (i.e., 5,000 to 8,000 acres), the conservation of approximately 162,600 acres of suitable foraging habitat throughout the Ranch is more than adequate to support the four known active nest territories south of the proposed project. In addition, substantial golden eagle nesting habitat is also conserved within open space lands throughout the Ranch further to the south, east, and northeast. Thus, with implementation of these measures, the loss of suitable foraging habitat for golden eagle is not expected to result in any direct impacts to eagles or their nests, or disturb eagles to the extent that the loss causes, or is likely to cause, an injury to, a decrease in the productivity of, or nest abandonment by an eagle.

7.2.1.3 Conclusion

With the substantial conservation of suitable primary breeding and foraging habitat in a large, unfragmented open space system to the south, southeast, and northeast of the proposed project, adequate suitable habitat would continue to support breeding pairs of golden eagle in this region. In addition, specific avoidance and minimization measures (biological resource protection measures) would be implemented to address potential indirect impacts to this species. These measures include restrictions on the development of new trails near any newly established active nests, restrictions on trail use and recreational activities near newly established active nests during the nesting season, lighting directed away from suitable nesting/foraging habitat, the distribution of educational information to avoid/minimize recreational impacts, APLIC measures to prevent collisions with power lines and utility structures, pesticide regulations, and fire-related measures. As previously discussed, all known active golden eagle nest sites within the study area and vicinity would be conserved.

Pursuant to BAGEPA, the biological resource protection measures, along with the conservation of approximately 162,600 acres of suitable foraging habitat throughout the Ranch, are consistent with the goal of maintaining stable breeding populations. Furthermore, as a result of the conservation and avoidance/minimization measures, the presence and use of nesting/foraging habitat by the golden eagle would not be substantially reduced by the proposed project nor would the proposed project substantially reduce the species within its broader range in California and the western United States.

With implementation of the measures described above, no direct impact to golden eagles or their nests or disturbance of golden eagles causing, or likely to cause, an injury to, a decrease in the productivity of, or nest abandonment by an eagle would occur as a result of proposed project implementation. These measures should avoid effects on and any take of golden eagles within the meaning of BAGEPA.

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8 REFERENCES

8.1 Report References

14 CCR 670.2. Plants of California Declared to be Endangered, Threatened, or Rare.

14 CCR 670.5. Animals of California Declared to be Endangered or Threatened.

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

50 CFR 10.1–10.22. Subchapter B: Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants.

50 CFR 17.1–17.95. Endangered and Threatened Wildlife and Plants.

50 CFR 21.1–21.61. Migratory Bird Permits.

50 CFR 22.1–22.32. Eagle Permits.

32 FR 4001. Notice: "Native Fish and Wildlife: Endangered Species" (Endangered Species Preservation Act). March 11, 1967.

43 FR 6230–6233. Final rulemaking: "Determination of Certain Bald Eagle Populations as Endangered or Threatened." February 14, 1978.

60 FR 36000–36010. Final rule: "Endangered and Threatened Wildlife and Plants; Final Rule to Reclassify the Bald Eagle from Endangered to Threatened in All of the Lower 48 States." July 12, 1995.

64 FR 36454–36464. Proposed rule: "Endangered and Threatened Wildlife and Plants; Proposed Rule to Remove the Bald Eagle in the Lower 48 States from the List of Endangered and Threatened Wildlife." July 6, 1999.

72 FR 31132–31140. Final rule: "Protection of Eagles; Definition of 'Disturb'." June 5, 2007.

72 FR 37346–37372. Final rule: "Endangered and Threatened Wildlife and Plants; Removing the Bald Eagle in the Lower 48 States from the List of Endangered and Threatened Wildlife." July 9, 2007.

74 FR 46836–46879. Final rule: "Eagle Permits; Take Necessary to Protect Interests in Particular Localities." September 11, 2009.

16 U.S.C. 668–668d. Bald and Golden Eagle Protection Act.

16 U.S.C. 703–712. Migratory Bird Treaty Act, as amended.

16 U.S.C. 1531–1544. Endangered Species Act.

Anthony, R.G., R.L. Knight, G.T. Allen, B.R. McClelland, and J.I. Hodges. 1982. "Habitat Use by Nesting and Roosting Bald Eagles in the Pacific Northwest." In *Transactions of the 47th North American Wildlife and Natural Resources Conference*, edited by K. Sabol, 332–342. Washington, D.C.: Wildlife Management Institute.

AOU (American Ornithologists' Union). 2014. The A.O.U. Checklist of North and Middle American Birds, 7th edition [Online]. American Ornithologists' Union (Producer). http://checklist.aou.org/.

Aoyama, I., F. Sekiyama, N. Obara, T. Tamura, and H. Sakaguchi. 1988. "Breeding Biology of a Pair of Golden Eagles in the Kitakami Mountains." Abstract. *Aquila Chrysaetos* 6:14–23. Accessed October 8, 2012. http://www.srge.info/en/journals.php.

APLIC (Avian Power Line Interaction Committee). 1994. *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. Washington, D.C.: Edison Electric Institute.

APLIC. 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Pier Final Project Report CEC-500-2006-022. Washington, D.C., and Sacramento, California: Edison Electric Institute, APLIC, and the California Energy Commission. http://www.aplic.org/mission.php.

APLIC. 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Washington, D.C.: Edison Electric Institute and APLIC.

APLIC and USFWS (Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service). 2005. *Avian Protection Plan Guidelines*. Washington, D.C.: Edison Electric Institute (EEI) and USFWS. April 2005.

Babcock, K. 2013. Wintering bald eagles on Tejon Ranch. Personal observations by K. Babcock (Dudek). February 2013.

Babcock, K. 2014. Golden eagle use on Tejon Ranch. Personal observations by K. Babcock (Dudek). October 2014.

Beebe, F.L. 1974. "Golden Eagle, *Aquila chrysaetos*." In *Field Studies of the Falconiformes (Vultures, Eagles, Hawks, and Falcons) of British Columbia*, 94–103. Occasional Papers of the British Columbia Provincial Museum, no. 17. Victoria, British Columbia: Province of British Columbia, Department of Recreation and Conservation.

Beecham, J.J. 1970. "Nesting Ecology of the Golden Eagle in Southwestern Idaho." Master's thesis; University of Idaho, Moscow.

Bloom, P.H., and S.J. Hawks. 1982. "Food Habits of Nesting Golden Eagles in Northeast California and Northwest Nevada." *Raptor Research* 16(4): 110–115.

Bloom Biological Inc. 2014. "Results from 2014 Aerial Golden Eagle (*Aquila chrysaetos*) Nest Surveys for the Grapevine Project, Kern County, California." Letter report from Peter H. Bloom (Bloom Biological Inc.) to Keith Babcock (Dudek). February 23, 2014.

Boeker, E.L., and T.D. Ray. 1971. "Golden Eagle Population Studies in the Southwest." *Condor* 73:463–467.

Braun, C.E., F. Hamerstrom, T. Ray, and C.M. White. 1975. "Conservation Committee Report on Status of Eagles." *Wilson Bulletin* 87:140–143.

Brown, L., and D. Amadon. 1968. "*Aquila chrysaetos*, Golden Eagle." In *Eagles, Hawks, and Falcons of the World*, Vol. 2, 663–669. New York, New York: McGraw-Hill.

Brown, B.T., and L.E. Stevens. 1997. "Winter Bald Eagle Distribution is Inversely Correlated with Human Activity along the Colorado River, Arizona." *Journal of Raptor Research* 31(1): 7–10.

Buehler, D.A. 2000. "Bald Eagle (*Haliaeetus leucocephalus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed September 2012. http://bna.birds.cornell.edu/bna/species/506/articles/introduction.

California Department of Water Resources. 2014. "Fishing along the SWP." http://www.water.ca.gov/pubs/swp/fishing_along_the_swp/fishingswpeng.pdf.

California Fish and Game Code, Section 1900–1913. California Native Plant Protection Act of 1977.

California Fish and Game Code, Section 3503. Protection of Birds' Nests.

California Fish and Game Code, Section 3511. Fully Protected Birds.

California Fish and Game Code, Section 3513. Taking Migratory Bird Treaty Act Birds.

California Fish and Game Code, Section 4700. Fully Protected Mammals.

California Fish and Game Code, Section 5050. Fully Protected Reptiles and Amphibians.

California Fish and Game Code, Section 5515. Fully Protected Fish.

CDFG (California Department of Fish and Game). 2011. "State and Federally Listed Endangered and Threatened Animals of California." California Natural Diversity Database. CDFG, Biogeographic Data Branch. January 2011. Accessed October 2012. http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

CDFG. 2012a. "Bald Eagle Breeding Population Data for California, 1990–2010." *Bald Eagles in California*. California Department of Fish and Game. Accessed September 2012. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/bald_eagle/breeding.html.

CDFG. 2012b. "*Haliaeetus leucocephalus*." Element Occurrence Query. California Natural Diversity Database (CNDDB). RareFind, Version 4.0 (Commercial Subscription). Sacramento, California: CDFG, Biogeographic Data Branch. Accessed September 2012. http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW (California Department of Fish and Wildlife). 2015. California Natural Diversity Database GIS layer. September 2015.

Chapman, J.A., and G.A. Feldhamer, eds. 1982. *Wild Mammals of North America: Biology, Management, and Economics*. Baltimore, Maryland: Johns Hopkins University Press.

Cleary-Rose, K. 2002. Unsuccessful bald eagle breeding attempts south of Santa Barbara County. Personal communication from K. Cleary-Rose (U.S. Fish and Wildlife Service).

Collopy, M.W. 1984. "Parental Care and Feeding Ecology of Golden Eagle Nestlings." *Auk* 101:753–760.

Collopy, M.W., and T.C. Edwards. 1989. "Territory Size, Activity Budget, and the Role of Undulation Flight in Nesting Golden Eagles." *Journal of Field Ornithology* 60:43–51.

DeGraaf, R.M., V.E. Scott, R.H. Hamre, L. Ernst, and S.H. Anderson. 1991. *Forest and Rangeland Birds of the United States: Natural History and Habitat Use*. U.S. Department of Agriculture, Forest Service, Agriculture Handbook 688. Washington, DC: U.S. Department of Agriculture, Forest Service. Accessed July 2, 2014. http://www.npwrc.usgs.gov/resource/birds/forest/.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared for Tejon Mountain Village LLC. Prepared by Dudek. May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan.* Draft. Prepared for Tejon Ranchcorp. Encinitas, California: Dudek. Prepared with technical assistance from U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

Dudek. 2014. *Fire Safety Plan: Grapevine Project*. Prepared for Tejon Grapevine LLC. Encinitas, California: Dudek. June 2014.

Dunstan, T.C. 1989. "The Golden Eagle." In *Audubon Wildlife Report 1989/1990*, edited by W.J. Chandler, 499–511. National Audubon Society. San Diego, California: Academic Press Inc.

Ellis, D.H., T. Craig, E. Craig, S. Postupalsky, C.T. Larue, R.W. Nelson, D.W. Anderson, C.J. Henny, J. Watson, B.A. Milsap, J.W. Dawson, K.L. Cole, E.M. Martin, A. Margalida, and P. Kung. 2009. "Unusual Raptor Nests around the World." *Journal of Raptor Research* 43:175–198.

Ewins, P.J., and R.A. Andress. 1995. "The Diet of Bald Eagles, *Haliaeetus leucocephalus*, Wintering in the Lower Great Lakes Basin, 1987–1995." *Canadian Field-Naturalist* 109: 418–424.

Franson, J.C., L. Sileo, and N.J. Thomas. 1995. "Causes of Eagle Deaths." In *Our Living Resources: A Report to the Nation on the Distribution, Abundance and Health of U.S. Plants, Animals and Ecosystems*, edited by E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac. Washington, D.C.: U.S. Department of the Interior, National Biological Service.

Garrett, K., and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles Audubon Society.

Garrett, M.G., J.W. Watson, and R.G. Anthony. 1993. "Bald Eagle Home Range and Habitat Use in the Columbia River Estuary." *Journal of Wildlife Management* 57(1): 19–27.

Gerrard, J.M., A.R. Harmata, and P.N. Gerrard. 1992. "Home Range and Activity of a Pair of Bald Eagles Breeding in Northern Saskatchewan." *Journal of Raptor Research* 26(4): 229–234.

Good, R.E., R.M. Nielson, H.H. Sawyer, and L.L. McDonald. 2004. *Population Level Survey of Golden Eagles (*Aquila chrysaetos*) in the Western United States*. Final report submitted to the Division of Migratory Bird Management, U.S. Fish and Wildlife Service. Cheyenne, Wyoming: Western EcoSystems Technology Inc. August 30, 2004.

Good, R.E., R.M. Nielson, H.H. Sawyer, and L.L. McDonald. 2007. "A Population Estimate for Golden Eagles in the Western United States." *Journal of Wildlife Management* 71: 395–402.

Gordon, S. 1955. "The Golden Eagle in the British Isles." In *The Golden Eagle: King of Birds*, 7–21. London: Collins.

Grinnell, J., and A.H. Miller. 1944. *The Distribution of the Birds of California*. Pacific Coast Avifauna Number 27. Berkeley, California: Cooper Ornithological Club. Reprinted by Artemisia Press, Lee Vining, California, April 1986.

Grubb, T.G., and R.M. King. 1991. "Assessing Human Disturbance of Breeding Bald Eagles with Classification Tree Models." *Journal of Wildlife Management* 55(3): 500–511.

Hamann, B., H. Johnston, P. McClelland, S. Johnson, L. Kelly and J. Gobielle. 1999. "Birds." In *Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana*, edited by G. Joslin and H. Youmans, 3.1–3.34. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. September 1999.

Harness, R.E., and K.R. Wilson. 2001. "Electric-Utility Structures Associated with Raptor Electrocutions in Rural Areas." *Wildlife Society Bulletin* 29:612–623.

Herron, G.B., C.A. Mortimore, and M.S. Rawlings. 1985. *Nevada Raptors: Their Biology and Management*. Nevada Department of Wildlife Biological Bulletin No. 8.

HMANA (Hawk Migration Association of North America). n.d. *Winter Raptor Survey Guidelines*.

Holmes, T.L., R.L. Knight, L. Stegall, and G.R. Craig. 1993. "Responses of Wintering Grassland Raptors to Human Disturbance." *Wildlife Society Bulletin* 21:461–468.

Hunt, W.G., R.E. Jackman, T.L. Brown, J.G. Gilardi, D.E. Driscoll, and L. Culp. 1995. *A Pilot Golden Eagle Population Study in the Altamont Pass Wind Resource Area, California*. Predatory Bird Research Group, University of California, Santa Cruz.

Hunt, W.G., R.E. Jackman, J.M. Jenkins, C.G. Thelander, and R.N. Lehman. 1992. "Northward Post-Fledging Migration of California Bald Eagles." *Journal of Raptor Research* 26(1): 19–23.

Impact Sciences Inc. 2000. *Resource Management and Monitoring Plan: Tejon Industrial Complex Habitat Preserve, Tejon Ranch, Kern County, California*. July 27, 2000.

Impact Sciences Inc. 2004. *Special-Status Amphibian, Reptile, and Bird Biological Evaluation for TMV*. Camarillo, California: Impact Sciences Inc.

Jackman, R.E., W.G. Hunt, J. M. Jenkins, and P.J. Detrich. 1999. “Prey of Nesting Bald Eagles in Northern California.” *Journal of Raptor Research* 33(2): 87–96.

Jacobson, M.J. 2008. “The Status of the Bald Eagle in Southeast Alaska.” In *Bald Eagles in Alaska*, edited by B.A. Wright and P. Schrempf, 151–156. Bald Eagle Research Institute.

Jones & Stokes. 2006. *Tejon Mountain Village Biological Resources Technical Report*. Draft. Prepared for Tejon Ranch Company. January 2006.

Kern County. 2000. *Tejon Industrial Complex West Final Environmental Impact Report*. May 2000.

Kern County. 2002. *Final Environmental Impact Report (SCH No. 2001101133) Tejon Industrial Complex East Specific Plan, Volume 1. Environmental Impact Report*. Final. SCH no. 2001101133. Prepared by Impact Sciences: Agoura Hills, California. November 2002.

Kern County. 2006. *Kern County Valley Floor Habitat Conservation Plan*. Draft. Prepared by Garcia and Associates. Lompoc, California: Garcia and Associates. December 2006.

Knight, S.K., and R.L. Knight. 1983. “Aspects of Food Finding by Wintering Bald Eagles.” *Auk* 100:477–484.

Knight, R.L, and S.K. Skagen. 1988. “Effects of Recreational Disturbance on Birds of Prey: A Review.” In *Proceedings of the Southwest Raptor Management Symposium and Workshop*, 355–359. Institute of Wildlife Research, National Wildlife Federation Sci. Tech. Series No. 11.

Kochert, M.N, and K. Steenhof. 2002. “Golden Eagles in the U.S. and Canada: Status, Trends, and Conservation Challenges.” *Journal of Raptor Research* 36:32–40.

Kochert, M.N., K. Steenhof, L.B. Carpenter, and J.M. Marzluff. 1999. “Effects of Fire on Golden Eagle Territory Occupancy and Reproductive Success.” *Journal of Wildlife Management* 63:773–780.

Kochert, M.N., K. Steenhof, C.L. McIntyre, and E.H. Craig. 2002. “Golden Eagle.” In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed October 2012. doi: 10.2173/bna 684.

Kramer, J.L., and P.T. Redig. 1997. “Sixteen Years of Lead Poisoning in Eagles, 1980–95: An Epizootiologic View.” *Journal of Raptor Research* 31(4):327–332.

Lehman, P.E. 1994. *The Birds of Santa Barbara County, California*. Santa Barbara, California: University of California, Vertebrate Museum.

Lehman, R.N. 2001. "Raptor Electrocution on Power Lines: Current Issues and Outlook." *Wildlife Society Bulletin* 29(3): 804–813.

Lehman, R.N., P.L. Kennedy, and J.A. Savidge. 2007. "The State of the Art in Raptor Electrocution Research: A Global Review." *Biological Conservation* 136:159–174.

Lehman, R.N., J.A. Savidge, P.L. Kennedy, and R.E. Harness. 2010. "Raptor Electrocution Rates for a Utility in the Intermountain Western United States." *Journal of Wildlife Management* 74:459–470.

Linthicum, J., R.E. Jackman, B.C. Latta, J. Koshear, M. Smith, and J.W. Watson. 2007. "Annual Migrations of Bald Eagles to and from California." *Journal of Raptor Research* 41(2): 106–112.

Mabie, D.W., M.T. Meredino, and D.H. Reid. 1995. "Prey of Nesting Bald Eagles in Texas." *Journal of Raptor Research* 29(1): 10–14.

Marzluff, J.M., S.T. Knick, M.S. Vekasy, L.S. Schueck, and T.J. Zarriello. 1997. "Spatial Use and Habitat Selection of Golden Eagles in Southwestern Idaho." *Auk* 114:673–687.

Menkens, G.E. Jr., and S.H. Anderson. 1987. "Nest Site Characteristics of a Predominantly Tree-Nesting Population of Golden Eagles." *Journal of Field Ornithology* 58(1): 22–25.

Mosher, J.A., and C.M. White. 1976. "Directional Exposure of Golden Eagle Nests." *Canadian Field-Naturalist* 90:356–359.

NatureServe. 2014. "*Haliaeetus leucocephalus*." *NatureServe Explorer: An Online Encyclopedia of Life [web application]*. Version 7.1. Arlington, Virginia: NatureServe. Data last updated July 2013. Accessed May 7, 2014. http://explorer.natureserve.org/servlet/NatureServe?searchSciOrCommonName=Haliaeetus%20leucocephalus.

Oberholser, H.C. 1906. *The North American Eagles and Their Economic Relations*. Bulletin 27. Washington, D.C.: U.S. Department of Agriculture Biological Survey.

Olendorff, R.R., A.D. Miller, and R.N. Lehman. 1981. "Suggested Practices for Raptor Protection on Power Lines – State of the Art in 1981." *Raptor Research Report* 4: 1–111.

Pagel, J.E., D.M Whittington, and G.T. Allen. 2010. *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations*. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. February 2010.

Palmer, R.S., ed. 1988. "Golden Eagle, *Aquila chrysaetos*." In *Handbook of North American Birds, Vol. 5; Family Accipitridae (Concluded): Buteos, Golden Eagle; Family Falconidae: Crested Caracara, Falcons*, 180–231. New Haven, Connecticut: Yale University Press.

Phillips, R.L. 1986. "Current Issues Concerning the Management of Golden Eagles in Western USA." *Birds of Prey Bulletin* 3:149–153.

Phillips, R.L., A.H. Wheeler, J.M. Lockhart, T.P. McEneaney, and N.C. Forrester. 1990. *Nesting Ecology of Golden Eagles and Other Raptors in Southeastern Montana and Northern Wyoming*. Fish and Wildlife Technical Report 26. Washington, D.C.: U.S. Fish and Wildlife Service.

Polite, C., and J. Pratt. 1999. "Bald Eagle, *Haliaeetus leucocephalus*." Life History Account. California Wildlife Habitat Relationships System, California Department of Fish and Game, California Interagency Wildlife Task Group. October 1999. file:///C:/Users/lporter/Downloads/LHA_B113.pdf.

Postovit, H.R., and B.C. Postovit. 1987. "Impacts and Mitigation Techniques." In *National Wildlife Federation Raptor Management Techniques Manual*, edited by B.A. Giron Pendleton, B.A. Millsap, K.W. Cline, and D.M. Bird, 183–208. Washington, D.C.: National Wildlife Federation.

Richardson, C.T., and C.K. Miller. 1997. "Recommendations for Protecting Raptors from Human Disturbance: A Review." *Wildlife Society Bulletin* 25:634–638.

Robards, F.C., and J.G. King. 2008. "Nesting and Productivity of Bald Eagles in Southeast Alaska – 1966," 157–168. In *Bald Eagles in Alaska*, edited by B.A. Wright and P. Schrempf. Juneau, Alaska: Bald Eagle Research Institute, University of Alaska Southeast. Originally published in1966.

Roberson, D. 2002. *Monterey Birds: Status and Distribution of Birds in Monterey County, California*. 2nd ed. Carmel, California: Monterey Peninsula Audubon Society.

Scott, T.A. 1985. "Human Impacts on the Golden Eagle Population of San Diego County." Master's thesis; San Diego State University.

Smith, D.G., and J.R. Murphy. 1973. "Breeding Ecology of Raptors in the Eastern Great Basin Desert of Utah." *Brigham Young University Science Bulletin, Biological Series* 18(3): 1–76.

Stalmaster, M.V. 1983. “An Energetics Simulation Model for Managing Wintering Bald Eagles.” *Journal of Wildlife Management* 47:349–359.

Stalmaster, M.V., and J.L. Kaiser. 1998. “Effects of Recreation Activities on Wintering Bald Eagles.” *Wildlife Monographs* 137:1–46.

Stalmaster, M.V., and J.R. Newman. 1978. “Behavioral Responses of Wintering Bald Eagles to Human Activity.” *Journal of Wildlife Management* 42:506–513.

Stalmaster, M.V., and J.R. Newman. 1979. “Perch-Site Preference of Wintering Bald Eagles in Northwest Washington.” *Journal of Wildlife Management* 43:221–224.

Steenhof, K., L. Bond, and L.L. Dunn. 2008. *The Midwinter Bald Eagle Survey Results and Analysis 1986–2012*. U.S. Geological Survey, National Biological Information Infrastructure, and Northwest Alliance for Computational Science and Engineering. Accessed June18, 2014. http://ocid.nacse.org/nbii/eagles/.

Steenhof, K., M.N. Kochert, and T.L. McDonald. 1997. “Interactive Effects of Prey and Weather on Golden Eagle Reproduction.” *Journal of Animal Ecology* 66:350–362.

Steenhof, K., M.N. Kochert, and M.Q. Moritsch. 1984. “Dispersal and Migration of Southwestern Idaho Raptors.” *Journal of Field Ornithology* 55:357–368.

Steidl, R.J., K.D. Kozie, G.J. Dodge, T. Pehovski, and E.R. Hogan. 1993. Effects of Human Activity on Breeding Behavior of Golden Eagles in Wrangell-St. Elias National Park and Preserve: A Preliminary Assessment. WRST Research and Resource Report No. 93-3. National Park Service, Wrangell-St. Elias National Park and Preserve, Copper Center, Alaska.

Suter, G.W. II, and J.L. Joness. 1981. “Criteria for Golden Eagle, Ferruginous Hawk, and Prairie Falcon Nest Site Protection.” *Raptor Research* 15:12–18.

Tejon Ranch Company. 2013. “Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area” [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

Tejon Ranch Conservancy. 2013. “Biological resources GIS data, including Ranchwide bird, mammal, and plant point location data” [Shapefiles]. Received from Tejon Ranch Company on January 7, 2014.

Tejon Ranch Conservancy. 2014. Email communication with Keith Babcock (Dudek). June 30, 2014.

Thelander, C.G. 1974. *Nesting Territory Utilization by Golden Eagles (*Aquila chrysaetos*) in California during 1974*. Wildlife Management Branch Administrative Report no. 74-7. January 1, 1974.

Todd, C.S. 1989. "Golden Eagle." In *Northeast Raptor Management Symposium and Workshop: Proceedings, 1989, May 16–18, Syracuse, NY*, 65–70. National Wildlife Federation Scientific and Technical Series 13. Washington, DC: National Wildlife Federation.

TRC (Tejon Ranch Company), Sierra Club, National Audubon Society, National Resources Defense Council, Endangered Habitats League, Planning and Conservation League, Tejon Ranch Conservancy, and Centennial Founders LLC, Tejon Industrial Corp., and Tejon Mountain Village LLC. 2008. *Tejon Ranch Conservation and Land Use Agreement*. June 17, 2008. http://www.sec.gov/Archives/edgar/data/96869/000119312508138009/dex1028.htm.

Unitt, P. 2004. *San Diego County Bird Atlas*. San Diego, California: San Diego Natural History Museum.

USFS (U.S. Forest Service). 2013. "Put on Your Eagle Eyes! It's Time to Count Eagles!" USFS, San Bernardino National Forest. February 2, 2013. http://www.fs.usda.gov/detail/sbnf/news-events/?cid=STELPRDB5408473.

USFWS (U.S. Fish and Wildlife Service). 1986. *Pacific Bald Eagle Recovery Plan*. Portland, Ore.: U.S. Fish and Wildlife Service.

USFWS. 1998. *San Joaquin Valley Upland Species Recovery Plan.* Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2004. *Protocol for Evaluating Bald Eagle Habitat and Populations in California*. June 2004.

USFWS. 2007a. "National Bald Eagle Management Guidelines." U.S. Fish and Wildlife Service. May 2007.

USFWS. 2007b. "Bald Eagle Population Size." Accessed July 3, 2014. http://www.fws.gov/midwest/eagle/population/baeanosbystate99to06.pdf

USFWS. 2008. *Birds of Conservation Concern 2008*. Arlington, Virginia: USFWS, Division of Migratory Bird Management. December 2008. Accessed July 26, 2010. http://www.fws.gov/migratorybirds.

USFWS. 2009. *Post-Delisting Monitoring Plan for the Bald Eagle (*Haliaeetus leucocephalus*) in the Contiguous 48 States*. Minneapolis and St. Paul, Minnesota: U.S. Fish and Wildlife Service, Division of Endangered Species and Migratory Birds and State Programs, Midwest Regional Office.

USFWS. 2012a. "The Bald and Golden Eagle Protection Act." Access October 2014. http://www.fws.gov/midwest/midwestbird/eaglepermits/bagepa.html

USFWS. 2012b. "Species Profile: Bald Eagle (*Haliaeetus leucocephalus*)." U.S. Fish and Wildlife Service: Environmental Conservation Online System. Accessed September 2012. http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008.

USFWS. 2013. *Eagle Conservation Plan Guidance, Module 1 – Land-Based Wind Energy. Version 2*. USFWS Division of Migratory Bird Management. April 2013. http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf.

USFWS. 2015. "Birds of Conservation Concern." Migratory Bird Program. Accessed October 25, 2015. http://www.fws.gov/migratorybirds/currentbirdissues/management/BCC.html.

Watson, J. 1997. *The Golden Eagle*. London: T. and A.D. Poyser.

Watson, J.W., M.G. Garrett, and R.G. Anthony. 1991. "Foraging Ecology of Bald Eagles in the Columbia River Estuary." *Journal of Wildlife Management* 55(3): 492–299.

Wheeler, B.K. 2003. *Raptors of Western North America: The Wheeler Guides*. Princeton, New Jersey: Princeton University Press.

Wheeler, B.K. 2007. *Raptors of Eastern North America: The Wheeler Guides*. Princeton, New Jersey: Princeton University Press.

WRI (Wildlife Research Institute). 2014. "Bald Eagles: Lake Henshaw, Ramona, and Lake Morena, San Diego County." July 2, 2014.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife, Volume 2: Birds*. Sacramento, California: California Department of Fish and Game.

8.2 Figure References

CDFW (California Department of Fish and Wildlife). 2015. California Natural Diversity Database GIS Layer. October 2015.

Bloom Biological Inc. 2014. "Results from 2014 Aerial Golden Eagle (*Aquila chrysaetos*) Nest Surveys for the Grapevine Project, Kern County, California." Letter report from Peter H. Bloom (Bloom Biological Inc.) to Keith Babcock (Dudek). February 23, 2014.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report*. Prepared for Tejon Mountain Village LLC by Dudek. May 2009.

McIntosh & Associates. 2013. "Grapevine Project Site Boundary GIS Data" [Shapefiles]. Received from McIntosh & Associates on July 25, 2013.

McIntosh & Associates. 2014. "Grapevine Project Footprint GIS Data" [Shapefiles]. Received from McIntosh & Associates on April 8, 2014.

Tejon Ranch Conservancy. 2013. "Biological resources GIS data, including Ranchwide bird, mammal, and plant point location data" [Shapefiles]. Received from Tejon Ranch Company on January 7, 2014.

TRC (Tejon Ranch Company). 2013a. "Tejon Ranch Boundary GIS Data" [Shapefiles]. Received from TRC on October 15, 2013.

TRC. 2013b. "Grapevine Planning Area Boundary GIS Data" [Shapefiles]. Received from TRC on January 8, 2013.

TRC. 2013c. "Infrastructure GIS Data" [Shapefiles]. Received from TRC on February 12, 2013.

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SOURCES: McIntosh & Associates 2013; TRC 2013a, 2013b

The Grapevine Study Area (McIntosh & Associates 2013) and Tejon Ranch (2013a) boundaries appear on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 1

Regional Location

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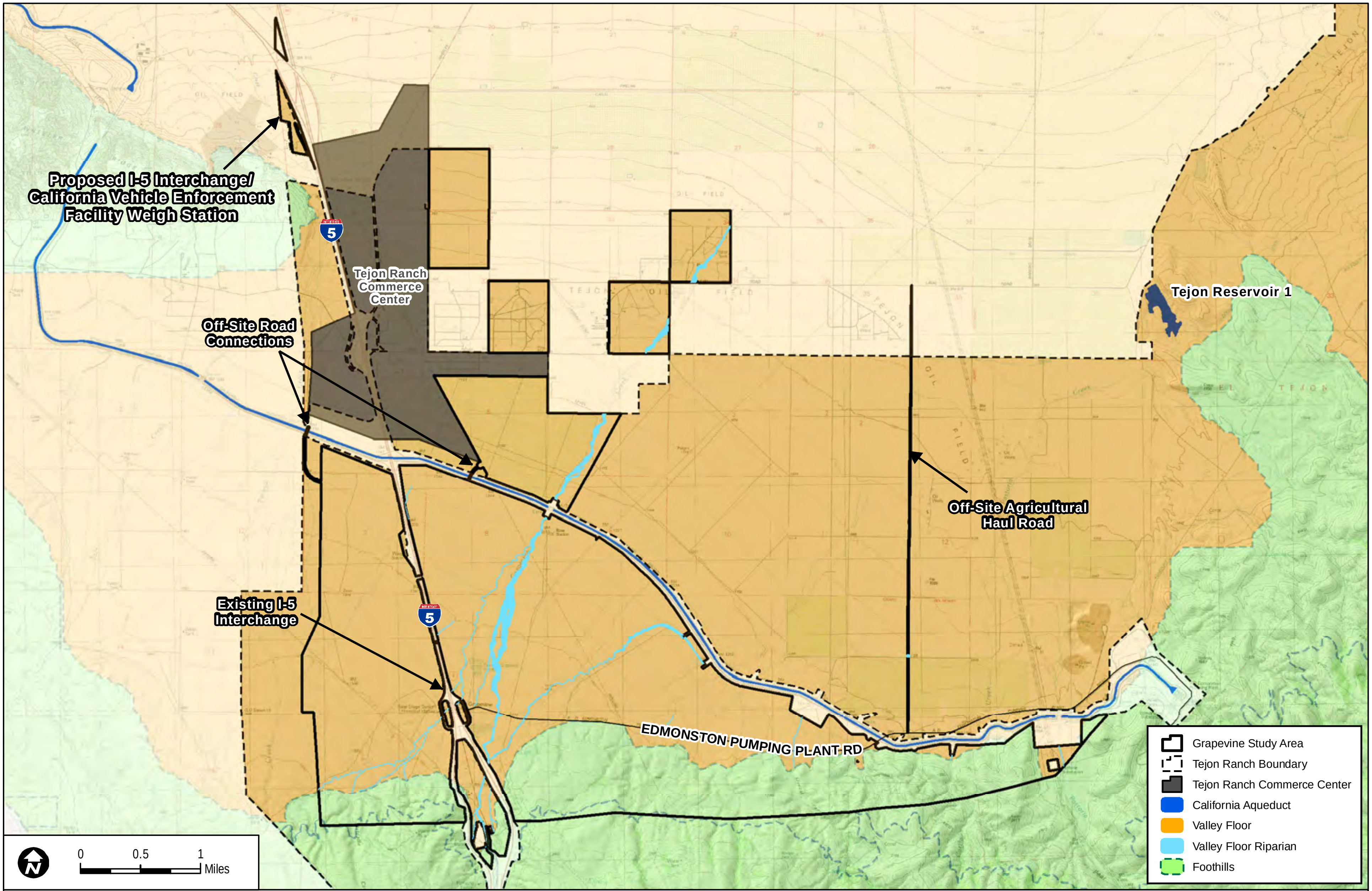

SOURCES: McIntosh & Associates 2014; TRC 2013c

The California aqueduct (TRC 2013c) appears on subsequent figures; the source information will not be provided on subsequent figures.

FIGURE 2

Vicinity Map

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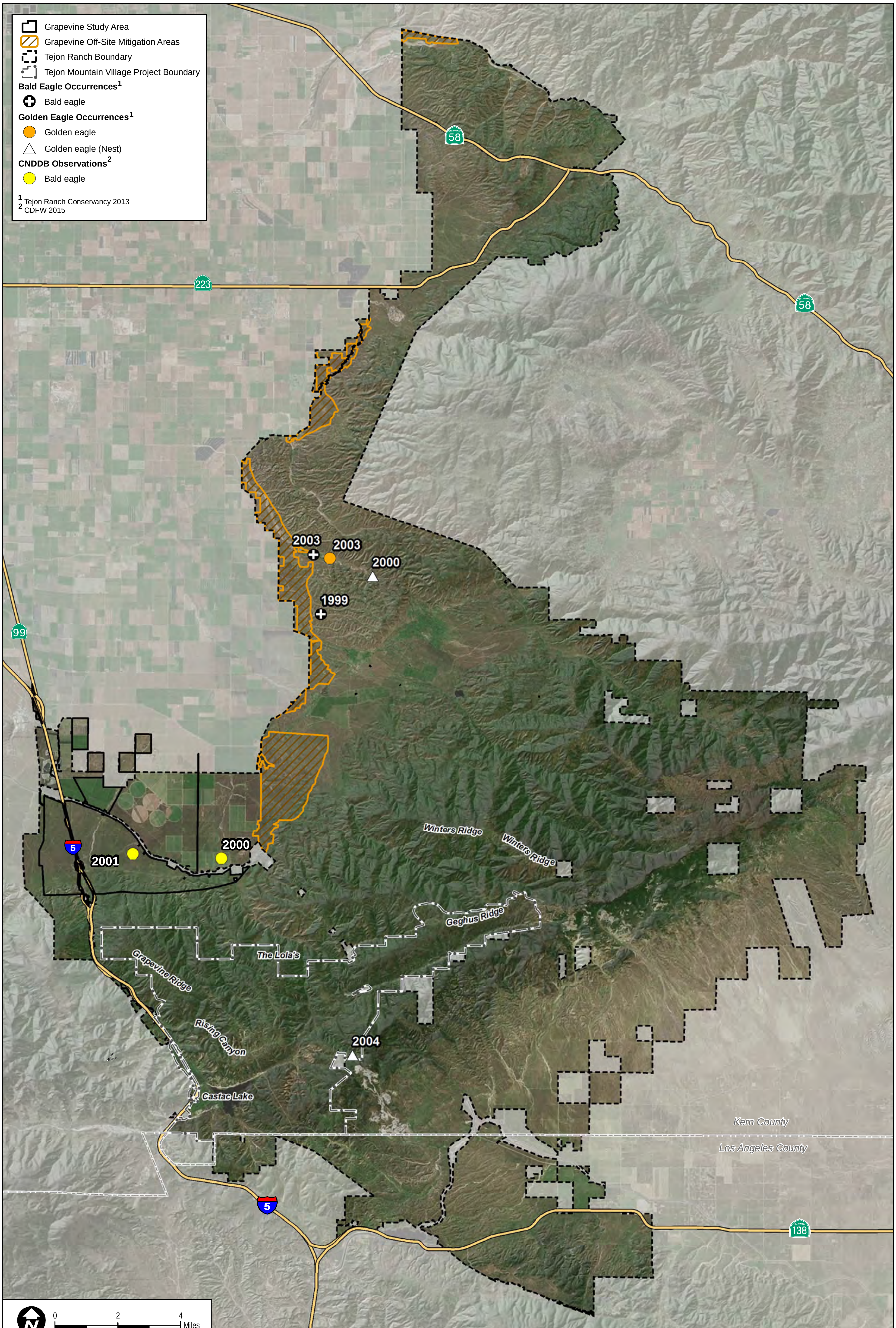

SOURCES: Tejon Ranch Conservancy 2013; CDFW 2015

FIGURE 3

Bald and Golden Eagle - Past Records (Up to 2004)

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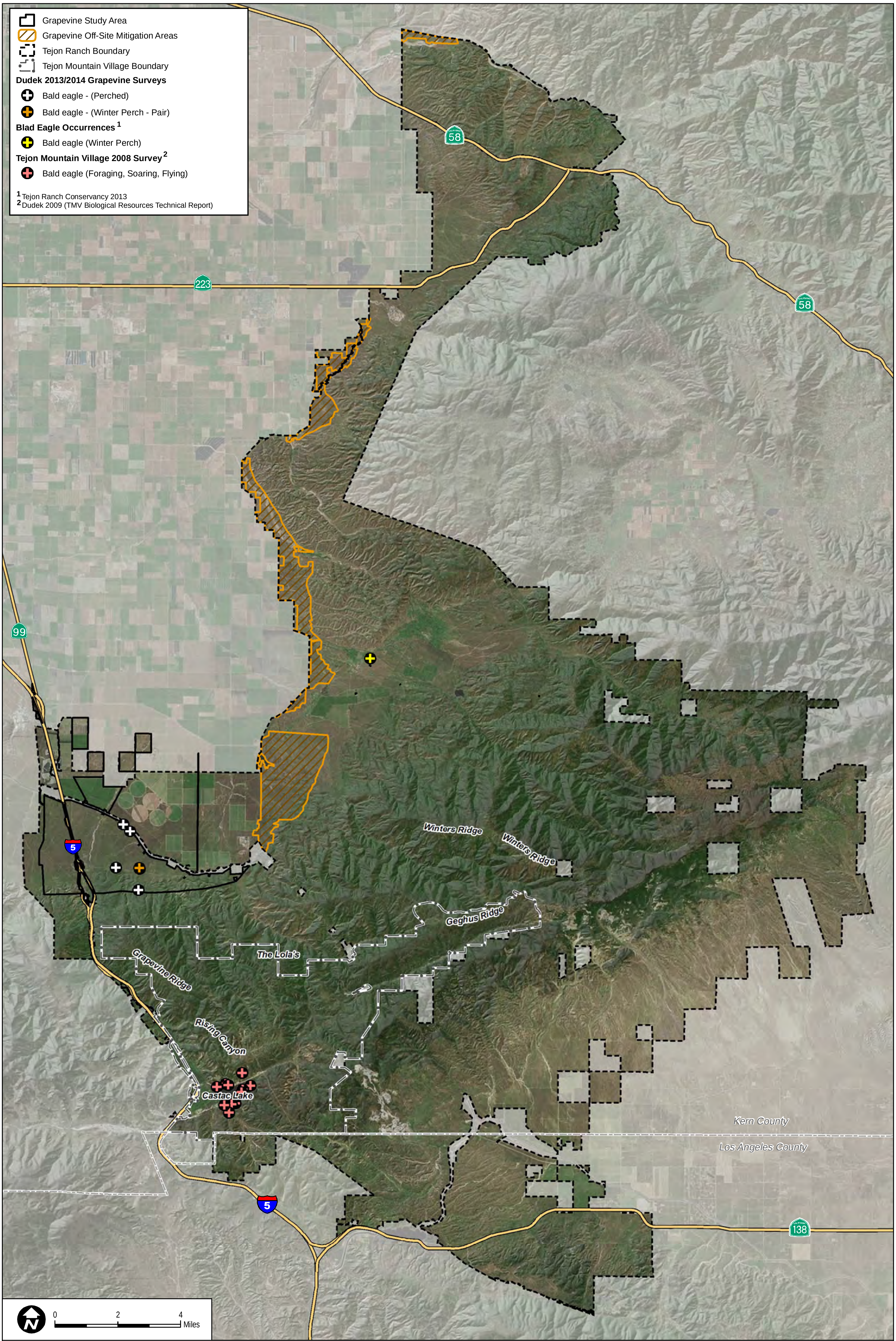

SOURCES: Dudek 2009; Tejon Ranch Conservancy 2013

FIGURE 4

Bald Eagle - Recent Records (2005-2015)

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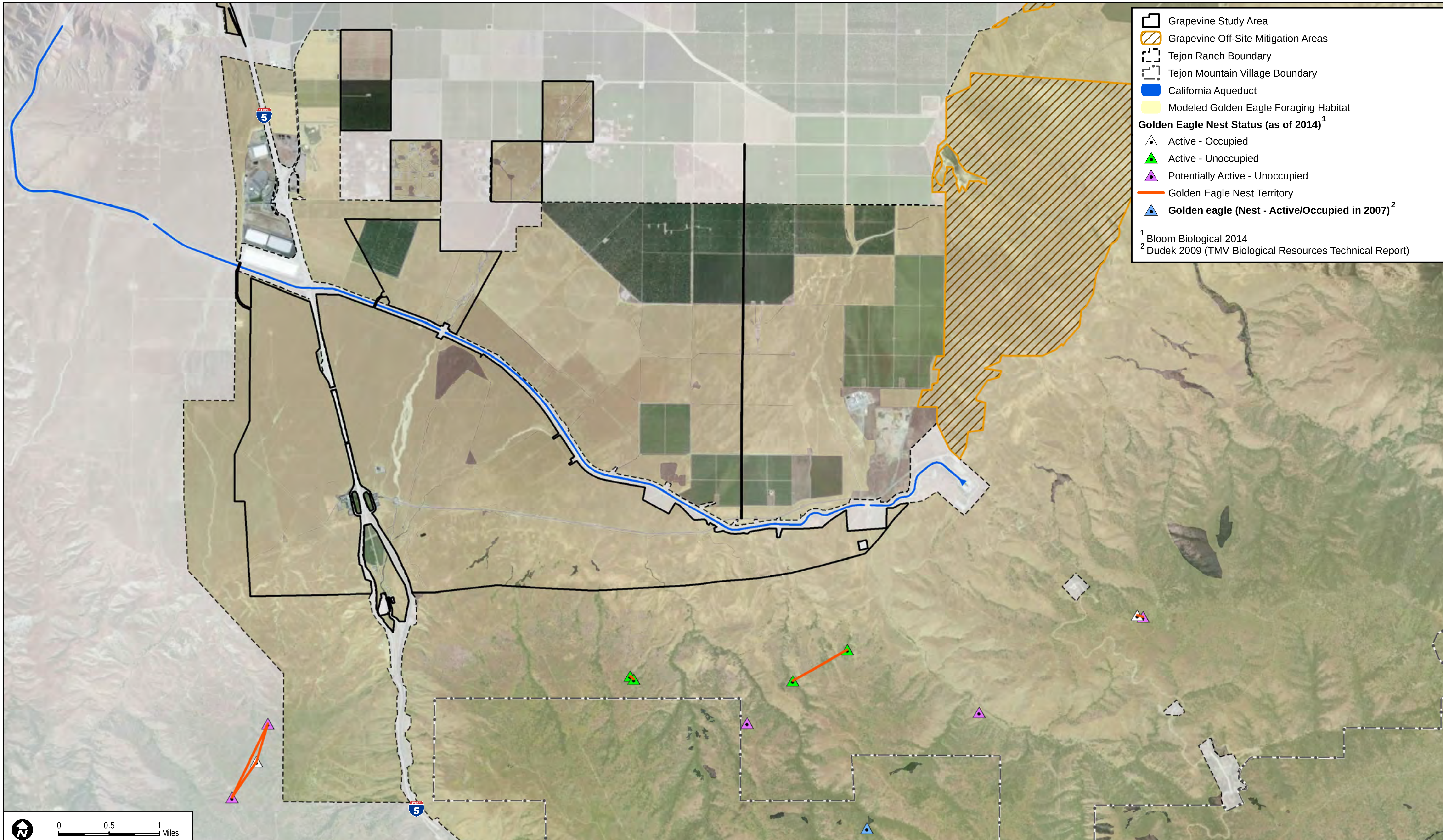

SOURCES: Bloom Biological 2014; TRC 2014; Dudek 2009

FIGURE 5

Golden Eagle Foraging Habitat and Active/Potentially Active Nests

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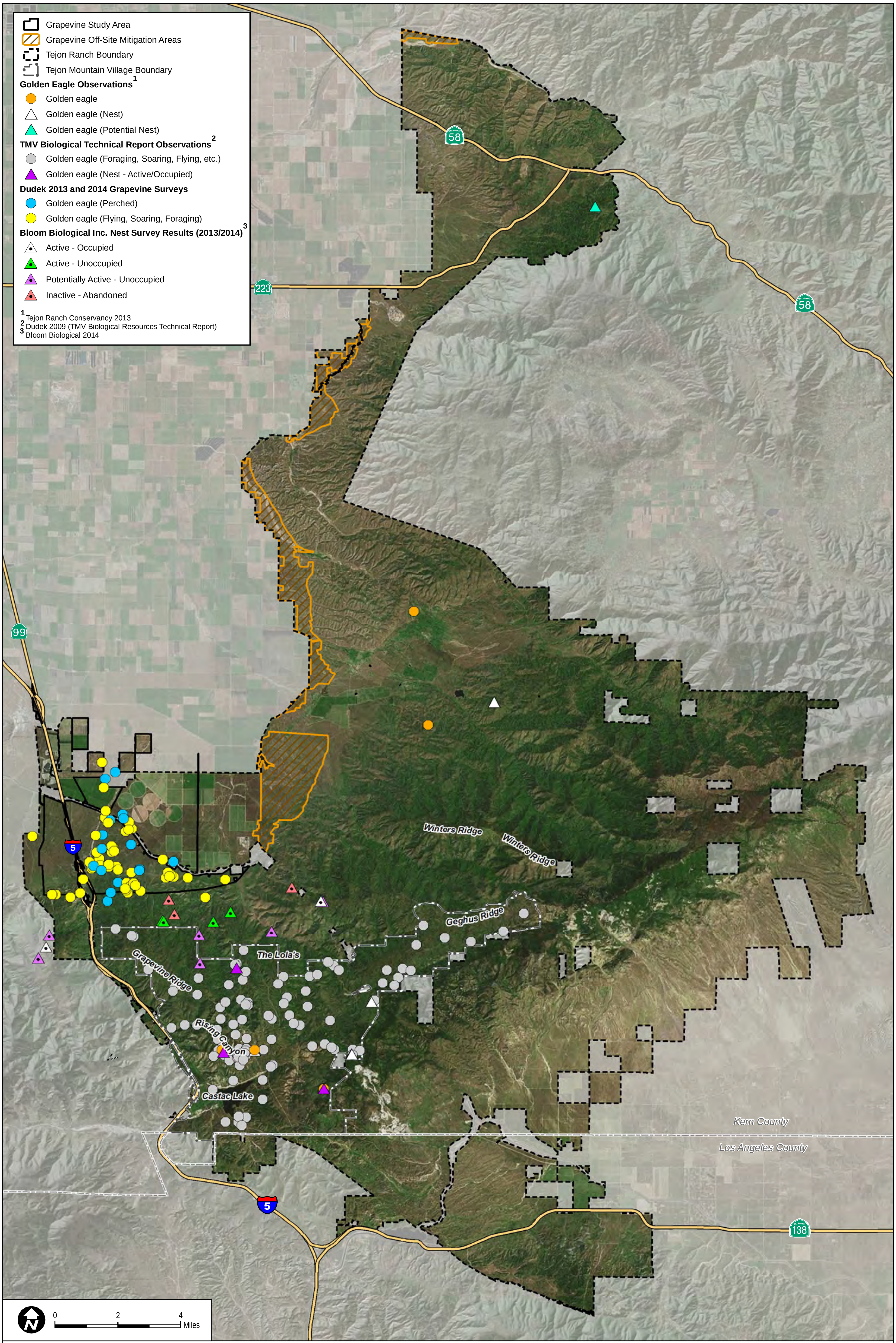

SOURCES: Dudek 2009; Tejon Ranch Conservancy 2014; Bloom Biological 2014

FIGURE 6

Golden Eagle - Recent Records (2005-2015)

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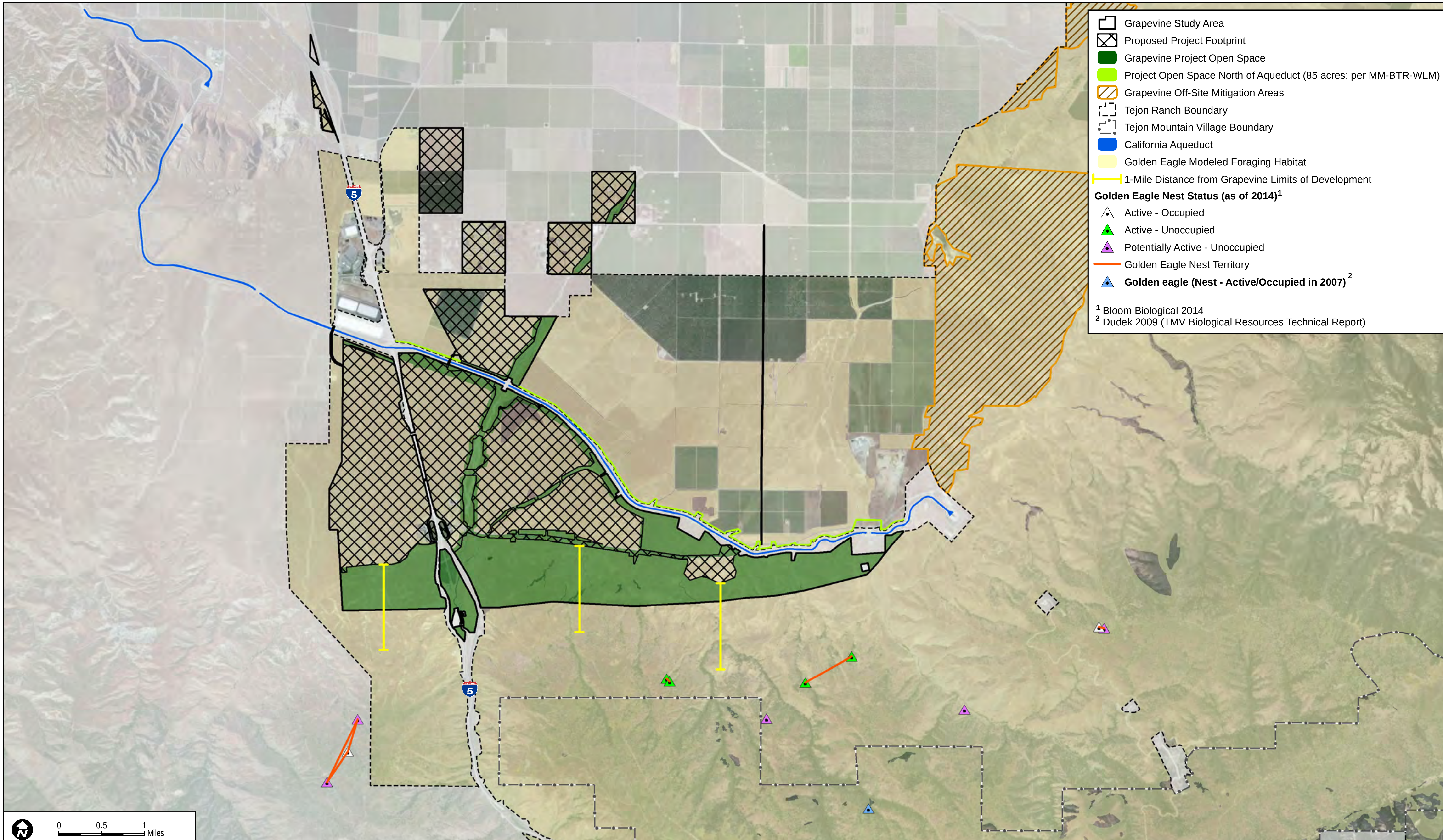

SOURCES: Bloom Biological 2014; McIntosh & Associates 2014; TRC 2014; Dudek 2009

FIGURE 7

Golden Eagle Foraging Habitat and Active/Potentially Active Nests within Proposed Project Footprint

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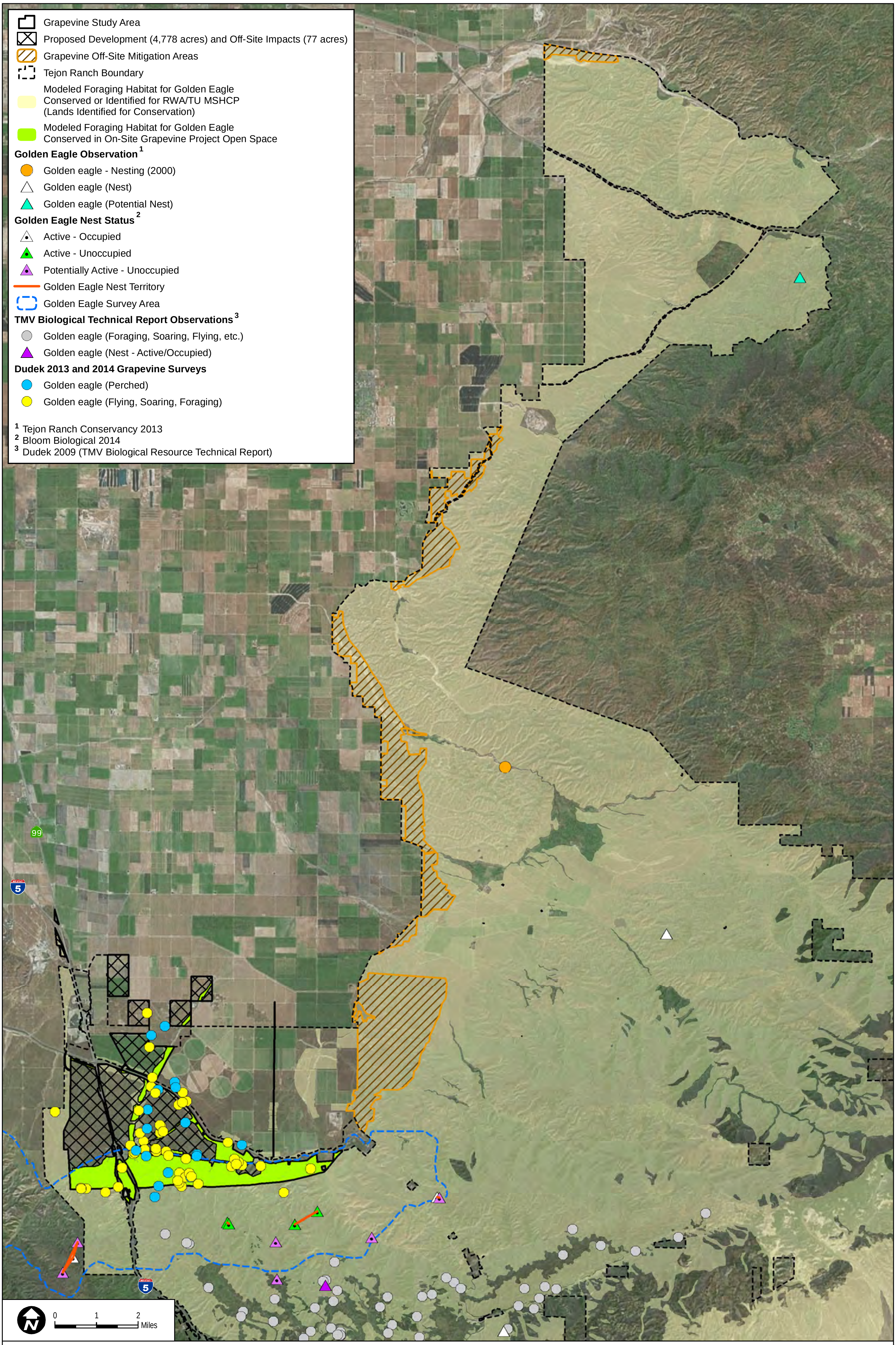

SOURCES: Dudek 2009; TRC 2007; 2014; Bloom Biological 2014; McIntosh & Associates 2014; Tejon Ranch Conservancy 2013

FIGURE 8

Preserved Golden Eagle Foraging Habitat within and Adjacent to the Grapevine Project

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APPENDIX M

Bat Study

APPENDIX M
Bat Survey

The Biological Resources Technical Report (BTR) summarizes the bat surveys and results for the Grapevine project. A full description of the bat survey methods is presented in Appendix B, Biological Resources Survey Methods. This appendix provides the complete results for bat occurrence in the Ranchwide Agreement[1] (RWA) Grapevine Development Area and potential roosts in the Grapevine study area and adjacent aqueduct crossings. The results are organized in the following sections: Anabat survey results and bat roosting assessment and surveys.

1 ANABAT SURVEY RESULTS

Eighteen Anabat passive survey stations were established in the 15,644-acre RWA Grapevine Development Area between July 15 and August 4, 2013, with 16 of the 18 stations monitored for 7 nights, 1 station (station 6) monitored for 4 nights, and 1 station (station 14) monitored for 5 nights (see Appendix B for survey methods). Of these, 14 stations are located within the study area.[2] The locations of the 18 stations are shown on Figure 2-9B of the BTR. Figures M-1 and M-2 show the stations within the study area and include charts of species' activity levels at each of the stations. Of the 18 stations, 4 stations (10, 12, 16, and 17) were off site, but within the RWA Grapevine Development Area, and therefore the results were evaluated for potential presence of the bats in the RWA Grapevine Development Area. For example, stations 12, 16 and 17 are located near the proposed off-site agriculture haul road. Figure M-3 includes the charts of species' activity levels at each of these stations.

Thirteen bat species were detected during Anabat surveys completed between July 15 and August 4, 2013, including four special-status bats and nine non-special-status bats (Table M-1). Overall bat species richness in the RWA Grapevine Development Area is relatively high, with the 13 detected species representing 57% of the approximately 23 bat species that occur in California. The large number of bat species detected in the RWA Grapevine Development Area indicates high use of the RWA Grapevine Development Area by bats, primarily for foraging, as discussed in more detail below.

Table M-1
Bat Species Detected in Grapevine Study Area

Scientific Name	Common Name	Status
Antrozous pallidus	Pallid bat	SSC
Corynorhinus townsendii	Townsend's big-eared bat	SC, SSC
Eptesicus fuscus	Big brown bat	None

1 Tejon Ranch Conservation and Land Use Agreement is referred to herein as the Ranchwide Agreement.
2 The initial surveys were conducted throughout the larger Ranchwide Agreement Grapevine Development Area, and this appendix describes the results from this area unless otherwise stated in the text.

Table M-1
Bat Species Detected in Grapevine Study Area

Scientific Name	Common Name	Status
Eumops perotis californicus	Western mastiff bat	SSC
Lasiurus blossevillii	Western red bat	SSC
Lasiurus cinereus	Hoary bat	None
Myotis californicus	California myotis	None
Myotis ciliolabrum	Western small-footed myotis	None
Myotis lucifugus	Little brown bat	None
Myotis volans	Long-legged myotis	None
Myotis yumanensis	Yuma myotis	None
Parastrellus hesperus	Canyon bat	None
Tadarida brasiliensis	Brazilian free-tailed bat	None

Status
SC = State Candidate
SSC = California Species of Special Concern

Special-status and non-special-status bats are described separately below.

1.1 Special-Status Bats

The four special-status bats detected were pallid bat (*Antrozous pallidus*; SSC), western mastiff bat (*Eumops perotis californicus*; SSC), western red bat (*Lasiurus blossevillii*; SSC), and Townsend's big-eared bat[3] (*Corynorhinus townsendii*; state candidate for listing as threatened or endangered, SSC). Exact numbers of individuals cannot be determined by acoustic monitoring alone because the difference between single vocalization files made by different individuals or multiple vocalization files made by the same individual cannot be distinguished. In order to summarize the relative activity of the different bat species and to standardize the data in order to make comparisons (e.g., activity per unit time, such as number of nights), the analysis applied methods described by Miller (2001). The sum of 1-minute time blocks for which a species was detected as present was used to calculate an acoustic activity index (AI), or relative magnitude of each species' contribution to spatial use. The AI was calculated as the sum of 1-minute time blocks for which a species was detected divided by the number of nights of sampling (i.e., 4, 5, or 7 nights depending on the station). The result was then multiplied by 100 by convention to depict AIs as whole numbers in order to avoid any problems of exceedingly small decimal numbers where activity levels were low. Multiplying by 100 does not alter the arithmetic relationship among AI scores.

Table M-2 lists the special-status bat AI results and the vegetation types present at the different stations, including three stations in valley oak woodland–arroyo willow association; two in Fremont cottonwood forest–red willow thickets association; 1 in a complex of open water, southern cattail

3 Townsend's big-eared bat was detected off site just north of the California Aqueduct at station 16 (BTR Figure 2-9B).

association, and red willow thickets association; two in valley oak woodland/grass association; five in primarily non-native grasslands; one in tamarisk thickets; one in eucalyptus groves semi-natural stands; one in disturbed habitat; and two in agriculture /non-native grasslands. Table M-3 displays the total AI for both the special-status and non-special status species for comparative purposes.

Table M-2
Special-Status Bat Survey Results by Location (Acoustic Activity Index)

Station No.	Vegetation Type at Station	Bat Species				AI
		Pallid bat	*Western mastiff bat*	*Western red bat*	*Townsend's big-eared bat*	
On-Site Stations						
1	Valley oak–arroyo willow association	314	0	0	0	*314*
2	Valley oak–arroyo willow association	0	0	0	0	*0*
3	Non-native grassland	0	0	0	0	0
4	Valley oak woodland/ grass association	0	0	0	0	0
5	Valley oak woodland/ grass association	0	0	0	0	0
6	Valley oak–arroyo willow association	0	0	0	0	0
7	Open water, southern cattail association, and red willow thickets association	29	14	0	0	43
8	Tamarisk thickets semi-natural stands	0	0	0	0	0
9	Disturbed habitat	0	43	0	0	43
11	Non-native grassland	14	0	0	0	14
13	Non-native grassland	0	14	14	0	29
14	Fremont cottonwood forest–red willow thickets association	0	0	0	0	0
15	Non-native grassland (scattered trees)	0	0	0	0	0
18	Non-native grassland	14	14	0	0	29
	Subtotal On-Site AI	*371*	*85*	*14*	*0*	*472*
Off-Site Stations						
10	Fremont cottonwood forest–red willow thickets association	2,114	0	57	0	2,171
12	Eucalyptus groves semi-natural stands	43	0	0	0	43
16	Agriculture/non-native grasslands	1,014	0	0	14	1,029
17	Agriculture/non-native grasslands	500	14	200	0	714
	Overall AI	**4,043**	**100**	**271**	**14**	**4,429**

Table M-3
Acoustic Activity Indices for All Bats Detected in Project Study Area

Common Name	AI
Special-Status Bats	
Pallid bat	4,043
Western red bat	271
Western mastiff bat	100
Townsend's big-eared bat	14
Total	**4,429**
Mean AI for Special-Status Bats	*1,107*
Non-Special-Status Bats	
Big brown bat	42,021
Hoary bat	86
California myotis	9,800
Western small-footed myotis	9,665
Yuma myotis	62,657
Long-legged myotis	3,229
Canyon bat	64,358
Little brown bat	25,579
Brazilian free-tailed bat	18,049
Total	**235,444**
Mean AI for Non-Special-Status Bats	*26,160*

Compared to the non-special-status bats (discussed below), the special-status bats generally had lower AIs, with pallid bat (the highest AI of the special-status bats by far) exceeding the AIs for only two of the non-special-status bats—hoary bat and long-legged myotis. These results indicate that there is low to moderate relative representation of special-status bat activity across the RWA Grapevine Development Area compared to overall bat activity.

Three of the four special-status bats were detected at stations within the project boundary, with Townsend's big-eared bat only detected off site at station 16, approximately 1,000 feet outside the project boundary; this species also had the lowest AI of all the bat species detected in the RWA Grapevine Development Area. Overall, pallid bat was recorded at 8 of 18 stations and accounted for 91% of the special-status bat activity in the RWA Grapevine Development Area. Western mastiff bat had low overall activity relative to pallid bat, but occurred at 5 of the 18 stations, including 2 sites associated with disturbed habitat and non-native grasslands (stations 9 and 13). Western red bat was detected at three stations, including one on site (station 13) and two off site (stations 10 and 17), and also had low overall activity compared to pallid bat. See Figures M-1 and M-2 for station locations and results.

Although a majority of the stations (14 out of 18) were located within the study area, special-status bat activity within the study area had a total AI of 472, accounting for only 11% of the total special-status bat activity detected at the 18 stations (Table M-2). Station 10, off site, was the most active site for the special-status bats, with an AI of 2,171 and representing 49% of all special-status bat activity detected in the Study Area. Station 10 was just south of the study area, located in the Interstate 5 (I-5) median strip adjacent to Fremont cottonwood forest–red willow thickets association. The second most active station was station 16 with an AI of 1,029, or 23% of the overall activity. Station 16 was also off site in areas of agriculture and non-native grassland just north of the California Aqueduct, near the proposed off-site agriculture haul road. Pallid bat accounted for the vast majority of activity by special-status bats at these two sites, with 97% of the activity at station 10 and almost 99% of the activity at station 16. The only other special-status bat detected at station 10 was western red bat (a tree bat), and the only other special-status bat detected at station 16 was Townsend's big-eared bat. The station with the highest special-status bat activity in the study area was station 1 located in valley oak–arroyo willow association in the southern foothills region of the project. Station 1 had an AI of 314 (7% of total activity), but all of the detected activity at this station was by pallid bat.

Six of the 14 on-site stations had special-status bat activity, but there was no clear relationship between presence of the special-status bats and vegetation types at the stations. Three of the six stations with bat activity are associated with non-native grasslands; one is associated with valley oak–arroyo willow association; one is associated with the open water, southern cattail association, and red willow thickets association complex; and one is associated with disturbed habitat. At off-site stations, both Fremont cottonwood forest–red willow thickets association (station 10) and agriculture/non-native grasslands (station 16) had very high levels of activity. The variety of vegetation types supporting bat activity in the RWA Grapevine Development Area indicates that the special-status bats are foraging in multiple habitats, but at relatively low levels in the study area (compared to off-site stations).

Eight of the 14 stations on site had no recorded special-status bat activity (Table M-2). As with the stations with recorded activity, there was no clear pattern of absence related to vegetation types. Stations with no activity were associated with both grasslands and riparian/woodlands.

1.2 Non-Special-Status Bats

The nine non-special-status bats detected were big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), Yuma myotis (*Myotis yumanensis*), long-legged myotis[4] (*Myotis volans*), canyon bat (*Parastrellus hesperus*), little brown bat (*Myotis lucifugus*), and Brazilian free-tailed

[4] Long-legged myotis was only detected off site at stations 10, 16, and 17 (BTR Figure 2-9B).

bat (*Tadarida brasiliensis*). These species were detected at the 18 stations (Table M-4). With the exception of hoary bat, with an AI of 86, and long-legged myotis, with an AI of 3,229, all of the non-special-status bats had much higher activity levels in the RWA Grapevine Development Area than the special-status bats (Table M-3). The three most active non-special-status bats were canyon bat (27% of total activity by non-special-status bats), Yuma myotis (26% of total activity), and big brown bat (18% of total activity), accounting for 70% of all non-special-status bat activity in the RWA Grapevine Development Area.

Activity by non-special-status bats was recorded at all 18 stations, but activity levels were highly variable and, as with the special-status bats, not clearly related to vegetation types at the station. For example, total activity was highest at off-site station 10 in Fremont cottonwood forest–red willow thickets association, with 25% of the total activity and representing all 9 non-special-status species, but the second highest activity level was at station 17 in agriculture/non-native grasslands, with 19% of the total activity and also representing all 9 non-special-status species. By far, disturbed habitat at station 9 had the lowest level of activity, with only 0.2% of total activity, but even this site had activity by 6 of the 9 non-special-status species, as well as the special-status western mastiff bat.

For the 14 on-site stations, stations 6 and 7 accounted for 44% of the activity within the RWA Grapevine Development Area . Station 6, with an AI of 32,275, was located in a well-developed stand of valley oak–arroyo willow association in the foothill region of the study area. While this station had the highest amount of overall activity by non-special-status species, only 5 of the 9 species were recorded at this site, and 4 of these 5 accounted for more than 99% of the activity at the site. Station 6 also had no activity by special-status species. Station 7, with an AI of 23,943, was located near the stock pond and red willow thickets association complex, which would be expected to support high insect prey densities and possibly be used for drinking. Station 7 had activity for 6 of the 9 non-special-status bats, but 39% of the activity was accounted for by a single species—canyon bat—followed by big brown bat at 26% of the total activity. Most the stations had six or seven different non-special-status species, and no single station had activity for all nine non-special-status species. These activity data indicate that non-special-status bats occur throughout the study area, but that some areas (i.e., stations 6 and 7) appear to support relatively higher levels of activity.

Table M-4
Non-Special-Status Bat Survey Results by Location (Acoustic Activity Index)

Station No.	Vegetation Type at Station	Bat Species									AI
		Big brown bat	*Hoary bat*	*California myotis*	*Western small-footed myotis*	*Yuma myotis*	*Long-legged myotis*	*Canyon bat*	*Little brown bat*	*Brazilian free-tailed bat*	
On-Site Stations											
1	Valley oak–arroyo willow association	2,129	0	6,386	2,643	871	0	2,843	514	57	15,443
2	Valley oak–arroyo willow association	586	0	0	86	1,457	0	2,571	743	86	5,529
3	Non-native grassland	257	0	71	29	143	0	1,571	71	0	2,143
4	Valley oak woodland/grass association	129	0	0	171	343	0	857	157	86	1,743
5	Valley oak woodland/grass association	757	0	0	229	643	0	2,486	914	43	5,071
6	Valley oak–arroyo willow association	5,550	0	0	225	5,600	0	8,775	12,125	0	32,275
7	Open water, southern cattail association, and red willow thickets association	6,200	0	0	300	3,714	0	9,300	300	4,129	23,943
8	Tamarisk thickets semi-natural stands	4,100	43	0	643	2,043	0	1,143	514	1,186	9,671
9	Disturbed habitat	100	14	0	57	43	0	343	29	0	586
11	Non-native grassland	471	0	14	100	786	0	843	0	171	2,386
13	Non-native grassland	586	0	0	14	57	0	500	271	9,986	11,414
14	Fremont cottonwood forest–red willow thickets association	900	0	0	2,140	2,700	0	2,540	340	520	9,140
15	Non-native grassland (scattered trees)	100	0	114	129	186	0	400	543	29	1,500
18	Non-native grassland	429	0	0	57	1,600	0	443	643	129	3,300
Off-Site Stations											
10	Fremont cottonwood forest–red willow thickets association	12,986	14	557	1,786	9,171	29	25,186	8,157	300	58,186
12	Eucalyptus groves semi-natural stands	986	0	14	100	800	0	443	114	243	2,700
16	Agriculture/non-native grasslands	471	0	2,500	0	2,757	471	1,386	43	414	8,043
17	Agriculture/non-native grasslands	5,286	14	143	957	29,743	2,729	2,729	2,100	671	44,372
	Overall AI	**42,021**	**86**	**9,800**	**9,665**	**62,657**	**3,229**	**64,358**	**27,579**	**18,049**	**237,444**

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2 BAT ROOSTING ASSESSMENT AND SURVEY

The study area and adjacent aqueduct crossings were also initially evaluated for potential bat roosting habitat in November 2013, and a follow-up maternity roost survey was conducted between May and September 2014. Potential roosting areas of the 13 detected bat species include crevices in rocky outcrops; caves and rock crevices on cliff faces; natural caves; tree hollows; tree or shrub foliage; riparian foliage; under exfoliating tree bark; beneath rock ledges or rocks on the ground; sinkholes; erosion cavities; rocky canyons; and various human structures, including bridges, barns, porches, buildings (human-occupied or vacant), mines, tunnels, and culverts. Most of the different bat species use some subset of these roost types. For example, Townsend's big-eared bats prefer natural caves and mines, while western red bat uses trees and shrubs with adequate foliage. Pallid bat is one of the most opportunistic species, using a variety of roost types, including caves and crevices, trees, buildings, and even holes in the ground. The roost types listed above, however, cover the range of roosts used by the bats detected in the study area and adjacent aqueduct crossings.

Suitable bat roosts must provide adequate microclimate conditions, provide protection from predators, and be within commuting distance of food and water. For example, not all rock crevices on site are deep enough to provide adequate roost habitat; however, there are several areas of suitable crevice habitat present in the study area and adjacent aqueduct crossings, including rock and boulder outcrops, steep canyon rock faces, and bridge and underpass crevices. Potential roosts in trees include snags, bark, cavities, and adequate foliage to provide protective cover. Water is likely less a limiting factor for roost utilization within the study area due to the relative close proximity of perennial and intermittent water resources to potential bat roost sites. The California Aqueduct, the stock pond, and open water areas of Grapevine Creek all provide drinking sources and foraging habitat for bats.

Two potential maternity roost areas were surveyed in 2014: the abandoned buildings south of Edmonston Pumping Plant Road (on site) and the large concrete underpass for Grapevine Creek at I-5 (off site) (see Figure M-4). Other potential roost sites, such as rocky outcrops and trees, were not a part of this survey. Rocky outcrops were not surveyed because they are only present off site and would not be affected by the project, as discussed in greater detail below. Individual boulders and rees were not surveyed for maternity sites for three reasons: (1) the labor involved in focused surveys would have been prohibitively high due to the large number of potential roosting trees and boulders; (2) only western red bat depends on tree roosts, and the large majority (83%) of its maternal roosting in California is along the Sacramento and San Joaquin Rivers well to the north; and (3) with an AI of 271, western red bat had among the lowest activity levels of the bats detected during surveys. Given the large number of potential roosts and the likely small number of western red bats, if any, using trees in the study area as maternity roosts, the probability of detecting maternity roosts occupied by western red bat would have been very low even with a high level of effort. Further, use of certain trees and boulders for roosting may not be a good predictor of future use since tree characteristics that make them suitable or unsuitable for roosting may change from year to year. The abandoned buildings were surveyed in May 2014 for visual sign of bats entering or leaving the buildings. The I-5 underpass roost surveys consisted of visual surveys of the underpass, as well as acoustic monitoring at each side of the underpass for one evening each in May, June, July, and September (see Appendix B).

2.1 Special-Status Bats

Based on the literature review, the passive acoustic bat survey results reported above, and the reconnaissance-level field observations, two special-status bat species—pallid bat and western red bat—have moderate potential to use roosts for day and/or night roosting within the study area during the summer season and during spring and fall migration (Table M-5). Although western red bats have a moderate potential to use roosts on site, numbers are expected to be small due to its relatively low AI of 271 and detection at only 3 of the 18 stations (Table M-2) and no detection during the roost surveys. Pallid bat is considered to have the highest potential of all the special-status bats to roost on site because of its relatively high activity levels on site and its opportunistic use of a wide variety of roost types. During the November 2013 bat roost habitat assessment, no bats were detected as being active or present at potential roosts in the study area, which supports the assumption that by November, bats had either migrated from the region for the winter season, or dispersed to local winter roosts and were less active. During the 2014 maternity roost surveys, no special-status bats were found roosting in the I-5 underpass, and no bats were observed at the abandoned buildings.

Additional potential bat roost habitat, however, is present within the study area, as shown in Figure M-4, and includes:

- Crevices in rock outcrops, rock cliff faces, and rugged canyons in the foothills;
- Areas beneath boulders in non-native grassland in the foothills; and
- Exfoliating bark, tree cavities or hollows, tree crevices, and foliage found in the mature valley oak woodlands in the foothills, the stock pond in the foothills, and isolated tree patches, and mature cottonwood and willow riparian vegetation found along Grapevine Creek in the valley floor.

Potential bat roost habitats immediately adjacent to the study area include:

- Joints or crevices in one bridge that spans a dry wash on the eastern edge of the study area; and
- Joints or crevices in the larger California Aqueduct underpasses.

Table M-5 summarizes the common roost habitats for special-status bats detected in the RWA Grapevine Development Area, and whether they are likely present in this area . The activity levels for each species are provided as a reference point for the relative activity of the species in the RWA Grapevine Development Area in relation to potential roost sites, and include both the AI discussed in Section 1.1 and the AI from the maternity roost survey acoustic monitoring.

Table M-5
Special-Status Bat Species Roost Habitat Descriptions and Assessment

Common Name	Roost Habitat	Roosts Probable in Project Area	AI
Pallid bat	Rock crevices, buildings, bridges	Yes	21,218
Western red bat	Tree foliage, particularly cottonwoods in riparian areas, sometimes orchards	Yes	271
Western mastiff bat	Rocky cliff face and rugged canyon crevices, exfoliating rock slabs; require locations that allow >2 meter drop for takeoff and flight	Unlikely in project area; possibly adjacent	100
Townsend's big-eared bat	Mines, caves, buildings	Unlikely; none observed in underpass	14

Potential roosting habitat for special-status bats is shown in Figure M-4. Crevice roost habitat, including rock outcrops, canyon rock faces, and boulder fields located in the foothills is the most plentiful type of potential bat roost habitat in the study area and adjacent aqueduct crossings. Rock crevice-roosting species could occur singly or in small groups and may use these roosts for day or night roosts. Some of the crevices could support more than one bat species, with different species using different microhabitats within the crevice itself (e.g., smaller versus larger crevices at the same general roost location). The two abandoned buildings south of Edmonston Pumping Plant Road provide suitable potential roost sites under the shingles and inside the roof rafters, particularly for species that are known to use buildings, such as pallid bat. However, no bat activity was observed near these buildings during focused surveys in 2014, and there is evidence of current barn owl (*Tyto alba*) occupancy inside these buildings, likely precluding bats from using the interior of the buildings. The large, mature valley oak and cottonwood trees in the valley oak woodland alliance and Fremont cottonwood forest alliance provide a moderate amount of roost sites for tree bats such as western red bat, and other bats that may also roost under bark or in tree cavities such as some of the small non-special-status myotis species (see Figure 2-5 of the BTR for distribution of these alliances). The larger trees exhibit exfoliating bark, broken limbs with crevices, and/or hollow cavities that provide potential roost sites, although specific trees were not mapped on Figure M-4. Trees were not surveyed for maternity roosts in 2014 for the reasons explained above.

The I-5 underpass for Grapevine Creek (shown on Figure M-4) provides highly suitable crevice roost habitat and may potentially support larger colonies of bats, including multiple species. The underpass is large and relatively long (approximately 15 feet high and 385 feet long) and cave-like. Concrete joints or crevices approximately 0.5 to 0.75 inch wide occur every 20 feet along the length of the underpass. While it has characteristics suitable for special-status bat species, such as pallid bat and Townsend's big-eared bat, these species were not observed roosting here during the May-September 2014 roost surveys. Although pallid bat was not observed roosting in the underpass, it was detected regularly at both of the acoustic monitoring locations (see Figures M-2 and M-3). Townsend's big-eared bat was not detected during the acoustic monitoring at this underpass, indicating this species does not use this area regularly.

Off site, there are some bridges and underpasses that have some, but less, potential for roosting. The bridge over the California Aqueduct immediately adjacent to the study area, the smaller aqueduct underpasses, and the I-5 bridges at Grapevine Road East and Grapevine Road West provide low roost potential. These features provide low roost potential for bats because they either do not have deep cracks or crevices preferred by bats for roosting (e.g., depth of at least 12 inches), and the smooth concrete surface would make it difficult for bats to cling to for roosting. The concrete bridge over Pastoria Creek adjacent to the eastern edge of the study area and the larger California Aqueduct underpasses provide some concrete joint crevices of a suitable width for bats (less than 1 inch). These areas were not surveyed for maternity roosts in 2014.

2.2 Non-Special-Status Bats

The potential roost habitats described above in Section 2.1 for special-status bats are also suitable for most of the non-special-status bats. Table M-6 summarizes the common roost habitats for non-special-status bats, and whether they are likely present in the RWA Grapevine Development Area . The activity levels for each species are also provided as a reference point for relative abundance of the species in the RWA Grapevine Development Area in relation to potential roost sites, and include both the AI discussed in Section 1.2 and the AI from the maternity roost survey acoustic monitoring. Figures M-1 through M-3 show the AI activity by location.

Table M-6
Non-Special-Status Bat Species Roost Habitat Descriptions and Assessment

Common Name	Roost Habitat	Roosts Probable in Project Area	AI
Canyon bat	Among boulders, cracks, and crevices of rock faces, also possibly kangaroo rat and other rodent burrows	Yes	65,833
Yuma myotis	Buildings, bridges, tree cavities, mines, caves	Yes. A maternity roost of 21–22 individuals was observed off site at the I-5 underpass during each of the surveys conducted between May and September.	82,032

Table M-6
Non-Special-Status Bat Species Roost Habitat Descriptions and Assessment

Common Name	Roost Habitat	Roosts Probable in Project Area	AI
Big brown bat	Loose bark, tree cavities, buildings, barns, bridges, artificial bat houses	Yes. This species was observed roosting in the I-5 underpass in May 2014, but use as maternity site not observed.	49,946
Little brown bat	Buildings, attics, tree cavities and crevices; roosts tend to be close to water where they forage	Yes	27,579
Brazilian free-tailed bat	Bridges, caves, mines, buildings, hollow trees	Yes	19,474
California myotis	Loose tree bark and tree crevices, snag crevices; small maternity colonies can be found in cliff crevices, buildings, bridges	Yes	9,925
Western small-footed myotis	Cliff face crevices, erosion cavities, beneath rocks on the ground; hibernate in caves and mines	Yes	13,290
Long-legged myotis	Exfoliating tree bark, tree cavities, in openings or along forest edges; also roost in rock crevices, cliffs, buildings	Yes	3,229
Hoary bat	Trees along forest borders	Yes	336

The potential roosting areas described in Section 2.1 would be the same for the non-special-status bats.

2.2 Summary

No special-status bats were observed roosting in the abandoned buildings or the I-5 underpass for Grapevine Creek during the visual inspection. Pallid bat was detected from the acoustic monitoring during each of the four maternity bat roost surveys, and overall had the second-highest total AI from the maternity roost surveys and the fifth-highest AI from all of the acoustic surveys conducted on site. Although pallid bats were not observed to use the underpass as a day roost during the survey inspections, they could use the underpass as a night roost because they are known to use human-made structures for roosting and their activity level was relatively high at the underpass entrances. No other special-status bats were detected visually or acoustically during these surveys.

A small Yuma myotis maternity roost was observed at the I-5 underpass for Grapevine Creek (Figure M-4). Yuma myotis were observed roosting in clusters during the May, June, July, and September surveys. A maximum of 21–22 Yuma myotis was observed; this relatively small colony (maternity colonies can support thousands of individuals) was confirmed to be a maternity colony because pups were observed during the July site inspection. Because this was a maternity colony, they would have also used the underpass as a night roost. In addition, two big brown bats were observed roosting in separate crevices away from the Yuma myotis during the May site inspection only but its use as a maternity site was not observed.

REFERENCES

Miller, B.W. 2001. "A Method for Determining Relative Activity of Free Flying Bats Using a New Activity Index for Acoustic Monitoring." *Acta Chiropterologica* 3:93–105.

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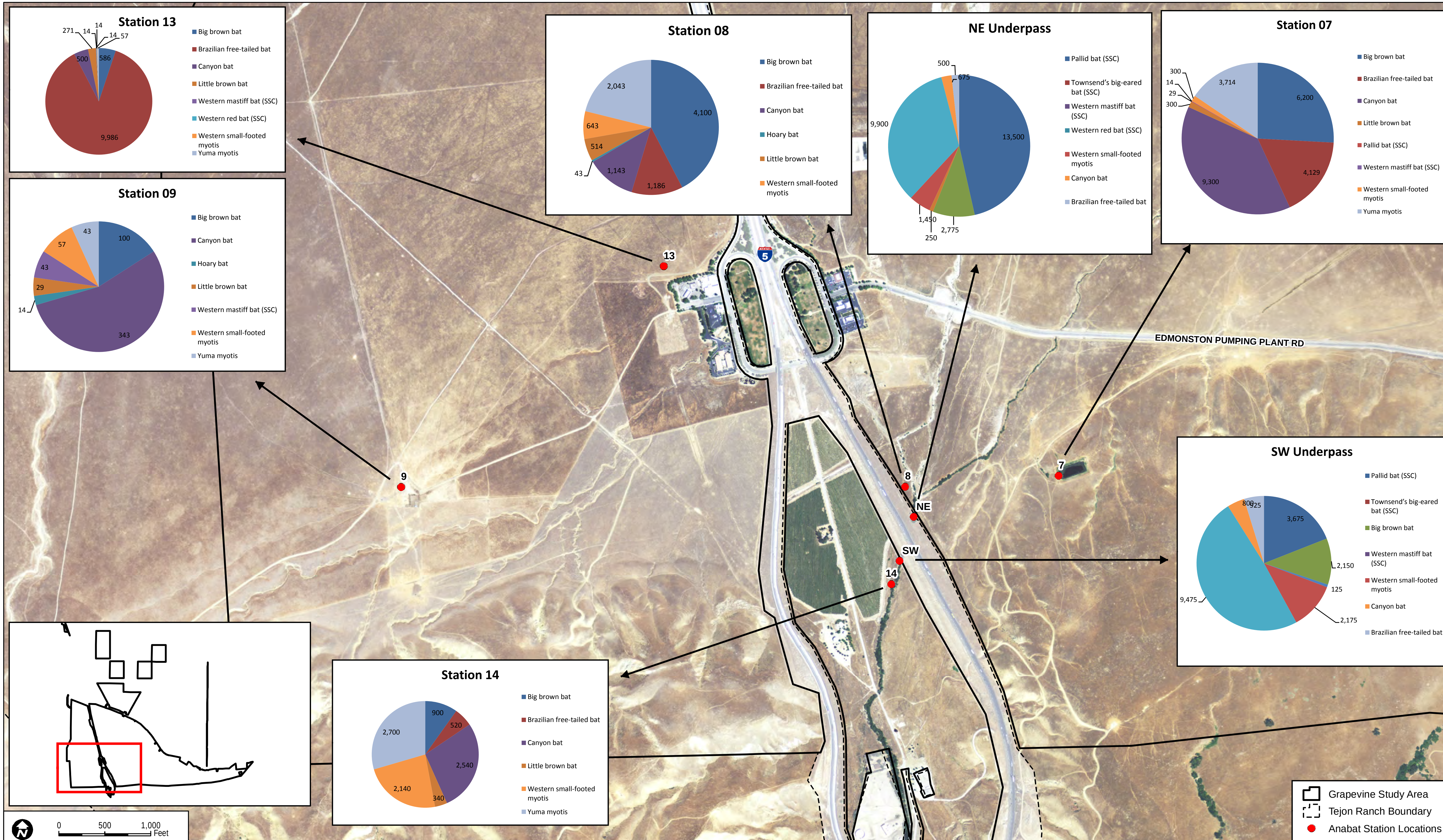

FIGURE M-1

Anabat Survey Results (Acoustic Activity Index) Offsite

GRAPEVINE PROJECT

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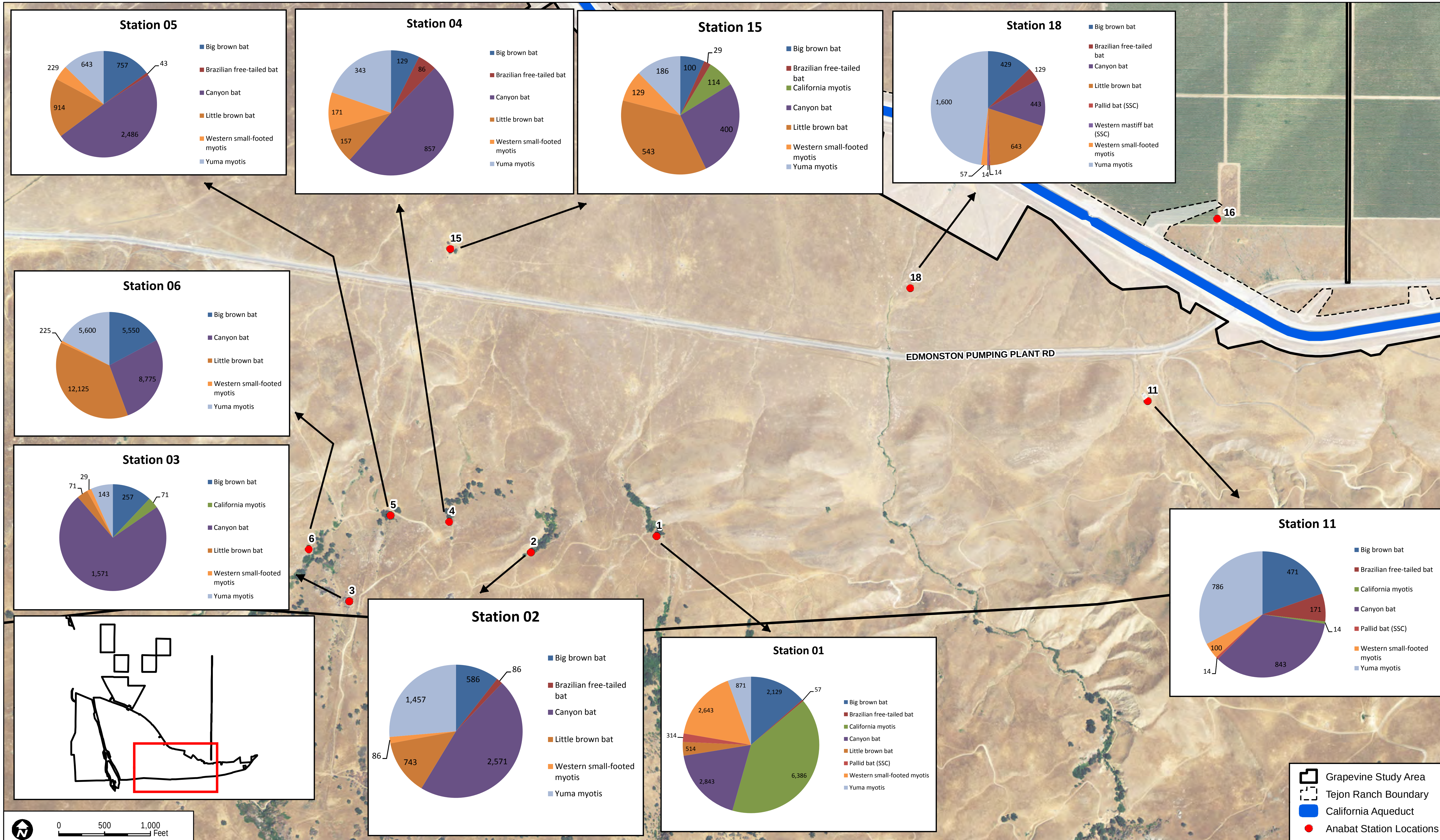

FIGURE M-2

Anabat Survey Results (Acoustic Activity Index) Offsite

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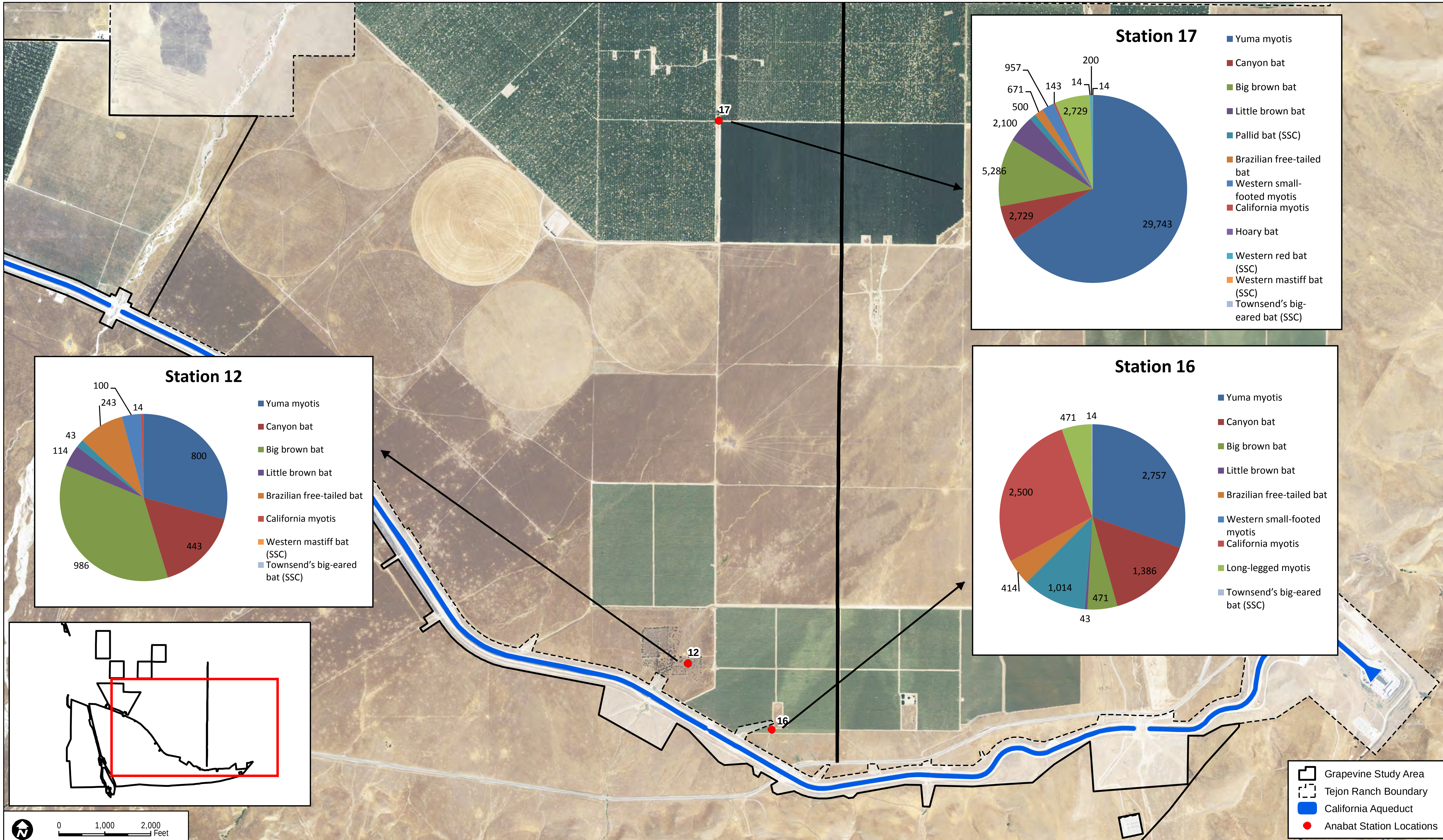

FIGURE M-3

Anabat Survey Results (Acoustic Activity Index) Offsite

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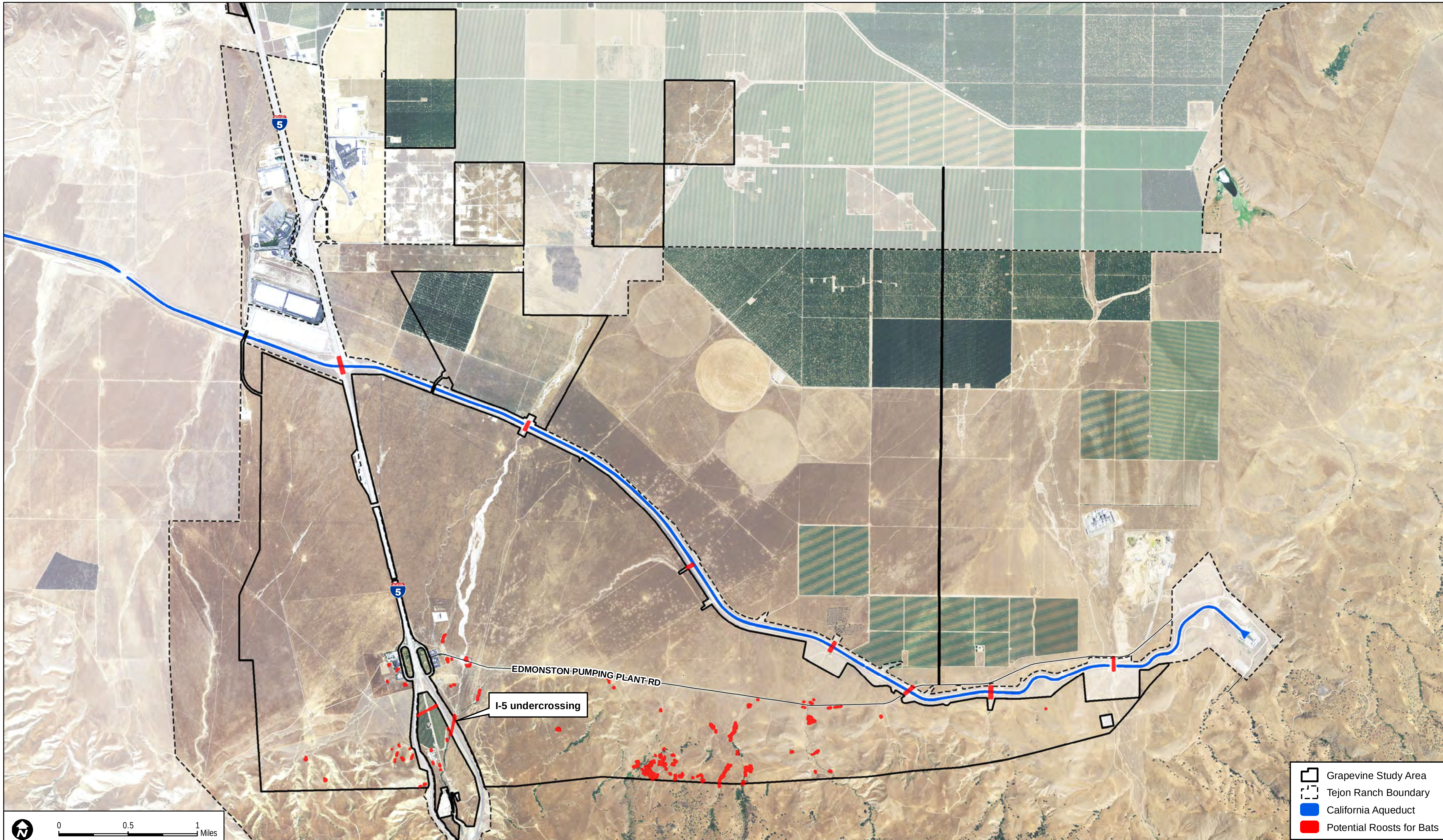

FIGURE M-4

Potential Bat Roost Habitat

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APPENDIX N

Wildlife Movement

APPENDIX N
Wildlife Movement

1 PURPOSE

This document is an appendix to the Biological Resources Technical Report (BTR) for the proposed Grapevine project. Additional information regarding the overall setting and other biological resources on the Grapevine study area (which includes 8,010-acre Grapevine Specific Plan Area and the proposed off-site impact areas) is provided in the BTR.

The purpose of this appendix is to discuss the methods and results of various assessments and studies used to assess the degree to which the study area functions as a regional wildlife movement corridor and to evaluate wildlife movement within the study area. Section 2 describes the literature review, survey, and data collection methods used to evaluate wildlife movement. Section 3 describes the results of the surveys and data collection, Section 4 discusses the focal species wildlife movement in the study area based on this data, and Section 5 summarizes the potential wildlife movement in the study area. A summary of the findings of this appendix is presented in Section 5 and the references cited in the document are listed in Section 6.

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2 METHODS

2.1 Literature Review

Several information and data sources related to wildlife habitat use and movement in the project region were reviewed in support of the wildlife movement evaluation, including but not limited to the following:

- South Coast Missing Linkages Project: A Linkage Design for the Tehachapi Connection (Penrod et al. 2003)
- Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications (Cypher et al. 2013)
- Kit Fox Habitat Survey on Tejon Ranch Properties (Cypher 2010)
- Five-Year Review for San Joaquin Kit Fox (USFWS 2010a)
- Five-Year Review for Blunt-Nosed Leopard Lizard (USFWS 2010b)
- Tejon Mountain Village (TMV) BTR (Dudek 2009; wildlife corridor study section)
- Tejon Mountain Village Final Environmental Impact Report (Kern County 2009)
- Environmental Impact Statement for the Tehachapi Uplands Multiple Species Habitat Conservation Plan (TU MSHCP) (USFWS 2012)
- Datasets from Tejon Ranch Company (TRC), including:
  - TRC 2008/2009 camera data (TRC 2013a)
  - San Joaquin kit fox connectivity corridor models (TRC 2013b).

A variety of other literature related to the natural history of the four focal species for wildlife movement evaluation—San Joaquin kit fox (*Vulpes macrotis mutica*), American badger (*Taxidea taxus*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), and blunt-nosed leopard lizard (*Gambelia sila*)—was also reviewed. Only the American badger has been confirmed on site. These terrestrial species were selected as focal species because they are federally listed, state listed, and/or of special-status and are representative of the San Joaquin Valley floor; range from relatively low to high mobility; are known to move across landscapes either in rapid movement events (e.g., kit fox, badger), or over generations (e.g., squirrel, lizard); and are likely to be sensitive to habitat loss and fragmentation.

2.2 Wildlife Movement Camera Studies

Dudek conducted wildlife corridor, ringtail camera surveys and San Joaquin kit fox camera surveys in 2013 and 2014 (see Appendix B, Survey Methods, of the BTR). In addition to these species camera studies, Dudek reviewed camera study data collected by Impact Sciences Inc. in 2008 and 2009 at several potential I-5 wildlife crossing points ranging from the Gorman area in the south to the California Aqueduct in the north. In 2013 and 2014, Dudek conducted a wildlife movement camera study in the study area, including some of the same potential I-5 crossing points monitored by TRC in 2008/2009 within or in proximity to the study area, some additional I-5 undercrossings in the study area, and at several locations within the wide median strip between the I-5 northbound and southbound lanes south of the commercial Grapevine Center (Figure N-1). The Dudek 2013/2014 wildlife movement study also included cameras at several locations along the California Aqueduct to assess north–south movement by valley floor species. These are described in more detail in the following sections. The 2008/2009 studies are described in Section 2.2.1 (I-5 Crossings Camera Study) and the Dudek 2013/2014 studies are described in Section 2.2.2 (Grapevine Wildlife Corridor Camera Study).

2.2.1 I-5 Crossings Camera Study

Several published studies identify the Tehachapi Mountain range as a critical montane habitat connection between the southern Sierra Nevada range and the Coast Ranges to the west (CDFG 2003). I-5, which borders the study area on the west, has been identified as a potential barrier for wildlife movement across this montane connection (e.g., Penrod et al. 2003, p. 53).

Impact Sciences Inc. conducted a camera study at various I-5 undercrossings between the California Aqueduct at Grapevine in the north to the Gorman area in the south in 2008 and 2009 (TRC 2013a). The camera study involved placement of paired motion-sensitive cameras at both entrances to culverts and overpasses at 14 study sites in 2008/2009. The camera locations are described in Table N-1 and shown on Figure N-1.

These same locations had also been monitored for wildlife use between 2002 and 2007 in response to public interest and as part of the resource assessments conducted for the TMV project (Dudek 2009; Kern County 2009). The results of the 2002–2007 camera study are reported in the BTR for the TMV project (Dudek 2009), the TMV EIR (Kern County 2009), and the TU MSHCP (Dudek 2013).

Dudek obtained the 2008/2009 data from TRC, including camera station data, photographs, summary information, and camera monitoring schedule/problem sheets. These data were reviewed and tabulated to help understand the broader regional wildlife movement patterns and opportunities and constraints to movement related to the proposed project. These data were also compared to the 2002–2007 dataset to determine whether there were any apparent changes in movement patterns and species activity at the crossing sites over time. There were no apparent changes in movement patterns, and, therefore, this section focuses on the results on the 2008–2009 study.

The TRC 2008/2009 study generated 12,821 photographs of species. All photographs were reviewed to determine the species present in the photograph and the direction of movement, where possible. Each camera station is described in Table N-1 and shown on Figure N-1 in terms of the regional location of the photographs taken by each camera (i.e., Grapevine (valley floor and foothills), Castac Lake, and Gorman); crossing type, dimensions, and general location; the surrounding vegetation; and other attributes relevant to wildlife use.

Table N-1
Description of I-5 Crossings Camera Locations

Camera Group	Region	Camera Name	Crossing Type/Location	Surrounding Vegetation	Other Attributes
Grapevine	Valley floor	GV-RC1	I-5 and Aqueduct overpass	Habitat to the east and west of this overpass includes development, agriculture and non-native grassland.	• Paved utility/maintenance overpass.
		GV-RC2 (east and west)	I-5 and Aqueduct underpass	Habitat on either side of the aqueduct includes development, agriculture, and non-native grassland.	• Cameras at each end of the south side of the I-5 underpass at the California Aqueduct located on a dirt pathway (approximately 4 feet wide).
		GV-RC3 (east and west)	Grapevine Center exit	Habitat surrounding I-5 and the camera location include development, disturbed land, agriculture, non-native grassland, mulefat thickets associated with drainages, and unvegetated channels.	• Cameras at each side of the I-5 at both the northbound exit and the southbound exit • Split cement box culvert with each entrance measuring approximately 6 feet in both height and width and approximately 200 feet in length.
	Foothills	GV-RC4 (east and west)	I-5 southbound	Habitat to the east and west of I-5 northbound includes development, disturbed lands, non-native grassland, bladderpod spiderflower shrubland, purple needle grass grassland, unvegetated channels, and Fremont cottonwood–red willow association and mulefat thickets associated with drainages.	• Cameras at each end of the I-5 southbound portion of freeway where northbound and southbound lanes split • Concrete box culvert measures approximately 9 feet in height, 18 feet in width, and approximately 100 feet in length.
		GV-RC5 (east and west)	I-5 northbound	Habitat to the east and west of I-5 northbound includes development, disturbed lands, non-native grassland, bladderpod spiderflower shrubland, purple needle grass grassland, unvegetated channels, and Fremont cottonwood–red willow association and mulefat thickets associated with drainages.	• Cameras at each end of the I-5 northbound portion of freeway where northbound and southbound lanes split • Concrete box culvert measures approximately 9 feet in height, 18 feet in width, and approximately 100 feet in length
		GV-RC6 (east and west)	I-5 southbound	Habitat to the east of the culvert is steep and rocky; a trail cuts along the slope north of the culvert and an oak woodland canyon is present west of I-5 just north of the culvert.	• Cameras at each end of culvert within Grapevine Canyon near a billboard along I-5 southbound

Table N-1
Description of I-5 Crossings Camera Locations

Camera Group	Region	Camera Name	Crossing Type/Location	Surrounding Vegetation	Other Attributes
					• Concrete box culvert measures approximately 6 feet in height, 10 feet in width, and approximately 180 feet in length.
Castac Lake	N/A	TL-RC1 (east and west)	I-5 underpass	Habitat surrounding the entrance to the culvert consists of willow riparian with nettles (*Urtica* sp.) and peppergrass (*Lepidium* sp.). Habitat to the west is composed of oak savanna on a fairly steep slope. Surrounding habitat includes riparian vegetation, non-native grassland, development, and disturbed land.	• Cameras at each end of culvert entrance at the I-5 underpass of the Fort Tejon exit • Concrete box culvert with three openings measuring approximately 6 feet in height, 6 feet in width, and approximately 240 feet in length • Water flows through the middle culvert; the two end culverts are dry with a dirt bottom.
		TL-RC2 (east and west)	I-5 and Lebec Road	Habitat includes development, non-native grassland, oak savanna, and willow riparian habitat along Grapevine Creek.	• Cameras at each end of the paved Lebec Road.
		TL-RC3 (east and west)	Pasture at I-5 underpass	Habitat to the west consists of bulrush, cattails, and peppergrass along a stream commonly inhabited by mallards (*Anas platyrhynchos*), red-winged blackbirds (*Agelaius phoeniceus*), and song sparrows (*Melospiza melodia*). Habitat to the east is composed of wetland grasses such as rushes (*Juncus* spp.).	• Cameras at each end of the culvert entrance along the I-5 underpass between two large pastures • Concrete box culvert measuring approximately 10 feet in height, 12 feet in width, and approximately 100 feet in length.
		TL-RC4 (east and west)	Cuddy Creek at I-5 underpass	Habitat within Cuddy Creek is primarily unvegetated due to extreme scouring.	• Cameras at each end of Cuddy Creek where it crosses under I-5 immediately north of the Frazier Park–Lebec Road-I-5 interchange • Bridge over Cuddy Creek measures approximately 9 to 10 feet in height and 210 feet in width.

Table N-1
Description of I-5 Crossings Camera Locations

Camera Group	Region	Camera Name	Crossing Type/Location	Surrounding Vegetation	Other Attributes
Gorman	N/A	GM-RC1 (east and west)	I-5 underpass, near Gorman sign	Habitat to the east side of the culvert is filled with cattail (*Typha* sp.), bulrushes (*Scirpus* spp., *Schoenoplectus* spp., etc.), nettles, and peppergrass, with rabbitbrush scrub along the bank. Habitat to the west side of the culvert consists of willow riparian with a bank of rabbitbrush scrub.	• Cameras at each end of culvert close to the Gorman exit off I-5 near the Gorman billboard on the north side of the freeway • Concrete twin box culvert measuring approximately 8 feet in height, 14 feet in width (two 7-foot-wide openings), and approximately 140 feet in length • Both sides of the culvert contained water during camera studies, due to a perennial stream flowing through the culvert.
		GM-RC2 (east and west)	Mile marker 5.05, Peace Valley Road	Habitat adjacent to the west and east of the culvert is primarily non-native grassland with intermittent rabbitbrush scrub.	• Cameras located at mile marker 5.05 along Peace Valley Road on State Park land • Concrete box culvert measures approximately 8 feet in height, 8 feet in width, and approximately 375 feet in length.
		GM-RC3 (east and west)	Mile marker 5.60, Peace Valley Road	Habitat on each side of the culvert consists of non-native grassland and rabbitbrush scrub.	• Cameras located at mile marker 5.60 along Peace Valley Road on State Parks land • Concrete box culvert measures approximately 3 feet in height, 4 feet in width, and approximately 100 feet in length • Culvert leads to an unvegetated dry channel.
		GM-RC4 (east and west)	Mile marker 6.13, Peace Valley Road	Habitat on the west side of the culvert is primarily rabbitbrush scrub on a slight slope; vegetation to the east side of the culvert is willow riparian habitat associated with Grapevine Creek.	• Cameras located at mile marker 6.13 along Peace Valley Road on State Parks land • Concrete box culvert measures approximately 9 feet in height, 8 feet in width, and approximately 270 feet in length • Culvert leads to an unvegetated dry channel.

2.2.2 Grapevine Wildlife Corridor Camera Study

Dudek conducted a wildlife corridor camera study from August to October 2013 at various locations throughout the study area and at selected sites at the I-5 and California Aqueduct crossing and additional locations along I-5 south and north of the study area. The camera stations outside of the study area were placed along the California Aqueduct and within the wide I-5 median strip south of the study area (Figure N-2). The selected camera station locations were identified as potentially suitable for wildlife movement based on a review of the previous wildlife movement studies conducted in the area for the TMV project (see Dudek 2009), as well as other studies, maps, and site assessments. Because much of the study area and surrounding landscape is undeveloped, wildlife can be expected to roam freely throughout the region. In order to understand the potential impact of the proposed project on movement, camera stations were established at points where wildlife movement is most likely to be constrained or experience bottlenecks, either currently (e.g., along I-5) or in the future, by development of the proposed project. Key focus areas therefore included undercrossings along portions of I-5 that are located within or adjacent to the study area, natural drainages, dirt roads, California Aqueduct undercrossings and overpasses, and in areas with vegetative cover and water.

The wildlife corridor camera study is supplemental to the focused camera studies for ringtail and San Joaquin kit fox camera surveys that were conducted to determine these species' use of on the study area. Ringtail camera surveys were conducted in late fall of 2013 along the southern end of Grapevine Creek, other water sources, and riparian woodland habitat within and adjacent to the study area. San Joaquin kit fox camera surveys were conducted in early winter and late spring of 2014 within annual grassland areas, along dirt roads, at aqueduct undercrossings and overpasses, and at potential denning sites identified adjacent to and within the study area (see Appendix B of the BTR).

Because the focus of each of the various camera studies was somewhat different, the siting and methods employed at the camera stations varied slightly depending on the study focus (i.e., wildlife corridor, ringtail, or San Joaquin kit fox), but always included at least one digital Reconyx infrared camera with a 2+ GB disk. For example, bait attractants were not used during the wildlife corridor camera study because the purpose of the study was to monitor normal spatial behavior patterns (bait attractants can alter an animal's normal behavior and lure them to areas they may not normally use); however, bait was used for the ringtail and San Joaquin kit fox studies because the study focus was to maximize the chance of detecting the two species. Additionally, the number of camera stations, frequency of checks, and time frame during which cameras were deployed varied depending on the camera study. Each camera station (including ringtail and kit fox cameras) is described in Table N-2 in terms of the regional location of the photographs taken by each camera (i.e., the valley floor or Tehachapi foothills), the survey type (i.e., wildlife movement or species-specific information), crossing type and general location, the surrounding vegetation, and other relevant attributes. Figure N-1 shows the locations of all of the wildlife cameras.

During the wildlife corridor camera studies, 34 camera stations were deployed within and adjacent to the study area. The camera stations were primarily deployed in two sessions, each composed of 15 camera stations[1] strategically distributed throughout the study area and adjacent lands. The first session occurred along Grapevine Road (located in the median between the I-5 northbound and southbound lanes) and the aqueduct crossings east of I-5 and west of the Edmonston Pumping Plant Road crossing of the California Aqueduct. The second session was concentrated along the aqueduct and was conducted from just west of the Edmonston Pumping Plant Road aqueduct crossing to the east where the aqueduct passes under Pastoria Creek. In total, 6 camera stations (GV-RC4A, GV-RC5A, GV-RC7, GV-RC8, GV-RC11, and GV-RC12) were placed at undercrossings along I-5; 3 camera stations (GV-RC1A, GV-RC2A, and GV-AQ26) were positioned along the California Aqueduct and I-5 underpass and overpass; 2 camera stations (GV-RC9 and GV-RC10) were placed along Grapevine Road; 22 camera stations (GV-AQ1, GV-AQ2, GV-AQ3, GV-AQ4, GV-AQ5, GV-AQ6, GV-AQ7, GV-AQ8, GV-AQ9, GV-AQ12, GV-AQ13, GV-AQ14, GV-AQ16, GV-AQ17, GV-AQ18, GV-AQ19, GV-AQ21, GV-AQ22, GV-AQ23, GV-AQ24, GV-AQ25, and GV-AQ28) were placed along aqueduct crossings, including 2 (GV-AQ1 and GV-AQ2) at Grapevine Creek and 4 (GV-AQ22, GV-AQ23, GV-AQ24, and GV-AQ25) at Pastoria Creek; 2 camera stations (GV-AQ15 and GV-AQ20) were situated to face a wildlife trail and drainage leading from aqueduct crossings, and 2 camera stations (GV-AQ10 and GV-AQ11) were placed on dirt roads along the aqueduct. The majority of the cameras along the aqueduct were placed at concrete culverts that convey stormwater flows across the aqueduct during rain events or provide access across the aqueduct via overpasses (see Table N-2). All of the culvert undercrossings and their associated drainages were dry during the camera studies (which were mostly conducted during the dry season). Other camera stations were positioned to view roads, drainages, and trails selected as potential wildlife corridors during the literature and aerial map review of the area, and based on detection of wildlife use (wildlife sightings, tracks, scat, or other signs) identified during site reconnaissance and camera station installation.

Once camera stations were selected, their locations were photographed and a data point was recorded using GPS with sub-meter accuracy. Each camera station was checked every 14 days; thus, camera station checks occurred on the 14th day and upon removal of camera stations from a location, which generally occurred on day 28. During camera checks, photographs were downloaded and camera stations were assessed for any camera malfunctions or adjustments in the field needed to maximize species detections (e.g., tipped camera stations, moved cameras,

[1] Four of the camera stations were moved on day 14.

faulty SD cards, low batteries, swaying vegetation tripping cameras). Any adjustments made in the field were documented. The images were thoroughly assessed and a compiled list of all wildlife species identified from the photographs was generated.

Most cameras were maintained in place for a period of 28 consecutive days; however, four of the camera stations (GV-AQ12, GV-AQ14, GV-AQ16, and GV-AQ18) were relocated to new locations (GV-AQ13, GV-AQ15, GV-AQ17, and GV-AQ19) during the camera check on the 14th day of the second session. Photographs from the four original camera locations showed that the aqueduct undercrossings were being use as denning sites by raccoons (*Procyon lotor*), likely precluding use by other species. Therefore, these four camera stations were relocated to other aqueduct crossings in the area. This second set of four camera stations was maintained in place for a period of 14 consecutive days during the beginning of the second session of the study, and then positioned at a new aqueduct undercrossing location during the remaining 14 days of the second session.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
California Aqueduct				
GV-AQ1	Wildlife corridor	Underpass of aqueduct access road along Grapevine Creek	Surrounding habitat primarily includes non-native grassland and disturbed land. The majority of Grapevine Creek is unvegetated in this area.	• Camera on east side of Grapevine Creek where aqueduct crosses under the drainage, beneath aqueduct road; facing southwest toward Grapevine Creek • Camera east of GV-AQ2, under bridge at Grapevine Creek (dry during study) along eastern blocked segment • Bridge over Grapevine Creek measures approximately 11 feet 5 inches in height, 15 feet 6 inches in width, and 84 feet in length
GV-AQ2	Wildlife corridor	Underpass of aqueduct access road along Grapevine Creek	Surrounding habitat primarily includes non-native grassland and disturbed land. The majority of Grapevine Creek is unvegetated in this area.	• Camera on west side of Grapevine Creek where aqueduct crosses under the drainage, beneath aqueduct road; facing south toward Grapevine Creek • Camera west of GV-AQ1, under bridge at Grapevine Creek (dry during study) along western blocked segment • Bridge over Grapevine Creek measures approximately 11 feet 5 inches in height, 15 feet 6 inches in width, and 84 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ3	Wildlife corridor	Underpass through large box culvert and overpass of aqueduct	Surrounding habitat primarily includes non-native grassland and disturbed land; however, there is also an unvegetated channel south of the aqueduct.	• Camera on west side of concrete box culvert; facing northwest toward western entrance to culvert crossing • Camera west of GV-AQ28, on same concrete box culvert • Concrete box culvert was dry during study; conveys water flow from unnamed drainage across the aqueduct during rain events • Concrete box culvert measures approximately 5 feet 11 inches in height, 14 feet 2 inches in width, and 300 feet in length.
GV-AQ4	Wildlife corridor	Aqueduct overpass	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands and development associated with dirt and paved roads. Other habitats include semi-natural stands of eucalyptus groves and small communities of purple needle grass grassland and silver bush lupine scrub.	• Camera on south side of aqueduct, within the easternmost concrete box segment of triple box culvert; facing north • Camera east of both GV-AQ5 and GV-AQ6 along the same concrete triple box culvert, which is separated into three separate concrete blocks • Concrete triple box culvert was dry during study; conveys water from an unnamed drainage across the aqueduct during rain events • Easternmost box culvert measures approximately 8 feet in height, 13 feet in width, and 315 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ4	Wildlife corridor	Aqueduct underpass through large box culvert	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands and development associated with dirt and paved roads. Other habitats include semi-natural stands of eucalyptus groves and small communities of purple needle grass grassland and silver bush lupine scrub.	• Camera on south side of aqueduct, along the center concrete block segment of triple box culvert; facing north • Camera east of GV-AQ5 and GV-AQ6 along the same concrete triple box culvert, which is separated into three separate concrete blocks • Concrete triple box culvert was dry during study; conveys water from an unnamed drainage across the aqueduct during rain events • Easternmost box culvert measures approximately 8 feet in height, 13 feet in width, and 315 feet in length.
GV-AQ5	Wildlife corridor	Aqueduct underpass through large box culvert	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands and development associated with dirt and paved roads. Other habitats include semi-natural stands of eucalyptus groves and small communities of purple needle grass grassland and silver bush lupine scrub.	• Camera on south side of aqueduct, along the center concrete block segment of triple box culvert; facing north • Camera west of GV-AQ4 and east of GV-AQ6 along the same concrete triple box culvert, which is separated into three separate concrete blocks • Concrete triple box culvert was dry during study; conveys water from an unnamed drainage across the aqueduct during rain events • Center box culvert measures approximately 8 feet in height, 13 feet in width, and 315 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ6	Wildlife corridor	Aqueduct underpass through large box culvert	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands and development associated with dirt and paved roads. Other habitats include semi-natural stands of eucalyptus groves, and small communities of purple needle grass grassland and silver bush lupine scrub.	• Camera on south side of aqueduct, along the westernmost concrete block segment of triple box culvert; facing northeast • Camera west of both GV-AQ4 and GV-AQ5 along the same concrete triple box culvert, which is separated into three separate concrete blocks • Concrete triple box culvert was dry during study; conveys water from an unnamed drainage across the aqueduct during rain events • Westernmost box culvert measures approximately 8 feet in height, 13 feet in width, and 315 feet in length.
GV-AQ7	Wildlife corridor	Small pipe culvert under aqueduct	Habitat surrounding camera station location primarily includes non-native grassland. Other surrounding habitats include mulefat thickets north of the aqueduct and scattered communities of semi-natural stands of eucalyptus groves, purple needle grass grassland, and silver bush lupine scrub.	• Camera south of aqueduct, facing north towards a concrete pipe culvert that crosses the aqueduct • Concrete pipe culvert dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events • Concrete pipe culvert measures approximately 6 feet 2 inches in height, 7 feet 4 inches in width, and 450 feet in length.
GV-AQ8	Wildlife corridor	Underpass through somewhat narrow box culvert and overpass of aqueduct	Surrounding habitat primarily includes agriculture, non-native grassland, disturbed lands (dirt roads), and development (Edmonston Pumping Plant Road), with scattered communities of California buckwheat scrub, purple needle grass grassland, and eucalyptus woodland.	• Camera on northeast side of aqueduct, facing northeast toward northeastern entrance to concrete box culvert • Camera northeast of GV-AQ9 along the same concrete box culvert • Concrete box culvert was dry during study; conveys water across aqueduct from an unnamed drainage during rain events • Concrete box culvert measures approximately 7 feet 9 inches in height, 7 feet in width, and 315 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ9	Wildlife corridor	Underpass through somewhat narrow box culvert and overpass of aqueduct	Surrounding habitat primarily includes agriculture, non-native grassland, disturbed lands (dirt roads), and development (Edmonston Pumping Plant Road), with scattered communities of California buckwheat scrub, purple needle grass grassland, and eucalyptus woodland.	• Camera on southwest side of aqueduct, facing northeast toward concrete box culvert • Camera southwest of GV-AQ8 along the same concrete box culvert • Concrete box culvert was dry during study; conveys water across aqueduct from an unnamed drainage during rain events • Concrete box culvert measures approximately 5 feet in height and width, and 315 feet in length.
GV-AQ10	Wildlife corridor	Dirt road south of where Edmonston Pumping Plant Road crosses over the aqueduct	Habitat primarily includes non-native grassland, agriculture, and disturbed land, with scattered patches of California buckwheat scrub, purple needle grass grassland, and development.	• Camera on northeast side of aqueduct, facing northwest toward dirt road and Edmonston Pumping Plant Road on north side of the aqueduct • Dirt road is approximately 15 feet wide.
GV-AQ11	Wildlife corridor	Dirt road south of where Edmonston Pumping Plant Road crosses over the aqueduct	Habitat primarily includes non-native grassland, agriculture, and disturbed land, with scattered patches of California buckwheat scrub, purple needle grass grassland, and development.	• Camera on the southwest side of aqueduct, facing north toward a dirt utility road and Edmonston Pumping Plant Road on south side of the aqueduct • Dirt road is approximately 15 feet wide.
GV-AQ12	Wildlife corridor	Small pipe culvert 290.71	Surrounding habitat includes non-native grassland, agriculture, development, disturbed lands (dirt roads), and small patches of California buckwheat scrub to the south.	• Camera on north side of aqueduct facing west toward a latrine and wildlife trail • Camera immediately north of GV-AQ14 and associated with same aqueduct culvert (290.71) • Camera was deployed at this location for 14 days during the beginning of the second session prior to being moved to the new location (GV-AQ13) for the remaining 14 days of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ13	Wildlife corridor	Small pipe culvert 291.46	Habitat surrounding the aqueduct is composed primarily of non-native grassland, agriculture, disturbed lands, and developed areas. There is also a small patch of purple needle grass grassland and California buckwheat scrub alliance south of the camera station location.	• Camera on the north side of the aqueduct facing southeast toward a wildlife trail leading to a concrete pipe culvert (291.46) that crosses the aqueduct • Camera was deployed from GV-AQ12 to this location for the remaining 14 days at the end of the second session • Concrete pipe culvert was dry during study; conveys the flow of water from an unnamed drainage across the aqueduct • Concrete pipe culvert measures approximately 3 feet 5 inches in height, 3 feet 3 inches in width, and 350 feet in length.
GV-AQ14	Wildlife corridor	Small pipe culvert 290.71	Surrounding habitat includes non-native grassland, agriculture, development, disturbed lands (dirt roads), and small patches of California buckwheat scrub to the south.	• Camera on north side of aqueduct facing southwest toward concrete culvert that crosses the aqueduct • Camera immediately south of GV-AQ12 and associated with same aqueduct culvert (290.71) • Camera was deployed at this location for 14 days during the beginning of the second session prior to being moved to the new location (GV-AQ15) for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events • Concrete pipe culvert measures approximately 1 foot 4 inches in height, 2 feet 11 inches in width, and 315 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ15	Wildlife corridor	Wildlife trail leading away from an aqueduct undercrossing	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands, with patches of California buckwheat scrub and development (Edmonston Pumping Plant Road).	• Camera facing south toward a wildlife trail off the aqueduct culvert • Camera is immediately south of dirt utility road and GV-AQ17 • Camera was deployed from GV-AQ14 to this location for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events.
GV-AQ16	Wildlife corridor	Small pipe culvert 290.97	Habitat south of the aqueduct primarily includes non-native grassland with small patches of California buckwheat scrub and disturbed lands (dirt utility roads); north of the aqueduct, habitat includes agriculture, non-native grassland, development, and disturbed lands.	• Camera on north side of aqueduct facing west toward a latrine and wildlife trail • Camera immediately north of GV-AQ18 and associated with same aqueduct culvert (290.97) • Camera was deployed at this location for 14 days during the beginning of the second session prior to being moved to the new location (GV-AQ17) for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ17	Wildlife corridor	Small pipe culvert	Habitat surrounding the aqueduct primarily includes non-native grassland, agriculture, and disturbed lands, with patches of California buckwheat scrub and development (Edmonston Pumping Plant Road).	• Camera on south side of aqueduct facing northwest toward a concrete culvert that crosses the aqueduct • Camera is immediately north of dirt utility road and GV-AQ15 • Camera was deployed from GV-AQ16 to this location for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events • Concrete pipe culvert measures approximately 1 foot 10 inches in height, 2 feet 11 inches in width, and 315 feet in length.
GV-AQ18	Wildlife corridor	Small pipe culvert 290.97	Habitat south of the aqueduct primarily includes non-native grassland with small patches of California buckwheat scrub and disturbed lands (dirt utility roads); north of the aqueduct habitat includes agriculture, non-native grassland, development, and disturbed lands.	• Camera on north side of aqueduct facing southwest toward concrete culvert that crosses the aqueduct • Camera immediately south of GV-AQ16 and associated with same aqueduct culvert (290.97) • Camera was deployed at this location for 14 days during the beginning of the second session prior to being moved to the new location (GV-AQ19) for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events • Concrete pipe culvert measures approximately 1 foot 10 inches in height, 2 feet 11 inches in width, and 325 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ19	Wildlife corridor	Small pipe culvert 290.97	Habitat south of the aqueduct primarily includes non-native grassland with small patches of California buckwheat scrub, a small patch of sandbar willow thickets, and disturbed lands (dirt utility roads); north of the aqueduct, habitat includes agriculture, non-native grassland, development, and disturbed lands.	• Camera on south side of aqueduct facing northeast toward concrete culvert that crosses the aqueduct • Camera was deployed from GV-AQ18 to this location for the remaining 14 days at the end of the second session • Concrete culvert was dry during study; conveys water flow from an unnamed drainage across the aqueduct during rain events • Concrete pipe culvert measures approximately 3 feet in height, 2 feet 11 inches in width, and 325 feet in length.
GV-AQ20	Wildlife corridor	Underpass through large box culvert	Habitat south of the aqueduct includes primarily non-native grassland with scattered patches of purple needle grass grassland, California buckwheat scrub, and a small patch of sandbar willow thicket. Habitat north of the aqueduct includes primarily agriculture, non-native grassland, development, and disturbed areas.	• Camera on south side of aqueduct, facing southeast toward drainage and wildlife trail • Camera south of GV-AQ21 on opposite end of the same concrete box culvert • Concrete box culvert was dry during study; conveys water flow from Cattle Creek across the aqueduct during rain events • Concrete box culvert measures 6 feet in height, 9 feet 2 inches in width, and 245 feet in length.
GV-AQ21	Wildlife corridor	Underpass through large box culvert	Habitat south of the aqueduct includes primarily non-native grassland with scattered patches of purple needle grass grassland, California buckwheat scrub, and a small patch of sandbar willow thicket. Habitat north of the aqueduct includes primarily agriculture, non-native grassland, development, and disturbed areas.	• Camera on north side of aqueduct, facing southwest toward aqueduct concrete box culvert • Camera north of GV-AQ20, on opposite end of the same aqueduct overpass • Concrete box culvert was dry during study; conveys water flow from Cattle Creek across the aqueduct during rain events • Concrete box culvert measures 7 feet 11 inches in height, 9 feet 10 inches in width, and 245 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ22	Wildlife corridor	Overpass of aqueduct at Pastoria Creek and underpass of road	Habitat includes sparsely vegetated riparian vegetation along Pastoria Creek north and south of camera station location. The habitat north and south of the aqueduct is primarily composed of non-native annual grassland with a patch of popcorn flower fields alliance to the south and agriculture and development (dirt and paved roads) to the north.	• Camera beneath an aqueduct road on east side of Pastoria Creek where aqueduct crosses under the drainage; facing southwest toward Pastoria Creek • Camera east of GV-AQ23, southeast of GV-AQ254 and south of GV-AQ25; within the Pastoria Creek corridor (dry during camera studies) • Bridge over Pastoria Creek measures approximately 9 feet 2 inches in height, 20 feet in width, and 170 feet in length.
GV-AQ23	Wildlife corridor	Overpass of aqueduct at Pastoria Creek and underpass of road	Habitat includes sparsely vegetated riparian vegetation along Pastoria Creek north and south of camera station location. The habitat north and south of the aqueduct is primarily composed of non-native annual grassland with a patch of popcorn flower fields alliance to the south and agriculture and development (dirt and paved roads) to the north.	• Camera beneath an aqueduct road on west side of Pastoria Creek where aqueduct crosses under the drainage; facing southeast toward Pastoria Creek • Camera west of GV-AQ22, south of GV-AQ24, and southwest of GV-AQ25; within the Pastoria Creek corridor (dry during camera studies) • Bridge over Pastoria Creek measures approximately 9 feet 2 inches in height, 20 feet in width, and 170 feet in length.
GV-AQ24	Wildlife corridor	Overpass of aqueduct at Pastoria Creek and underpass of road	Habitat includes sparsely vegetated riparian vegetation along Pastoria Creek north and south of camera station location. The habitat north and south of the aqueduct is primarily composed of non-native annual grassland with a patch of popcorn flower fields alliance to the south and agriculture and development (dirt and paved roads) to the north.	• Camera beneath an aqueduct road on east side of Pastoria Creek where aqueduct crosses under the drainage; facing northeast toward Pastoria Creek • Camera northwest of GV-AQ22, north of GV-AQ23, and west of GV-AQ25; within the Pastoria Creek corridor (dry during camera studies) • Bridge over Pastoria Creek measures approximately 9 feet 2 inches in height, 20 feet in width, and 170 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-AQ25	Wildlife corridor	Overpass of aqueduct at Pastoria Creek and underpass of road	Habitat includes sparsely vegetated riparian vegetation along Pastoria Creek north and south of camera station location. The habitat north and south of the aqueduct is primarily composed of non-native annual grassland with a patch of popcorn flower fields alliance to the south and agriculture and development (dirt and paved roads) to the north.	• Camera beneath an aqueduct road on east side of Pastoria Creek where aqueduct crosses under the drainage; facing southwest toward Pastoria Creek • Camera north of GV-AQ22, northeast of GV-AQ23, and east of GV-AQ24; within the Pastoria Creek corridor (dry during camera studies) • Bridge over Pastoria Creek measures approximately 9 feet 2 inches in height, 20 feet in width, and 170 feet in length.
GV-AQ26	San Joaquin kit fox	East–west undercrossing of I-5	Surrounding habitat includes non-native grassland, development, disturbed lands, and agriculture.	• Camera off a gravel road at an aqueduct undercrossing beneath I-5; north of aqueduct facing southwest • I-5 northbound overpass over the aqueduct measures approximately 9 feet in height, 65 feet in width, and 175 feet in length with the aqueduct flowing through the middle; the width of the dirt walking area is approximately 2 feet in height, 4 feet 7 inches in width, and 65 feet in length.
GV-AQ27[1]	San Joaquin kit fox	Dirt access road adjacent to aqueduct	Surrounding habitat includes non-native grassland, development, disturbed lands, unvegetated channels, and tamarisk thickets associated with unnamed drainages.	• Camera on a fence post along a dirt road immediately north of the aqueduct, approximately 1.3 miles east of I-5; facing north.
GV-AQ28	Wildlife corridor	Underpass through large box culvert and overpass of aqueduct	Surrounding habitat primarily includes non-native grassland and disturbed land; however, there is also an unvegetated channel south of the aqueduct.	• Camera on east side of concrete box culvert; facing northeast toward eastern entrance to culvert • Camera east of GV-AQ3, on same concrete box culvert • Concrete box culvert conveys water flow from an unnamed drainage across the aqueduct during rain events.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
Valley Floor				
GV-RC1A	San Joaquin kit fox	Paved east–west overpass of I-5 north of aqueduct	Habitat at the camera station location is developed (existing paved road over I-5). Surrounding habitat includes non-native grassland, development, disturbed land, and agriculture.	• Camera at a paved service road that crosses over I-5 and the aqueduct; camera facing northwest • Bridge over I- 5 measures approximately 20 feet in height and width and 200 feet in length.
GV-RC2A	San Joaquin kit fox	East–west undercrossing of I-5	Surrounding habitat includes non-native grassland, development, disturbed lands, and agriculture.	• Camera off a gravel road at an aqueduct undercrossing beneath I-5; south of aqueduct facing northwest • I-5 northbound overpass over the aqueduct measures approximately 9 feet in height, 65 feet in width, and 175 feet in length with the aqueduct flowing through the middle; the width of the dirt walking area is approximately 5 feet 10 inches in height, 5 feet 2 inches in width, and 65 feet in length.
GV-RC11	Wildlife corridor	I-5 northbound crosses over Grapevine Creek	Surrounding habitat primarily includes non-native grassland, development, agriculture, and disturbed lands. Grapevine Creek is dominated by Fremont cottonwood–red willow association south of I-5 northbound and semi-natural stands of tamarisk thickets and mulefat thickets to the north. Other communities scattered throughout the southern area include purple needle grass grassland and bladderpod spiderflower shrubland.	• Camera in tunnel under I-5 northbound, facing southwest toward riparian woodland associated with Grapevine Creek • Underpass is approximately 15 feet in height, 15 feet in width, and 385 feet long • Camera southwest of GV-RC12, along the southwestern opening of tunnel at Grapevine Creek.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-RC12	Wildlife corridor	I-5 northbound crosses over Grapevine Creek	Surrounding habitat primarily includes non-native grassland, development, agriculture, and disturbed lands. Grapevine Creek is dominated by Fremont cottonwood-red willow association south of I-5 northbound and semi-natural stands of tamarisk thickets and mulefat thickets to the north. Other communities scattered throughout the southern area include purple needle grass grassland and bladderpod spiderflower shrubland.	• Camera in riparian woodland associated with Grapevine Creek, northeast of tunnel under I-5 northbound; facing southwest toward tunnel • Underpass is approximately 15 feet in height, 15 feet in width, and 3 feet long • Camera northeast of GV-RC11, northeast of tunnel opening along Grapevine Creek.
GV-SP3	Ringtail	N/A	Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera deployed immediately west of where Grapevine Road crosses over Grapevine Creek; on the east side of Grapevine Creek facing south.
GV-SP4	Ringtail	N/A	Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera deployed west of the drainage (Grapevine Creek) facing east towards the drainage; there is an orchard approximately 150 feet north of the camera location.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP5	Ringtail		Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations, southern cattail associations, and mulefat thickets associated with drainages and basins in the area.	• Camera east of drainage facing northwest toward drainage.
GV-SP6	Ringtail		Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations, southern cattail associations, and mulefat thickets associated with drainages and basins in the area.	• Camera facing southwest towards drainage.
GV-SP15	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, disturbed lands, channels that are unvegetated (Grapevine Creek), and mulefat thickets associated with unnamed drainages.	• Camera off a dirt road approximately 0.65 mile east of I-5, north of Edmonston Pumping Plant Road and south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP16	San Joaquin kit fox	N/A	Surrounding habitat primarily includes non-native grassland, development, and disturbed lands.	• Camera off a dirt road approximately 1.2 miles east of I-5, north of Edmonston Pumping Plant Road, and south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP17	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, and disturbed lands.	• Camera approximately 2 miles east of I-5, north of Edmonston Pumping Plant Road and south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP18	San Joaquin kit fox	N/A	Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands, with scattered patches of purple needle grass grassland and semi-natural stands of eucalyptus groves.	• Camera approximately 2.7 miles east of I-5, north of Edmonston Pumping Plant Road, and 0.19 mile south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP19	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, and disturbed lands.	• Camera off a dirt road approximately 1.8 miles east of I-5, north of Edmonston Pumping Plant Road and approximately 3.0 miles southeast of the California Aqueduct; facing north. • Cattle present in the area during the camera surveys.
GV-SP20	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, disturbed lands, unvegetated channels, and mulefat thickets associated with unnamed drainages.	• Camera off a dirt road approximately 1.6 miles east of I-5, north of Edmonston Pumping Plant Road and 0.9 mile south of the California Aqueduct, facing north • Cattle present in the area during the camera surveys.
GV-SP21	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, disturbed lands, and unvegetated channels.	• Camera off a dirt road approximately 1.6 miles east of I-5, north of Edmonston Pumping Plant Road and approximately 0.25 mile east of the California Aqueduct; it is attached to a wooden fence post, facing north • Cattle present in the area during the camera surveys.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP22	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, disturbed lands, and unvegetated channels.	• Camera off a dirt road approximately 1.2 miles east of I-5, north of Edmonston Pumping Plant Road, and 0.4 mile south of the California Aqueduct; it is located approximately 30 feet northwest of an electrical utility road, facing north • Cattle present in the area during the camera surveys.
GV-SP23	San Joaquin kit fox	N/A	Surrounding habitat primarily includes non-native grassland, disturbed lands, and unvegetated channels. Other habitats or land covers include a small patch of fiddleneck fields alliance and some development.	• Camera off a dirt road approximately 6.5 miles east of I-5, north of Edmonston Pumping Plant Road, and 0.56 mile south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP24	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, development, disturbed lands, and unvegetated channels.	• Camera off a dirt road approximately 0.2 mile east of I-5, north of Edmonston Pumping Plant Road, and 1.2 miles south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP25	San Joaquin kit fox	N/A	Surrounding habitat primarily includes non-native grassland, disturbed lands, and unvegetated channels. Other habitats or land covers include scattered patches of fiddleneck fields alliance and development.	• Camera off a dirt road approximately 0.16 miles east of I-5, north of Edmonston Pumping Plant Road, and 0.4 mile south of the California Aqueduct; facing north • Cattle present in the area during the camera surveys.
GV-SP26	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, disturbed land, agriculture, development, and an unvegetated channel (Grapevine Creek).	• Camera off a dirt road on a wooden pole; approximately 2.3 miles east of I-5, 0.32 mile west of Grapevine Creek, and 0.23 mile east and south of Laval Road; facing north.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP27	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, disturbed land, agriculture, development, and an unvegetated channel (Grapevine Creek).	• Camera off a dirt road; approximately 3 miles east of I-5, 0.19 mile north of Grapevine Creek, and 0.33 mile north of Laval Road; facing north.
GV-SP28	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland, disturbed land, agriculture, development, and an unvegetated channel (Grapevine Creek).	• Camera off a dirt road on a wooden pole; approximately 1.3 miles east of I-5 and 0.28 mile north of Laval Road; facing north.
GV-SP29	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP30	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near two potential canid burrows.
GV-SP31	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP32	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP33	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP34	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP35	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP36	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP37	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP38	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP39	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP40	San Joaquin kit fox	N/A	Surrounding habitat includes unvegetated channel and non-native grassland.	• Camera location in an unvegetated channel near a potential canid burrow.
GV-SP41	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP42	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP43	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near potential San Joaquin kit fox scat.
GV-SP44	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP45	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential wildlife crossing near drainage.
GV-SP46	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP47	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP48	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP49	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP50	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP51	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP52	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP53	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
GV-SP54	San Joaquin kit fox	N/A	Surrounding habitat includes non-native grassland.	• Camera location in non-native grassland near a potential canid burrow.
Foothills				
GV-RC4A	Wildlife corridor	Large box culvert underpass of southbound I-5	Surrounding habitat primarily includes non-native grassland, agriculture, and development. There are also scattered communities of bladderpod spiderflower shrubland, purple needle grass grassland, and an unvegetated channel west of the camera station location and I-5 southbound.	• Camera facing northwest toward southbound I-5 concrete box culvert underpass • Concrete box culvert measures approximately 9 feet in height, 18 feet in width, and approximately 100 feet in length.
GV-RC5A	Wildlife corridor	Large box culvert underpass of northbound I-5	Surrounding habitat primarily includes non-native grassland, development, agriculture, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera facing northeast toward northbound I-5 underpass • Concrete box culvert measures approximately 9 feet in height, 18 feet in width, and approximately 100 feet in length.
GV-RC7	Wildlife corridor	Paved road underpass of southbound I-5 west of lane	Surrounding habitat primarily includes non-native grassland, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera immediately north of Grapevine Road at I-5 south underpass, facing southeast toward Grapevine Road • Camera northwest of GV-RC8 along same underpass along Grapevine Road • I-5 underpass is approximately 15 feet 3 inches in height, 21 feet in width, and 100 feet in length.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-RC8	Wildlife corridor	Paved road under southbound I-5 east of lane	Surrounding habitat primarily includes non-native grassland, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera immediately south of Grapevine Road at I-5 south underpass, facing northwest toward road • Camera southeast of GV-RC7, at same underpass along Grapevine Road • I-5 underpass is approximately 15 feet 3 inches in height, 21 feet in width, and 100 feet in length.
GV-RC9	Wildlife corridor	I-5 median strip	Surrounding habitat primarily includes non-native grassland, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera immediately west of northbound I-5 and east of Grapevine Road, facing southwest toward a wildlife trail.
GV-RC10	Wildlife corridor	I-5 median strip; east of Grapevine Creek	Surrounding habitat primarily includes non-native grassland, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera facing southeast toward Grapevine Road and a wildlife trail.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP1	Ringtail	N/A	Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera deployed west of Grapevine Road on the east side of Grapevine Creek, facing southwest toward a wildlife trail.
GV-SP2	Ringtail	N/A	Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations and mulefat thickets associated with drainages in the area.	• Camera deployed west of Grapevine Road facing north towards Grapevine Creek.
GV-SP7	Ringtail		Surrounding habitat primarily includes non-native grassland, agriculture, development, and disturbed lands. Other habitats scattered throughout the area include bladderpod spiderflower shrubland and purple needle grass grassland, as well as Fremont cottonwood–red willow associations, southern cattail associations, and mulefat thickets associated with drainages and basins in the area.	• Camera facing southeast toward a detention pond with cattail associations.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP8	Ringtail		Surrounding habitat includes non-native grassland, red willow thickets, California buckwheat scrub, bladderpod spiderflower shrubland, purple needle grass grassland, development, and disturbed areas.	• Camera is on the west side of drainage, facing southeast toward a wildlife trail.
GV-SP9	Ringtail		Surrounding habitat includes non-native grassland, red willow thickets, California buckwheat scrub, bladderpod spiderflower shrubland, purple needle grass grassland, development, and disturbed areas.	• Camera approximately 50 feet to the west side of drainage, facing northeast toward a wildlife trail.
GV-SP10	Ringtail		Surrounding habitat includes non-native grassland, valley oak–arroyo willow associations, valley oak woodland, red willow thickets, California buckwheat scrub, bladderpod spiderflower shrubland, purple needle grass grassland, and disturbed areas.	• Camera on the east side of the drainage, facing northeast toward a wildlife trail.
GV-SP11	Ringtail		Surrounding habitat includes non-native grassland, valley oak–arroyo willow association, mulefat thickets, valley oak woodland, bladderpod spiderflower shrubland, purple needle grass grassland, silver lupine scrub alliance, and disturbed areas.	• Camera on the west side of the drainage facing southwest toward waterway and a wildlife trail.
GV-SP12	Ringtail		Surrounding habitat includes non-native grassland, valley oak–arroyo willow association, valley oak woodland, California buckwheat scrub, bladderpod spiderflower shrubland, purple needle grass grassland, and disturbed areas.	• Camera within the drainage, facing northeast toward a wildlife trail.

Table N-2
Description of Grapevine Wildlife Corridor Camera Locations

Camera Name	Focus of Survey	Crossing Type/Location Description	Surrounding Vegetation	Other Attributes
GV-SP13	Ringtail		Surrounding habitat includes non-native grassland, valley oak–arroyo willow association, mulefat thickets, valley oak woodland, bladderpod spiderflower shrubland, purple needle grass grassland, silver lupine scrub alliance, and disturbed areas.	• Camera facing south toward a wildlife trail and waterway.
GV-SP14	Ringtail		Surrounding habitat includes non-native grassland, valley oak–arroyo willow association, mulefat thickets, valley oak woodland, bladderpod spiderflower shrubland, purple needle grass grassland, silver lupine scrub alliance, and disturbed areas.	• Camera on the east side of the drainage, facing southeast toward a wildlife trail.

1 Camera station GV-AQ27 is located on a dirt road rather than a crossing at the aqueduct and results at this location are not included in the wildlife corridor discussion of the BTR.

2.3 Wildlife Movement Evaluation

To evaluate wildlife movement in the project region, Dudek considered the information reviewed and camera study data collected in the project region, as described in Sections 2.1 and 2.2. The literature specifically addressing the project region, such as the Penrod et al. (2003) study that modeled travel routes for San Joaquin kit fox, American badger, and blunt-nosed leopard lizard; the USFWS (2010a) regional habitat linkage for San Joaquin kit fox; and Cypher et al. (2013) modeled habitat for kit fox, provides information addressing general habitat use and connectivity for three of the four focal species. In addition, natural history information related to spatial movement patterns (e.g., home range or territory use and dispersal) for all four of the focal species was reviewed and incorporated into the evaluation. The important life history traits related to movement patterns (e.g., home range, territory, dispersal) of each of these focal species is described in Section 3.3.

Given that most of the project region landscape is currently undeveloped and that wildlife are free to roam throughout the region, the field studies of movement focused on wildlife activity at selected "pinch-points," or potential bottlenecks, where movement is already likely constrained by existing landscape features such as the I-5 and the California Aqueduct. The camera studies were designed to assess current wildlife use of these pinch-points and to provide the baseline information for the project impacts analysis. That is, would the project preclude wildlife access to and/or use of frequently used crossings? This baseline information is also used to develop project design features that will avoid and minimize adverse impacts on wildlife movement and/or will enhance wildlife movement in the project region such that the project does not have a significant adverse effect on regional wildlife movement.

2.4 General Biological Surveys

Biologists recorded the locations of observed or detected special-status wildlife species during biological surveys for biological resources; the results of which are described in Section 2.5 of the BTR. Of the focal species, only American badger was identified as occurring on site. These locations were recorded on field maps and later digitized into GIS using ArcGIS or were mapped using GPS. These data provide a representative sampling of the species' occurrence in the study area.

3 RESULTS

3.1 TRC 2008–2009 Camera Study of I-5 Crossings

All of the studies reviewed regarding focal species movement in the study area and surrounding region also identify the need for movement across I-5, which is the most significant existing constraint on landscape-level wildlife movement in the project region. Therefore, a focus of the analysis of wildlife movement associated with the study area included a review and evaluation of existing wildlife camera data collected by TRC between 2008 and 2009 (TRC 2013a). That camera study involved placement of paired motion-sensitive cameras at both entrances to culverts and overpasses at 14 study sites in 2008 and 2009. Detailed descriptions of the I-5 crossings, including the I-5 and California Aqueduct crossings, where cameras were placed are provided in Table N-1. Five crossings were monitored in the valley floor portion of the I-5 adjacent to the study area (GV-RC-1 through GV-RC-5), one crossing was monitored in the foothill region of I-5 approximately 1.8 miles south of the study area (GV-RC6), four crossings were monitored on the I-5 near to and north of Castac Lake (TL-RC1 through TL-RC4), and four crossings were monitored in the Gorman area in the southernmost area outside of the study area (GM-RC1 through GM-RC-4) (see Figure N-1). Table N-3 summarizes the results[2] of the TRC 2008–2009 I-5 camera study by camera and camera location (shown on Figures N-1 and N-2) as noted in the sub-heading groupings in the table (e.g., Grapevine Camera Group (Valley Floor)). More information with respect to the results of each I-5 camera group is discussed further below.

Table N-3
TRC 2008–2009 I-5 Wildlife Corridor Camera Study Results

Camera Name	Crossing Type/Location	Wildlife Species Observed (2008–2009) and Total Number of Records	
Grapevine Camera Group (Valley Floor)			
GV-RC1	I-5 and Aqueduct Overpass	*Species*	
		California Ground Squirrel	32
		Coyote	3
		San Joaquin Kit Fox[1]	1
		Red Fox	61
		Mouse	31
		Cottontail Rabbit	1
		Domestic Dog	1

[2] The camera study results presented in Table N-3 include species that represent terrestrial wildlife movement at road crossings and through the California Aqueduct, and do not include a list of the bird species detected on the cameras.

Table N-3
TRC 2008–2009 I-5 Wildlife Corridor Camera Study Results

Camera Name	Crossing Type/Location	Wildlife Species Observed (2008–2009) and Total Number of Records		
GV-RC2 (East and West)	I-5 and Aqueduct Underpass	*Species*	*East Camera*	*West Camera*
		California Ground Squirrel	304	207
		Domestic Cat	1	—
		Domestic Dog	1	1
		Red Fox	11	3
		Lizard	1	1
		Mouse	7	4
		Cottontail Rabbit	124	74
		Raccoon	49	21
		Coyote	—	1
		Kangaroo rat	—	1
Grapevine Camera Group (Valley Floor Riparian)				
GV-RC3 (East and West)	Grapevine Center Exit	*Species*	*East Camera*	*West Camera*
		California Ground Squirrel	5	17
		Domestic Cat	139	60
		Domestic Dog	1	1
		Mouse	3	—
		Raccoon	6	3
		Bat	—	1
Grapevine Camera Group (Foothills)				
GV-RC4 (East and West)	I-5 Southbound	*Species*	*East Camera*	*West Camera*
		Bobcat	59	—
		California Ground Squirrel	160	—
		Coyote	498	—
		Mule Deer	8	2
		Red Fox	11	—
		Cottontail Rabbit	12	—
		Raccoon	16	—
GV-RC5 (East and West)	1-5 Northbound	*Species*	*East Camera*	*West Camera*
		Bobcat	—	20
		California Ground Squirrel	—	7
		Coyote	1	164
		Mule Deer	30	61
		Cottontail Rabbit	—	3
		Raccoon	—	4
		Domestic Dog	10	6
GV-RC6 (East and West)	I-5 Southbound	*Species*	*East Camera*	*West Camera*
		Coyote	9	—
		Mule Deer	144	93

Table N-3
TRC 2008–2009 I-5 Wildlife Corridor Camera Study Results

Camera Name	Crossing Type/Location	Wildlife Species Observed (2008–2009) and Total Number of Records		
Castac Lake Camera Group				
TL-RC1 (East and West)	I-5 Underpass	*Species*	*East Camera*	*West Camera*
		California Ground Squirrel	—	1
		Mule Deer	33	12
TL-RC2 (East and West)	I-5 and Lebec Road	*Species*	*East Camera*	*West Camera*
		Bobcat	8	—
		Coyote	13	—
		Mule Deer	311	117
		Wild Boar	7	3
TL-RC3 (East and West)	Pasture at I-5 Underpass	*Species*	*East Camera*	*West Camera*
		California Ground Squirrel	2	—
		Mule Deer	21	—
		Domestic Dog	5	—
		Wild Boar	12	—
		Raccoon	575	2
TL-RC4 (East and West)	Cuddy Creek at I-5 Underpass	*Species*	*East Camera*	*West Camera*
		Bobcat	3	—
		California Ground Squirrel	3	—
		Coyote	7	5
		Mule Deer	46	153
		Domestic Dog	43	41
		Cottontail Rabbit	21	—
		Striped Skunk	1	—
Gorman Camera Group				
GM-RC1 (East and West)	I-5 Underpass, near Gorman Sign	*Species*	*East Camera*	*West Camera*
		Western Fence Lizard	2	N/A
GM-RC2 (East and West)	Mile Marker 5.05, Peace Valley Road	*Species*	*East Camera*	*West Camera*
		Coyote	1	—
GM-RC3 (East and West)	Mile Marker 5.60, Peace Valley Road	*Species*	*East Camera*	*West Camera*
		Coyote	3	—
		Cottontail Rabbit	1	—
		Bobcat	—	4
GM-RC4 (East and West)	Mile Marker 6.13, Peace Valley Road	*Species*	*East Camera*	*West Camera*
		California Ground Squirrel	—	3

Note:
1 Tentatively identified as San Joaquin kit fox. See text for details.

Grapevine Camera Group (Valley Floor)

Animals were documented at all of the I-5 crossings in the Grapevine Valley Floor group and cumulatively included California ground squirrel (*Spermophilus (Otospermophilus) beecheyi*), coyote, red fox (*Vulpes vulpes*), mouse (unidentifiable to species), cottontail rabbit (*Sylvilagus* sp.), domestic dog (*Canis lupus familiaris*), domestic cat (*Felis catus*), lizard (unidentifiable to species), raccoon, kangaroo rat (*Dipodomys* sp. (unidentifiable to species)), and bat (unidentifiable to species); there was also a fox record (unidentifiable to species).

The northerly crossings of the Grapevine camera group at GV-RC1 and GV-RC2 (the overpass and underpass crossings at the California Aqueduct, respectively) in the valley floor, are located just outside of the study area adjacent to proposed project open space (Figure N-2), and had more records of species that are expected to use open or modified habitats (i.e., grassland, agriculture), and/or are more tolerant of development and human activities. The species that could be identified include raccoons, coyotes, California ground squirrels, small rodents (unidentifiable to species), and cottontail rabbits. These crossings also had most of the records for red fox in the study area in 2008 and 2009.

Located just outside of the study area adjacent to the proposed project footprint, GV-RC3 at Grapevine Center (a long, split concrete box culvert approximately 200 feet in length) had numerous records of domestic cats (84% of all records at the crossing). While possibly these records represent only a few to several individual cats, their consistent presence severely limits the value of this crossing for most of the other species that could be prey (i.e., native rodents and rabbits), as evidenced by the relative lack of records for small native species compared to other crossings.

Overall, the Grapevine Valley Floor crossings are frequently used by wildlife. None of the four focal species was definitively documented using these crossings during the TRC 2008/2009 surveys. However, several mice were documented at GV-RC1 and GV-RC2, and a kangaroo rat was recorded at GV-RC2-West, but their identities to species level could not be confirmed. Given that habitat on either side of the GV-RC1 and GV-RC2 crossings includes non-native grassland, the focal species—San Joaquin kit fox, American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard—could use these crossings.

Grapevine Camera Group (Foothills)

The more southerly crossings in the Grapevine camera group, GV-RC4 and GV-RC5 (large concrete box culverts), had more records of activity by large species such as mule deer (*Odocoileus hemionus*) (especially GV-RC5), bobcat (*Lynx rufus*), and coyote, which is expected because adjacent areas support shrublands that provide cover for the deer and bobcat. The box culverts also provide good visual access for species that are hesitant to move through dark, confined passages such as mule deer. GV-RC4 had by far the most frequent number of bobcat records (59 total) of all the crossings in the study area, and was the only other crossing besides GV-RC1 and GV-RC2 with records for common fox species (all of the discernable photos were red fox, although gray fox (*Urocyon cinereoargenteus*) could use these crossings as well). The crossings are also more distant from development and other human activities than the northernmost crossings in the valley floor. GV-RC6, which is a concrete box culvert (6 feet high by 10 feet wide by 180 feet long) with shrub habitat (primarily rabbitbrush) on the west and willow riparian associated with Grapevine Creek on the east, had the largest number of deer records (237 records) of the Grapevine crossings. The only other species detected at this crossing in this camera group was coyote. While the only other species detected at this crossing was coyote, this culvert is also suitable for smaller species. These crossings are located adjacent to proposed project open space.

Castac Lake Camera Group

The Castac Lake camera group is located south of the study area, west of Castac Lake along the I-5 roughly 1 to 3 miles from the lake. These crossings are located near TMV open space. The data collected from the Castac Lake camera group are provided herein because wildlife movement is analyzed in the context of the entire Ranch. Animals were documented at all of the I-5 crossings in the Castac Lake camera group. Most of the animals recorded at these crossing were the larger, more mobile species, such as mule deer, bobcat, and coyote. TL-RC2, which is located along Lebec Road and is associated with oak savannah, willow riparian along Grapevine Creek, and non-native grassland, had very high use by deer, with 428 total records in 2008 and 2009. This crossing also had 8 records of bobcat. TL-RC4, which is an underpass of I-5 at Cuddy Creek, had the highest number of species records in the Castac Lake group, including almost 200 deer records, as well as records for bobcat, coyote, California ground squirrel, cottontail rabbit, and striped skunk (*Mephitis mephitis*). The two crossings with fewer records—TL-RC1 and TL-RC-3—have physical constraints that probably limit wildlife use. TL-RC1 is a concrete box culvert with three relatively small (6 feet by 6 feet) openings that is approximately 240 feet long. The middle culvert also has flowing water. While this site had 45 mule deer records (but one other record of a ground squirrel), its small opening dimensions and long length, which gives the appearance of a very confined space, may inhibit deer and other species from using the culvert for I-5 crossings. In contrast, TL-RC2 just to the south had 428 mule deer records, as well bobcat, coyote, and wild boar (*Sus scrofa*). Because these crossing are close to each other, and the energy expend to access the crossings may be similar (i.e., the least-cost or best travel route concept), animals may be selecting TL-RC2 as preferred crossing point and generally ignoring TL-RC1. TL-RC3, as a concrete box culvert measuring 10 feet by 12 feet an 100 feet in length, is located in a pasture with wetlands on both sides of the culvert, including bulrush and cattails on the west side and wetland grasses (e.g., rush) on the east side. This crossing had a very large number of raccoons (577 records), but only 21 deer records confined to the east side of the culvert even though the culvert is large and open enough for deer passage. Raccoons are not deterred by wetlands, but mule deer and other larger species such as bobcat and coyote, as well as small upland species (e.g., ground squirrels, cottontail rabbits), probably avoid the wet habitats at the site.

Gorman Camera Group

The Gorman camera group is located south of the study area, north of the intersection of I-5 and State Highway 138 and south of Castac Lake in the community of Gorman. The data collected from the Gorman camera group are provided herein because wildlife movement is analyzed in the context of the entire Ranch. The Gorman camera group crossings had far fewer records, which may reflect both their physical characteristics and adjacent lands uses that may limit their use. GM-RC1, which is a twin-box culvert underpass, had in total only two records for western fence list (which likely was just moving around the vicinity of the camera rather than moving through the crossing). This culvert had perennial running water through the culvert during the study, which may have precluded its use as crossing point. GM-RC2, which is a concrete box culvert approximately 8 feet by 8 feet and 375 feet in length, had only one record of coyote. This box culvert is relatively small in opening size and long, which may inhibit animal use. GM-RC3, which is a small box culvert only 3 feet by 4 feet and 100 feet long, had only three mammal species records, but did have 4 bobcat records. GM-RC4, which is a box culvert 9 feet by 8 feet and 270 feet long had only a few ground squirrel records. The reason for the lack of records at this crossing is unclear because the culvert is reasonably large and has shrub habitat (rabbitbrush) on the west side and willow riparian associated with Gorman Creek on the east side, which should provide good cover for animals.

Summary

Overall, the TRC 2008/2009 camera study showed several general patterns (see Table N-3 for details). First, wildlife are able to cross I-5 at several locations on Tejon Ranch, including across the valley floor, based on the observation that all the camera stations recorded wildlife activity. By total numbers of observations, the Grapevine Camera Group (Foothills) and Castac Lake Camera Group showed by far the most wildlife activity while the Gorman Camera Group had by far the least amount of activity. Second, the suites of species and numbers of individuals at the crossings differ substantially by location, terrain and adjacent habitats and land uses, with only small and mid-sized species using the valley floor crossings. The Grapevine Camera Group (Valley Floor), excluding GV-RC3 at Grapevine Center Exit (which was dominated by domestic cats, precluding native wildlife), was dominated by small species such as California ground squirrel and cottontail rabbit, but also included large numbers of raccoons and non-native red foxes. No mule deer or bobcats were recorded in Grapevine Camera Group (Valley Floor), nor were wild boar. In contrast, the higher elevation Grapevine Camera Group (Foothills) and Castac Lake Camera Group were dominated by mule deer and coyotes, and also included numerous bobcat records. Raccoons were only common in the pasture at the I-5 Underpass (TL-RC3), but were by far the dominant species at this crossing. Wild boar were only recorded at the Castac Lake Camera Group at TL-RC2 and TL-RC3.

The Castac Lake Group crossings that had less wildlife activity had physical constraints that may discourage terrestrial wildlife use. These constrained crossings include the TL-RC1 box culvert, which has three parallel 6-foot by 6-foot openings and is fairly long at 240 feet (and thus possibly perceived as too long and narrow and with visibility too poor to be a safe crossing), and the TL-RC3 box culvert, which has saturated and inundated soils at both openings that would be avoided by species such as coyote, bobcats, and mule deer. Notably, the TL-RC3 crossing was dominated by raccoons (575 records) and also had 12 wild boar records. High raccoon activity at this crossing is not surprising because they include several aquatic and semi-aquatic species in their diet, including amphibians, crayfish, and fish, and they use permanent water for drinking and feeding. Wild boar are omnivorous and are habitat generalists that often feed and wallow in wet and muddy areas. The Gorman Camera Group, which had by far the least amount of activity, also had relatively low diversity with five different species—western fence lizard (*Sceloporus occidentalis*), California ground squirrel, cottontail rabbit, coyote, and bobcat. Finally, the Grapevine Center Exit crossing in the Grapevine Camera Group (Valley Floor) was dominated by domestic cats (84% of records) and was little used by native species. This is the only crossing in the study considered to be unsuitable for native species due to the presence of cats.

Habitat conditions adjacent to and at the crossings themselves largely explain the patterns of use. Species associated with denser vegetation cover, primarily mule deer and bobcat, tended to be more common at crossings with shrubs and riparian habitats near the crossings, including GV-RC4, GV-RC5, and TL-RC2. However, the Cuddy Creek underpass (TL-RC4) also was heavily used by mule deer and included three bobcat records even though the creek is generally unvegetated, indicating that these types of species may use crossings that are more sparsely vegetated. However, it is expected that their use of this crossing would mostly be during the nighttime when perceived threats to their security would be lower or would occur in quick bursts to limit their exposure.

Wildlife activity at the northernmost crossings in the valley floor (GV-RC1 and GV-RC2) included smaller species associated with open, sparsely vegetated habitats such as non-native grassland and agriculture, and included red fox, coyote, California ground squirrel, other small rodents, and rabbits. GV-RC3 at Grapevine Center is the least suitable wildlife crossing area of all the crossings along I-5 in the Grapevine study area due to the large number of domestic cat records (199 records), and development adjacent to the crossing. The open space between the Grapevine development and California Aqueduct will allow wildlife access to GV-RC-1 and GV-RC-2 and because these are open under- and over-passes, domestic cats are less likely to use these crossings due to the distance from existing development and their exposure to predators (Figure N-2).

3.2 2013–2014 Camera Study of Grapevine Study Area

As described in Section 2.2, Dudek conducted a wildlife corridor camera study throughout the study area from August to October 2013, and a San Joaquin kit fox camera study in January-February and April-May 2014. To assess wildlife movement to, through, and from the study area, the wildlife corridor camera study also included adjacent lands outside the Grapevine Specific Plan Area along the California Aqueduct and a stretch of I-5 bordering the Grapevine Specific Plan Area (Figure N-1). The camera station locations selected for the wildlife corridor study were identified as suitable for wildlife movement based on a review of previous wildlife movement studies conducted in the area, such as the TRC 2008–2009 camera study described in Section 3.1, as well as other references, and maps. Camera stations included undercrossings along portions of I-5 that are located within or adjacent to the study area, drainages, dirt roads, aqueduct undercrossings, and water sources. The naming convention for the cameras is related to their crossing type: cameras at road crossings are denoted with an "RC" in the camera name, and camera names along the California Aqueduct are denoted by "AQ."

Table N-4 summarizes the results of the 2013 camera study and the 2014 San Joaquin kit fox camera study for locations at road crossings and the aqueduct. The table is summarized by camera name and camera location as noted in the sub-heading groupings in the table (e.g., Valley Floor (California Aqueduct)). More detailed information on the results of each of the camera groups is discussed further below.

Table N-4
Grapevine Study Area 2013–2014 Wildlife Corridor Camera Study Results

Camera Location	Crossing Type/Location	Wildlife Species Observed (2013-2014) and Number of Total Records	
Valley Floor (California Aqueduct)			
GV-AQ1 GV-AQ2	Underpass of aqueduct access road along Grapevine Creek	Coyote	7
		Raccoon	3
		Striped Skunk	8
		Cottontail Rabbit	13
		Red Fox	1
GV-AQ3 GV-AQ28	Underpass of roads through large box culverts and overpass of aqueduct	Coyote	16
		Raccoon	2
		Striped Skunk	3

Table N-4
Grapevine Study Area 2013–2014 Wildlife Corridor Camera Study Results

Camera Location	Crossing Type/Location	Wildlife Species Observed (2013-2014) and Number of Total Records	
GV-AQ4 GV-AQ5 GV-AQ6	Aqueduct underpass through large box culvert	Bobcat	1
		Coyote	28
		Striped Skunk	2
		Raccoon	2
		California Ground Squirrel	2
GV-AQ7	Small pipe culvert under aqueduct	Bobcat	1
		Coyote	3
		Raccoon	3
		Striped Skunk	1
		California Ground Squirrel	3
GV-AQ8 GV-AQ9	Underpass through somewhat narrow box culvert and overpass of aqueduct	Coyote	3
		Raccoon	33
		Bobcat	7
		Striped Skunk	1
GV-AQ10 GV-AQ11	Overpass associated with dirt road north and south of aqueduct where Edmonston Pumping Plant Road crosses over the aqueduct	Coyote	4
		Raccoon	16
		California ground Squirrel	3
		Cottontail Rabbit	4
		Wild Boar	1
GV-AQ12 GV-AQ14 GV-AQ15 GV-AQ17	Small pipe culvert 290.71 and wildlife trail leading away from an aqueduct undercrossing and associated small pipe culvert	Raccoon	154
		Striped Skunk	13
		California Ground Squirrel	1
		Bobcat	2
		Coyote	2
GV-AQ13	Small pipe culvert 291.46	Raccoon	8
		Striped Skunk	1
GV-AQ16 GV-AQ18 GV-AQ19	Small pipe culvert 290.97	Raccoon	140
		Striped Skunk	6
		California Ground Squirrel	11
		Cottontail Rabbit	1
GV-AQ20 GV-AQ-21	Underpass through large box culvert	Striped Skunk	1
		Raccoon	10
		Bobcat	1
		Cottontail Rabbit	2
GV-AQ22 GV-AQ23 GV-AQ24 GV-AQ25	Overpass of aqueduct at Pastoria Creek and underpass of road	Bobcat	10
		Coyote	14
		Raccoon	83
		Striped Skunk	1
		California Ground Squirrel	1
		Cottontail Rabbit	3
		Wild Boar	3

Table N-4
Grapevine Study Area 2013–2014 Wildlife Corridor Camera Study Results

Camera Location	Crossing Type/Location	Wildlife Species Observed (2013-2014) and Number of Total Records	
Valley Floor			
GV-RC1A	Paved east–west overpass of I-5 north of aqueduct in the valley floor	California Ground Squirrel	2
		Cottontail Rabbit	4
GV-RC2A	East–west undercrossing of the I-5 at the southern edge of the aqueduct in the valley floor	Raccoon	4
		Striped Skunk	1
		Domestic Dog	2
		Mouse	5
		Domestic Cat	2
GV-AQ26[1]	East–west undercrossing of I-5 at the northern edge of the aqueduct in the valley floor	California Ground Squirrel	6
		Raccoon	3
Valley Floor (Riparian)			
GV-RC11 GV-RC12	Large tunnel undercrossing of Northbound I-5 associated with Grapevine Creek in valley floor	Bobcat	6
		Coyote	1
		Raccoon	10
		Striped Skunk	3
		Domestic Dog	9
Foothills			
GV-RC4A	Large box culvert underpass of Southbound I-5 at transition point between valley floor and foothills	Coyote	2
		Mule Deer	4
		Cottontail Rabbit	2
GV-RC5A	Large box culvert underpass of Northbound I-5 at transition point between valley floor and foothills	Bobcat	2
		Coyote	9
		Mule Deer	14
		Striped Skunk	6
		Domestic Dog	7
GV-RC7 GV-RC8	Paved road underpass of west and east of Southbound I-5 in foothills of Tejon Ranch	Bobcat	2
		Mule Deer	73
		Coyote	1
		Striped Skunk	1
		Cottontail Rabbit	1
GV-RC9	I-5 median strip in foothills of Tejon Ranch	Bobcat	1
		Mule Deer	29
GV-RC10	I-5 median strip; east of Grapevine Creek in foothills of Tejon Ranch	Bobcat	3

1 The camera station GV-AQ26 is located adjacent to the California Aqueduct, as its name denotes; however, this camera station represents wildlife crossings under I-5 and is thus included in the Valley Floor subsection of the table.

California Aqueduct Camera Stations

A total of 26 camera stations were placed along 11 potential wildlife crossing points along the California Aqueduct (see Table N-4 and shown in Figure N-2). One of the crossings is a road overpass of the aqueduct (GV-AQ10 and GV-AQ11, associated with Edmonston Pumping Plant Road); three of the crossings are large, fairly open concrete box culvert underpasses of the aqueduct or the access road over Grapevine Creek (GV-AQ1 and GV-AQ2); three of the crossings are combined box culvert underpasses and overpasses, including underpasses of access roads paralleling the aqueduct and overpasses of the aqueduct itself such as at Pastoria Creek (GV-AQ22 through GV-AQ25); and four of the crossings are pipe culverts under the aqueduct that tend to be much smaller and confined (GV-AQ7; GV-AQ12, GV-AQ14, GV-AQ15, and GV-AQ17; GV-AQ13; and GV-AQ16, GV-AQ18, and GV-AQ19). Generally, the habitats at these camera stations are grasslands, unvegetated disturbed lands, and unvegetated channel at some locations. Some of the locations also support small patches of scrub communities such as silver bush lupine (e.g., GV-AQ5 through GV-AQ7) and California buckwheat scrub (e.g., GV-AQ8 through GV-AQ21). Some of the locations also support riparian vegetation, such as sandbar willow thickets at A GV-Q19 through GV-AQ21 and sparse riparian at GV-AQ22 through GV-AQ25 along Pastoria Creek. All of the aqueduct underpasses and culvert crossing points designed to convey water were dry during the 2013 camera study.

A total of 8 different terrestrial wildlife taxa were detected at the 11 aqueduct crossing points: coyote, raccoon, striped skunk, cottontail rabbit, red fox, California ground squirrel, bobcat, and wild boar. Raccoons, with 454 of the 639 total records, accounted for the large majority (71%) of the observations and were recorded at all the aqueduct crossing points. Coyotes were the second most frequent species observed, with 77 records at 8 of the crossings points. A fairly high number of bobcats were observed, with 22 records at 6 of the crossing points. Other species commonly observed were striped skunks with 37 records, cottontail rabbits with 23, and California ground squirrels with 21. There were also 4 wild boar records (3 at GV-AQ23 at Pastoria Creek and 1 at GV-AQ11 at Edmonston Pumping Plant Road).

The patterns of use of the different aqueduct crossing areas differed substantially, primarily related to crossing structure type, as described below. The number of different species detected at any given crossing point ranged from two species (the small pipe culvert at GV-AQ13) to seven species (at the four stations at the Pastoria Creek crossing), with five species the modal number of different species at the crossings.

The four relatively small pipe culvert crossings (GV-AQ7 and GV-AQ13 through GV-AQ19) accounted for a modest majority of the records, with 350 (53%) of the total 639 records. However, the numerous culvert records were dominated by raccoons, with 305 (87%) of the 350 total culvert records; the 305 raccoon culvert records accounted for 67% of the 454 total raccoon records. Other species commonly recorded at the culverts were striped skunk (21 records) and California ground squirrel (15 records). Because of the presence of raccoons, these small pipe culverts probably are not highly suitable for the four focal species, and San Joaquin kit fox in particular. In contrast, almost all of the bobcat and coyote records were at the overpasses and combined overpasses and underpasses, including 19 of the 22 records for bobcat and 72 of the 77 records for coyote.

With the exception of possibly bobcat and the relatively few records along Grapevine Creek, no clear species distributional patterns emerged from different aqueduct crossing points. For bobcat, all 22 records were in eastern portion of the project area, from the GV-AQ7 crossing to the easternmost Pastoria Creek crossing (GV-AQ22) (Figure N-2). This eastern concentration of records for bobcat may reflect the shorter travel distance along the valley floor between the foothills and the aqueduct. Relatively few records were collected at the Grapevine Creek underpass of the access road north the aqueduct (GV-AQ1 and GV-AQ2), including only seven coyote records; however, this crossing included the only red fox record along the aqueduct.

Overall, the camera study at various crossings along the aqueduct shows that wildlife use all of the potential wildlife crossings, but that use of the smaller pipe culverts is dominated by raccoons, which makes them much less suitable for the focal species. The two largest and mobile species—coyote and bobcat—were recorded much more frequently at the larger overpasses and box culvert underpasses. These large overpasses and box culverts are also more likely to be used by the focal species. No one crossing appears to a critical resource for any of the six native species, including coyote at 8 of the crossings, bobcat at 6 of the crossings (concentrated in the eastern portion of the study area), raccoon at all 11 of the crossings, striped skunk at 10 of the crossings, cottontail rabbit at 5 of the crossings, and California ground squirrel at 6 of the crossings.

I-5 Camera Stations

Camera stations were also placed along I-5 at eight general locations, including several in the same general locations as TRC's stations described in Section 2.2.1: GV-RC1A (= TRC's GV-RC1), GV-RC2A (= TRC's GV-RC2-East), GV-RC4A (= TRC's GV-RC4-West), and GV-RC5A (= TRC's GV-RC4-East) (Table N-4 and Figure N-2). New camera stations (GV-RC7 through GV-RC12) were established at other potential crossings of I-5 and wildlife activity locations that may convey movement in the open median between northbound and southbound lanes, where Grapevine Creek flows and some active agriculture (vineyards) is present.

Stations GV-RC1A, GV-RC2A, and GV-AQ26 are located in the valley floor adjacent to the aqueduct and were placed to record movement over and under I-5 along the aqueduct. GV-RC11 and GV-RC12 to the south are located in the valley floor riparian subarea west and east of the northbound I-5 at the Grapevine Creek undercrossing, and thus were designed to monitor movement under I-5 along Grapevine Creek that would convey wildlife between the study area and the foothills southwest of the project.

Stations GV-RC4A, GV-RC5A, and GV-RC7 through GV-RC10 are in the foothills on Tejon Ranch lands just south the study area. Stations GV-RC7 and GV-RC8 in the foothills are located just west and east of the undercrossing of the southbound I-5 along Grapevine Road where the southbound and northbound lanes diverge to the north until Grapevine Center. This open median strip between the southbound and northbound lanes provides potential north-south movement along the median and between undeveloped lands east and west of the I-5. For example, animals entering the median area from the west via GV-RC7 could travel north along the median and then move directly east via GV-RC5A or move northeast along Grapevine Creek or vice versa. Both GV-RC9 and GV-RC10 face a wildlife trail that meets Grapevine Creek west of northbound I-5 and east of Grapevine Road, and thus are intended to record wildlife movement and activity in the median area between the north- and southbound I-5 rather than the shortest distance crossings of the I-5, as well as species using Grapevine Creek as a movement corridor.

A total of 10 different terrestrial wildlife taxa were detected at the eight I-5 locations: coyote, raccoon, striped skunk, cottontail rabbit, mouse (unknown species), mule deer, California ground squirrel, bobcat, pet or feral cat, and pet or feral dog. Mule deer, with 120 of the 215 total records, accounted for 56% of the observations. All of the mule deer records were at four of the eight locations, and all were in the foothills. Of the native species, raccoons were the second most frequent species with 17 records, followed by bobcats, with 14 records, and coyotes, with 13 records. With the exception of 7 records for raccoon at GV-RC2A and GV-AQ26 (at east–west crossing of I-5 north of the aqueduct) in the valley floor, all of the records for these species were in the foothills or in at the Grapevine Creek crossing in the valley floor. Relatively little wildlife activity by native species was recorded at the three valley floor locations next to the aqueduct. Only cottontail rabbit (4 records) and California ground squirrel (2 records) were recorded at the paved road that crosses the I-5 (GV-RC1A). The undercrossings of I-5 at GV-RC2A and GV-AQ26 had 23 records, but 4 of these were by domestic cats (2 records) and dogs (2 records), 5 records were for mice not identified to species level, and 6 were California ground squirrel. Although coyotes and red fox were not recorded at the I-5 crossings next to the aqueduct in 2013, they were recorded in the 2008–2009 TRC study (Table N-3). As such, these canid species would be expected to continue to use these locations given their ability to use and move through highly modified landscapes and on and along paved roads. These crossings potentially could be used by the four focal species, including San Joaquin kit fox, American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard (see Figure N-2).

The underpass crossing of the I-5 southbound lane at Grapevine Road (GV-RC7 and GV-RC8) supports substantial mule deer activity, accounting for 73 of the total 78 records at these two stations. Two bobcat records were also collected at this crossing. Similarly, at GV-RC9 to the north and just east of Grapevine Road, 29 of the 30 records were mule deer and the other record was bobcat. GV-RC10 just to the north also had 3 bobcat records but no mule deer records. The records for GV-RC5A show that wildlife moving across the I-5, either via the GV-RC4A undercrossing or Grapevine Road GV-RC7/GV-RC8, can access undeveloped lands to the east. GV-RC5A had 38 records, of which 14 were for mule deer, 9 were for coyote, and 2 were for bobcat. Likewise, the tunnel crossing of the I-5 northbound lane associated with Grapevine Creek had 29 records (GV-RC11/GV-RC12). However, this crossing had a different suite of species, with 6 bobcat records, 10 raccoon records, 3 striped skunk records, and 1 coyote record, but no mule deer records.

There appears to be a number of free-ranging dogs in the I-5 median strip in this area. There were 7 records for dogs at GV-RC5A and 9 at GV-RC11/GV-RC12. These dogs may belong to the residents that operate the vineyards located between GV-RC4A and GV-RC11/12, they may be feral animals, or they may be both pet and feral animals. Whether the lack of mule deer using the tunnel undercrossing at GV-RC11/RC12 is attributable to the dogs or because of the some other factor that inhibits their use (e.g., steep slopes or long passage) is unknown. Bobcat use of the tunnel does not appear to be inhibited.

3.3 Summary of Literature Review and Wildlife Surveys

Wildlife species generally inhabit suitable habitat patches distributed across a landscape. These habitat blocks, which may make up the species' home range or breeding territory, support most, if not all, of the species' life history needs (e.g., food resource, mates, refuge). Critical to the survival of most wide-ranging species is the ability to access or move between various habitat blocks to allow for juvenile dispersal, to access food and/or shelter during the winter months, to escape catastrophic events (e.g., flood, fire, etc.), and to ward against genetic in-breeding (Rosenberg et al. 1997). In undisturbed or unfragmented landscapes, such movements by some species may occur throughout the landscape without a defined movement route (e.g., between mosaics of suitable habitat patches). However, where landscapes have movement constraints related to either natural conditions, such as vegetation types or topography (e.g., steep slopes) or man-made obstacles (e.g., urban areas, roads), wildlife may have to move along defined landscape linkages or "movement corridors."

The phrase "wildlife movement corridors," as used in this report and the BTR, are generally linear landscape features that permit species to disperse between favorable habitats. Typically, terrestrial wildlife species use corridors that contain at least some elements of their preferred habitat, such as vegetative cover (Rosenberg et al. 1997). These linear wildlife corridors may contain fairly continuous suitable habitat or may only contain disjunct habitat patches sometimes referred to as "stepping stones." Some researchers (e.g., Bennett 2003) have suggested that stepping-stone habitats can be as effective as continuous corridors for certain species moving between larger suitable habitat blocks; however, this effectiveness would depend on factors such as the species' inherent movement ability (e.g., fast- or slow-moving species), their propensity to move across unsuitable habitat (e.g., a paved road surface), and the distance between habitat patches making up the stepping stones.

As noted, wildlife movement can be categorized in several ways, including as regular short-term movements such as daily movements within an individual's home range or territory (e.g., during foraging); one-time dispersal events between suitable, but disjunct habitat areas; and seasonal or periodic migrations or range shifts. For many species, the daily or regular movements are usually contained within a contiguous home range or territory (e.g., small rodents, reptiles, small passerine birds), but for other species these types of daily or regular movements can occur at three different spatial scales: (1) landscape habitat linkages, (2) wildlife corridors, and (3) wildlife crossings. For example, mule deer, which typically have large home ranges ranging from 0.2 to 1.9 square miles (for doe and fawn groups) to 18 to 60 square miles (for bucks), may use large-scale habitat linkages, more constrained linear wildlife corridors, and specific wildlife crossings (e.g., a road undercrossing) on a regular basis.

Landscape habitat linkages are large, broad natural areas that provide regional connections between blocks of habitat (Penrod et al. 2001). These habitat linkages, which are essential to maintaining connectivity within a landscape, are large enough to provide permanent resident (or "live-in") habitat for smaller wildlife species, while also providing connections between larger core habitats in the landscape, as are often required by larger species that have large ranges and territories and that often disperse long distances.

Wildlife movement corridors, in contrast to habitat linkages, are typically more linear landscape features that seldom provide sufficient habitat elements to meet a species' full life history requirements (e.g., adequate food or refuge resources). Such linear features within fragmented landscapes (e.g., urbanizing areas) may also increase risk factors for some species such as predation by urban-related predators. Wildlife corridors, however, do provide dispersal opportunities between two or more disjunct habitats areas for more mobile species (Rosenberg et al. 1997). However, while they may allow dispersal by mobile species that can move through them quickly, they may not permit slower "diffusion" movement of less mobile or sedentary species over a longer period. For example, for species that only disperse short distances (such as the closest available territory next to their natal territory), linear wildlife corridors may not be effective unless they contain adequate resident habitat for the species. For these reasons, the mechanisms of dispersal through corridors tend to be highly species-specific; i.e., "one size does not fit all" (Beier and Loe 1992; Haddad and Tewksbury 2006).

Wildlife crossings are not habitats per se, but are identifiable locations within a constrained landscape through which wildlife must pass to negotiate physical constraints, such as roads and development. These crossings may occur within a landscape habitat linkage or a wildlife corridor, but, in either case, represent potential bottlenecks in the movement landscape.

Development and roads transecting or interrupting existing natural crossings can create dangerous or impassable barriers that impede natural movements by animals. These barriers can create habitat "sinks" where animals are often subjected to high risks of injury and mortality when encountering these barriers, as in the case of roadways where no safe wildlife passage is provided and animals are forced to cross roads at grade (Meese et al. 2007).

The following sections review available movement habitat linkages, corridors and crossing information within and adjacent to the study area for the four focal species: San Joaquin kit fox, blunt-nosed leopard lizard, Nelson's antelope squirrel, and American badger. As noted above, these species encompass the range of high-mobility (e.g., kit fox) to low-mobility (e.g., blunt-nosed leopard lizard) species known to occur in the region and potentially occurring on or adjacent to the study area. The sections below also incorporate an analysis of the USFWS 5-Year Review (2010a) of San Joaquin kit fox, in particular a landscape level habitat linkage identified by the USFWS for kit fox movement along the northern Tehachapi Mountains valley/foothill transition zone that occurs on Tejon Ranch. In addition, applicable results from Penrod et al. (2003), who published a report entitled *South Coast Missing Linkages Project: A Linkage Design for the Tehachapi Connection*, was incorporated into several sections. In this report, Penrod et al. (2003) identified conceptual habitat linkages for three of the focal species: San Joaquin kit fox, American badger, and blunt-nosed leopard lizard. The conceptual habitat linkages were mapped using a landscape permeability model, which models the relative cost to a species of moving along different routes between large protected "core" habitat areas and selecting the route that results in the least cost (in terms of energetics, food/shelter needs, potential threats, etc.) to the species, or a "least-cost" corridor. However, it is important to note that the least-cost corridor model is developed and applied at a fairly coarse scale and cannot take into consideration more detailed and site specific factors that can be present along an identified least-cost corridor. Such factors include micro-level vegetation and topography variation, recent land disturbances or habitat conversion, presence/absence movement barrier under/overcrossings, etc., that can only be identified by on-the-ground observations and analysis. The ability of this model to apply to the movement of focal species within and adjacent to the study area is discussed further below.

San Joaquin Kit Fox

San Joaquin kit fox, which is primarily a valley floor species, may use all low elevation grasslands and major canyons and drainages between protected areas, from the San Emigdio Ranges on Wind Wolves Preserve to the Kern River area on Sequoia National Forest. For a regional perspective, Cypher et al. (2013) modeled suitable habitat for the kit fox using a "GIS-based mapped-algebra model" that include several habitat variables, including land use/land cover, vegetation density, and terrain ruggedness. The model includes two categories of suitable habitat: high and medium. Cypher et al. (2013) found that kit fox populations are persisting in large areas modeled as high or a mix of high and medium suitability, and that high suitability habitat is concentrated in the southern portion of the species' range, including Kern County (Figure N-4). In addition, larger high-suitability habitat blocks protect against yearly fluctuations in habitat quality due to the amount of grass cover—providing for refuge pockets throughout the seasonal and yearly fluctuations. The permanent open space lands identified for conservation or conserved as part of the Tejon Ranch Land Use and Conservation Agreement (Ranchwide Agreement [RWA on figures]) represent the type of large, unfragmented habitat patches required for this species, including 17,664 acres of medium and high suitable habitat mapped for kit fox in the valley floor during a site-specific habitat assessment by Cypher et al. (2013) (Figure N-4).

Within Tejon Ranch, a site-specific reconnaissance-level habitat assessment of the study area (and surrounding Tejon Ranch lands) was conducted on May 27, 2010, by kit fox experts Brian Cypher (ESRP) and Scott Phillips (ESRP) and Dudek biologist Keith Babcock. The results of the habitat assessment were described in a report prepared by Brian Cypher (2010). The assessment mapped most of the central portion of the study area as "low to moderate" suitability, with "moderate to high" suitability mapped along Grapevine Creek, and the southern foothills as unsuitable for kit fox (Cypher 2010). This site-specific information differs in some areas from the Cypher et al. 2013 model because it is based on the specific site conditions (e.g., on-site soil conditions, vegetation species and structure, current land uses, management) that may affect local habitat suitability. However, the Cypher et al. 2013 model covers the entire Central Valley and, to ensure a conservative analysis and based upon Dr. Cypher's recommendation, the results of the model were used to assess potential cumulative impacts to San Joaquin kit fox. No San Joaquin kit fox were detected during the species-specific camera studies focused on potential den locations, and no San Joaquin kit fox were confirmed during the I-5 crossing studies (see Section 3.1 for additional discussion).

Absence of detections in the study area is consistent with habitat suitability modeling conducted by Cypher et al. (2013). Most of the study area is classified as medium quality or unsuitable habitat (Cypher pers. comm. 2015). Medium quality habitat primarily functions as movement or dispersal habitat and rarely seems to support resident foxes (Cypher pers. comm. 2015). Most of suitable habitat is found in the disjunct parcels at the north end of the Specific Plan Area while the rest occurs as relatively small fragments, mostly along the aqueduct or Grapevine Creek. The fragmented nature of this high quality habitat further reduces the probability of occupancy by kit fox (Cypher pers. comm. 2015). The sum total of the high quality habitat is probably insufficient to support a single pair or family group of foxes (Cypher pers. comm. 2015; Cypher et al. 2013). Furthermore, little suitable habitat occurs adjacent to the study area.

With respect to San Joaquin kit fox movement, the Penrod et al. (2003) modeling effort that was reviewed showed that most of the site constitutes a least-cost corridor for the kit fox between Wind Wolves Preserve to the west and Sequoia National Forest to the northeast (see Figure 11 in Penrod et al. 2003). More recently, and consistent with the Penrod modeling effort, the USFWS 5-Year

Review for the kit fox identified the portion of the study area south of the aqueduct (including the valley floor and foothills) and a small portion of the project just north of the aqueduct (in the valley floor) as part of a landscape habitat linkage between satellite populations (Northeast Bakersfield, Metropolitan Bakersfield) to the north and core populations (Carrizo Plains Core Area, Western Kern County Core Area) to the west (USFWS 2010a) (Figure N-5).

Additional natural history information for San Joaquin kit fox that was reviewed and is relevant to the wildlife movement analysis for the species, including information regarding dispersal and movements, use of dens and refuge structures, and use of crossing structures is provided below.

San Joaquin kit foxes are quite mobile and have relatively large home ranges. Cypher et al. (2001) determined a mean adult home-range size of approximately 1,072 acres and a mean pup home-range size of 325 acres on the Naval Petroleum Reserves in western Kern County. Briden et al. (1992, as cited in USFWS 2010a) found that denning ranges (the area encompassing all known dens for an individual) for San Joaquin kit fox averaged approximately 1,169 acres in western Merced County. White and Ralls (1993) estimated a mean home range for San Joaquin kit fox of approximately 2,866 acres at the Carrizo Plain in 1990 and 1991, but noted these home ranges were large and likely reflected drought conditions and prey scarcity. Home ranges during this study were also relatively exclusive, with little overlap between individuals of the same sex (White and Ralls 1993). At the Camp Roberts Army National Guard Training Site in northern San Luis Obispo County, radiotelemetry documented mean home ranges for San Joaquin kit fox of approximately 5,782 acres (Root and Eliason 2001, as cited in USFWS 2010a). White and Ralls (1993) suggested that large, exclusive home ranges during periods of drought may be an adaptation to episodic prey scarcity and a means to maintain their own body mass and condition.

With regard to dispersal, San Joaquin kit fox pups remain under the care of adults for 4 to 5 months before beginning to disperse from their natal area as early as July and continuing through August and September (USFWS 2010a). Mortality during dispersal is a significant source of kit fox mortality. In a study of dispersal by San Joaquin kit fox, Koopman et al. (2000) found that more than 65% of dispersing juveniles died within 10 days of leaving their natal range. The primary cause of mortality of dispersing and philopatric juveniles (juveniles that that remain in their natal area) was predation. Some offspring remain with their parents (Ralls et al. 2001). In one study spanning 16 years, 33% of tracked juveniles dispersed from their natal territory, with significantly more males dispersing than females, and the average dispersal distance was 4.8 miles (range of 1.1 to 20 miles) (Koopman et al. 2001). Most dispersal occurred in the first year of the animal's life. Briden et al. (1992, as cited in USFWS 2010a) documented dispersals of 1.2 to 12 miles. Four long-distance dispersals of between 25 and 50 miles were documented between Camp Roberts and Fort Hunter Liggett Military Reserve in Monterey County and the Carrizo Plain (California Air National Guard 2008, as cited in USFWS 2010a).

Given the large home ranges of kit foxes, the potential for long-distance dispersal, and the kit fox's apparent tolerance of human activities and modified landscapes (as long as suitable habitat is available in the Grapevine Specific Plan Area, including suitable refuges), the proposed project site after development should not be an inherent obstacle to the use of and movement across the site. Provision of refuges for dispersing kit foxes, in particular, will be important to minimize predation. Coyotes, for example, are a common natural predator of kit foxes (e.g., Ralls and White 1995; White et al. 1995; White and Garrott 1997; Kozlowski et al. 2008) and also a direct competitor for resources (White et al. 1995; Arjo et al. 2003, 2007; Kozlowski et al. 2008), and providing refuges could decrease the risk of predation of kit foxes.

Selection of den sites does not appear to be strongly related to nearby human activities, nor do kit foxes appear to actively avoid man-made features, such as roads and structures. Bjurlin et al. (2005), for example, found that almost 10% of San Joaquin kit fox dens in the Bakersfield area were within 100 feet of road centerlines and that some dens used features of major roads, including culverts, embankments and underpasses, and drainage basins or canals immediately adjacent to roads. In fact, the presence of industrial developments may encourage proximate kit fox denning in part due to increased foraging opportunities and protections against predators such as coyotes (*Canis latrans*) (Cypher pers. comm. 2014).

American Badger

American badgers and their dens have been observed several times in the study area and it is estimated that, based upon their home range, 6 to 13 badgers could occur at any given time on the 8,010-acre Grapevine Specific Plan Area. The proposed off-site impact areas are scattered in different areas, ranging from 4 to 34 acres; occupation of these areas depend on the number of badgers present in adjacent habitats. This species typically occurs in open, sparsely vegetated habitats, but also uses modified habitats such as agriculture. Virtually the entire site is considered to be suitable for badgers, and since they are relatively mobile, no one area of the study area is critically important for this species. For example, on multiple occasions during the camera studies, what appeared to be a single badger visited several widespread stations within the same evening.

Badgers may be considered intermediate between highly mobile and moderately mobile species. While they are capable of long-distance dispersal (Messick and Hornocker (1981) reported a juvenile dispersal event of 68 miles), they may be relatively sedentary within home ranges where resources are plentiful. As stated in the BTR, American badger home ranges are large and range from 240 hectares (593 acres) to 850 hectares (2,100 acres) (Lindzey 1978; Long 1973; Messick and Hornocker 1981; Minta 1993; Sargeant and Warner 1972). Their distribution in a landscape coincides with the availability of prey, burrowing sites, and mates; with males' distribution ranging wider than females' during the breeding and summer months (Minta 1993). In general, badger activity within a home range tends to concentrate in areas with suitable soils for burrowing or with colonies of ground squirrels.

Penrod et al. (2003) identified the contiguous belt of grassland and foothill habitat around the southern end of the San Joaquin Valley as the most likely route for badger moving between the Sierra Madre and Sierra Nevada protected core areas. This encompasses the valley floor grasslands and major canyons between protected areas, including Tejon and Grapevine Canyons (see Figure 10 in Penrod et al. 2003). The areas indicated in the habitat linkage map depicted in the USFWS 5-year review for kit fox (USFWS 2010a; see Figure N-5), and consistent with the Penrod et al. (2003) map, would also likely be used by American badger for movement.

Nelson's Antelope Squirrel

Nelson's antelope squirrel inhabits arid grassland, shrubland, and alkali sink habitats within the San Joaquin Valley. They prefer dry flat or rolling terrain with slopes less than 10 to 14 degrees (18% to 25%) (Whitaker and NatureServe 2008). For this reason, the antelope squirrel is primarily considered to be a non-riparian valley floor species. They seldom dig their own burrows, mainly occupying burrows of other small fossorial mammals, primarily kangaroo rats (*Dipodomys* sp.) (Whitaker and NatureServe 2008; Ahlborn 2005). They occur in greatest densities within sparse-to-moderate cover of shrubs, including saltbush, California ephedra, bladderpod, goldenbush, and matchweed (USFWS 1998). They are uncommonly found in shrubless areas (USFWS 1998). Additionally, they are rarely found within areas of alkaline soils supporting halophytes, most likely because highly alkaline soils within the Valley floor are typically indicative of high water tables (within a few centimeters to a meter from the surface) (USFWS 1998). Potential for this species to occur on site includes the grassland on the valley floor. However, the study area is on the edge of the species' range and very few small mammal burrows or suitable shrub habitat was found. Additionally, the majority of the shrub habitat is located within the foothills on steep slopes not suitable for Nelson's antelope squirrel. No individuals were found during the site surveys.

Nelson's antelope squirrels are considered to be a moderately mobile species. Home range studies have yielded varying results depending on methods used to calculate home ranges. Hawbecker (1947) reported a mean home range from a field site 65 miles west of Fresno of 10.9 acres (4.4 hectares) based on trapping data, varying between 6.4 to 17.8 acres (2.6 to 7.2 hectares). Harris and Stearns (1991) reported larger home ranges for antelope squirrels using both radiotracking and trapping mark-recapture data on the Elkhorn Plain. Their home range estimates depended on the analytic method applied, with a mean 10.8 hectares (26.7 acres) using a minimum convex polygon method and mean of 14.4 hectares (35.6 acres) using a 95% ellipse estimation method. Both estimates reported by Harris and Stearns (1991) are larger than those reported by Hawbecker (1947), which may reflect different ecological conditions at the sites and/or different field methods. Hawbecker (1958) reported observations of daily movements, including movement along a circuit of

1,250 feet in a single 3.5-hour period. While many individuals were captured by Hawbecker in the same general area within an approximately 11-acre range over several years, some individuals were captured more than 2,000 feet from previous locations, including one immature male that was captured 4,200 feet from its original capture in 6-month period. Because the Hawbecker data are limited by where trap stations were established, it is expected that some movements may well exceed 4,200 feet. The substantially larger home range estimates by Harris and Stearns (1991) are consistent with these observations of longer movements. This home range and movement information indicates that while most Nelson's antelope squirrels probably do not move far from their natal ranges (i.e., they remain in generally the same home range area over their life span) and that dispersal may be more diffusive, they are physically capable of moving relatively long distances (e.g., 1,250 feet) in short time periods (e.g., 3- to 4-hour periods within a single daytime activity period) for a squirrel species. While no least-cost corridor was modeled by Penrod et al. (2003) or the USFWS for this species, individuals would likely use the valley habitat portions of the kit fox habitat linkage depicted in the USFWS (2010a) 5-year review for kit fox.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard inhabits open habitats with sparse vegetation in the San Joaquin Valley and nearby valleys and foothills (Stebbins 1985; USFWS 2010b). They are commonly found within alkali flats, canyon floors, non-native grassland, valley sink scrub, valley needlegrass grassland, alkali playa, and saltbush (*Atriplex* spp.) grassland where small mammal burrows are available (Stebbins 1985; Holland 1986; Hammerson 2007; Tollestrup 1976, as cited in USFWS 2010b). They generally occupy sandy, gravelly, and loamy substrates, and occasionally hardpan (Stebbins 1985). Suitable ground cover for blunt-nosed leopard lizard is 15% to 30%, and ground cover greater than 50% is unsuitable (USFWS 1998). Blunt-nosed leopard lizards also prefer flat or gently rolling hills with low relief (i.e., 15% or less) (Williams et al. 1993; as cited in USFWS 2010b), and are absent from steep slopes, densely vegetated areas, or areas that are seasonally inundated (USFWS 1998; CDFG 2004). Potential habitat for blunt-nosed leopard lizard in the study area therefore is limited to the valley floor, including the unvegetated channels and unvegetated portions of Grapevine Creek, and tamarisk stands.

Dr. Germano, a recognized expert on blunt-nosed leopard lizard, conducted a habitat assessment in the study area (see Appendix B of the BTR for methods). Based on this assessment, Dr. Germano concluded that the potential for blunt-nosed leopard lizard to occur in the study area at high densities was low, but could have moderate potential to occur in suitable habitat areas of the site if site conditions improved from the ongoing drought, which is described in more detail in Section 2.5 of the BTR.

Observed spatial patterns of blunt-nosed leopard lizard are somewhat variable, which may reflect the different periods over which data were collected. Multiple studies also indicated that home ranges for males and females often overlap and that males outnumbered females by ratios of 2:1 to 3:1 (CDFG 2010; USFWS 1998, 2010b). The 1998 USFWS Recovery Plan for Upland Species of the San Joaquin Valley reported estimated home ranges between 0.52 acre and 4.2 acres for males and 0.25 acre to 2.7 acres for females (USFWS 1998). However, a radiotelemetry study estimated male home ranges between 3.9 to 21.7 acres (average: 10.5 acres), and female home ranges between 1.2 and 11.0 acres (average: 5.0 acres) (Warrick et al. 1998, as cited in USFWS 2010b; CDFG 2010). Blunt-nosed leopard lizard surface activity levels are strongly influenced by environmental factors (e.g., temperature, precipitation and vegetation characteristics), which in turn affect thermoregulation, metabolism, prey densities, and predatory success or mobility (Warrick et al. 1998; cited in USFWS 2010b). These factors may also account for some of the differences in estimated home ranges in the different studies.

Although the largest published home ranges are just over 20 acres and the smallest is approximately 0.25 acre (for females), individuals are capable of relatively long-distance (e.g., more than 1,500 feet) movements over short time periods (e.g., within 1 month). Tollestrup (1983) reported one individual traveling 1,509 feet between successive capture points based on mark and recapture methods during a one-month period study (as cited in CDFG 2010). Such movements may not reflect a home range, but rather a dispersal event where an individual shifts its home range or makes a “sortie”[3] to an area not within its core home range.

The USFWS (2010b) 5-year review for this species addresses the importance of establishing corridors between existing natural areas in Kern and Tulare Counties to enhance blunt-nosed leopard lizard metapopulation recovery strategy and maintain lizard populations. According to the USFWS (2010b) 5-year review, landscape corridors that linked the following publicly-protected natural areas would benefit blunt-nosed leopard lizard populations: Buena Vista Valley; Elk Hills, Lokern Natural Area; Buttonwillow Ecological Reserve; Semitropic Ridge Preserve; Kern National Wildlife Reserve; Allensworth Ecological Reserve; and Pixley National Wildlife Reserve (USFWS 1998; USFWS 2010b). Blunt-nosed leopard lizards prefer to move through scattered shrubs in grassland, alkali scrub, and wash communities in flats and canyon bottoms; and avoid urban and intense agricultural areas (Penrod et al. 2003). While the USFWS did not identify habitat specifically within or adjacent to the study area in its list of corridors that would benefit blunt-nosed leopard lizard populations, the valley habitat portions of the study area that are included in the San Joaquin kit fox linkage identified in the USFWS (2010a) 5-year review for kit foxes could facilitate east–west movement for blunt-nosed leopard lizard. In addition, Penrod et al. (2003) modeled the southern end of the San Joaquin Valley floor, including narrow areas of the valley floor portion of the study area, as a least-cost corridor for

3 Animals sometimes make unusual, long-distance movements, or “sorties,” into new areas for various reasons, including mate seeking, investigating new habitat areas prior to a permanent shift in range, or just general exploratory behavior, especially by juveniles and sub-adults.

blunt-nosed leopard lizard between core population areas within the Tehachapi region. However, as previously noted, this model was developed at a coarse scale and was not able to consider more site-specific factors that can only be identified during site-specific analysis. For example, several portions of the Penrod et al. (2003) modeled corridor for blunt-nosed leopard lizard occur within currently active agricultural fields–habitat that is not suitable for this species. In addition, the model shows the least-cost corridor connecting to both the east and west side of I-5. However, this portion of the interstate is within the lower reaches of the Tehachapi Mountain foothills in topography that would not be considered suitable for blunt-nosed leopard lizard; I-5 underpasses in this area would not directly connect to suitable habitat on either side of this portion of the interstate.

4 FOCAL SPECIES MOVEMENT CROSSINGS

Section 3.3 provides habitat and natural history information for the four focal species and existing conditions in the study area for the wildlife movement analysis. This section provides information about types of wildlife crossings known or likely to be suitable for the focal species and identifies the existing crossing in the study area that would be expected to facilitate the four focal species.

San Joaquin Kit Fox

Substantial information is available regarding the use of crossing structures by San Joaquin kit fox. Vehicle collisions, especially in urban settings such as Bakersfield, are a major source of kit fox mortality (Bjurlin and Cypher 2003), but the risk of collision is likely related to larger road sizes (e.g., widths and number of lanes) and increased vehicular traffic densities and speeds on the larger roads. While San Joaquin kit foxes often cross roads at grade at night, they may use existing crossing structures, such as bridges and tunnels, and smaller culverts less frequently (which kit foxes may perceive as areas where they could be ambushed by larger predators) (Cypher et al. 2012). All of the crossings shown in Figure N-2, with the exception of GV-RC7, GV-RC8, GV-RC9, and GV-RC10 that are located south of the study area along the I-5 in the foothills, are suitable for San Joaquin kit fox with varying levels of suitability.

Other Focal Species

For the other three project focal species–American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard–Ruediger and DiGiorgio (2007) indicate that for smaller species, culverts and concrete box culverts of at least 36 inches in diameter are necessary. Ruediger and DiGiorgio (2007) also assumed that these smaller species would readily pass through larger structures, including round culverts, box culverts, arches, bridges, and overpasses.

Passage length is another factor in whether a particular species will use a crossing structure. For example, raccoons and dogs readily use longer passages, while mule deer tend to avoid longer passages (Ng et al. 2004). The relationship between passage length and effectiveness for these three focal species is unknown, but a reasonable assumption is that shorter passage lengths are likely to be more effective than long passage lengths for most species, including the focal species. In addition to structure type and dimensions, other factors affecting use of crossing structures are fencing, existing land uses, proximity to natural habitat edges and water features, and the probability of human disturbance. All of the crossings shown in Figure N-2 are suitable for American badger with varying levels of suitability. Blunt-nosed leopard lizard and Nelson's antelope squirrel have the potential to cross at GV-RC1A, GV-RC2A, GV-AQ26, GV-AQ1, GV-AQ2, GV-AQ10, GV-AQ11, GV-AQ22, GV-AQ23, GV-AQ24, and GVAQ25.

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5 SUMMARY OF POTENTIAL WILDLIFE MOVEMENT IN THE STUDY AREA

The study area is located within the San Joaquin Valley floor and northern Tehachapi Mountain foothills life zone. Currently, the study area east of I-5 represents a large expanse of land within which animals inhabiting the site can move with little constraint, but bounded somewhat by I-5 (east-west) and the California Aqueduct (north-south).

The preservation of large blocks of grassland and scrubland habitat within this life zone, and the provision for landscape connectivity between these lands is noted in the Recovery Plan for Upland Species of the San Joaquin Valley as being critical to the ultimate recovery of 34 special-status plants and animals that occur in the San Joaquin Valley (USFWS 1998). Much of the San Joaquin Valley floor has been converted to agricultural, urban, or industrial uses. Movement between wildlife populations, particularly those associated with grassland and scrubland habitats, is largely confined to those non-agricultural and non-developed areas along the valley floor/foothill edge in a general east–west orientation, some of which is encapsulated along the northern and western boundaries of the Ranch.

For east–west regional connectivity, both Penrod et al. (2003) and the USFWS (1998; 2010a) have identified the site as part of an important habitat linkage for San Joaquin kit fox, American badger, and blunt-nosed leopard lizard and other species, linking core populations further to the east and west of the study area. As identified in the *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (Spencer et. al 2010) prepared for the CDFW and the California Department of Transportation (Caltrans), the foothills of the Tehachapi and San Emigdio Mountains are described as a "natural landscape block," supporting native biodiversity and connecting the Tehachapi Mountains to the Sierra Madre Mountains (see also Penrod et al. 2003; USFWS 2010a; Cypher et al. 2013). The study area contains portions of this foothill landscape linkage as well as the flat valley floor lands that transition to the foothills, both of which provide east–west connections across I-5 (Figure N-6).

While existing open habitat on site allows for generally unrestricted movement for the focal species across the site, under the existing condition, the east-west movement from the site is restricted by I-5. As noted by the results of the camera data analysis, a number of wildlife species, including at least one of the focal species—American badger—were confirmed as accessing and using the various I-5 underpasses (including the California Aqueduct underpass) to reach natural habitat on both sides of I-5. An unconfirmed fox species was also captured on camera as crossing I-5 at the aqueduct. Mule deer also use and move across the foothills region of the study area, as does bobcat. Animals moving westward through these underpasses can currently access large open habitat blocks immediately adjacent to I-5 as well as further to the west. Animals moving eastward would access the open valley floor and lower foothill habitats of the study area immediately east of I-5 but would ultimately encounter the aqueduct further to the east as it curves southward. Animals would then either cross the aqueduct through various underpasses and overpasses and then ultimately encounter active agricultural areas, or move along the southern flank of the aqueduct until reaching the Edmonston Pumping Plant, where additional natural open lands occur to the east and southeast within the lower foothill regions (Figure N-6).

Animals of similar size and movement capabilities to Nelson's antelope squirrel and blunt-nosed leopard lizard (e.g., daily movements or dispersal events) such as California ground squirrel, cottontail rabbit, and unidentified kangaroo rats, mice and lizards were recorded at the California Aqueduct underpass at I-5 during the TRC 2008–2009 camera studies. California ground squirrel and cottontail rabbit were recorded at the underpasses and overpasses of the California Aqueduct in 2013. Studies reviewed by Ruediger and DiGiorgio (2007) indicate that small culverts and concrete box culverts at least 36 inches in diameter are adequate for smaller species, which would apply to Nelson's antelope squirrel and blunt-nosed leopard lizard. Ruediger and DiGiorgio (2007) also assumed that smaller species would readily pass through larger structures, including round culverts, box culverts, arches, bridges, and overpasses, or in other words, the types of crossings present along the I-5 and California Aqueduct in the project area. As previously noted, blunt-nosed leopard lizard and Nelson's antelope squirrel have the potential to cross I-5 at GV-RC1A and GV-RC2A, and the aqueduct at GV-AQ26, GV-AQ1, GV-AQ2, GV-AQ10, GV-AQ11, GV-AQ22, GV-AQ23, GV-AQ24, and GVAQ25 (Figures N-2 and N-6).

With respect to the valley/foothill transition zone on site, the portion of this east–west landscape linkage within the study area will be preserved and will continue to facilitate movement and/or dispersal for both common and special-status species. Proposed Parcel 5b, located just south of Edmonston Pumping Plant Road near the intersection of this road with the California Aqueduct (Figure N-6), could pose as a "bottleneck" to the east–west movement of some species, particularly those that are more associated with valley floor habitat, such as blunt-nosed leopard lizard and Nelson's antelope squirrel. However, the proposed project will design development on this parcel to ensure permeability of such species through and/or around the parcel such that east–west movement along the valley floor/foothill transition area would be maintained. Additionally, the focal species can move along the proposed project open space north of Edmonston Pumping Plant Road (per MM-BTR-OS) (see Figure N-6), as well as cross under the road through several large culverts. Further, although the valley/foothill transition zone in the study area on either side of I-5 are within steep topographic areas that would not be suitable for blunt-nosed leopard lizard, nor for Nelson's antelope squirrel, the proposed project would preserve north–south connections along the creeks, which connect to the aqueduct and the I-5/aqueduct undercrossing that are suitable for these species.

With respect to the valley floor east-west connection, open space is proposed along the south side of the California Aqueduct (per MM-BTR-OS (zoned exclusive agriculture and restrictions on allowable uses)) and a 100-foot buffer will be conserved to the north along the California Aqueduct (per MM-BTR-WLM (conservation of 100-foot buffer north of aqueduct)). The post-development width of the open space band south of the aqueduct, which includes a series of detention basins shown in a close-up in Figure N-3, will be variable, and will range from a minimum of approximately 190 feet to a maximum of approximately 900 feet wide. The segment between I-5 and Grapevine Creek will be fairly wide, with a typical width exceeding 600 feet. The proposed project open space corridor contains potential suitable habitat for blunt-nosed leopard lizard and Nelson’s antelope squirrel, as well as for San Joaquin kit fox and American badger, such that all four focal species could effectively connect to and access the southern aqueduct/I-5 undercrossing (GV-RC1A) and move into suitable undeveloped habitats west of I-5 (i.e., Tecuya Creek Preserve and Wind Wolves Preserve). Conversely, animals approaching from the west could access this undercrossing, move along the aqueduct open space corridor, and connect to the more regional east–west valley/foothill landscape linkage to other large open space habitat blocks (Figures N-2 and N-6). Species may also use this corridor as a link to Live Oak Creek and other open space areas at the terminus of the aqueduct further to the east. While some segments of the band are narrow, all of the focal species are mobile enough to traverse these less suitable areas over short time periods; additionally, conservation of the 100-foot band north of the aqueduct is provided to facilitate wildlife movement through this area. The likely least mobile of the focal species—blunt-nosed leopard lizard—is capable of making at least occasional long-distance movements, and are expected to be able to traverse the area finding patches of suitable habitat. The other focal wildlife species—San Joaquin kit fox, American badger, and Nelson’s antelope squirrel—are more mobile and capable of quickly moving through less suitable habitat.

With respect to north-south wildlife movement, the California Aqueduct serves as somewhat of a barrier to north–south and northeast–southwest movement within the valley floor portion of the site. While animal species, including the four focal species, are currently able to access the numerous culverts and overpass points along the aqueduct, because active agricultural occurs north of the study area, the site does not serve as a habitat linkage connecting large, preserved open space habitat blocks north and south of the study area. Consequently, landscape features such as Grapevine Creek and Cattle Creek likely serve as localized north–south movement pathways for animals in search of food, shelter, and mates as both Grapevine Creek and Cattle Creek eventually lead to active agricultural areas to the north.

Overall, wildlife species are expected to use the proposed project open space habitat bands shown on Figure N-6in the southern valley/foothill transition zone, adjacent to the California Aqueduct, along Grapevine Creek, and along the tributary to Cattle Creek to make both localized movements within the proposed project open space and to access east–west connections under I-5, via the I-5/aqueduct underpass, and through multiple I-5 crossings connected to the southern transition zone. These habitat connections will ultimately continue to serve as an east–west habitat linkage to large preserved habitat blocks east and west of the study area, which, in turn, connect to still other large habitat blocks and landscape linkages, thus contributing to a regional landscape habitat linkage along the southern San Joaquin Valley floor/foothill interface. In total, wildlife habitat linkages that the Recovery Plan (USFWS 1998) considers a key priority to conservation and recovery of special-status species will be preserved. Consequently, the configuration and preservation of valley floor and foothill edge habitats in the study area is consistent with the habitat preservation and landscape connectivity objectives of the Recovery Plan (USFWS 1998).

6 REFERENCES

Ahlborn, G. 2005. *California Wildlife Habitat Relationships System*. Vol I–III. Sacramento, California: California Department of Fish and Game.

Arjo, W.M., T.J. Bennett, and A.J. Kozlowski. 2003. *Characteristics of Current and Historical Kit Fox (*Vulpes macrotis*) Dens in the Great Basin Desert*. USDA National Wildlife Research Center – Staff Publications. Paper 192. http://digitalcommons.unl.edu/icwdm_usdanwrc/192.

Arjo, W.M., E.M. Gese, T.J. Bennett, and A.J. Kozlowski. 2007. *Changes in Kit Fox–Coyote–Prey Relationships in the Great Basin Desert, Utah*. 2007 USDA National Wildlife Research Center – Staff Publications. Paper 676. http://digitalcommons.unl.edu/icwdm_usdanwrc/676.

Beier, P., and S. Loe. 1992. "In My Experience: A Checklist for Evaluating Impacts to Wildlife Movement Corridors." *Wildlife Society Bulletin* 20:434–440.

Bennett, A.F. 2003. "Habitat Fragmentation." In *Ecology: An Australian Perspective*, edited by P. Attiwell and B. Wilson, 440–456. South Melbourne, Victoria, Australia: Oxford University.

Bjurlin, C.D., and B.L. Cypher. 2003. "Effects of Roads on San Joaquin Kit Foxes: A Review and Synthesis of Existing Data." In *Proceedings of the International Conference on Ecology and Transportation*, edited by C.L. Irwin, P. Garrett, and K.P. McDermott, 397–406. Raleigh, North Carolina: Center for Transportation and the Environment, North Carolina State University.

Bjurlin, Curtis D., B.L. Cypher, C.M. Wingert, and C.L. Van Horn Job. 2005. *Urban Roads and the Endangered San Joaquin Kit Fox*. Prepared for the California Department of Transportation Contract No. 65A0136 by California State University, Stanislaus Endangered Species Recovery Program.

CDFG (California Department of Fish and Game). 2003. *Atlas of the Biodiversity of California*. CDFG.

CDFG. 2004. *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard*. May 2004. http://www.dfg.ca.gov/wildlife/nongame/docs/BNLLrevisedprotocol.pdf.

CDFG. 2010. "Draft Environmental Impact Report (DEIR) for the Panoche Valley Solar Farm (SCH No. 2010031008)." Letter report from Kevin Hunting (CDFG) to Michael Krausie (Aspen Environmental Group). August 31, 2010.

Cypher, B., M.E. Koopman, and D.R. McCullough. 2001. "Space Use and Movements by Kit Fox Family Members." *2001 Transactions of the Western Section of the Wildlife Society* 37:84–87.

Cypher, B. 2010. "Kit Fox Habitat Survey on Tejon Ranch Properties." Memorandum from B Cypher (Endangered Species Recovery Program) to K. Babcock (Dudek). June 3, 2010.

Cypher, B., C. Van Horn Job, and S. Phillips. 2012. *Conservation Strategies for San Joaquin Kit Foxes in Urban Environments*. Prepared for the U.S. Bureau of Reclamation Agreement No. R11AP20502 by California State University, Stanislaus Endangered Species Recovery Program. January 16, 2012.

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. "Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications." *Canid Biology & Conservation* 16(7): 25–31. http://www.canids.org/CBC/16/San_Joaquin_kit_fox_habitat_suitability.pdf.

Cypher, B. 2014. Personal Communication. Conversation between Brian Cypher (ESRP) and Brock Ortega (Dudek). April 18, 2014.

Cypher, B. 2015. Personal Communication. Email between Brian Cypher (ESRP) and Callie Ford (Dudek). August 17, 2015.

Dudek. 2009. *Tejon Mountain Village Biological Resources Technical Report* (TMV BTR). May 2009.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan.* Draft. Prepared for Tejon Ranchcorp. Encinitas, California: Dudek. With technical assistance from U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

Haddad, N.M., and J.J. Tewksbury. 2006. "Impacts of Corridors on Populations and Communities." In *Connectivity Conservation*, edited by K.R. Crooks and M. Sanjayan, 390–415. Cambridge University Press.

Hammerson, G.A. 2007. *Gambelia sila*. The IUCN Red List of Threatened Species. Version 2014.2. Downloaded October 25, 2014.www.iucnredlist.org.

Harris, J.H., and D.M. Streans. 1991. *Population Density, Census Methods, Habitat Relationships, and Home Range of the San Joaquin Antelope Ground Squirrel, 1988–89*. California Department of Fish and Game, Nongame Bird and Mammal Section Rep., 91-02:1-37.

Hawbecker, A. 1947. "Food and Moisture Requirements of the Nelson Antelope Squirrel." *Journal of Mammalogy* 28(2): 115–125.

Hawbecker, A. 1958. "Survival and Home Range in the Nelson Antelope Ground Squirrel." *Journal of Mammalogy* 39(2): 207–215.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. 156 pp.

Kern County. 2009. *Draft Environmental Impact Report Tejon Mountain Village by TMV LLC*. SCH No. 2005101018. May 2009.

Kern County. 2012. Kern County Environmental Checklist Form. Kern County Planning and Community Development Department. January 2012.

Koopman, M.E., B.L. Cypher, and D.R. McCullough. 2001. "Factors Influencing Space and Prey Use by San Joaquin Kit Foxes." *2001 Transactions of the Western Section of the Wildlife Society* 37:77–83. Accessed September 23, 2012. http://joomla.wildlife.org/western/.

Kozlowski, A.J., E.M. Gese, and W.M. Arjo. 2008. "Niche Overlap and Resource Partitioning between Sympatric Kit Foxes and Coyotes in the Great Basin Desert of Western Utah." *American Midland Naturalist* 160(1): 191–208.

Lindzey, F.G. 1978. "Movement Patterns of Badgers in Northwestern Utah." *Journal of Wildlife Management* 42:418–422.

Long, C.A. 1973. "*Taxidea taxus*." *Mammalian Species* 26:1–4. American Society of Mammalogists.

Meese, R.J., F.M. Shilling, and J.F. Quinn. 2007. *Wildlife Crossings Assessment and Mitigation Manual*. U.C. Davis and California Department of Transportation.

Messick, J.P., and M.G. Hornocker. 1981. "Ecology of the Badger in Southwestern Idaho." *Wildlife Monographs* 76:1–53.

Minta, S.C. 1993. "Sexual Differences in Spatio-Temporal Interaction among Badgers." *Oecologia* 96:402–409

Ng, S.J., J.W. Dole, R.M. Sauvajot, S.P.D. Riley, and T.J. Valone. 2004. "Use of Highway Undercrossings by Wildlife in Southern California." *Biological Conservation* 115:499–507.

Penrod, K., R. Hunger, and M. Merrifield, M. 2001. *Missing Linkages: Restoring Connectivity to the California Landscape, Conference Proceedings*. Co-sponsored by California Wilderness Coalition, The Nature Conservancy, U.S. Geological Survey, Center for Reproduction of Endangered Species, and California State Parks.

Penrod, K., C.R. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. *South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection*. Monrovia, California: South Coast Wildlands Project. October 2003.

Ralls, K., and P.J. White. 1995. "Predation of San Joaquin Kit Foxes by Larger Canids." *Journal of Mammalogy* 76:723–729

Ralls, K., K.L. Pilgrim, P.J. White, E.E. Paxinos, M.K. Schwartz, and R.C. Fleischer. 2001. "Kinship, Social Relationships, and Den Sharing in Kit Foxes." *Journal of Mammalogy* 82(3): 858–866.

Rosenberg, D., Berkes, F., Bodaly, R., Hecky, R., Kelly, C., Rudd, J. 1997. "Large-scale impacts off hydroelectric development" Environmental Review 5 : 27-54.

Ruediger, B., and M. DiGiorgio. 2007. "Safe Passage: A User's Guide to Developing Effective Highway Crossings for Carnivores and Other Wildlife." The Southern Rockies Ecosystem Project. www.carnivoresafepassage.org

Sargeant, A.B., and D.W. Warner. 1972. "Movement and Denning Habits of a Badger." *Journal of Mammalogy* 53:207–210.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians.* Second Edition. Peterson Field Guide Series. Boston, Massachusetts: Houghton Mifflin Company.

TRC (Tejon Ranch Company). 2013a. "Wildlife camera data." Received from Tejon Ranch Company on July 16, 2013.

TRC. 2013b. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

USFWS (U.S. Fish and Wildlife Service). 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Portland, Oregon: Region 1, USFWS. Approved September 30, 1998.

USFWS. 2010a. *San Joaquin Kit Fox (*Vulpes macrotis mutica*), 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

USFWS. 2010b. *Blunt-Nosed Leopard Lizard (*Gambelia sila*), 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2012. *Environmental Impact Statement for the Tehachapi Uplands Multiple Species Habitat Conservation Plan*. Volume I. Supplemental Draft. January 2012. Ventura, California: USFWS.

Whitaker Jr., J.O., and NatureServe. 2008. "*Ammospermophilus nelsoni*." In *IUCN 2013, IUCN Red List of Threatened Species*, Version 2013.2, edited by G. Hammerson and D.F. Williams. Accessed March 6, 2014. www.iucnredlist.org.

White, P.J., and K. Ralls 1993. "Reproduction and Spacing Patterns of Kit Foxes Relative to Changing Prey Availability." *The Journal of Wildlife Management* 57(4): 861–867.

White, P.J., K. Ralls, and C.A. Vanderbilt. 1995. "Overlap in Habitat and Food Use Between Coyotes and San Joaquin Kit Foxes." *Southwestern Naturalist* 40:342–349.

White, P.J., and R.A. Garrott. 1997. "Factors Regulating Kit Fox Populations." *Canadian Journal of Zoology* 75:1982–1988.

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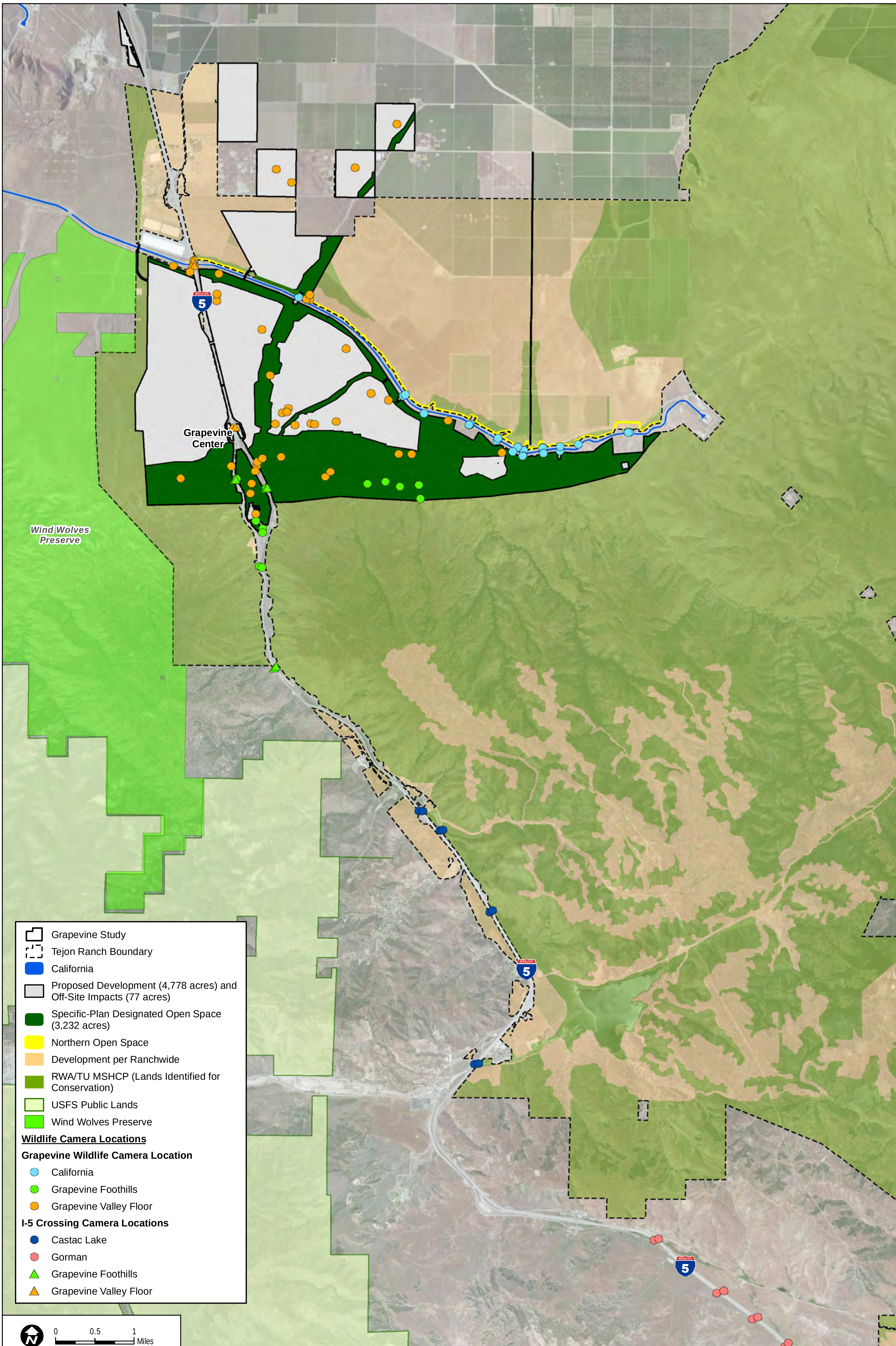

SOURCES: TRC 2007, 2013a; TRC 2013e; McIntosh & Associates 2014

FIGURE N-1

Wildlife Camera Studies Overview Map (Tejon Ranch Company; Dudek)

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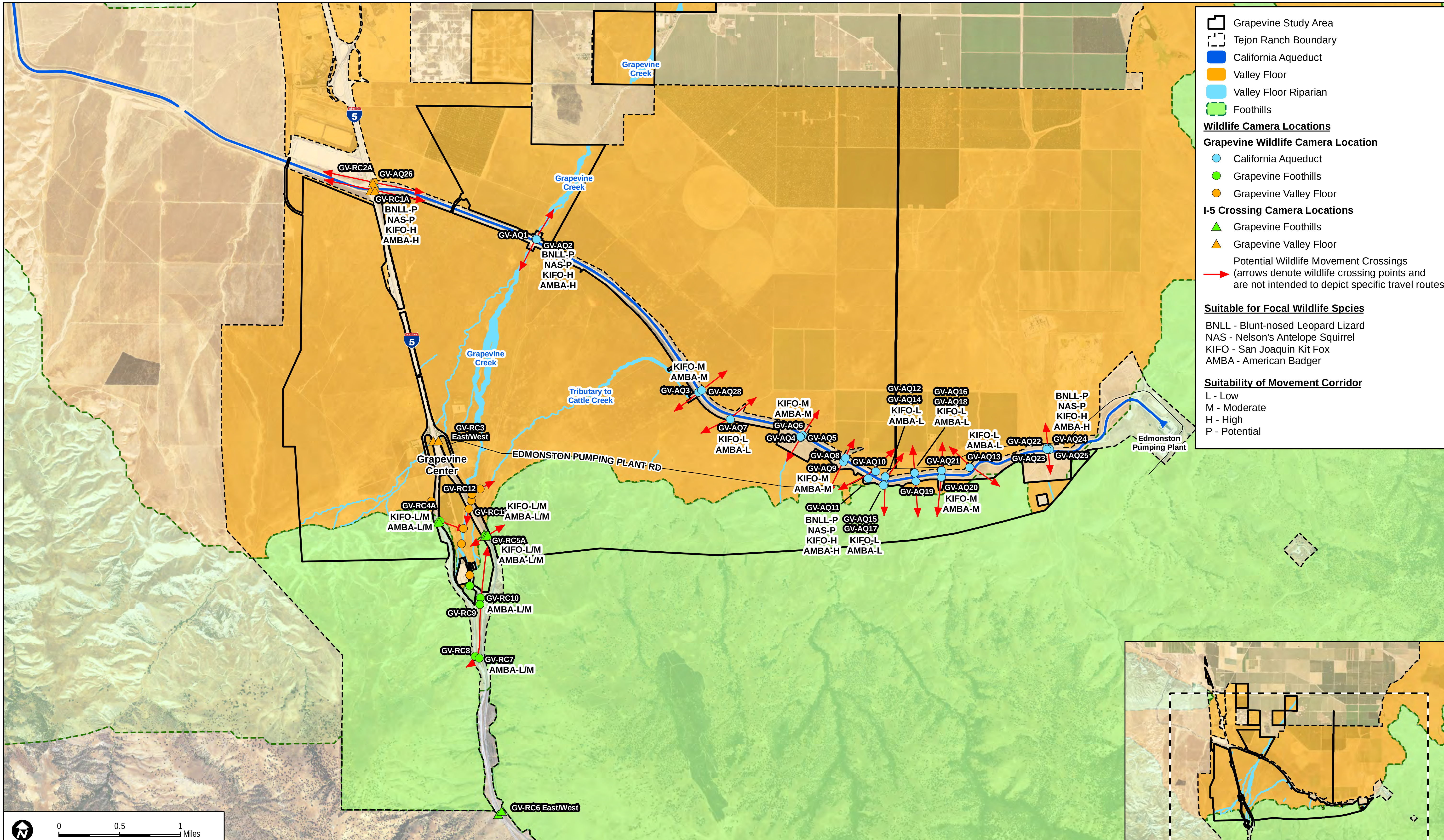

SOURCES: TRC 2013a

FIGURE N-2

Grapevine Camera Study and Wildlife Movement Map

GRAPEVINE PROJECT

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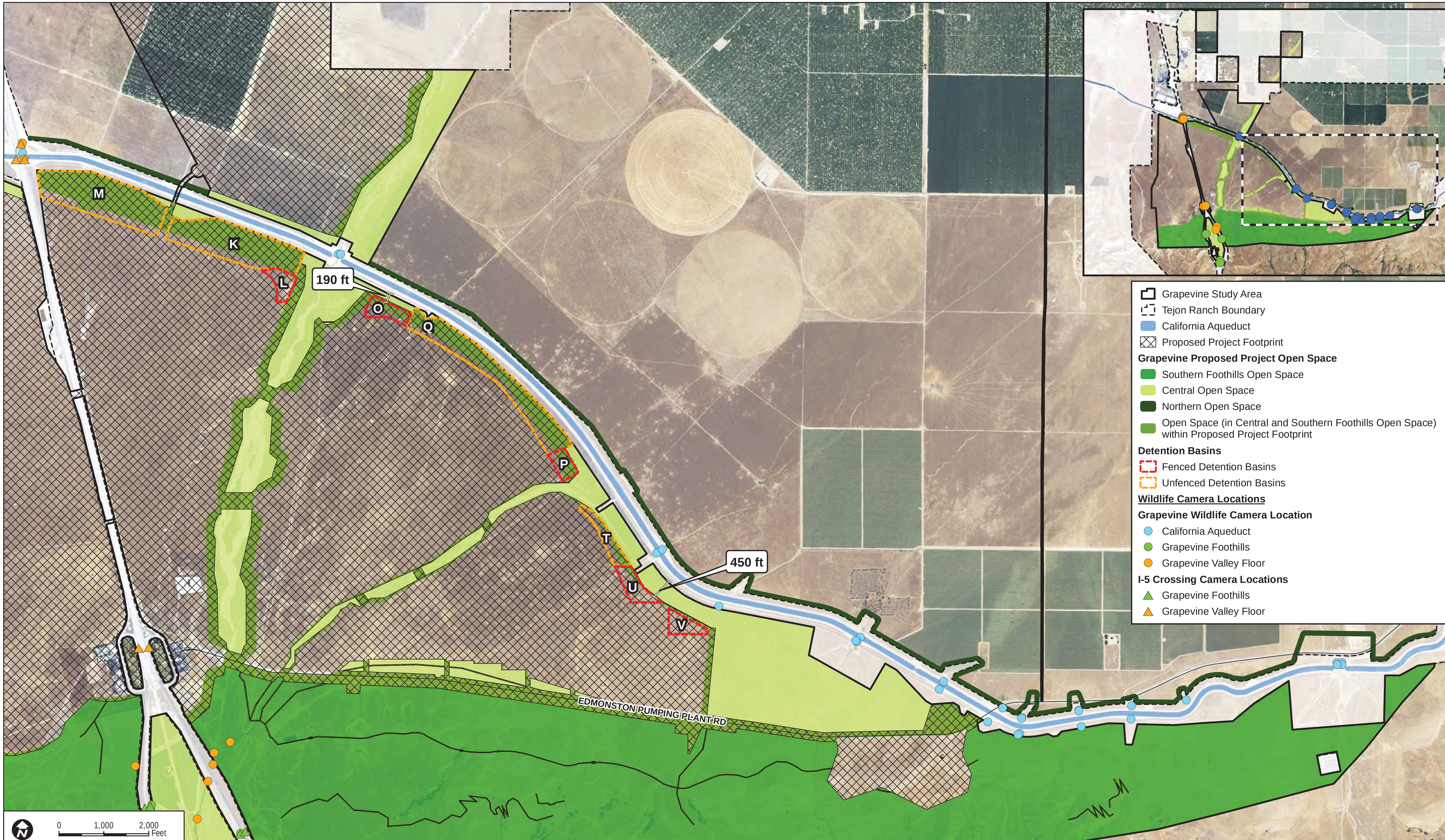

SOURCES: McIntosh & Associates 2014; TRC 2013a

FIGURE N-3

Location of Detention Basins in Open Space

GRAPEVINE PROJECT

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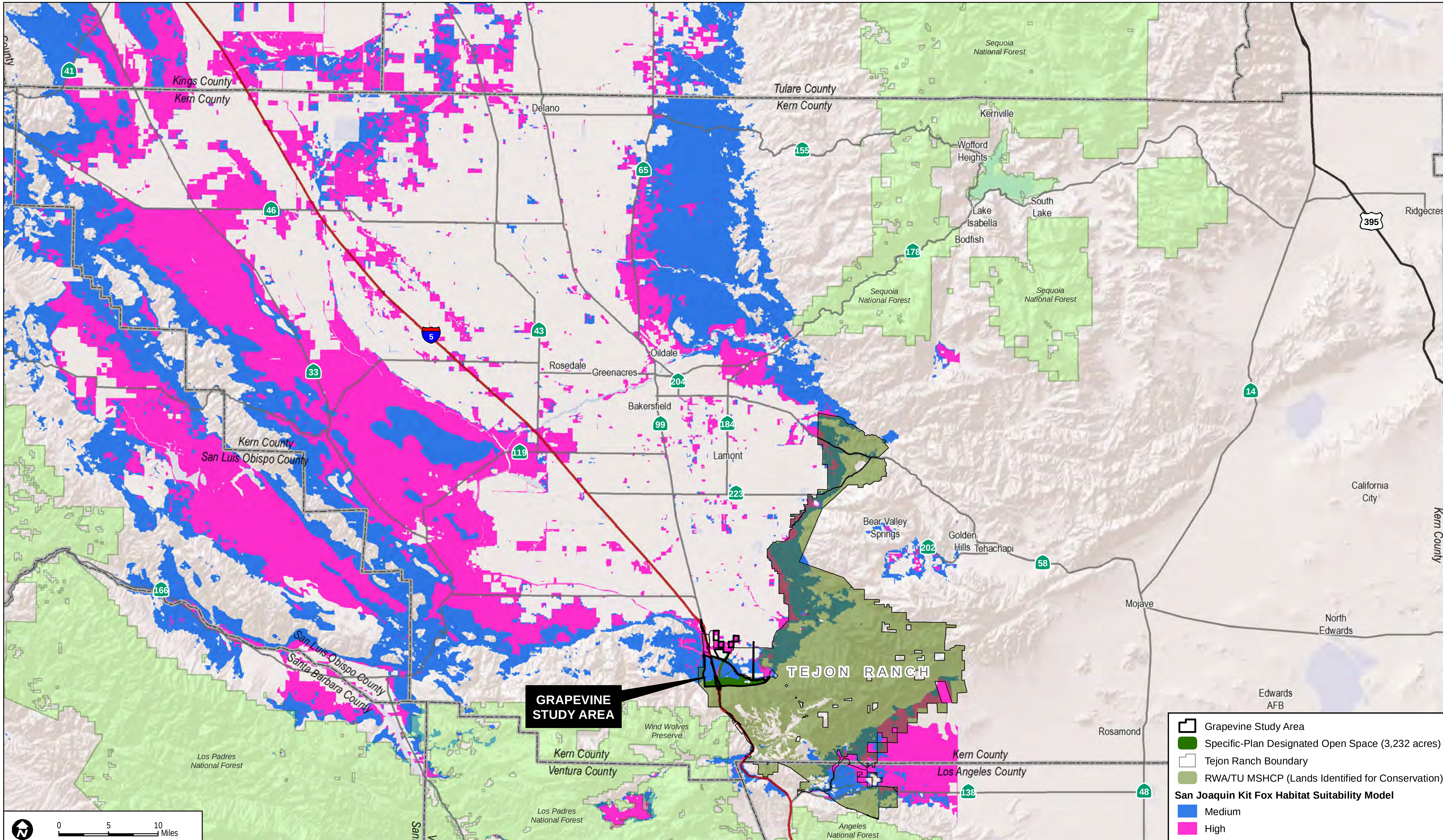

SOURCES: Cypher et al. 2013

FIGURE N-4

Suitable Habitat for San Joaquin Foxes in Central California (Cypher et al. 2013)

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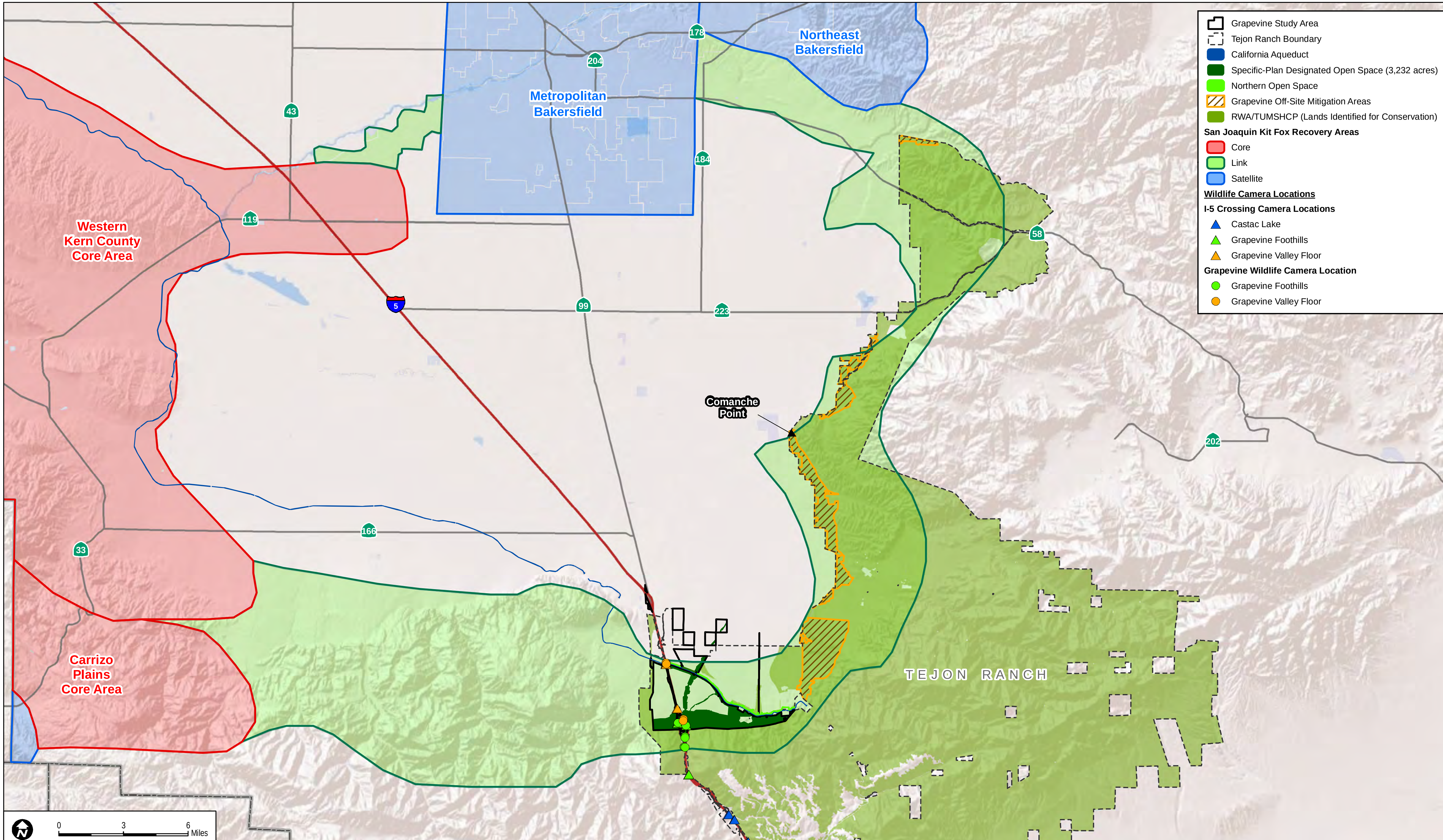

SOURCES: TRC 2008; 2013a McIntosh & Associates 2014; USFWS 2010

FIGURE N-5

San Joaquin Kit Fox and Satellite Populations Identified in USFWS 5-Year Review

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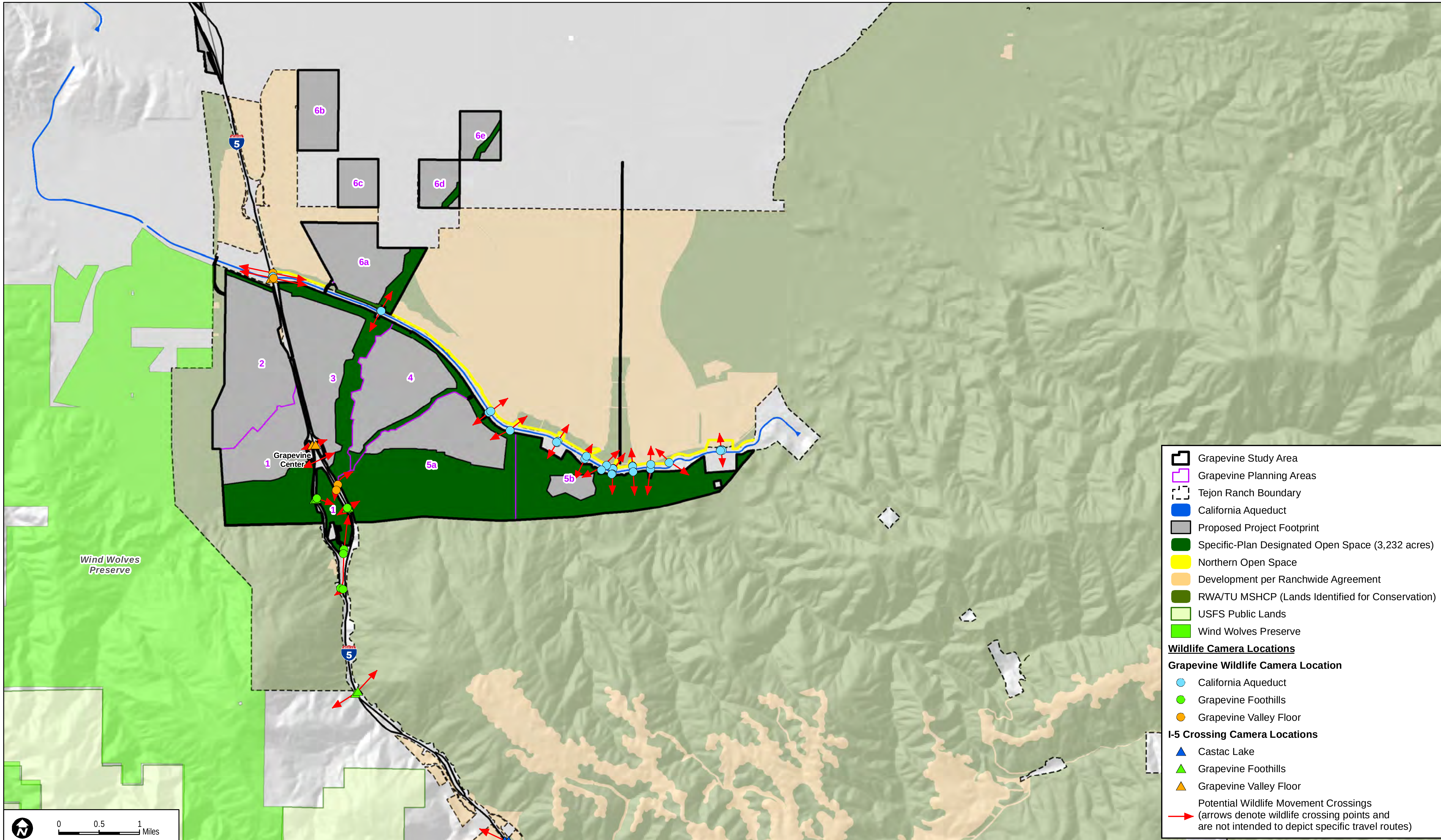

SOURCES: TRC 2007, 2008; 2013a; McIntosh & Associates 2014

FIGURE N-6

Habitat Linkage

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APPENDIX O

Biological Resources Cumulative Impacts Analysis

FINAL

Biological Resources Cumulative Impacts Analysis for the Grapevine Specific Plan

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APPENDIX O
Biological Resources Cumulative Impacts Analysis

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1 INTRODUCTION

This report provides the analysis of the potential cumulative biological impacts associated with the proposed Grapevine project, as required by California Environmental Quality Act (CEQA) Section 21083, which requires an analysis to determine if the project has impacts that are cumulatively considerable. Cumulatively considerable means that the incremental effects of a project are considerable when viewed in conjunction with the effects of past projects, other current projects, and probable future projects. Potential cumulative effects to California condor (*Gymnogyps californianus*) are addressed in the Condor Technical Report (Appendix K of the Biological Resources Technical Report (BTR) for the Grapevine Specific Plan).

Cumulative effects on biological resources may result from increased development and changes in land use. The impacts to biological resources considered in the Grapevine BTR include direct and indirect effects of residential and commercial development. Whether or not the combined effects of the proposed Grapevine project would result in cumulative adverse effects is primarily dependent on the project's biological protection measures as well as other relevant individual development project impact review and requirements imposed by local, state, and federal authorities pursuant to their approval processes for other reasonably foreseeable actions.

Within the Grapevine Specific Plan Area, the foothills of the Tehachapi Mountains and San Emigdio Mountains on the southern portion of the site (foothills) will largely be conserved as open space. On the San Joaquin Valley floor, the riparian areas and the open space habitat along the southern edge of the California Aqueduct, which can be used as a movement corridor by various wildlife species, are generally avoided and will be conserved in open space. The remainder of the valley floor is where community development will occur. While the project will result in impacts to the valley floor, the project site was largely selected based on the absence of significant biological resources (as well as prior disturbance and proximity to major existing infrastructure such as Interstate 5 (I-5) and the California Aqueduct). Remaining biological impacts will be avoided, minimized, and mitigated to less-than-significant levels through recommended biological resource protection measures, including the conservation of the 7,233-acre Grapevine Off-Site Mitigation Area (Mitigation Area) located in the San Joaquin Valley floor.

1.1 Cumulative Impacts Analysis Area

The Kern County Planning and Community Development Department defined the geographic extent of the cumulative impacts analysis area (Analysis Area). The Analysis Area for biological resources includes a large portion of Kern County (40%) (Figure 1) and is approximately 3,311 square-miles (2,119,482 acres). The Analysis Area includes the following: (1) the Southern San Joaquin Valley Floor within Kern County, defined as areas in the valley below 1,000 feet above mean sea level (amsl); (2) the Tehachapi Mountain, San Emigdio, and Temblor Foothills; (3) the

Tehachapi Uplands (Covered Lands) addressed in the Tehachapi Upland Multiple Species Habitat Conservation Plan (TU MSHCP), which are defined as the area of the Ranch generally above 2,000 feet amsl on the north (San Joaquin Valley) side of the mountains and generally above 3,500 feet amsl on the south (Antelope Valley) side; and (4) a portion of the Wind Wolves Preserve west of I-5 in the San Emigdio Mountains and Los Padres National Forest south of the Wind Wolves Preserve. Additionally, if a portion of a project on the cumulative projects list was outside of this area (i.e., partially inside and partially outside), the Analysis Area was expanded to include the entire project. The Analysis Area was extended beyond the County's standard 6-mile radius (Kern County 2014a) to include the portion of the San Joaquin Valley in Kern County as well as the adjacent Tehachapi upland area, as the species at issue are found in both ecoregions. The larger area better accounts for analyzing effects to moderate- to high-mobility species. In addition, wildlife connectivity and regional movement is more accurately assessed at a larger scale.

In the San Joaquin Valley portion of the Analysis Area, lands are primarily agriculture or grasslands on relatively flat terrain. The mountain and foothill areas in the southern portion of the Analysis Area are characterized by steeper slopes and more varied terrain that supports vegetation communities dominated by oak woodlands and forests (Lennartz et al. 2008). The assemblage of wildlife species, including special-status species, in the San Joaquin Valley portion of the Analysis Area is generally the same as the wildlife species identified as occurring or with potential to occur in the Grapevine study area.[1] Of the 3,311-square-mile Analysis Area, 51% of that acreage is composed of agricultural land (i.e., cropland and orchards and vineyards), 7% is composed of unvegetated and non-natural land covers (i.e., urban/developed lands, disturbed habitat, and barren lands), and 27% is composed of grasslands. The remaining 15% of the Analysis Area is a variety of habitat types including forests, meadows, riparian woodlands/wetlands, savannahs, scrubs, chaparral, wash, and woodlands.

1.2 Ranchwide Conservation

The majority, or approximately 220,000 acres, of the 270,000-acre Ranch is located in the Analysis Area, and approximately 240,000 acres of the Tejon Ranch (Ranch) is permanently preserved. Specifically, over 129,000 acres of open space on the Ranch will be preserved under the TU MSHCP, with an additional 110,000 acres preserved under the Ranchwide Agreement (USFWS 2013; TRC et al. 2008). The Ranchwide Agreement and the TU MSHCP are discussed in Sections 1.2.1 and 1.2.2.

---

[1] The "Grapevine study area" includes the 8,010-acre Grapevine Specific Plan Area and 77 acres of off-site impact areas.

1.2.1 Ranchwide Agreement

Based on landform, the Ranch can be divided into the following sections: (1) the San Joaquin Valley floor, which includes the adjacent foothills and within which the proposed Grapevine project is located; (2) the Tehachapi Mountain Uplands; and (3) the Antelope Valley floor. The Analysis Area includes the San Joaquin Valley floor and the Tehachapi Mountain Uplands, but does not include the Antelope Valley floor. The Ranchwide Agreement designated three development areas located adjacent to major infrastructure and sited to avoid significant adverse impacts to protected biological resources and wildlife corridors. These include the proposed Grapevine project on the San Joaquin Valley floor, the Tejon Mountain Village (TMV) project in the Tehachapi Uplands, and the Centennial project in the Antelope Valley (TRC et al. 2008).

In total, the Ranchwide Agreement provides for conservation of approximately 240,000 acres (90%) of the Ranch. It includes habitats that range from riparian and wetland to upland scrub and shrub, forested areas, and grasslands. A wide variety of special-status species are anticipated to occur within these areas. Approximately 87,136 acres of the Ranch is in the San Joaquin Valley floor, including the adjacent foothills, and 74,094 acres or 85% have been identified for conservation and management as part of the Ranchwide Agreement.

In accordance with the Ranchwide Agreement, and as a master planned community, the proposed Grapevine project has been designed with a variety of measures related to reducing the project's carbon footprint, conserving water, maintaining water quality, and conserving biological resources, as described in Exhibit Q-1 of the Ranchwide Agreement (TRC et al. 2008).

1.2.2 Tehachapi Uplands Multiple Species Habitat Conservation Plan

On April 29, 2013, the U.S. Fish and Wildlife Service (USFWS) issued Incidental Take Permit (ITP) No. TE198636, pursuant to the federal Endangered Species Act (FESA), for incidental take of 25 covered species described in the TU MSHCP. The Covered Lands include a combination of foothill grasslands and montane woodlands that make up the Tehachapi Uplands component of Tejon Ranch. The Covered Lands include 141,866 acres of the Ranch and are generally above 2,000 feet amsl near the San Joaquin Valley floor, and to the south by the Antelope Valley floor, where the elevation ranges from about 3,200 to 4,700 feet amsl, following the Los Angeles County line, with an average elevation of 4,100 feet amsl. The proposed Grapevine project open space generally abuts the TU MSHCP Covered Lands boundary. As stated, over 129,000 acres of open space on the Ranch will be preserved under the TU MSHCP. The proposed Grapevine project was analyzed in the cumulative effects analysis for the TU MSHCP, where the USFWS found that the cumulative impacts to the covered species, including California condor, bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), western spadefoot (*Spea hammondii*), Blainville's horned lizard (*Phrynosoma* *blainvillii*), and burrowing owl (*Athene cunicularia*), on the Ranch and throughout the range was not likely to jeopardize the continued existence of the covered species (USFWS 2013).

1.3 Methods

Attachment O-1 lists the cumulative projects included in this analysis. The County provided an initial list of 259 cumulative projects and subsequently removed four projects from this list upon further evaluation (Taylor, pers. comm. 2015). Additionally, nine projects on the list that were duplicate entries for other projects on the cumulative projects list (i.e., same Assessor Parcel Number (APN), location, project description, etc.) were removed. The undeveloped portions of Tejon Ranch Commerce Center, where development is allowed per that project's entitlements was added to the list. Thus, including the proposed Grapevine project, 248 projects were evaluated further. The location of each project was reviewed and 13 projects were found to be located entirely outside of the Analysis Area and are not analyzed further. For the remaining 235 projects (including the proposed Grapevine project), if project-specific information was available for a project, such as an Environmental Impact Report (EIR), the impact information was used in the analysis. For the remainder, the impacts were analyzed according to the project's location and acreage. The cumulative projects list provided by Kern County included APNs, which identifies the approximate project location, but does not identify the proposed project impact. The APNs are used herein to determine the acreage of potential impacts. Using Kern County's GIS parcel data, the acreage of each project, based upon the APNs provided was calculated. In cases where the acreage of the APNs were less than the acreage provided by the County, the difference was added to the potential impact acreage, as it is not clear what area within the APN will be impacted. This is a conservative approach that likely results in an overestimate of cumulative impacts to biological resources. Also, these estimates do not take into account local, state, and federal permitting process and requirements designed to reduce potential effects on biological resources.

Section 2 describes the methods used to determine which projects could result in land use changes that could result in cumulatively consider effects to biological resources. Of the cumulative projects analyzed, 28,639 acres (or 1% of the Analysis Area) of land could be modified from development activities. The proposed Grapevine project footprint is approximately 5,268 acres. Thus, the cumulative projects that could have cumulative considerable effects on biological resources, in addition to the proposed Grapevine project, total approximately 33,907 acres.

The vegetation and land cover data in the Analysis Area on the Ranch is based upon the following data: (1) the vegetation map prepared for the 15,644-acre Ranchwide Agreement Grapevine Development Area in 2013 (Dudek 2015); (2) vegetation based on the existing conditions at Tejon Ranch Commerce Center; (3) vegetation map used for the TU MSHCP Covered Lands, which is a composite map of various studies, including the mapping done for the TMV project (Dudek and

TRC 2007); (4) the Tejon Ranch-wide vegetation composite for areas outside of the TU MSHCP Covered Lands and the Ranchwide Agreement Grapevine Planning Area (TRC 2007); and (5) Kern County's 2013 crop data (Kern County 2013). Kern County's 2013 crop data for the Ranch was used when the habitat type differed from that of the Tejon Ranch-wide vegetation composite because the dataset is more recent and reflects the current land use more accurately. Outside of the Ranch, the vegetation and land cover data in the Analysis Area is based on Kern County's 2013 crop data (Kern County 2013) and the U.S. Geological Survey Gap Analysis Program (GAP) vegetation data (Lennartz et al. 2008). Kern County's 2013 crop data was used when the habitat type differed from that of the GAP vegetation data for the reasons described above.

Because the vegetation data layers use different classification systems and the habitat suitability analysis requires a vegetation data layer consisting of a uniform classification system, the majority of the habitat types were "crosswalked" to the categories used for the Tejon Ranch-wide vegetation composite data layer; the exceptions include the classification of lake and agriculture. Lake was more broadly categorized as open water to include other types of standing water, such as ponds, outside of the Ranch. Additionally, the detailed information available from Kern County's 2013 crop data was retained and not crosswalked to the more general agriculture category because species may use some types of agricultural areas (e.g., cropland), but not others (e.g., orchards and vineyards).

To analyze potential cumulative impacts to wildlife species, a habitat-based approach was used to analyze suitable habitat for special-status species in the Analysis Area. The habitat models are primarily based upon the vegetation, or habitat type, but slopes for some wildlife species with known slope restrictions were also evaluated. In addition, the model for suitable habitat for San Joaquin kit fox (*Vulpes macrotis mutica*) developed by Cypher et al. (2013) was used to determine cumulative impacts to habitat for San Joaquin kit fox.

As part of the analysis on wildlife movement, the following literature was reviewed for special-status wildlife species:

- Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications (Cypher et al. 2013)
- Five-Year Review for San Joaquin Kit Fox (USFWS 2010a)
- Five-Year Review for Blunt-Nosed Leopard Lizard (USFWS 2010b)
- Recovery Plan for Upland Species of San Joaquin Valley (USFWS 1998)
- South Coast Missing Linkages Project: A Linkage Design for the Tehachapi Connection (Penrod et al. 2003).

An analysis of the cumulative impacts to jurisdictional water resources is based on available project-specific data (i.e., the Grapevine and TMV projects), and flowline data from U.S. Geological Survey (USGS 2015).

2 CUMULATIVE PROJECTS

Section 2.1 describes the cumulative projects that would not result in cumulative adverse effects in the Analysis Area, and Section 2.2 describes projects within the Analysis Area that could result in land use changes, such as undeveloped land to developed, that could result in cumulatively considerable effects.

2.1 No Cumulatively Considerable Effects

This section describes the following types of cumulative projects that would not have cumulative significant effects: (1) projects that would not result in increased development or changes in land use and (2) projects that are located in the foothills or mountains (see Figure 2A).

2.1.1 Projects that Would Not Result in Increased Development or Changes in Land Use

Existing Development

There are 40 cumulative projects totaling 130 acres that are wholly within developed lands and would not substantially affect biological resources. Therefore, these 40 cumulative projects would not (in conjunction with the proposed Grapevine project) result in cumulative adverse effects to biological resources in the Analysis Area.

Existing Agriculture

There are 20 projects totaling 3,055 acres that are currently agriculture and propose conversion to other agricultural uses, such as dairies, crops, and feedlots. Because these projects are currently located on agricultural land (i.e., cropland, cropland and orchards/vineyards, or orchards and vineyards), these projects would not result in land use conversion and would not result in cumulatively considerable effects.

2.1.2 Projects Located in the Foothills or Mountains

The proposed Grapevine project will largely conserve the foothills of the Tehachapi Mountains and San Emigdio Mountains as open space, including 1,716 acres or 96% of the total foothills area. There are four cumulative projects in the foothills (Project Nos. 19, 36, 137, and 236). Project No. 19 is a cell tower and installation would result in minimal impacts to the foothill/mountain portion of the Analysis Area. Project No. 36 is a reclamation plan on Bureau of Land Management land that, when implemented, would result in revegetation of currently disturbed areas, which would have a benefit to the ecosystem. Project No. 137 may result in 24.7 acres of impacts in the foothill mountains. The TMV project (Project No. 236) includes development of 5,082 acres and the dedication of 21,335 acres of open space in the Tehachapi foothills and mountains that will be legally protected as open space by a conservation easement or deed restriction. Additionally, the TU MSHCP will conserve an additional 107,983 acres, for a total 129,318 acres, in the Tehachapi Mountains and foothills. Because the foothills of the Tehachapi Mountains and San Emigdio Mountains will largely be conserved as open space for the proposed Grapevine project and the TU MSHCP and TMV project will result in the conservation 129,318 acres in the foothill/mountains, the proposed Grapevine project will not have a cumulatively considerable effect to the biological resources in the foothills. Therefore, the cumulative effects of these projects are not considered further in this analysis.

2.2 Potential Cumulatively Considerable Effects

Projects within the Analysis Area that could result in land use changes, such as undeveloped land to developed, could result in cumulatively considerable effects. These projects primarily include the following types of projects agricultural; solar; mining and reclamation; oil and gas production; circulation; cellular towers; residential, commercial, and industrial development. The projects are discussed below by project type. Of the cumulative projects analyzed, 169 projects could result in land use changes from development activities, totaling 28,639 acres (or 1% of the Analysis Area) (see Figure 2B).

2.2.1 Agricultural Projects

There are four dairy projects on the cumulative projects list that could have some effect on biological resources (Project Nos. 29, 107, 171, and 214). The potential impact area is 5,273 acres. The vast majority (97%) of the project areas are existing agricultural lands. The potential loss of habitat is quantified in Table O-1.

2.2.2 Solar Projects

There are 16 solar projects proposed or approved to be built within the Analysis Area. These projects account for approximately 9,073 acres of the cumulative project impacts. EIRs have been prepared for several of the solar projects, including Blackwell Solar, Lost Hills Solar Maricopa Sun, Recurrent Energy (RE) Old River One and RE Old River Two, and Valley Solar (Enxco), which are described in more detail below.

Blackwell Solar Park

The Blackwell Solar Park Project (Project No. 242), referred to as Tom Fitzgerald in the County's cumulative projects list, is a 20-megawatt (MW) solar photovoltaic project in northwest Kern County near the community of Lost Hills. It is located in the San Joaquin Valley, and the only habitat is non-native grasses; no jurisdictional features were identified on site (Kern County PCDD

2014b). The proposed project includes development of solar panels on 190 acres of a 477-acre parcel. Special-status wildlife species with some potential to occur on site that also may be significantly affected by the proposed Grapevine project include blunt-nosed leopard lizard (*Gambelia sila*), San Joaquin coachwhip (*Coluber flagellum ruddocki*), burrowing owl, loggerhead shrike (*Lanius ludovicianus*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), San Joaquin kit fox, and American badger (*Taxidea taxus*). Additional special-status wildlife species documented to have some potential to occur in the vicinity of the Blackwell Solar Project include Swainson's hawk (*Buteo swainsoni*), mountain plover (*Charadrius montanus*), western snowy plover (*Charadrius nivosus nivosus*), northern harrier (*Circus cyaneus*), giant kangaroo rat (*Dipodomys ingens*), and Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), of which only Swainson's hawk and northern harrier may be present in the Grapevine study area, but would not be significantly impacted by the proposed Grapevine project. The project site is not a wildlife linkage identified in the Recovery Plan (Kern County PCDD 2014b; USFWS 1998). The project would implement mitigation measures that would avoid or minimize direct and indirect project impacts, including species-specific measures for San Joaquin kit fox, blunt-nosed leopard lizard, American badger, burrowing owl, and Nelson's antelope squirrel.

Lost Hills Solar

The Lost Hills Solar Project (Project No. 152), referred to as Lost Hills Solar By Nextlight in the County's cumulative projects list, is a 32.5 MW solar photovoltaic project in northwest Kern County near the community of Lost Hills. It is located in the San Joaquin Valley, and habitat types include cropland, with ruderal and naturalized vegetation along the perimeter of the site (Kern County PCDD 2010a). The proposed project includes development of solar panels on two parcels, totaling 307 acres. Special-status wildlife species with some potential to occur on site that also may be significantly affected by the proposed Grapevine project include blunt-nosed leopard lizard, San Joaquin coachwhip, golden eagle (foraging), burrowing owl, loggerhead shrike, Nelson's antelope squirrel, pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), American badger, and San Joaquin kit fox (Kern County PCDD 2010a). Additional special-status wildlife species with some potential to occur on site include tricolored blackbird (*Agelaius tricolor*; foraging), Swainson's hawk, mountain plover, northern harrier, white-tailed kite (*Elanus leucurus*), giant kangaroo rat, short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), and Tulare grasshopper mouse (*Onychomys torridus tularensis*) (Kern County PCDD 2010a), of which only tricolored blackbird, Swainson's hawk and northern harrier may be present in the Grapevine study area, but would not be significantly impacted by the proposed Grapevine project. This solar project site is not identified in any recognized migratory corridors, and movement by special-status species, such as kit fox, is not expected to be impacted long term. The project would implement mitigation measures that would avoid or minimize direct and indirect project impacts, including species-specific measures for species such as San

Joaquin kit fox, blunt-nosed leopard lizard, American badger, burrowing owl, and Nelson's antelope squirrel (Kern County PCDD 2010a).

Maricopa Sun Solar Complex

Maricopa Sun Solar Complex Project (No.154), referred to as Maricopa Sun LLC in the County's cumulative projects list, is 700 MW solar photovoltaic project in southwest Kern County near the community of Maricopa. It is located within the southern San Joaquin Valley, and habitat types include fallow farmland (actively disked) and a few small potential wetlands (Kern County PCDD 2010b). The proposed project includes development of solar panels on 5,776 acres of the 6,046-acre project.[2] Additionally, 11.3 acres of impacts would result from utility upgrades (Kern County PCDD 2014c). Special-status wildlife species documented to occur in the vicinity and that also may be significantly affected by the proposed Grapevine project include American badger, blunt-nosed leopard lizard, burrowing owl, Blainville's horned lizard, Nelson's antelope squirrel, and San Joaquin kit fox. Additional special-status wildlife species documented to occur in the vicinity include northern harrier, Swainson's hawk, Tipton kangaroo rat, and white-tailed kite, of which only Swainson's hawk and northern harrier may be present in the Grapevine study area, but would not be significantly impacted by the proposed Grapevine project. Due to the existing land use, the project site is not considered a known migration route, wildlife corridor, or linkage area identified in the Recovery Plan (Kern County PCDD 2010b; USFWS 1998). The project would implement mitigation measures that would avoid or minimize direct and indirect project impacts, including species-specific measures for San Joaquin kit fox, blunt-nosed leopard lizard, American badger, burrowing owl, and Nelson's antelope squirrel; provide compensatory mitigation for habitat loss; enhance project sites to facilitate use by special-status species; and provide for long-term monitoring. As part of the project, 640 acres of native habitat would be conserved near the project site, and 270 acres of disked farmland on site would be retired and allowed to recover naturally (Quad Knopf 2010).

RE Old River One and RE Old River Two Solar

The RE Old River One and RE Old River Two Solar Project (Project No. 192), referred to as Recurrent Energy in the County's cumulative projects list, is 20 MW solar photovoltaic project in west-central Kern County, southwest of Bakersfield. It is located in the San Joaquin Valley within cropland; a canal traverses a portion of the site (Kern County PCDD 2012, 2014d; Rincon Consultants 2011). The proposed project includes development of solar panels on a 190-acre site. One special-status wildlife species was determined to have potential to occur,

[2] In addition, the Maricopa Sun Solar Complex EIR described future expansion of the solar project on an additional 2,960-acre area, of which 2,209 acres are evaluated on the programmatic level (Kern County PCDD 2010b, 2014c).

which also may be significantly affected by the proposed Grapevine project: San Joaquin kit fox. The project site does not serve as a wildlife corridor, but wildlife could move through the site and surrounding undeveloped lands. The project is located within the Metropolitan Bakersfield Habitat Conservation Plan (HCP), and "take" of San Joaquin kit fox is mitigated through the HCP. The project would implement mitigation measures that would avoid or minimize direct and indirect project impacts, including species-specific measures and avoidance of the canal (Kern County PCDD 2012).

Valley Solar

The Valley Solar Project (Project No. 81), referred to as Enxco Development Corporation in the County's cumulative projects list, is a 33.5 MW solar photovoltaic project that includes electrical switchyards. The project is comprised of three different parcels totaling 401 acres located in western Kern County (Kern County PCDD 2011, n.d.). Site 1 is comprised of disturbed allscale scrub/non-native grassland, scattered northern hardpan vernal pools, and a drainage swale; Site 2 is comprised of non-native grassland, regularly disked; and Site 3 consists of cropland and non-native grassland (Kern County PCDD 2011). Based on focused wildlife surveys, the sites have observed or have potential to support species that also may be significantly affected by the proposed Grapevine project include burrowing owl, Nelson's antelope squirrel, San Joaquin kit fox, Blainville's horned lizard, and loggerhead shrike. One additional special-status wildlife species, northern harrier, was documented to occur in the vicinity of the Valley Solar Project, and Site 2 is described as having potential for Buena Vista Lake shrew (*Sorex ornatus relictus*), both of which also may be present in the Grapevine study area, but would not be significantly impacted by the proposed Grapevine project. The Valley Solar Project would implement mitigation measures that would avoid or minimize direct and indirect project impacts, including species-specific measures for San Joaquin kit fox, burrowing owl, Blainville's horned lizard, Nelson's antelope squirrel, and other special-status species. The proposed EIR also recommends avoiding the vernal pools and establishing a buffer (Kern County PCDD 2011); based on the Addendum to the EIR, these areas appear to be avoided (Kern County PCDD, n.d.).

2.2.3 Mining and Reclamation Projects

There are eight projects within the Analysis Area that are related to surface mining and reclamation that could result in cumulatively considerable effects. The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code, Sections 2710–2796) requires that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition and reclaimed areas are revegetated. The potential impact area is 2,912 acres, roughly three-quarters of which would impact grasslands; the potential loss of habitat is quantified in Table O-1.

2.2.4 Oil and Gas Projects

Kern County has significant oil and gas reserves, and significant oil and gas production activities have been underway for more than a century. Kern County is completing an update to its oil and gas production ordinance, with an accompanying EIR (Kern County PCDD 2015). The California Department of Oil, Gas, and Geothermal Resources (DOGGR) prepared a Final EIR on well stimulation activities, such as hydraulic fracturing, statewide (DOGGR 2015).

Oil and gas exploration and production activities typically occur where the underlying resources occur in the greatest quantities and are the easiest to extract. After an area begins production, DOGGR adopts an “administrative boundary” and establishes “field rules” for the production area. Administrative boundaries are adjusted if production activities expand, and exploration and initial production can occur outside of these DOGGR administrative areas. The proposed Grapevine project is located in and adjacent to the existing Tejon and North Tejon oil fields designated by DOGGR and subject to ongoing oil and gas exploration and production activities under leases with Tejon Ranchcorp and its subsidiaries. Oil and gas activities are and will continue to occur on and in the vicinity of the Grapevine study area.

The biological resource impacts of oil and gas production activities have been extensively evaluated by DOGGR, the County, state, and federal wildlife agencies (e.g., in the context of issuing incidental take permits for oil and gas production activities), and independent scientists. While biological resource values initially decline in the immediate area of well installation and other construction activities, most of these biological values rebound to levels that are at or nearly consistent with pre-construction activities. For example, burrowing animals may be displaced by construction activity or construction-related noise and vibration, but the animals tend to return to burrows and continue to occupy the same habitat area once the oil and gas activity has moved into an operational phase with a network of small well pads (often less than 1 acre) connected by small pipes to storage and separation tanks and related ancillary equipment (Scobie et al. 2013). Similarly, oil and gas production areas to the north and east of the proposed Grapevine project are porous enough such that they are expected to be used by various wildlife species as part of local and regional movement events (Babcock, pers. comm. 2015).

By project design, the proposed Grapevine project would allow for the continuation of oil and gas exploration and extraction activities subject to the contractual relationships in the leases, and in a manner consistent with applicable Kern County zoning and other law, rules, and regulation. The biological resource mitigation measures provided in the Grapevine BTR (see Appendix A of the BTR), and mitigation measures provided in the County EIR (Kern County PCDD 2015), the mineral resources evaluation for Grapevine (WZI Inc. 2015), and the DOGGR Final EIR (DOGGR 2015), address the impacts from these oil and gas production activities. The project-level biological resource mitigation measures for Grapevine discussed above, and the oil and gas mitigation measures required by the County, are anticipated to reduce potential cumulative impacts relative to oil and gas production to less-than-significant levels.

2.2.5 Circulation Projects

There are five circulation-related projects on the cumulative projects list that could have some effect on biological resources (Project Nos. 6, 7, 48, 100, and 207). The potential impact area is 1,104 acres. The large majority (77%) of the cumulative project areas are existing agricultural lands. The potential loss of habitat is quantified in Table O-1.

2.2.6 Cellular Towers Projects

There are five cellular communication projects on the cumulative projects list that could have some effect on biological resources (Project Nos. 60, 194, 195, 249, and 250). The potential impact area is 1,594 acres; given the nature of cellular towers, it is assumed that this is an overestimate and that the impact area would be much smaller. The majority (58%) of the project areas are existing agricultural lands or urban/developed areas. The potential loss of habitat is quantified in Table O-1.

2.2.7 Development Projects

There are 131 projects on the cumulative projects that include or are related to residential, commercial, or institutional development that could have some effects on biological resources. No additional project-specific information is available for these projects. The potential impact area is 8,683 acres. The majority (54%) of the project areas are existing agricultural lands. The potential loss of habitat is quantified in Table O-1. Additionally, the proposed Grapevine project impact footprint, including off-site areas, is approximately 5,268 acres.

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3 BIOLOGICAL RESOURCES ANALYSIS

The remainder of this analysis focuses on the cumulative projects discussed in Section 2.2 that could result in land use changes and, consequently result in cumulatively considerable effects. The analysis focuses on the potential impacts to habitat and species. The impacts discussed also include the acreages of habitat impacted by the proposed Grapevine project.

3.1 Habitat Types

The impacts to habitat types or land covers for projects that could result in cumulatively considerable effects, described in Section 2.2, and the proposed Grapevine project are provided in Table O-1 and shown on Figure 2B. This totals approximately 33,907 acres, or 2%, of the entire Analysis Area. Approximately 153 of the cumulative projects are partially within converted lands, including agricultural lands, disturbed lands, and developed lands, which account for 21,471 acres, or 75%, of the cumulative project impact areas. The remaining 25% of the acreage is within natural or undisturbed lands (Dudek 2013, 2014; Kern County 2013; Lennartz et al. 2008). Comparing the potential loss of each habitat type in the context of the amount of acreage present in the Analysis Area, 1% of the total agricultural lands could be impacted and 1% of the total unvegetated and non-natural and covers (barren, disturbed, and urban/developed). The loss of the remaining habitat types is less than 1% in comparison to the amount of acreage in the Analysis Area.

Table O-1
Habitat Types in the Cumulative Impacts Analysis Area

General Habitat Type	Habitat Types/Land Cover	Analysis Area (Acres)	Potential Cumulative Impacts (Acres)	Grapevine Impacts (Acres)
Grassland	Grassland	563,133	5,567	4,444
	Total Grassland	*563,133*	*5,567*	*4,444*
Scrubs and Chaparrals	Alkali Desert Scrub	42,809	857	—
	Chaparral	24,588	1	—
	Desert Scrub	3,874	15	—
	Scrub	51,761	502	1[1]
	Total Scrubs and Chaparrals	*123,032*	*1,375*	*1[1]*
Meadow	Meadow	3	—	—
	Total Meadow	*3*	—	—
Riparian Woodland and Riparian / Wetland	Cottonwood/Willow Riparian	56	—	—
	Open Water	5,489	2	—
	Riparian	282	—	—
	Riparian Scrub	209	—	<1
	Riparian Woodland	487	—	—
	Riparian Woodland/Scrub	1,606	48	—

Table O-1
Habitat Types in the Cumulative Impacts Analysis Area

General Habitat Type	Habitat Types/Land Cover	Analysis Area (Acres)	Potential Cumulative Impacts (Acres)	Grapevine Impacts (Acres)
	Riparian/Wetland	1,373	—	—
	Wetland	10,241	60	<1
	Total Riparian Woodland and Riparian/Wetland	*19,743*	*110*	*<1*
Savannah	Savannah	39,282	51	—
	Total Savannah	*39,282*	*51*	—
Wash	Wash	1,097	—	7[2]
	Total Wash	*1,097*	—	*7[2]*
Woodland	Woodland	62,821	—	—
	Total Woodland	*62,821*	—	—
Forest	Conifer	36,525	18	—
	Conifer/Mixed Oak	27,287	15	—
	Total Conifer	*63,812*	*33*	—
Agricultural	Cropland	890,220	14,365	—
	Cropland and Orchards/Vineyards	62,274	769	—
	Orchards and Vineyards	137,140	4,497	458
	Total Agricultural	*1,089,634*	*19,631*	*458*
Unvegetated and Non-natural Land Covers	Barren	3,026	31	—
	Disturbed Habitat	659	96	294
	Urban/Developed	153,240	1,744	64
	Total Unvegetated and Non-natural Land Covers	*156,925*	*1,871*	*357*
Grand Total[3]		**2,119,482**	**28,639**	**5,268**

Note:
1 Through project design, the project will avoid a portion of the allscale scrub; final impacts to allscale scrub are approximately 0.7 acre.
2 Through project design, the project will only impact approximately 5 acres of wash.
3 May not total due to rounding.

3.2 Special-Status Wildlife Species

The proposed Grapevine project includes preservation of 3,232 acres of on-site open space in the more biologically diverse foothills and biologically sensitive valley floor riparian areas and direct impacts to 5,268 acres primarily within the valley floor proper. Construction and operation of the proposed Grapevine project has the potential to result in direct impacts to special-status wildlife species and their habitat in the valley floor. Direct impacts to these special-status wildlife species resulting from the proposed Grapevine project would be reduced to less than significant under CEQA with the implementation of biological resource protection measures. The discussion below analyzes whether the proposed Grapevine project, when considered in combination with the reasonably foreseeable projects in the Analysis Area, could result in substantial cumulative effects on special-status species, depending on the habitat requirements of a particular species and the location of the other projects. Additional background information on development near the proposed Grapevine project site is described in Attachment A-2 of Appendix A to the BTR.

The reasonably foreseeable cumulative projects that occur in the Analysis Area would have the potential to impact the same special-status wildlife species as the proposed project due to similar climate and topography, and, in some cases, similar vegetation. The cumulative projects analyzed in this report (including Grapevine impacts) could impact up to 10,716 acres of non-converted habitat that may be suitable for the special-status wildlife species, as well as 20,686 acres of agriculture lands and 1,669 acres of developed or disturbed lands, which do not provide habitat for most species, for a total of 33,907 acres.

A habitat model approach was used to estimate impacts to suitable habitat for wildlife species. The habitat model parameters used to analyze impacts to special-status wildlife species are listed in Attachment O-2. Based on the habitat model, the total suitable habitat and impacts to suitable habitat in the Analysis Area are provided for each species. The potential impacts to suitable habitat from the cumulative projects and the proposed Grapevine project are provided in Table O-2.

Table O-2
Cumulative Impacts to Wildlife Habitat

Species with Significant Impacts (Direct)[1,2]	Status (Federal/ State)	Habitat Modeled within Analysis Area (Acres)	Potential Cumulative Impacts to Modeled Habitat (Acres)	Potential Grapevine Impacts to Modeled Habitat (Acres)	Total Potential Impacts to Modeled Habitat (Acres)
Amphibians and Reptiles					
Blunt-nosed leopard lizard (*Gambelia sila*)	FE/SE; FP	441,955	6,006(1%)[3]	4,372 (1%)	10,378 (2%)
San Joaquin coachwhip (*Coluber flagellum ruddocki*)	—/SSC	609,816	6,439 (1%)	4,445 (1%)	10,884 (2%)
Blainville's horned lizard (*Phrynosoma blainvillii*)	—/SSC	704,596	7,041 (1%)	4,452 (1%)	11,493 (2%)
Western spadefoot (*Spea hammondii*)	—/SSC	N/A[4]	N/A[4]	N/A[4]	N/A[4]
Birds					
Bald eagle (*Haliaeetus leucocephalus*)	FD, BCC, MBTA/SE	N/A[5]	N/A[5]	N/A[5]	N/A[5]
Burrowing owl (*Athene cunicularia*)	BCC; MBTA/SSC	1,633,138	22,127 (1%)	4,444 (<1%)	26,571 (2%)
Ferruginous hawk (*Buteo regalis*)	BCC; MBTA/—	1,654,453	22,127 (1%)	4,452 (<1%)	26,579 (2%)

Table O-2
Cumulative Impacts to Wildlife Habitat

Species with Significant Impacts (Direct)[1,2]	Status (Federal/ State)	Habitat Modeled within Analysis Area (Acres)	Potential Cumulative Impacts to Modeled Habitat (Acres)	Potential Grapevine Impacts to Modeled Habitat (Acres)	Total Potential Impacts to Modeled Habitat (Acres)
Golden eagle (*Aquila chrysaetos*)	BCC; MBTA; FP	1,802,438	26,918 (1%)	4,454 (<1%)	31,372 (2%)
Loggerhead shrike (*Lanius ludovicianus*)	BCC; MBTA/SSC	1,681,139	22,176 (1%)	4,452 (<1%)	26,628 (2%)
Oregon vesper sparrow (*Pooecetes gramineus affinis*)	BCC; MBTA/SSC (wintering)	1,516,727	21,701 (1%)	4,451 (<1%)	25,152 (2%)
Mammals					
American badger (*Taxidea taxus*)	—/SSC	701,956	6,993 (1%)	4,452 (1%)	11,445 (2%)
Nelson's antelope squirrel (*Ammospermophilus nelsoni*)	—/ST	513,345	6,644 (1%)[6]	4,400 (1%)	11,044 (2%)
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE/ST	234,287 (medium suitability) 436,584 (high suitability)	1,799 (1%) (medium suitability) 9,566 (2%) (high suitability)	3,056[7] (1%) (medium suitability) 786[7] (<1%) (high suitability)	4,855 (2%) (medium suitability) 10,352 (2%) (high suitability)
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	—/SSC	1,616,768	21,359 (1%)	4,910 (<1%)	26,269 (2%)
Pallid bat (*Antrozous pallidus*)	—/SSC	1,962,556	26,768(1%)	4,911(<1%)	31,679 (2%)
Townsend's big-eared bat (*Corynorhinus townsendii*)	—/SSC, SC	1,937,968	26,767 (1%)	4,911 (<1%)	31,678 (2%)
Western mastiff bat (*Eumops perotis californicus*)	—/SSC)	1,937,968	26,767 (1%)	4,911 (<1%)	31,678 (2%)
Western red bat (*Lasiurus blossevillii*)	—/SSC	2,116,456	28,607 (1%)	4,911 (<1%)	33,519 (2%)

1 **Federal Designations:**
BCC USFWS Birds of Conservation Concern
FD Federally delisted
FE Federally listed as endangered
MBTA Migratory Bird Treaty Act

2 **State Designations:**
FP California Department of Fish and Wildlife (CDFW) protected and fully protected species
SE State listed as endangered
SC State candidate
SSC California Species of Special Concern
ST State listed as threatened

3 No blunt-nosed leopard lizards were observed on Grapevine during surveys, which included 100% coverage of the site. Additionally, the Grapevine site is considered low suitability for blunt-nosed leopard lizard.

4 No model. Suitable breeding and aestivation habitat for western spadefoot was not quantified because their habitat is limited to ephemeral sites with adequate hydroperiods for supporting larval (tadpole) development and adjacent upland areas that support aestivation the rest of the year. See Attachment O-2.
5 No model. Bald eagle distribution is limited in the San Joaquin Valley, and foraging is probably limited to a few locations rather than spread across the landscape. See Attachment O-2.
6 No Nelson's antelope squirrel were observed on Grapevine during surveys, which included 100% coverage of the site. Additionally, the Grapevine site is considered low suitability for Nelson's antelope squirrel.
7 Cypher et al. 2013.

Species-specific analyses are described by listed, candidate for listing, or full protected species in Section 3.2.1, and other special-status species are analyzed in Section 3.2.2. A summary is provided in Section 3.2.3.

3.2.1 Listed or Fully Protected Species

Bald Eagle (FD; BCC/SE; FP)

Bald eagles have been observed regularly in low numbers on the proposed Grapevine project site during the winter season (Babcock, pers. obs. 2013), and the Tejon Ranch Conservancy has observed bald eagles perched on a snag along Edmonston Pumping Plant Road on a regular basis since 2009 (Tejon Ranch Conservancy 2013). It is anticipated that the proposed Grapevine project would result in the loss of at least one wintering roost tree along Edmonston Pumping Plant Road that appears to be used regularly by a pair of bald eagles. Bald eagles do not nest on the Ranch and only occur in the area in small numbers during the winter.

Due to the widespread agricultural land uses, limited water bodies, and flatter topography in the majority of the cumulative impacts analysis area, bald eagle distribution is limited, and foraging is probably limited to a few locations rather than spread across the landscape. Therefore, the total amount of suitable foraging habitat within the Analysis Area was not quantifiable. In general, the cumulative projects are scattered throughout the valley floor of Kern County in areas that are not likely to support large numbers of bald eagles, and cumulative impacts to potential wintering/foraging habitat would be minimal.

In consideration of the preservation of suitable winter roosts and foraging habitat associated with the proposed Grapevine project, it is anticipated that cumulative effects on bald eagle would be minor, and would not substantially affect the species rangewide. Specifically, mitigation measure (MM-) BTR-BALD provides measures to preserve a suitable winter roost site for bald eagles; MM-BTR-OS will conserve more than 3,232 acres of on-site open space, including areas with suitable roosting and foraging habitat; and MM-BTR-OOS will conserve approximately 7,233 acres in off-site valley floor areas of the Mitigation Area. Additionally, MM-BTR-WLM, a mitigation measure to enhance wildlife movement opportunities, would also conserve approximately 85 acres along the north side of the aqueduct. The TU MSHCP conserves 604 acres (42%) of modeled suitable wintering habitat (including perching and roosting habitat) and 499 acres (96%) of modeled foraging habitat for the bald eagle in large interconnected blocks of habitat.

It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, and conservation measures for this species incorporated in the TU MSHCP, cumulatively considerable impacts to this species are not anticipated. Impacts at the rangewide scale are also not anticipated to be cumulatively considerable since regional cumulative impacts would be less than significant, and the range of this species is generally within the northern mountain ranges of California for breeding and is more widespread for wintering.

Blunt-Nosed Leopard Lizard (FE/SE; FP)

No blunt-nosed leopard lizards have been observed in the study area and the likelihood of occurrence on site is low based on the lack of observations during field surveys and habitat assessments. Nonetheless, this species occurs within the San Joaquin Valley, and if it occurs in the Grapevine study area, it could be impacted by the proposed Grapevine project.

Based upon the habitat model, there are 441,955 acres of potentially suitable habitat for blunt-nosed leopard lizard in the Analysis Area. The suitable habitat areas are generally located along the perimeter of the San Joaquin Valley portion of the cumulative impacts analysis area. Given this species' limited distribution, this is an overestimate of suitable habitat.

As shown in Table O-2, there could be impacts up to 10,378 acres of suitable habitat for blunt-nosed leopard lizard, which accounts for 2% of the total suitable habitat in the Analysis Area, from the cumulative projects and the proposed Grapevine project. Most of these potential cumulative project impacts are associated with mining and reclamation projects followed by development projects and solar projects.

In consideration of the pre-construction and avoidance surveys and habitat preservation required of the proposed Grapevine project, it is anticipated that cumulative effects on blunt-nosed leopard lizard would be minor, and would not substantially affect the species rangewide. Specifically, MM-BTR-PCA would reduce the adverse effect the proposed project could have on individual species by requiring focused surveys, as well as avoidance and monitoring measures. MM-BTR-PCA is designed to avoid "take" of blunt-nosed leopard lizard; however, if there may be potential impacts to blunt-nosed leopard lizard individuals, relocation and/or take of this species may only occur if authorized pursuant to an NCCP. MM-BTR-OS and MM-BTR-OOS will preserve 7,428 acres of modeled suitable valley floor habitat for blunt-nosed leopard lizard, including 1,242 acres on site and 6,186 acres in the off-site Mitigation Area. The off-site Mitigation Area contains higher value habitat for blunt-nosed leopard lizard than the Grapevine study area, and the Mitigation Area is known to support the species. The Mitigation Area also conserves an area considered important for the long-term conservation and recovery of blunt-nosed leopard lizard by the USFWS (1998), conserving valley floor portions of the Ranch that provide unconstrained linkages for multi-generational movement of blunt-nosed leopard lizard. Additionally, MM-BTR-WLM, a mitigation measure to enhance wildlife movement opportunities, would also conserve approximately 85 acres along the north side of the aqueduct.

Because blunt-nosed leopard lizard is fully protected, all projects must be designed to avoid “take” of blunt-nosed leopard lizard unless authorized pursuant to an NCCP, which would have species conservation measures, including the protection of the lizard through creation, management, and long-term monitoring of habitat for the species. For projects that do not have “take” authorization under an NCCP, similar measures for the protection of this species would be required under state law. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

Golden Eagle (BCC/FP)

While there are no nesting golden eagles in the Grapevine study area, golden eagles have been observed foraging throughout the site.

Within the San Joaquin Valley, golden eagle use appears to be very limited; while there is potential suitable habitat modeled in the valley, there are no records (foraging and nesting) for golden eagles within the Analysis Area outside of the Ranch (CDFW 2015; Tejon Ranch Conservancy 2013). Golden eagles are more likely to be found foraging within a few miles of their nesting areas, which, in the Analysis Area is limited to the mountains and foothills.

Approximately 162,600 acres of conserved land on the Ranch is considered suitable golden eagle foraging habitat. In consideration of the habitat preservation on the Ranch, it is anticipated that cumulative effects on golden eagle would be minor, and would not substantially affect the species rangewide.

It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, and conservation measures for this species incorporated in the TU MSHCP, cumulatively considerable impacts to this species are not anticipated. Impacts at the rangewide scale are also not anticipated to be cumulatively considerable since regional cumulative impacts would be less than significant and the range of this species is generally widespread through all portions of California except for the Central Valley.

Nelson's Antelope Squirrel (—/ST)

Nelson's antelope squirrel has not been documented in the Grapevine study area, and is considered to have low potential to occur in the study area.

Historically, the Nelson's antelope squirrel's geographic range covered the western and southern portions of the Tulare Basin, San Joaquin Valley, and contiguous areas to the west in the upper Cuyama Valley and on the Carrizo and Elkhorn Plains (USFWS 1998). The species ranged from western Merced County on the northwest, southward along the western side of the San Joaquin Valley to its southern end (USFWS 1998). The species was distributed across the floor of the San Joaquin Valley in Kern County and along the eastern edge of the valley northward to near Tipton, Tulare County (Hall 1981; Williams 1980, as cited in USFWS 1998). Currently more robust populations are confined to the Lokern and Elk Hills in western Kern County, and the Carrizo and Elkhorn Plains in eastern San Luis Obispo County (USFWS 1998).

Nelson's antelope squirrel inhabits arid grassland, shrubland, and alkali sink habitats within the San Joaquin Valley. They prefer dry flat or rolling terrain with slopes less than 10 to 14 degrees (18% to 25%) (NatureServe 2015). Nelson's antelope squirrels rarely occur in steep, rocky areas or the San Joaquin Valley floor where alkaline soils and plant species are dominant because neither habitat is conducive for digging burrows (USFWS 1998). For this reason, the antelope squirrel is primarily considered to be a non-riparian valley floor species. Within the Analysis Area, there are 513,345 acres of suitable habitat for Nelson's antelope squirrel modeled. Given this species limited distribution, this is an overestimate of suitable habitat.

There could be impacts on up to 11,044 acres of suitable habitat for Nelson's Antelope squirrel, which accounts for 2% of the total habitat in the Analysis Area, from the cumulative projects and the proposed Grapevine project. Most of these potential cumulative project impacts are associated with mining and reclamation projects followed by development projects and solar projects.

In consideration of the pre-construction and avoidance surveys and habitat preservation associated with the proposed Grapevine project, including MM-BTR-PCA, pre-construction surveys and avoidance and minimization measures, MM-BTR-OS, conservation of 1,703 acres of suitable habitat on site, and MM-BTR-OOS, conservation of 6,898 acres in the Mitigation Area, it is anticipated that cumulative effects on Nelson's antelope squirrel would be minor and would not substantially affect the species rangewide. The Mitigation Area contains higher-value habitat for Nelson's antelope squirrel than the Grapevine study area. The Mitigation Area conserves an area considered important for the long-term conservation and recovery of this species by the USFWS (1998); and the site has long-term conservation value because it is contiguous with other Ranch open space that is conserved and managed in perpetuity.

It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

San Joaquin Kit Fox (FE/ST)

San Joaquin kit fox has not been definitively confirmed in the Grapevine study area, but has moderate potential to occur in suitable habitat throughout the valley floor portion of the project.

Cypher et al. 2013 modeled suitable habitat for San Joaquin kit fox throughout the valley floor, identifying areas of low, medium, or high suitability for kit fox habitat. The model was based on a GIS map-algebra model using land use/land cover, vegetation density, and topography variables (Cypher et al. 2013). The model included the entire San Joaquin Valley within the species' range as defined in the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998), which included portions of Alameda, Contra Costa, Fresno, Kern, Kings, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara, Stanislaus, and Tulare Counties.

Within the biological cumulative Analysis Area, 436,584 acres are mapped as high suitability and 234,287 acres are mapped as medium suitability; all other areas were considered unsuitable (Cypher et al. 2013) (Figure 3). The medium and high suitability areas are concentrated along the foothills of the Temblor Mountain range, the western foothills of the Sierra Nevada, and areas near the northern boundary of Kern County, which are consistent with the core and satellite areas identified by the USFWS recovery plan (2010a).

There could be impacts to 10,352 acres mapped as high suitability (2%) and 4,855 acres mapped as medium suitability (2%) from the cumulative projects and the proposed Grapevine project. Most of these potential cumulative project impacts are associated with development projects followed by mining and reclamation projects, solar projects, and agricultural uses.

In consideration of the pre-construction and avoidance surveys and habitat preservation associated with the proposed Grapevine project, including MM-BTR-PCA, pre-construction take avoidance surveys; MM-BTR-OS, conservation of 299 acres of high suitable habitat on site and 809 acres of moderately suitable habitat on site; and MM-BTR-OOS, conservation of 7,233 acres of modeled suitable habitat for kit fox in the Mitigation Area, it is anticipated that cumulative effects on San Joaquin kit fox would be minor, and would not substantially affect the species rangewide. The Mitigation Area conserves areas that, together with other valley floor/foothill lands on the Ranch allow for movement opportunities within the Ranch and to off-Ranch satellite areas for the kit fox. In addition, the Mitigation Area conserves an area considered important for the long-term conservation and recovery of kit fox and other special-status species by the USFWS (1998). Additionally, the proposed Grapevine project would conserve approximately 85 acres along the north side of the aqueduct (MM-BTR-WLM), which will benefit wildlife movement opportunities; of which 22 acres are high suitable modeled habitat and 47 acres are moderately suitable habitat. Overall, as part of the Ranchwide Agreement, approximately 240,000 acres of the Ranch is permanently preserved; within the Ranchwide Agreement open space, there is approximately 15,165 acres of high suitable modeled habitat and 46,072 acres are moderately suitable habitat.

It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

Townsend's Big-Eared Bat (—/SC; SSC)

Townsend's big-eared bat was detected during acoustic monitoring surveys for the proposed Grapevine project, with only one minute of detection (0.01% total abundance) recorded on the north side of the California Aqueduct in the valley floor area just outside of the eastern portion of the Grapevine study area. No Townsend's big-eared bats were observed during the roost assessments or subsequent acoustic surveys. The overall very low activity detected on site (0.01% total abundance) indicates this species has some potential to forage in the study area but is unlikely to roost on site.

Townsend's big-eared bat can forage in most non-urban/developed areas in the Analysis Area, with the exception of chaparral, which is typically too dense for foraging. Roosting habitat is based on microhabitat features and cannot be quantified across a large landscape.

In general, the cumulative projects are scattered throughout Kern County. As shown in Table O-2, there are impacts to 31,678 acres, 2% of the modeled habitat in the Analysis Area, from the cumulative projects and the proposed Grapevine project. Most of these potential cumulative project impacts are associated with development, followed by solar projects and agricultural uses.

In consideration of the pre-construction and avoidance surveys and habitat preservation associated with the proposed Grapevine project, including MM-BTR-PCA, pre-construction surveys and avoidance and minimization measures; MM-BTR-OS, conservation of 2,779 acres of suitable habitat on site; and MM-BTR-OOS, conservation of 7,233 acres of suitable foraging habitat for bats in the Mitigation Area, it is anticipated that cumulative effects on Townsend's big-eared bat would be minor and would not substantially affect the species rangewide. The off-site Mitigation Area has long-term conservation value because it is contiguous with other Ranch open space that is conserved and managed in perpetuity. Additionally, MM-BTR-WLM, a mitigation measure to enhance wildlife movement opportunities, would also conserve approximately 85 acres along the north side of the aqueduct. Overall, as part of the Ranchwide Agreement, approximately 240,000 acres of the Ranch is permanently preserved, including suitable habitat for this species.

It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

3.2.2 Other Special-Status Species

There are potential significant impacts to several non-listed special-status species from the proposed Grapevine project. Species potentially affected are analyzed in Table O-3.

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
	Amphibians and Reptiles	
San Joaquin coachwhip (*Coluber flagellum ruddocki*) (SSC)	Endemic to California. Its range includes west of Arbuckle in the Sacramento Valley (Colusa County), and south into eastern Alameda County, San Joaquin and Stanislaus Counties, south of the San Luis Reservoir in Merced County, western San Benito County, northwestern and southwestern Fresno County, central Monterey County, southwestern Kings County, the western edge of Kern County with some records west of Lake Isabella, and the Carrizo Plain and Cayuma Valley area of San Luis Obispo with a couple records near Shandon (Jennings and Hayes 1994). There is also an isolated population near Sutter Buttes in Sutter County (Jennings and Hayes 1994; Nafis 2015).	This species has been recorded in the study area. Through avoidance, minimization, and biological resource protection measures that include on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by mining and reclamation projects and tower/pole projects. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
Blainville's horned lizard (*Phrynosoma blainvillii*) (SSC)	Occurs throughout most of California in locations west of the desert and Cascade-Sierran highlands, in elevations from sea level to around 8,000 feet amsl (Stebbins 2003). It is restricted to localized populations because of its association with loose soils that have a high sand content (Jennings and Hayes 1994).	This species has been recorded in the study area. Through avoidance, minimization, and biological resource protection measures that include on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by mining and reclamation projects and tower/pole projects. It

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
		is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement and TU MSHCP (90% primary and 82% secondary suitable habitat), cumulatively considerable impacts to this species are not anticipated.
Western spadefoot (*Spea hammondii*) (SSC)	Endemic to California and northern Baja California. Although the species primarily occurs in lowlands, it also occurs in foothill and mountain habitats. Within its range, the western spadefoot occurs from sea level to 1,219 meters (4,000 feet) amsl, but mostly at elevations below 910 meters (3,000 feet) amsl (Stebbins 2003).	This species was not observed in the study area, but development activities could directly impact western spadefoot breeding sites and adjacent uplands if they occur on site. Through pre-construction surveys and avoidance, minimization, and biological resource protection measures that include habitat creation and on-site preservation of open space, project-level impacts would be less than significant. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement and TU MSHCP (90% of suitable habitat), cumulatively considerable impacts to this species are not anticipated.
	Birds	
Burrowing owl (*Athene cunicularia*) (BCC, SSC)	Burrowing owls are distributed throughout western North America, from Canada to South America. In California, the range of the western burrowing owl extends through the lowlands, from north–central California to Mexico, with small, scattered populations occurring within the Great Basin and the desert regions of the southwestern part of the state (DeSante et al. 2007; Gervais et al. 2008).	This species has been observed breeding in the study area. Through focused pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include nesting bird surveys, avoidance buffers, passive relocation if required, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement and TU MSHCP (90% primary and 93% secondary suitable habitat), cumulatively considerable impacts to this species are not anticipated.

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
Ferruginous hawk (*Buteo regalis*) (BCC)	The ferruginous hawk nests from British Columbia eastward to southwestern Manitoba and generally southward to Nevada and Texas. In California, it winters in interior and coastal areas, and is an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges.	This species was observed in the study area during winter. This species would not nest in the study area. Through avoidance, minimization, and biological resource protection measures that include on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
Loggerhead shrike (*Lanius ludovicianus*) (BCC, SSC)	Loggerhead shrikes are widespread throughout the United States, Mexico, and portions of Canada. They are a year-round resident species in most of the United States, including from California east to Virginia, south to Florida, and in Mexico.	This species was observed in the study area during the winter and is likely a year-round resident. Through pre-construction surveys and avoidance, minimization, and biological resource protection measures that include nesting bird surveys, avoidance buffers, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
Oregon vesper sparrow (*Pooecetes gramineus affinis*) (BCC, SSC (wintering))	Oregon vesper sparrow nests in western Washington and Oregon south to Del Norte County, California (Jones and Cornely 2002), and winters in open grassland habitat, including stubble fields, meadows, and road edges (Erickson 2008).	Vesper sparrow (*Pooecetes gramineus*) was observed in the study area, and since both the Oregon vesper sparrow (*P. g. affinis*) and the more common Great Basin vesper sparrow (*P. g. confinis*) subspecies could occur in the study area, it is not known which subspecies was observed. Oregon vesper sparrow has moderate potential to winter on site, but would not nest in the study area. Through avoidance, minimization, and biological resource protection measures that

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
		include on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by agricultural uses and solar projects. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
	Mammals	
American badger (*Taxidea taxus*) (SSC)	Occurs throughout the western United States; north into the western provinces of Canada; and east to Ohio, Michigan, and Ontario, Canada (Long 1972). It occurs from below sea level in Death Valley to the Arctic–Alpine Life Zone at about 11,810 feet amsl. Within California, the badger occurs throughout the state except for the extreme northwestern coastal area (Zeiner et al. 1990).	This species has been recorded occurring in the study area in association with dens. Through pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include den surveys, avoidance buffers, flushing/relocation if required, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by mining and reclamation projects. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
Pallid bat (Antrozous pallidus) (SSC)	Widespread throughout the western United States; southern British Columbia, Canada; and mainland and Baja, Mexico (Hermanson and O'Shea 1983; Hall 1981). Occurs throughout California, except for the highest elevations of the Sierra Nevada (up to 8,000 feet amsl).	This species has been recorded occurring in the study area. Through pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include roost surveys, avoidance buffers, flushing if required, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development, followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
		these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (SSC)	This subspecies' range includes the southern coastal range north to about Lompoc and includes the southern portion of the San Joaquin Valley (Hall 1981).	This species has been recorded occurring on site and is assumed to occur throughout the study area. Through pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include flushing, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development, followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.
Western mastiff bat (*Eumops perotis californicus*) (SSC)	Widespread in the southwestern United States; the northern portion of Baja, Mexico; and south into central mainland Mexico (Hall 1981). In California, its year-round range includes the San Joaquin Valley, the coastal region from the San Francisco Bay area south to San Diego, and the Transverse and Peninsular mountain ranges and Mojave and Colorado Deserts of Southern California (Zeiner et al. 1990). It is absent in California from the agricultural regions of the Central Valley, northwestern California, and the Great Basin Desert of northeastern California (Zeiner et al. 1990).	This species has been recorded occurring in the study area. Through pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include roost surveys, avoidance buffers, flushing if required, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

Table O-3
Analysis of Cumulative Impacts to Special-Status Species

Species with Significant Impacts (Direct)[1,2]	Range	Analysis of Cumulative Impacts
Western red bat (*Lasiurus blossevillii*) (SSC)	Occurs in the southwestern United States, south into Baja California and mainland Mexico to South America (Cryan 2003). In California, it occurs from Shasta County and Mendocino County in the north, and through the central coastal region and Central Valley west of the Sierra Nevada/Cascade ranges to coastal Southern California (Cryan 2003; Zeiner et al. 1990).	This species has been recorded occurring in the study area. Through pre-construction surveys for this species and avoidance, minimization, and biological resource protection measures that include roost surveys, avoidance buffers, flushing if required, and on-site and off-site open space conservation, project-level impacts would be less than significant. Most of these potential cumulative project impacts are associated with development, followed by solar projects and agricultural uses. It is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species should it occur or be expected to occur. Due to these measures, the conservation and management of open space provided for in the Ranchwide Agreement, cumulatively considerable impacts to this species are not anticipated.

1 **Federal Designations:**
BCC USFWS Birds of Conservation Concern
2 **State Designations:**
SSC California Species of Special Concern

3.2.3 Conclusion

The proposed Grapevine project, in conjunction with the other cumulative projects, has the potential to reduce suitable habitat, distribution, and/or the overall population size of special-status wildlife species such that they would be vulnerable to environmental variability and would be at a higher risk of becoming imperiled. However, with the mitigation measures and permanent preservation associated with the proposed Grapevine project and the permanent preservation of habitat through the Ranchwide Agreement and TU MSHCP, as well as the fact that other cumulative projects will be required to implement their own avoidance, minimization, and mitigation measures, the impacts to special-status species are not cumulatively significant.

Specifically, the proposed Grapevine project includes pre-construction surveys and associated avoidance measures and buffers for all wildlife species that have potential to breed, nest, or roost on site (MM-BTR-PCA) as well as permanent preservation of open space native habitats (MM-BTR-OS and MM-BTR-OOS, which would mitigate for the habitat loss of special-status species from the proposed Grapevine project. Additionally, MM-BTR-WLM, a mitigation measure to enhance wildlife movement opportunities, would also conserve approximately 85 acres along the north side of the aqueduct. The Ranchwide Agreement and TU MSHCP together preserve approximately 240,000 acres of the Ranch. Additionally, the cumulative projects and proposed Grapevine project impacts (33,907 acres) would impact approximately 2% of the total Analysis Area (2,119,482 acres). Furthermore, like the proposed Grapevine project, other cumulative projects would be required to implement similar avoidance, minimization, and mitigation measures. Therefore, cumulative impacts (direct impacts and indirect loss of habitat) would be less-than significant to special-status wildlife species.

3.3 Wildlife Movement

The proposed Grapevine project has the potential to adversely affect local and regional wildlife movement corridors. A significant cumulative impact to wildlife movement would occur if the proposed Grapevine project, in conjunction with the reasonably foreseeable cumulative projects, result in substantially interfering with established habitat linkages or with the movement of native or migratory wildlife. Four focal[3] species for wildlife movement are described below in more detail—San Joaquin kit fox, American badger, Nelson's antelope squirrel, and blunt-nosed leopard lizard.

Most of the San Joaquin Valley within the Analysis Area is generally flat and is largely composed of agriculture interspersed with various levels of rural and urban development and fragmented areas of open space. The Analysis Area encompasses a landscape largely dominated by agricultural lands (1,089,634 acres, or 51%) and grassland (563,133 acres, or 27%). Additionally, 156,925 acres, or 7%, is composed of unvegetated and non-natural land covers (i.e., urban/developed lands, disturbed habitat, and barren lands) and the remaining 15% of the Analysis Area is a variety of habitat types, including forests, meadows, riparian woodlands/wetlands, savannahs, scrubs, chaparral, wash, and woodlands. Wildlife that are adapted to more urban and agricultural areas are able to move through this landscape to meet various life history needs. However, species that require larger and more naturally occurring and diverse habitats are generally relegated to the remaining natural lands areas along the valley floor and valley/foothill transition areas adjacent to the Temblor Range, San Emigdio Mountains, Tehachapi Mountains, and western Sierra Nevadas. These valley/foothill transition areas are generally characterized by open grassland, savannah, and scrub habitat.

Within the Analysis Area, there are four general regional habitat linkages: (1) from the San Emigdio Mountains east and northeast along the Tehachapi Mountains to the Tehachapi Valley; (2) from the southern Temblor Ranges extending northeast across the southern edge of the San

[3] Focal wildlife species were selected because, although not all were found to be present on site, they are special status, representative of the San Joaquin Valley floor, represent a range of movement mobility, from highly mobile, fast-moving species (e.g., San Joaquin kit fox and American badger) to relatively sedentary or slow-moving species (e.g., the blunt-nosed leopard lizard), and are likely to be sensitive to habitat loss and fragmentation).

Joaquin Valley, including the Tejon Hills, and north to the Sequoia National Forest; (3) along the Temblor Ranges and adjacent foothills; and (4) from the Temblor Ranges at the Kern-Kings County border west to the Sequoia National Forest. These areas are consistent with mapping provided in the *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* and in the San Joaquin kit fox 5-year review (Spencer et al. 2010; USFWS 2010a) (see Figure 3). The preservation of large blocks of grassland and scrubland habitat within the San Joaquin Valley floor and northern Tehachapi Mountain foothills life zone, and the provision for landscape connectivity between these lands, is also noted in the *Recovery Plan for Upland Species of the San Joaquin Valley* (Recovery Plan) as being critical to the ultimate recovery of special-status plants and animals that occur in the San Joaquin Valley (USFWS 1998).

I-5 presents a substantial barrier for terrestrial wildlife movement east to west within the valley floor and valley/foothill transition zone; smaller highways, such as Highway 99 and 46, also present movement barriers to most species. Additionally, the California Aqueduct traverses the entire cumulative impacts analysis area in a north to south direction from the Kern/Kings County boundary to the Grapevine study area where it turns east. Because of its width, the aqueduct can present a movement barrier to most terrestrial wildlife species in those areas where no culverts or crossings occur that would help facilitate movement over or under the aqueduct.

The majority of the cumulative projects that could result in land use changes and have the potential to result in cumulatively considerable effects are located within converted lands (i.e., agricultural and disturbed or developed lands) and these projects (including Grapevine) account for impacts up to 22,318 acres, or 1%, of the total Analysis Area. As mentioned in Section 2.1, 40 projects are wholly within developed lands. Other reasonably foreseeable projects that occur in the cumulative analysis area could potentially inhibit wildlife movement.

Three of the four focal species included as part of the wildlife movement analysis for the proposed Grapevine project (i.e., San Joaquin kit fox, blunt-nosed leopard lizard, Nelson's antelope squirrel) are generally restricted to valley floor and valley floor/foothill transition zone habitats; therefore, only projects within these areas would potentially contribute to a cumulative impact related to their dispersal or movement. The fourth species, American badger, occurs within the foothills and mountains within the Analysis Area.

3.3.1 San Joaquin Kit Fox

With respect to San Joaquin kit fox movement, the 5-year review for San Joaquin kit fox identifies recovery areas that are categorized as "core," "satellite," and "links" (USFWS 2010a) (Figure 3). Within the cumulative impacts analysis area, there are approximately 962,764 acres of these recovery areas; of those, only 10,448 acres (1%) would be impacted by the cumulative projects, including Grapevine. In addition to the recovery areas, Cypher et al. (2013) modeled suitable habitat for San Joaquin kit fox throughout the Central Valley. Within the cumulative impacts analysis area there are approximately 670,871 acres of suitable habitat (234,287 acres characterized as of medium suitability and 436,584 acres of high suitability); of those, 15,207 acres (2%) would be impacted by the cumulative projects, including Grapevine. Of the 962,764 acres of recovery areas mapped in the 5-year review (USFWS 2010a), approximately 561,292 acres were modeled as suitable for kit fox (Cypher et al. 2013), of which, only 8,066 acres (1%) would be impacted by the cumulative projects. The cumulative projects would impact up to 1,012 acres, or 0.3% of the total link areas; five of these are smaller development projects, ranging between 2 and 141 acres; two are solar projects ranging from 45 to 79 acres; and three are mining/reclamation projects ranging from 43 to 466 acres. Given the smaller size of the majority of these projects, in addition to the minimal impacts to other recovery areas (1%), kit fox would be able to continue to use these areas not only as foraging and breeding habitat, but also for dispersal to other areas.

Larger projects in the valley floor or valley floor/foothills transition area (e.g., Grapevine, solar projects) incorporate a variety of minimization, avoidance, and mitigation measures related to wildlife movement in the San Joaquin Valley. Additionally, the Metropolitan Bakersfield Habitat Conservation Plan (HCP) provides a framework to protect, enhance, and restore natural resources, including San Joaquin kit fox, a covered species. Land set aside as open space under various Tejon Ranch projects would be part of the larger 240,000 acres of open space conserved as part of the Ranchwide Agreement. For example, Grapevine will conserve 8,410 acres of modeled suitable habitat for kit fox through implementation of MM-BTR-OS, MM-BTR-OOS, and MM-BTR-WLM. Conservation of suitable habitat in large, unfragmented habitat patches is important for long-term persistence of San Joaquin kit fox (Cypher et al. 2013). Specifically, larger high-suitability habitat blocks protect against yearly fluctuations in habitat quality due to the amount of grass cover—providing for refuge pockets throughout the seasonal and yearly fluctuations. More recently, the USFWS 5-year review for the kit fox identified the portion of the proposed Grapevine project site south of the aqueduct (including the valley floor and foothills), a small portion of the project just north of the aqueduct (in the valley floor), and the Mitigation Area as part of a landscape habitat linkage between satellite populations (Northeast Bakersfield, Metropolitan Bakersfield) to the north and core populations (Carrizo Plains Core Area, Western Kern County Core Area) to the west (USFWS 2010a; see also Penrod et al. 2003) (Figure 3). The permanent open space lands conserved as part of the Ranchwide Agreement, within which the Mitigation Area is located, represent the type of large, unfragmented habitat patches required for this species. As discussed in the BTR, wildlife corridors suitable for San Joaquin kit fox will be preserved as part of the proposed Grapevine project.

Additionally, it is expected that other foreseeable projects on the cumulative projects list would incorporate similar measures for the protection of this species. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to kit fox movement are not anticipated.

3.3.2 Blunt-Nosed Leopard Lizard

Due to their size and smaller home ranges, wildlife movement for blunt-nosed leopard lizard is analyzed in terms of suitable habitat and habitat continuity. Based on land use in the San Joaquin Valley, the suitable areas for blunt-nosed leopard lizard include the flatter and gently sloping terrain within grasslands and alkali desert scrubs. These areas are generally located along the perimeter of the valley floor, where there is connectivity along the flatter areas of the foothills. The Recovery Plan (USFWS 1998) describes areas, including the valley floor edge and adjacent foothills of Tejon Ranch, as part of a large habitat linkage area that is considered important for the long-term conservation and recovery of valley floor species such as blunt-nosed leopard lizard. The USFWS (2010b) also addresses the importance of establishing corridors between existing natural areas in Kern and Tulare Counties to enhance blunt-nosed leopard lizard metapopulation recovery strategy and maintain lizard populations. Additionally, Penrod et al. (2003) identified travel routes for blunt-nosed leopard lizard along the foothills of the Tehachapi Mountain range, which is located towards the southern portion of the Analysis Area. There are few cumulative projects located outside of developed or agricultural lands near the boundary of Kern and Tulare Counties or within the Penrod et al. (2003) travel routes for blunt-nosed leopard lizard. There is one project (Solari Sand Project No. 108) located within the Penrod et al. (2003) best travel route, and the larger projects (i.e., between 190 and 500 acres) located north toward the Tulare-Kern County border include Project Nos. 110, 115, 143, and 242.

Larger projects in the valley floor or valley floor/foothills transition area (e.g., Grapevine, Tejon Ranch Commerce Center, solar projects) incorporate a variety of minimization, avoidance, and mitigation measures related to wildlife movement in the San Joaquin Valley. Land set aside as open space under various Tejon Ranch projects would be part of the larger 240,000 acres of open space conserved as part of the Ranchwide Agreement, including valley floor habitat. For example, Grapevine will conserve 7,428 acres of modeled suitable habitat for blunt-nosed leopard lizard through implementation of MM-BTR-OS and MM-BTR-OOS. While the USFWS (2010b) did not identify the general area in which the Grapevine study area is located, or other Ranchlands as a necessary corridor for blunt-nosed leopard lizard, conservation of the valley floor portions of the Ranch identified in the Ranchwide Agreement would provide unconstrained linkages for multi-generational movement of blunt-nosed leopard lizard, which is consistent with the Recovery Plan (USFWS 1998). As previously noted, the Recovery Plan identifies the valley floor edge and adjacent foothills of Tejon Ranch as part of a large habitat linkage area that can benefit the valley floor special-status species addressed by the Recovery Plan. The open space areas conserved as part of the proposed Grapevine project includes lands that are within this habitat linkage design and, therefore, is consistent with the

Recovery Plan's goals and objectives to preserve and maintain a habitat linkage along the valley floor/foothill fringe around the southern San Joaquin Valley. As discussed in the BTR, wildlife corridors suitable for blunt-nosed leopard lizard will be preserved as part of the proposed Grapevine project.

Additionally, it is expected that other foreseeable projects on the cumulative projects list would incorporate similar measures for the protection of this species. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to blunt-nosed leopard lizard movement are not anticipated.

3.3.3 Nelson's Antelope Squirrel

Due to their size and smaller home ranges, wildlife movement for Nelson's antelope squirrel is analyzed in terms of suitable habitat and habitat continuity. Based on land use in the San Joaquin Valley, the suitable areas for Nelson's antelope squirrel include the flatter and gently sloping terrain within grasslands, desert scrubs, and shrubland. These areas are generally located along the perimeter of the valley floor, where there is connectivity along the flatter areas of the foothills. The Recovery Plan (USFWS 1998) describes areas, including the valley floor edge and adjacent foothills of Tejon Ranch, as part of a large habitat linkage area that are considered important for the long-term conservation and recovery of valley floor species such as Nelson's antelope squirrel. While no least-cost corridor was modeled by Penrod et al. (2003) or the USFWS for Nelson's antelope squirrel, individuals would likely use the valley habitat portions of the kit fox habitat linkage depicted in the USFWS (2010a) 5-year review for kit fox. As discussed in Section 3.3.1, no cumulatively considerable impacts to these linkages were identified.

Larger projects in the valley floor or valley floor/foothills transition area (e.g., Grapevine, solar projects) incorporate a variety of minimization, avoidance, and mitigation measures related to wildlife movement in the San Joaquin Valley. Land set aside as open space under Tejon Ranch projects would be part of the larger 240,000 acres of open space conserved as part of the Ranchwide Agreement, including valley floor habitat. For example, the proposed Grapevine project will conserve 8,601 acres of modeled suitable habitat for Nelson's antelope squirrel through implementation of MM-BTR-OS and MM-BTR-OOS. As discussed in the BTR, wildlife corridors suitable for antelope squirrel will be preserved as part of the proposed Grapevine project.

Additionally, it is expected that other projects on the cumulative projects list would incorporate similar measures for the protection of this species. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to Nelson's antelope squirrel movement are not anticipated.

3.3.4 American Badger

American badger is more widely distributed and can occur on steeper slopes as well as flatter areas; however, badgers tend to avoid urban areas and high-intensity agriculture. The areas indicated in the habitat linkage map depicted in the USFWS 5-year review for kit fox (USFWS 2010a; see Figure 3) would likely be used by American badger for movement, including the valley floor/foothill transition zone along the southern San Joaquin Valley (see also Penrod et al. (2003). Within the Analysis Area, badgers are likely to move along the outer boundaries of the agricultural areas, and into the foothills and adjoining mountains. As described above, the majority of the cumulative projects occur in converted lands; however, there are larger projects within potential movement areas for badger. The TMV project is located along the southern boundary of the analysis area and there are scattered projects along the western boundary of the Analysis Area that are suitable for badger movement (including Project Nos. 81, 110, 115, 117, 119, 121, 142, 143, 144, 146, 152, 172, 191, 193, 216, 242, 243, 246, and 249).

Larger projects incorporate a variety of minimization, avoidance, and mitigation measures related to wildlife movement. Land set aside as open space under various Tejon Ranch projects would be part of the larger 240,000 acres of open space conserved as part of the Ranchwide Agreement. For example, Grapevine will conserve 9,873 acres of modeled suitable habitat for American badger through implementation of MM-BTR-OS and MM-BTR-OOS. As discussed in the BTR, wildlife corridors suitable for badger will be preserved as part of the proposed Grapevine project.

Additionally, it is expected that other foreseeable projects on the cumulative projects list would incorporate similar measures for the protection of this species. Due to these measures, in combination with the conservation and management of habitat provided for in the Ranchwide Agreement, cumulatively considerable impacts to American badger movement are not anticipated.

3.3.5 Summary

Overall, wildlife species are expected to continue to use the natural or undisturbed lands that occur within the Analysis Area; these lands are primarily located along the valley floor/foothills transition area adjacent to the Temblor Range, San Emigdio Mountains, Tehachapi Mountains, and western Sierra Nevadas. In the extreme southern portion of the San Joaquin Valley, where Grapevine is located, open space areas adjacent to the California Aqueduct, along Grapevine Creek, along the tributary to Cattle Creek, and in the valley/foothills transition zone, are available for both localized movements and to access the base of the foothills south of the site and areas west of I-5 through I-5 and aqueduct underpasses. These habitat connections will continue to serve as linkages to large preserved habitat blocks east and west of the Grapevine study area, which, in turn, connect to still other large habitat blocks and landscape linkages, thus contributing to a regional landscape habitat linkage along the southern San Joaquin Valley floor/foothill interface.

The proposed Grapevine project, combined with the reasonably foreseeable cumulative projects, would result in development throughout the San Joaquin Valley and a few areas within the Tehachapi Mountain foothills. Although this has the potential to disrupt wildlife movement patterns for wildlife species using the San Joaquin Valley and Tehachapi Mountains (in particular, typical wide-ranging terrestrial species, including mule deer (*Odocoileus hemionus*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus)*, and coyote (*Canis latrans*)), wildlife movement through and around the reasonably foreseeable cumulative project areas would still be possible. More importantly, although there are some cumulative projects within established wildlife habitat linkages, including those that the Recovery Plan (USFWS 1998) considers a key priority to conservation for a number of special-status species in the San Joaquin Valley, the San Joaquin kit fox recovery areas identified in the 5-year review (USFWS 2010a), and habitat linkages identified for conservation in Penrod et al. (2003), these linkages will largely be maintained. Consequently, the configuration and preservation of valley floor and foothill edge habitats and linkages associated with the proposed Grapevine project is consistent with the habitat preservation and landscape connectivity objectives of each of these reports. Despite the development of the reasonably foreseeable cumulative projects, the area would remain predominantly rural with significant open space and wildlife movement opportunity. Additionally, the total acreage of habitat analyzed in the Analysis Area is approximately 2,119,482 acres and the proposed Grapevine project, combined with reasonably foreseeable cumulative projects, would only impact approximately 2% of the total acreage. Therefore, the proposed Grapevine project, combined with the reasonably foreseeable cumulative projects, would remain a less-than-significant cumulative impact to habitat linkages and wildlife movement corridors.

3.4 Jurisdictional Water Resources

The proposed Grapevine project would have no impacts on federally jurisdictional waters; therefore, the project would not contribute to a cumulative impact to federal waters of the U.S. The Grapevine project will have an adverse impact on non-wetland and wetland waters of the state under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board (RWQCB).

The proposed Grapevine project would directly and permanently impact up to 1.8 acres (16,552 linear feet) of ephemeral waters of the state; 0.5 acre (956 linear feet) of permanent impacts and 1.6 acres (215 linear feet) of temporary impacts to intermittent waters of the state, including 0.2 acre of tamarisk thickets; 0.1 acre (171 linear feet) of wetland waters of the state, consisting of mulefat thickets; and 20.6 acres (55,052 linear feet) of other U.S. Geological Survey (USGS) stream features that were not delineated by Dudek as a water of the state. The impacted drainages include: (1) Grapevine Creek and its tributaries; (2) tributaries to Pastoria Creek, including Live Oak Creek and tributaries to Cattle Creek; and (3) unnamed drainages that are isolated, wholly contained on the project site (meaning they originate and terminate within the Grapevine study area), and do not connect to any other drainage feature. None of the cumulative projects, including the TMV project, would affect the unnamed, isolated drainages that would be impacted by the proposed Grapevine project and, thus, impacts to these isolated drainages would not result in cumulatively considerable effects.

The only cumulative project that would affect upstream tributaries to the remaining drainages is the TMV project, which received permits to impact these drainages from the RWQCB and CDFW, in 2011 and 2013, respectively. The TMV project would result in impacts to Rising Canyon and tributaries to Rising Canyon, which flow into Grapevine Creek, and a small portion of Grapevine Creek at Lake Drive, immediately downstream of Castac Lake, totaling 1.4 acres (7,446 linear feet). Additionally, the TMV project would result in 3.7 acres (11,548 linear feet) of impacts to Pastoria Creek, including its tributaries (Live Oak Creek and other unnamed tributaries). The TMV project permits required that impacts to state waters be avoided, minimized, and mitigated. Specifically, with respect to mitigation, the TMV project includes enhancement at the two Bear Trap Canyon sites along Pastoria Creek, occupying 1.70 and 4.90 acres, respectively, and 10.4 acres of establishment (creation), enhancement, and restoration at Cuddy Creek. The permanent impacts resulting from the proposed Grapevine project and the TMV project (including the Bear Trap turnout) to Grapevine Creek and its tributaries and Pastoria Creek and its tributaries are shown in Figure 4. Additionally, Figure 4 shows the conservation and avoidance of Grapevine Creek and its tributaries and Pastoria Creek and its tributaries on and off the Ranch.

The TMV project's impacts to jurisdictional waters are fully mitigated, as required by the project's permits. Regardless, when considered together, within the two project sites, the TMV project and the proposed Grapevine project would conserve on site 98% of the acres of Grapevine Creek and its tributaries and 96% of the acres of Pastoria Creek and its tributaries.[5] An analysis of conservation and impacts to other USGS stream features that were not previously delineated as waters of the state is included in the linear feet calculations. With respect to linear feet, when the TMV and proposed Grapevine projects are considered together, the TMV project and the proposed Grapevine project would conserve 82% of the linear feet of

5 The conservation acreages and linear feet include portions of Grapevine Creek and Pastoria Creek that will be avoided or temporary impacts that will be restored to pre-project conditions. Additionally, because the acreages of conservation for other USGS stream features that were not delineated as jurisdictional waters of the state were not digitized and acreages are not available from other sources (i.e., USGS NHD data), the conservation acreages were not included in the percentages; however, the conservation of linear feet of other USGS stream features that were not delineated as jurisdictional waters of the state are included.

Grapevine Creek and its tributaries, and 88% of the linear feet of Pastoria Creek and its tributaries on site. Further, outside these project sites, the majority of the remaining portion of these drainages, 264,428 linear feet (92%) of Grapevine Creek and its tributaries and 447,107 linear feet (93%) of Pastoria Creek and its tributaries (USGS 2015),[6] will be avoided and/or conserved (Figure 4). Given the amount of conservation and/or avoidance of Grapevine Creek, Pastoria Creek, and their tributaries, as well as mitigation and for these waterways, impacts resulting from the proposed Grapevine project are not cumulatively considerable.

The proposed Grapevine project would implement a mitigation plan for waters of the state (MM-BTR-WM), including 1:1 or 2:1 ratios depending on impact type, which would mitigate for the loss of waters of the state, including wetlands from the proposed Grapevine project. The Mitigation Area includes the conservation of 7,233 acres of land with field-verified state jurisdictional resources on site and restoration and enhancement within portions of the 7,233-acre Mitigation Area. In total, the Ranch will conserve 240,000 acres of land, as required by the Ranchwide Agreement and the TU MSHCP, which also has state- and federally jurisdictional waters and wetlands present and will greatly contribute to the ecological health of the watersheds by not adding impervious surfaces or modifying existing beneficial uses. Incremental cumulative adverse impacts to jurisdictional resources by the proposed Grapevine project would be offset by mitigation and other conservation on the Ranch; thus, the proposed Grapevine project's contribution to cumulative impacts to waters of the state would be less than significant.

[6] Acreages cannot be provided using the U.S. Geological Survey (2015) stream/river data because the data only includes linear features, not polygon features that can be used to calculate acreages.

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4 REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetland Delineation Manual.* Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. Accessed September 1, 2010. http://www.fedcenter.gov/Bookmarks/index.cfm?id=6403&pge_id=1606.

ACOE. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. Accessed September 24, 2012. http://el.erdc.usace.army.mil/elpubs/pdf/trel08-28.pdf.

Babcock, K. 2013. Wintering bald eagles on Tejon Ranch. Personal observation by K. Babcock (Dudek). February 2013.

Babcock, K. 2015. Wildlife movement events in oil and gas production areas. Personal communication from Keith Babcock (Dudek). October 2015.

CDFW (California Department of Fish and Wildlife). 2015. California Natural Diversity Database GIS layer. March 2015.

Cryan, P.M. 2003. "Seasonal Distribution of Migratory Tree Bats (*Lasiurus* and *Lasionycteris*) in North America." *Journal of Mammalogy* 84:579–593.

Cypher, B.L., S.E. Phillips, and P.A. Kelly. 2013. "Quantity and Distribution of Suitable Habitat for Endangered San Joaquin Kit Foxes: Conservation Implications." *Canid Biology and Conservation* 16(7): 25–31. http://www.canids.org/CBC/16/San_Joaquin_kit_fox_habitat_suitability.pdf.

DeSante, D.F., E.D. Ruhlen, and R. Scalf. 2007. "The Distribution and Relative Abundance of Burrowing owls in California During 1991–1993: Evidence for a Declining Population and Thoughts On Its Conservation." In *Proceedings of the California Burrowing owl Symposium, November 2003*, edited by J.H. Barclay, K.W. Hunting, J.L. Lincer, J. Linthicum, and T.A. Roberts, 1–41. Bird Populations Monographs No. 1. Point Reyes Station, California: The Institute for Bird Populations and Albion Environmental, Inc.

DOGGR (Division of Oil, Gas, and Geothermal Resources). 2015. *Analysis of Oil and Gas Well Stimulation Treatments in California*. *Final Environmental Impact Report.* SCH no. 2013112046. Volume I. Prepared by Aspen Environmental Group. July 2015. Accessed online October 26, 2015. http://www.conservation.ca.gov/dog/Pages/SB4_Final_EIR_TOC.aspx.

Dudek. 2013. *Tehachapi Uplands Multiple Species Habitat Conservation Plan.* Draft. Prepared for Tejon Ranchcorp. Encinitas, California: Dudek. With technical assistance from U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

Dudek. 2015. *Biological Resources Technical Report for the Grapevine Specific Plan*.

Dudek and TRC (Tejon Ranch Company). 2007. Vegetation Composite GIS Data for Tejon Ranch. Ranch-wide vegetation composite based on the 2007 vegetation mapping of Tejon Mountain Village, the 1980 Environmental Impact Report, the 1994 Biotic Assessment, the 1994 Antelope Valley Grassland exhibit, the 1980 Timber Index survey, and Tejon Valley Floor HCP vegetation information. Supplied by Dudek and TRC.

Erickson, R.A. 2008. "Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)." *California Bird Species of Special Concern: Studies of Western Birds No. 1*. Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing owl (*Athene cunicularia)*" In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 218–226. Studies of Western Birds 1. Camarillo, California: Western Field Ornithologists; Sacramento California: Department of Fish and Game.

Hall, E.R. 1981. *The Mammals of North America*. 2nd Edition. New York: John Wiley and Sons.

Hermanson, J.W. and T.J. O'Shea. 1983. "*Antrozous pallidus*." American Society of Mammalogists*. Mammalian Species* 213:1–8.

Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final report submitted to the California Department of Fish and Game, Rancho Cordova, California. Contract 8023.

Jones, S.L. and J.E. Cornely. 2002. "Vesper Sparrow (*Pooecetes gramineus*)." In *The Birds of North America Online*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/624doi:10.2173/bna.624.

Kern County. 2013. "Annually Permitted Crop Data, Kern County Spatial Data for Year 2013" [Shapefile]. Bakersfield, California: Kern County, Department of Agriculture and Measurement Standards. Updated July 15, 2013. Accessed August 2, 2013. http://www.kernag.com/gis/gis-data.asp.

Kern County PCDD (Kern County, Planning and Community Development Department). 2006. *Kern County Valley Floor Habitat Conservation Plan*. Draft. Lompoc, California: Garcia and Associates. December 2006.

Kern County PCDD. 2009. *Recirculated Draft Environmental Impact Report, Volume 1, Specific Plan Amendment Case No. 136, Map 500, Frazier Park Estates.* Bakersfield, California: Kern County Planning and Community Development Department with technical assistance by ICF International. June 2009.

Kern County PCDD. 2010a. *Lost Hills Solar by NextLight (PP 10215) Environmental Impact Report*. SCH no. 2010031038. Bakersfield, California: Kern County Planning and Community Development Department. July 2010.

Kern County PCDD. 2010b. *Maricopa Sun Solar Complex Project Environmental Impact Report*. SCH no. 2010031034. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. November 2010.

Kern County PCDD. 2011. *Valley Solar Project Environmental Impact Report*. SCH no. 2010031039. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. August 2011.

Kern County PCDD. 2012. *RE Old River One and RE Old River Two Solar Project Environmental Impact Report*. SCH no. 2010121058. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. May 2012.

Kern County PCDD. 2014a. "Scope of Cumulative Impacts for the Grapevine EIR and Technical Studies." Letter from J.R. Kitchen, Supervising Planner to Project File. July 31, 2014.

Kern County PCDD. 2014b. *Blackwell Solar Park Project (PP13237) Environmental Impact Report*. SCH no. 2013091025. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. June 2014.

Kern County PCDD. 2014c. *Addendum to the Environmental Impact Report for the Maricopa Sun Solar Complex Project.* Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. February 2014.

Kern County PCDD. 2014d. *Addendum to the Environmental Impact Report for the RE Old River One and RE Old River Two Solar Project*. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. June 2014.

Kern County PCDD. 2015. *Revisions to the Kern County Zoning Ordinance – 2014 (C) Focused on Oil and Gas Local Permitting*. SCH no. 2013081079. Final Environmental Impact Report. September 2015. Accessed October 26, 2015. http://pcd.kerndsa.com/planning/environmental-documents/421-oil-gas-deir

Kern County PCDD. No Date. *Addendum to Valley Solar Project Environmental Impact Report*. Bakersfield, California: Kern County Planning and Community Development with technical assistance by ICF International. May 2012.

Lennartz, S., T. Bax, J. Aycrigg, A. Davidson, M. Reid, and R. Congalton. 2008. *Final Report on Land Cover Mapping Methods for California Map Zones 3, 4, 5, 6, 12, and 13*.

Long, C.A. 1972. "Taxonomic Revision of the North American Badger, *Taxidea taxus.*" *Journal of Mammalogy* 53:725–759.

Nafis, G. 2015. *A Guide to the Reptiles and Amphibians of California*. Accessed February 2015. http://www.californiaherps.com

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed March 18, 2015. http://explorer. natureserve.org.

Penrod, K., C.R. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. *South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection*. Monrovia, California: South Coast Wildlands Project. October 2003.

Quad Knopf. 2010. *Conservation Plan, Maricopa Sun, LLC Solar Project*. Prepared for Maricopa Orchards. August 2010.

Rincon Consultants Inc. 2011. *Biological Resources Assessment, RE Old River One and RE Old River Two Solar Projects*. Ventura, California: Rincon Consultants. June 2011.

Scobie, C., A. Marsh, and R. Fisher. *Influence of Petroleum Development on Burrowing Owl Ecology*. Edmonton, Alberta: Department of Biological Sciences, University of Alberta. July 2013.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. *California Essential Habitat Connectivity*

Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stebbins, R.C. 2003. *Western Reptiles and Amphibians*. Peterson Field Guide, 3rd ed. New York, New York: Houghton Mifflin Company.

Taylor, T. 2015. Personal communication (email) between Diana Hurlbert (Tejon Ranch Company) and Todd Taylor (Kern County PCDD). March 13, 2015.

Tejon Ranch Conservancy. 2013. "Biological resources GIS data, including Ranchwide bird, mammal, and plant point location data" [Shapefiles]. Received from Tejon Ranch Company on January 7, 2014.

TRC (Tejon Ranch Company). 2007. Vegetation Composite GIS Data for Tejon Ranch. Ranch-wide vegetation composite based on the 1980 Environmental Impact Report, the 1994 Biotic Assessment, the 1994 Antelope Valley Grassland exhibit, the 1980 Timber Index survey, and Tejon Valley Floor HCP vegetation information. Supplied by Tejon Ranch Company.

TRC, Sierra Club, National Audubon Society, National Resources Defense Council, Endangered Habitats League, Planning and Conservation League, Tejon Ranch Conservancy, and Centennial Founders LLC, Tejon Industrial Corp., and Tejon Mountain Village LLC. 2008. *Tejon Ranch Conservation and Land Use Agreement*. June 17, 2008. http://www.sec.gov/Archives/edgar/data/96869/000119312508138009/dex1028.htm.

TRC. 2013. "Biological resources GIS data, including kit fox habitat, sensitive species (flora and wildlife), vegetation communities, and wildflower fields for the Grapevine planning area" [Shapefiles]. Received from Tejon Ranch Company on January 15, 2013.

USFWS (U.S. Fish and Wildlife Service). 1998. *Recovery Plan for Upland Species of the San Joaquin Valley.*

USFWS. 2010a. *San Joaquin Kit Fox (*Vulpes macrotis mutica*), 5-Year Review: Summary and Evaluation*. Sacramento, California: Sacramento Fish and Wildlife Office. February 2010.

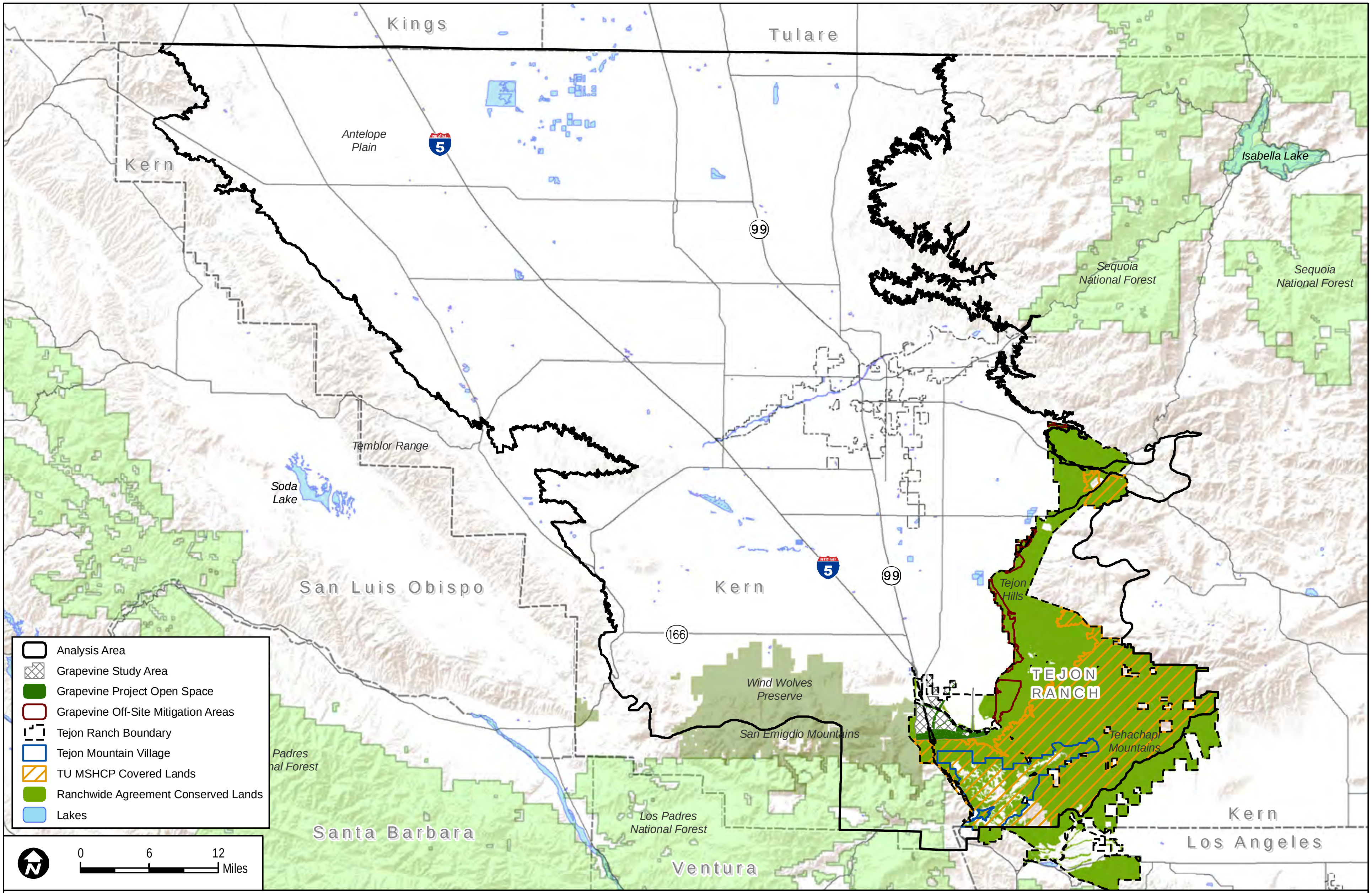
USFWS. 2010b. *Blunt-nosed leopard lizard (*Gambelia sila*) 5-Year Review: Summary and Evaluation*. February 2010.

USFWS. 2013. *Biological Opinion on the Proposed Issuance of an Incidental Take Permit for the Tehachapi Uplands Multiple Species Conservation Plan* (8-8-12-FW-55). April 26, 2013.

USGS (U.S. Geological Survey). 2015. "Flow lines, water points, watershed boundaries for hydrologic units 12 and 8, water bodies " [digital GIS data]. National Hydrography Dataset website. October 5, 2015. http://nhd.usgs.gov/.

WZI Inc. 2015. Mineral Resources Evaluation Technical Report for Grapevine.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife: Volume II*. Sacramento, California: California Department of Fish and Game.



SOURCES: McIntosh & Associates (2013); TRC 2013a, 2013b

FIGURE 1

Regional Location

GRAPEVINE PROJECT

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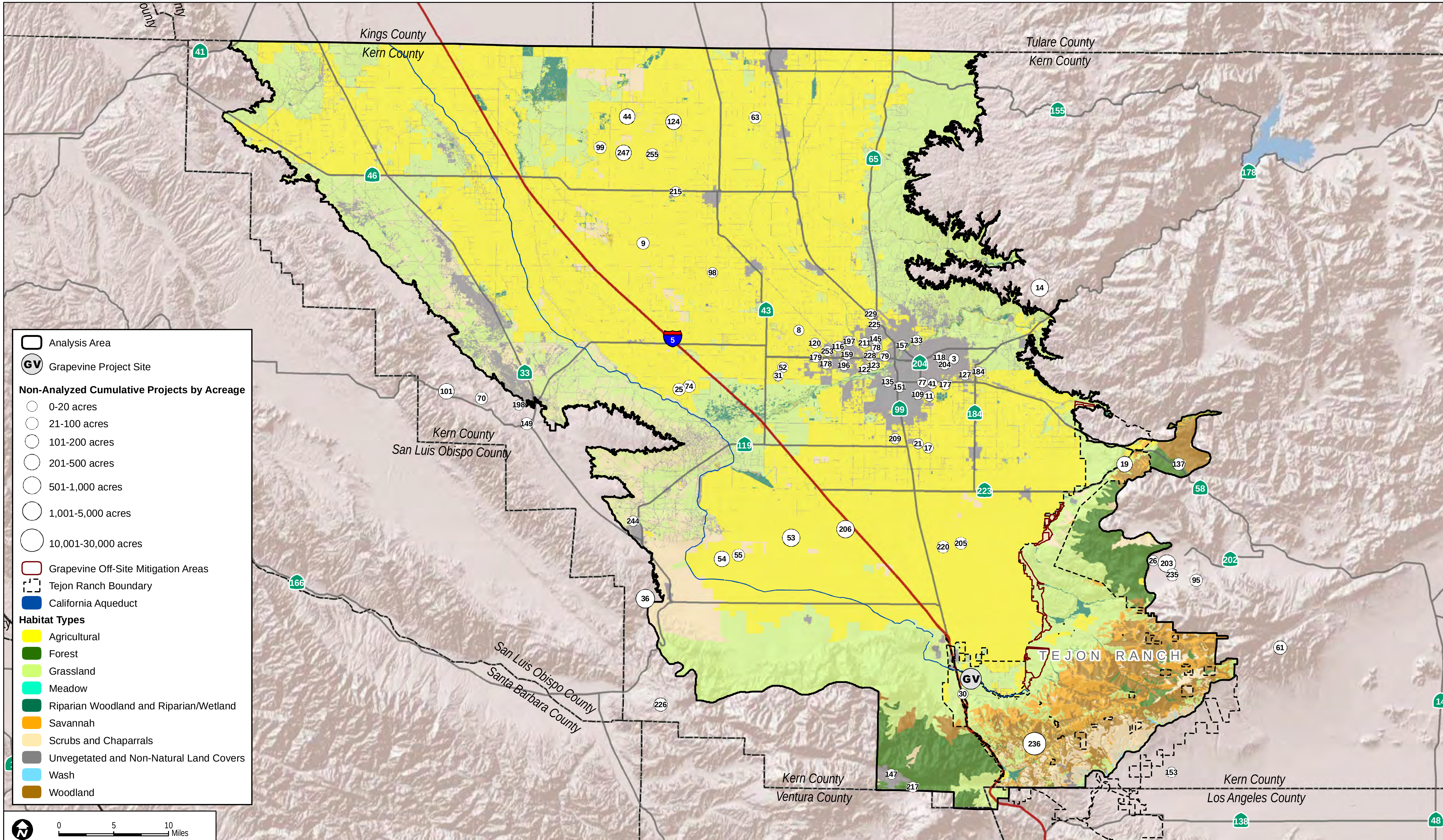

SOURCES: Kern County 2013; USGS GAP Vegetation

FIGURE 2A

No Cumulatively Considerable Effect Projects

GRAPEVINE PROJECT

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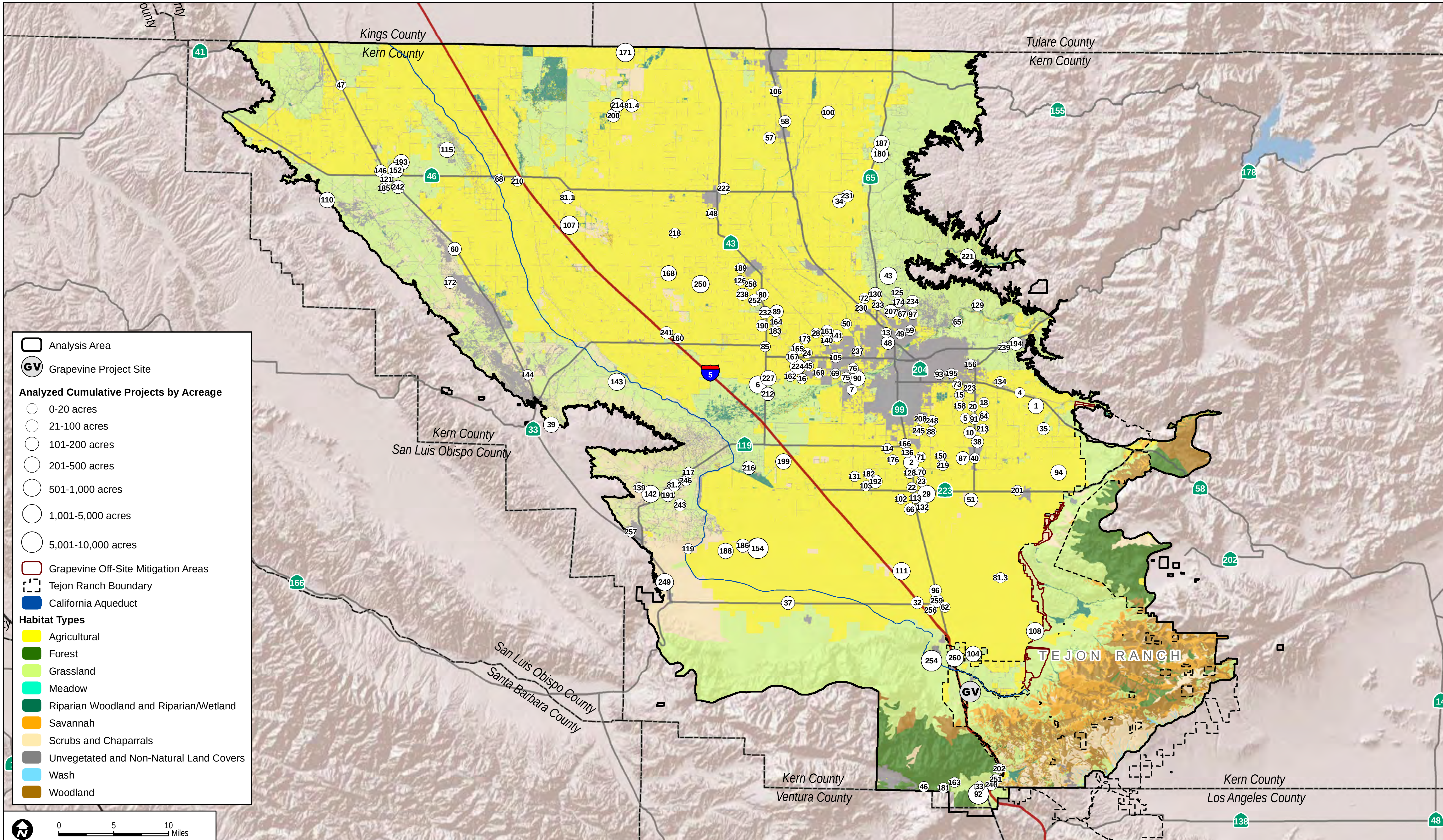

SOURCES: Kern County 2013; USGS GAP Vegetation

FIGURE 2B

Potential Cumulatively Considerable Effect Projects

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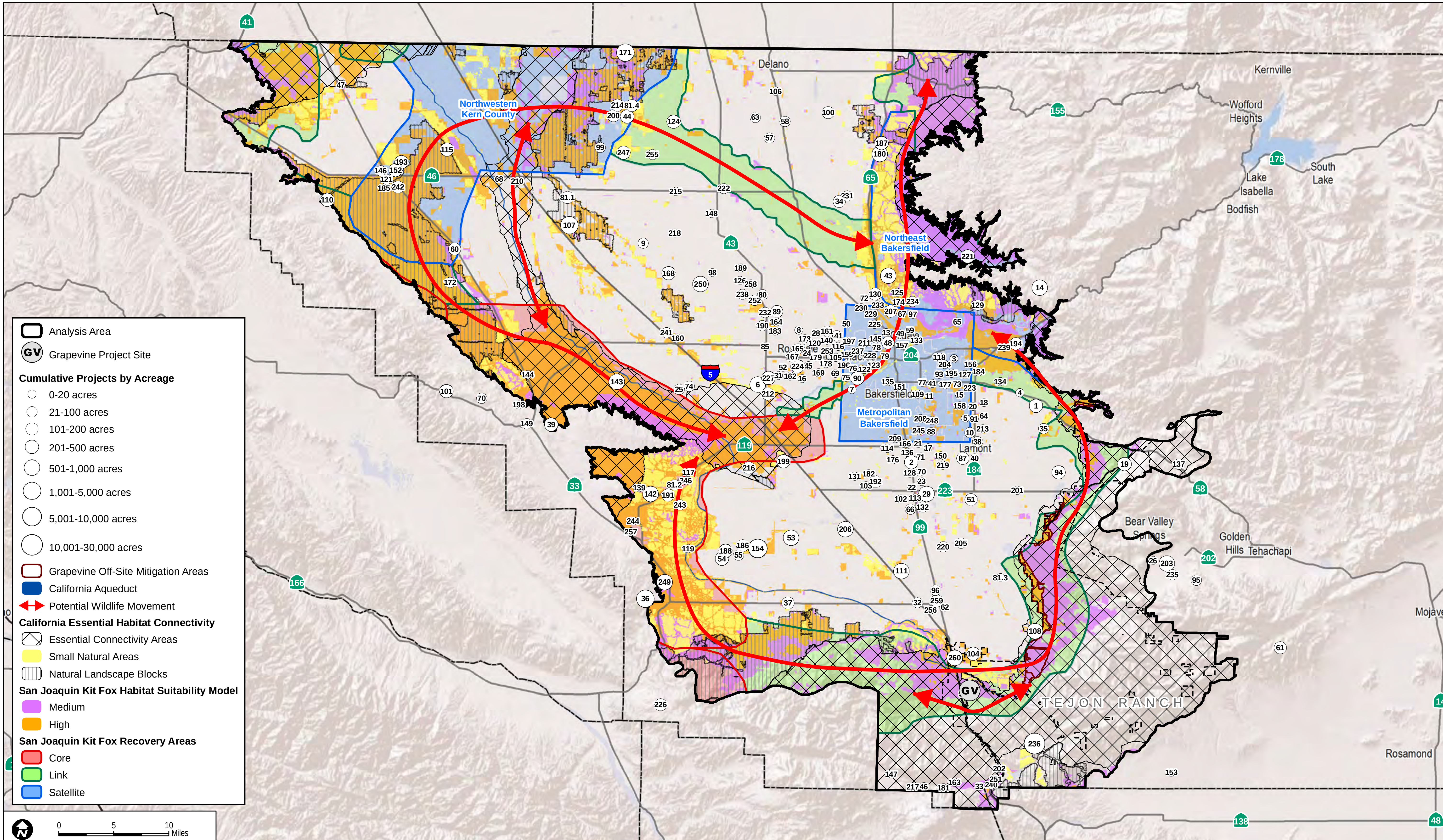

SOURCES: Kern County 2014; USFWS 2010; Cypher et al. 2013; Spencer et al. 20110

FIGURE 3
Wildlife Movement

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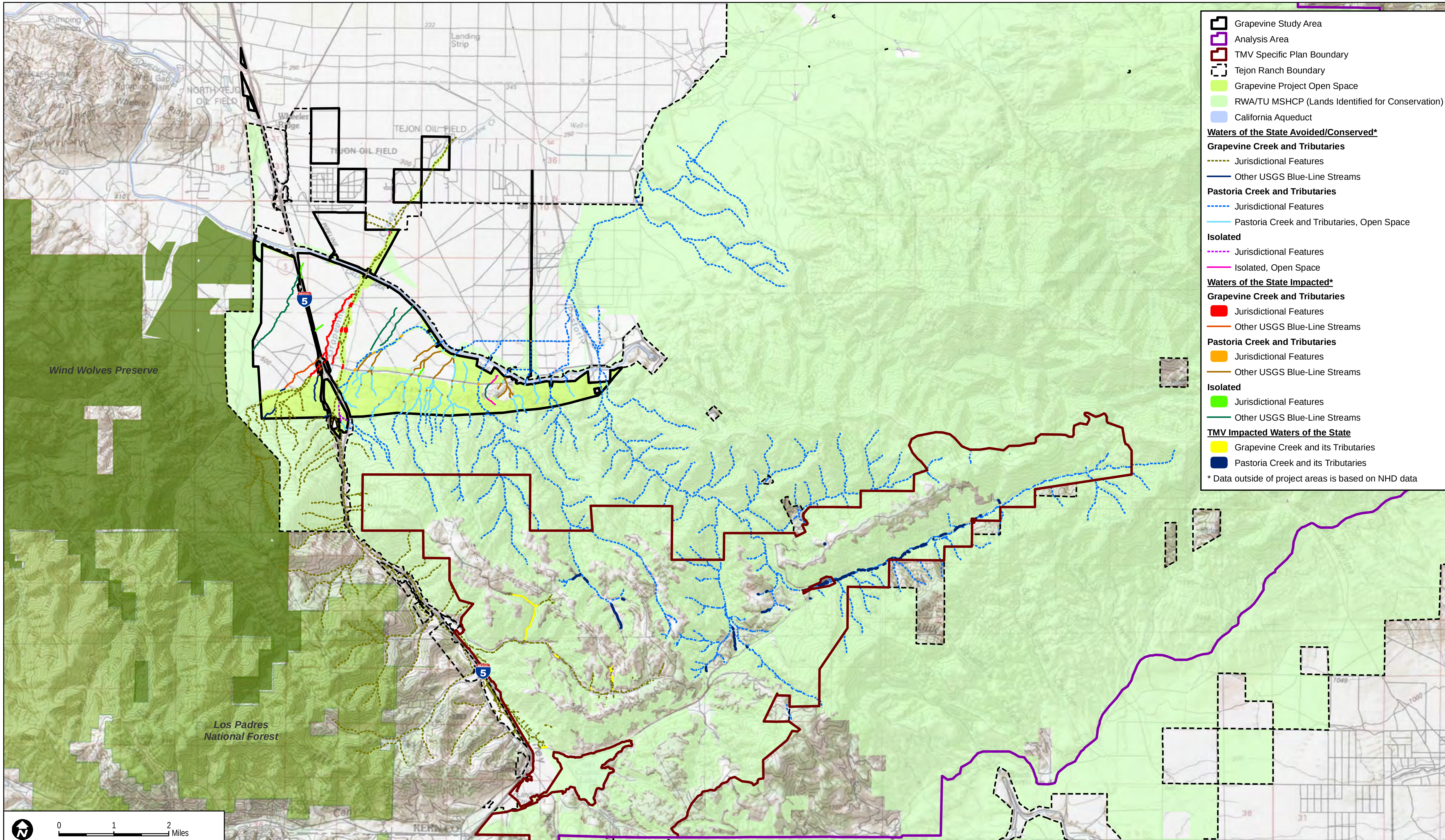

SOURCES: McIntosh & Associated 2014; USGS 2014

FIGURE 4

Cumulative Impacts Analysis for Waters of the State

GRAPEVINE PROJECT

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ATTACHMENT O-1

Cumulative Projects List

ATTACHMENT O-1
Cumulative Projects List

Cumulative projects are listed in Table O-1.1 along with their associated APNs[7] and acreage.[8] The table is organized into categories used in the analysis. Table O-1.2 describes the projects in chronological order by project identification number.

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
Included in Biological Cumulative Impact Analysis (Section 3)				
Agricultural Uses				
10221	29	Bloomfield/Tillema, Rich/John Schaap	185-322-36	635
10214	107	Goose Lake Ranch/Andrew Samarin	069-230-05 069-230-20 069-230-21 069-230-22 069-230-36 069-230-55 086-010-08 086-010-11 086-020-03 086-020-06 086-020-09 086-020-10 086-100-28 086-110-01 086-110-03 086-110-04 086-110-05 086-110-09 087-080-25	2,347

7 The Assessor's Parcel Numbers (APNs) depicted in this table may differ from the County-provided APNs in some cases where more current parcel data was available from review of EIRs and other public data.

8 The acreages depicted in this table may differ from the County-provided acreages in some cases where more current project impacts were used based on review of EIRs and other public documents.

9 The California Environmental Quality Act (CEQA) document project name is provided in parenthesis after the County-provided project name in this table in cases where the project name provided on the County list did not coincide with the CEQA document project name referenced in this document.

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
9875	171	North Kern, Stueve Bros/D Albers	046-020-01 046-020-02 046-020-03 046-050-03 046-050-04 046-050-05 046-050-07 046-050-09	2,134
10084	214	Savannah Farms Dairy/R Vanderweerd	046-280-05	158
Circulation				
13004	6	AECOM	160-010-02 160-010-07 160-010-21 160-010-22 160-010-59 160-010-60	616
13455	7	AERA Energy	390-310-01	18
—	48	City of Bakersfield	116-010-37 116-010-39 116-080-49 116-080-51 116-090-01 116-101-10 116-101-11 116-101-12 116-130-03 116-130-04 116-130-05 116-130-06 116-130-07 116-130-08 116-130-09 116-130-28 365-011-31	174
14468	100	George A. Zaninovich	050-260-03	160
12455	207	S & J Alfalfa Inc. by Sikand Engineering	483-010-29	136
Development				
—	2	99 Houghton LLC by McIntosh & Associates	185-140-08	314
12644	4	Abdo Fadhel by Cornerstone Engineering	177-220-16	5
14148	5	Advanced Geomatices Engineering	174-011-32	19
—	10	Al Graves by Wiley D. Hughes Surveying	174-141-14	29
9484	13	American Asphalt & Concrete Crushing/J Wilson	364-010-59	3

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
14355	15	Ana Maria Garay	173-162-09	3
12031	16	Andreatta, Carla/Richard Carr	408-011-50 408-011-51 408-011-52	8
14244	18	Ashley Ross	177-182-32	2
—	20	Aurelio Reyna	177-182-30	3
—	22	Bakersfield Land Co. by Jean Laborde	185-321-20	20
—	23	Bakersfield Land Company LLC by Delmarter	185-321-16	0
—	24	Bakersfield Land Investment/McIntosh & Associates	463-070-21	19
11901	28	Blackhawk Land Co. II/ Delamarter & Deifel	463-050-96	18
14544	32	Brian J. Mettler	238-203-40	26
11579	34	Calash LLC/John Ferguson	073-160-25	158
—	38	Carriage Homes/Carl Moreland	174-150-24	1
—	40	Cei Engineering Associates Inc.	188-270-02	0
14343	45	Christian Curutehague	407-482-12	1
10114	46	Cingular Wireless/AFL Telecommunications	256-070-31	17
10325	47	Cingular Wireless/Infranext	043-260-29	10
10072	50	Coe, Donna	492-090-20	6
12198	51	Community Recycling	185-350-55	158
—	57	Daljit Singh Sidhu & Gurpeet Sidhu by JR Design Group	060-080-03	53
13640	62	De La Torre, Cecelia/JR Design Group	238-281-08	1
13639	64	Del Toro, Joe	174-011-05	5
14496	65	Delamater Family Trust	436-080-28	8
—	66	Delgado by Jaime Sandoval	185-342-08	21
—	67	Denela LLC/Dewalt Corp	491-011-41	17
14382	68	Derek Holdsworth-KSA Group Architects	069-053-13	0
—	69	Dewey Maynard	496-010-01	6
—	71	Dominguez/Cuevas by Afinar Civil Engineers	185-050-03 185-050-04	17
11925	72	Downs, Gordon/Pinnacle Engineering	482-050-05 482-050-06 482-070-11	1
14189	73	Dwelling in Unity Foundation	144-300-51	0
—	75	Earle Gibbons by Greg Owens	110-170-06	2
—	80	Enos Properties LLC	090-180-40 090-180-41 090-180-42 090-180-43	20
14490	85	E-R Surveying and Consulting	104-220-28	18

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
10856	87	Etchison Living Trust/Norm Etchison	187-010-19	3
—	88	Felipe Laines Alfaro	518-010-06	10
1485	90	Flying J/Simpson-Vancuren Inc.	501-020-05	232
14162	91	Ford, Pam by Jodi Jensen	174-250-41	2
13859	93	Fuentes, Robin	140-250-08	1
13569	94	Garcia, Eduardo/Eric Sertic	503-041-14 503-041-17	269
—	96	Garone, Frank/Rickles	238-205-29 238-205-33 238-205-37	30
14363	97	Gary R. Olson	491-012-17	10
13902	102	Gic Corp, Gabriel Cruz/	184-392-61	19
11490	103	Gill, Punit K by Gw Wilson	184-490-14	9
11385	104	Goertzen, Vernon	238-390-36	352
11096	105	Golden Estates/Bdd Prop by Delmarter and Deifel	465-511-01	1
10174	106	Gonzalez, Olimpo/V Mariscal	521-070-18	4
11378	111	Grimmway Enterprises	295-120-48	618
12298	113	Guadalupe Jimenez	185-520-05	5
—	114	Gulzar Dhindsa	514-050-03	1
14459	115	H.M. Holloway Inc.	057-220-16	446
13729	117	Harrington, Billy	298-110-21 298-110-22	3
13758	119	Hernandez, Jose	220-030-13	11
14386	121	Hughes Surveying	068-191-20	47
14457	125	J+J Clean Up Service Inc.	481-200-06	0
14488	126	Jaime, Jesus and Christina by Rolland VanDeValk	026-252-08	0
14337	128	Jesus Reynaldo Portillo	185-381-17	2
14432	129	Joe Gergen	093-200-54	42
—	130	John Giumarra	482-020-09	152
—	131	Jon Moule	184-420-04	20
—	132	Jose Ramos by Jaime Sandoval	185-342-09	21
—	134	Joshua Huff	388-290-24	2
12309	136	Juarez, Ethel	184-150-29	6
—	139	KC Waste Management	298-050-16	10
13371	140	Kern County Firefighters/Luis Hinojosa	464-022-46	0

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
13408	141	Kern County Planning and Community Development Department	529-012-06 529-012-08 529-012-23 529-012-24 529-020-01 529-020-04 529-020-06 529-020-09 529-020-13 529-020-14 529-020-15 529-020-16	53
10502	144	Kern County Planning Department	099-310-20	20
14053	148	Leona Grant	071-050-33	18
10917	150	Loma Vista Real Estate/D&D	185-010-24	10
11001	156	Martin Bros Dev/Cornerstone	133-080-09	9
13596	158	Mayberry, Danny	173-293-28	2
—	160	McIntosh and Associates, Darcie Larman	103-080-32	9
—	161	McIntosh and Associates/Black Ops Real Estate III & Blackhawk Land Co. II \ Lonnie Oman	463-050-35	34
14042	162	Mckormick Landscape Inc.	408-122-13	2
14380	163	Michael and Karen Hessel	259-152-10	0
14424	164	Michael T and Cheryl A Cooper	104-012-15	10
10365	165	MMR Bakersfield/Matt Wade	463-070-11 463-090-10 463-090-12 463-090-13 463-090-14 463-090-15 463-090-16 463-090-17 463-090-18 463-090-19 463-090-20 463-090-26	19
—	166	Munn and Fong Chau	514-060-10	7
—	167	Neighborhood Development LLC by Andreis Lewis	407-112-27	34
10533	168	Nextel/Jeff Lienert	088-140-03	472
—	169	Nick Martin	409-021-17	3
—	170	Nolan Campbell	185-220-12	5
12214	172	Northstar Energy/Darrell Wagoner	085-130-45	40
—	173	Northwest Land Development LLC/Stantec	463-050-23	17

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
14308	174	Nsm Recycling Inc.	481-200-16	18
13801	176	Oldenkamp Trucking	184-150-42	20
14309	180	Peggy Schaefer by Delmarter & Assoc, Bruce Kelsey	060-322-15	615
11249	181	Phillips, Kathy	260-138-29	0
14537	182	Phyllis Turnage	184-530-40	2
10026	183	Pickenpaugh, Robert	104-410-13	5
11713	185	Poeschel Land Development	068-080-75	4
13705	186	Quan Phu by Roger Frymire, Vikon	220-110-14 220-110-17	121
13266	187	Quintana, David	060-322-14	419
14505	189	Rafael Acosta Jr	026-150-19 026-150-20 026-150-21	2
8557	199	Responsible Compost Mng/Coffin, John	184-090-09	315
13431	201	Robles, Maria	189-280-03	14
13453	202	Robrahn, Russ & Lolette	255-271-14	1
—	208	Sadiem LLC	414-140-02	4
14212	210	Samuel & Petra Gutierrez by JR Design Group LLC	069-370-14	20
—	212	San Joaquin Land and Cattle Co.	160-060-17	188
—	213	Santos Garcia by Hansen Engineering	178-050-07	5
10511	216	Selinger, Steve	184-030-48	159
13834	218	Silva, Ilda	071-130-12	19
13621	219	Silvas, Laura	185-442-03	2
10903	221	Smoot, Steve/T Fallgatter	093-010-07	228
11416	223	Solis, Luis Manuel	173-161-18	3
—	224	Soper, Michael/Porter-Robertson	407-040-01	1
11392	227	Stockdale Investor LLC\David Wood	104-291-30 104-291-31 104-291-32 104-291-33 104-291-34 160-010-42	312
11660	230	Suncoast Materials/Larry Clift	482-070-24 482-070-26	4
13447	231	Sun-Gro Commodities	073-160-08	50
13218	232	Swan, Murrel/Bruce Anderson	104-012-38	24
14301	233	Swanson Engineering Inc.	482-030-52	6
—	234	T. Square LLC by Marino & Associates	484-010-19 484-010-20	26
10696	237	Tekaat, Leonard & Brenda	450-060-08	3

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
14521	238	Terra Technologies Ltd by Dewalt Corp.	090-211-07 090-211-08	39
14489	239	Terry Jackson	387-170-02	5
12583	240	Terwilliger, Thomas	255-310-54 255-310-55	7
13479	241	Thomas Nguyen	103-080-48	46
13663	243	Torres Sandra by Aaron Byrd	298-300-15	40
10732	245	Valdez, Maria/San Joaquin Engineering	516-101-05	1
13489	246	Van Pelt, Don	298-120-49 298-120-51	8
—	248	Varela, Maria/Hansen Engineering	414-210-16	20
11017	251	Wainright, James/French & Associates	255-540-09	2
—	252	Western Ag Realty Inc.	090-211-12 090-211-13 090-211-17 090-211-18 090-211-29 090-211-30 090-211-31 090-211-32 090-224-11 090-230-15	58
14216	256	William Bonderov	238-205-14	10
4843	257	Wright, George/Happy Homes	199-191-01	2
13339	258	Zepedahughes Surveying	090-040-52	2
—	259	Tejon Indian Casino	238-204-02 238-204-04 238-204-07 238-204-14	304
—	260	Tejon Ranch Commerce Center	238-082-01 238-204-04 238-204-07 238-091-22 238-091-28 238-091-36 238-182-01 238-182-04 238-190-06 238-190-07 238-390-06 238-390-14 238-390-39	1,466

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			238-390-52 238-390-53 238-390-77 238-450-48 238-450-49 238-460-15 238-460-21 238-460-22 238-460-23 238-460-24 238-460-25 238-460-26 238-460-27 238-460-28 238-460-29 238-460-30 238-460-31 238-460-32 238-460-33 238-460-34 238-470-01 238-470-02 238-470-03 238-470-04 238-470-05 238-470-06 238-470-07 238-470-08 238-470-09 238-470-10 238-470-11 238-470-12 238-470-13 238-480-04 238-480-05 238-480-06 238-480-07 238-480-08 238-480-09 238-480-12 238-480-13 238-480-15 238-480-17 238-480-18	

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			238-480-19 238-480-20 238-480-21 238-480-22 238-480-24 238-480-25 238-480-27 238-480-28 238-490-01 238-490-05 238-490-06 238-490-12 238-490-13 238-490-14 238-490-16 238-490-17 238-490-18 238-490-19 241-230-27 241-340-11 241-370-04 241-370-05 241-370-14 241-370-17 241-370-18 241-440-01 241-440-02 241-440-03 241-440-04 241-440-05 241-440-08 241-440-09 241-440-10 241-440-11 241-440-12 241-440-13	
Mining and Reclamation				
6500	33	Cal Cart/WZI	255-620-59	5
8666	35	Caliente Sand Co/MH Wolfe & Assoc.	179-110-09 179-110-10 179-110-11 179-110-29 179-110-30	43

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
13944	37	Calmat Co.	239-070-51	148
846	43	Chevron USA	481-050-01	642
12780	108	Solari Sand and Gravel by Granite Construction Co.	402-150-01 402-150-06 402-150-09	543
13368	110	Griffith Company	068-110-03 068-110-04	318
12408	142	Kern County Planning Department	298-190-19	655
13220	143	Kern County Planning Department	158-010-24	559
Solar Projects				
—	1	61LK 8ME LLC	177-230-33	298
12985	39	CEH Ventures LLC	157-230-33	395
13481	58	Dave Iadarola	060-030-03	42
13251	81.1	Enxco Development Corporation (Valley Solar)	069-162-12	158
13252	81.2	Enxco Development Corporation (Valley Solar)	298-170-47 298-170-48	80
13250	81.4	Enxco Development Corporaton (Valley Solar)	046-280-08 046-280-13 059-010-03	171
13772	89	First Solar Development Inc.	104-012-03 104-012-06	188
14540	146	Kossie Dethloff	068-080-82	75
13256	152	Lost Hills Solar by Nextlight (Lost Hills Solar)	057-250-17	308
—	154	Maricopa Sun LLC (Maricopa Sun Solar Complex)	220-110-08 220-120-14 220-120-15 220-120-18 220-120-19 220-130-01 220-130-02 220-130-12 220-170-01 220-170-02 220-170-05 295-030-17 295-030-18 295-030-19 295-040-30 295-040-31 295-050-08 295-050-09 295-050-11	5,787

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			295-050-13 295-050-14 295-050-15 295-050-17 295-050-18 295-130-28 295-130-81 295-130-82 295-130-83	
13115	188	R. Wyatt Sanders Trust by T-Squared	220-120-09	271
13263	190	Recurrent Energy by Seth Israel	104-011-12	40
13264	191	Recurrent Energy by Seth Israel	298-190-15	160
13265	192	Recurrent Energy	184-490-31 184-490-33	190
12975	193	Renewable Ventures LLC	057-250-02 027-250-04	485
14530	200	Rival Power and Energy LLC	059-050-33	161
13873	222	Solar Land Partners, Attn: Phillip Millenbah, VP	072-050-12	72
14007	242	Tom Fitzgerald (Blackwell Solar)	068-191-21	190
Tower/Pole				
14529	60	David Downs	085-190-26	135
14258	194	Renia Boudaghian	387-020-51	200
14473	195	Renia Boudaghian	142-130-12	5
14499	249	Verizon Wireless by Rebekah Anderson	220-191-11	626
14466	250	Verizon Wireless/Rebekah Anderson	088-150-01	629
Total Acreage of Projects Analyzed in the Biological Cumulative Analysis				*28,639*
No Cumulative Effect Because Wholly Outside Cumulative Study Area				
—	14	American Land Fund	093-260-22	980
13219	26	Berganza, Juan	448-051-05	19
14225	61	David Firestone	156-080-07	161
12822	70	Diatom LLC	379-021-01	79
12407	95	Garcia, German by Ward Engineering	156-070-01	26
12883	101	GF Industries	157-240-11	289
13707	149	Liquid Waste Management Inc., LWMI	254-450-23	39
13240	153	Makshanoff, Lena	093-260-22	2
11608	175	NSRInvestors	233-231-07 233-550-14 233-550-19	163
14316	198	Renia Boudaghian, Esq., AT&T	157-090-12	18
—	203	Rogers Family Cummings Valley LLC by Sikand Engineering	376-011-03 376-011-04	636

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			376-011-05 376-011-06 376-011-07 376-011-08 376-011-09 376-011-10 448-051-28 448-051-41 448-051-42 448-051-43 448-051-44 448-051-45 448-051-46 448-051-47 448-051-48 448-051-49 448-051-50 448-051-51 448-051-52 448-051-53 448-051-54 448-051-55 448-051-56 448-051-57 448-051-58 448-051-59 448-051-60 448-051-61 448-051-62 448-051-63 448-051-64	
—	226	Steinbeck, Arthur by Wiley Hughes Surveying	240-291-42	108
13146	235	Tehachapi Solar LLC By Recurrent Energy	376-012-26 448-052-12	95
No Cumulative Effect Because Wholly In Developed Land				
13759	3	AT&T/Tricia Knight	136-040-14	1
14004	11	Alice Powell	168-253-03	0
14281	17	Arturo Rodriguez	517-040-12	3
—	21	Babby Kurian	517-040-13	9
14460	41	Central Metals/Raymond Cordova	140-390-05	7
12833	49	Clowers, Thomas	113-042-19	0
13754	59	David Aezah	113-074-09	0

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
14396	76	Edward and Lena Fisher et al.	368-190-30 368-190-33 368-190-54 368-190-57	6
13746	77	Elias Garcia	168-091-01	0
14516	78	Ellis, Stan/Etchechury	452-070-20	10
12094	79	Ellis, Stan/R Lusich	452-070-35	10
9912	109	Gregory O. Black	166-291-07	0
—	116	Hageman and Allen Inc.	465-020-75	14
—	118	Hearthstone Adult Services	128-111-17 128-111-18 128-111-19	1
—	120	Hinesly, Floyd/Porter-Robertson	463-140-05	3
—	122	Hughes, Tracy Marie et al.	110-040-18 110-040-19 110-040-20	1
—	123	J & F Properties	452-080-01 452-080-02 452-080-06	2
13842	127	Javier Zalazar Megoza	144-292-04	7
14439	133	Joseph A. Leon	118-120-27	3
14501	135	Juan Carlos Herrera	148-240-07	1
14541	145	Klaus Hackel By Alta Design Group	507-280-20	0
13776	147	Lee Benda	256-120-02 156-120-15 256-421-21	7
14461	151	Lopez, Pablo/Frank Slinkard	148-240-27	0
10550	157	Mary Izguierdo	113-081-23	0
14419	159	Maynard, Dewey	465-060-15	0
—	177	O'Malley, Lawrence	140-340-26	4
13405	178	Pascual Garcia	496-050-11 496-050-13	9
14093	179	Pavletich, Neal	464-031-23	5
13682	184	Pioneer Place/Delmarter	145-040-10	9
11597	196	Renia Boudaghian AT&T	496-061-02	3
14453	197	Renia Boudaghian, esq. AT&T	449-210-07	3
14350	204	Roman Morales	137-310-11	0
13998	209	Salvador Cruz	514-211-10	0
—	211	San Joaquin Engineering	452-170-33	0
11441	217	Sheffield, Richard & Tammy	250-101-21	0

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
—	225	St. Marks United Methodist Church/ Sandra Sons	361-032-14	0
14361	228	Sturgeon Services Int., John Lucero	452-060-30	4
14524	229	Sun Coast Materials/Larry Clift	482-090-49	3
10234	244	Tucker, Mark	199-021-09	1
13358	253	Whitezell, David/Nelms Surveying	464-022-31	3
	No Cumulative Effect Because Outside Cumulative Effects Bioregion			
14204	19	AT&T Mobility	504-020-22	237
13221	36	California Vision Inc.	239-191-24 239-192-01 239-200-02 239-200-03	1,310
14479	137	Judy Warren	505-200-13	25
—	236	Tejon Ranchcorp.	241-120-16 241-120-17 241-130-07 241-130-09 241-130-10 241-140-01 241-140-02 241-140-03 241-140-04 241-150-01 241-150-02 241-150-03 241-150-07 241-150-08 241-150-09 241-150-10 241-150-11 241-150-12 241-150-13 241-200-03 241-200-04 241-200-05 241-210-06 241-260-06 241-260-07 241-260-11 241-270-21 241-270-23 255-020-01 255-020-02 255-020-03	26,417

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			255-020-05 255-020-09 255-020-10 255-070-01 255-070-02 255-070-03 255-070-04 255-070-06 255-070-10 255-070-11 255-070-13 255-070-14 255-070-15 255-070-16 255-070-17 255-070-18 255-070-19 255-070-20 255-070-22 255-070-23 255-070-24 255-080-02 255-080-03 255-080-04 255-080-05 255-080-06 255-080-07 255-080-09 255-080-10 255-080-11 255-080-12 255-080-13 255-090-01 255-090-03 255-090-05 255-090-18 255-090-19 255-090-20 255-090-21 255-090-24 255-090-31 255-100-01 255-100-02 255-100-04	

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			255-100-05 255-100-07 255-100-08 255-100-10 255-100-11 255-100-12 255-100-13 255-100-15 255-100-16 255-110-01 255-110-02 255-120-01 255-120-02 255-120-03 255-120-04 255-120-05 255-120-06 255-120-09 255-120-10 255-120-11 255-120-13 255-120-14 255-120-15 255-120-16 255-130-01 255-130-02 255-130-03 255-130-04 255-130-05 255-130-06 255-142-20 255-142-34 255-150-04 255-160-01 255-160-05 255-160-06 255-160-07 255-160-10 255-160-11 255-160-12 255-160-13 255-182-08 255-182-16 255-182-17	

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
			255-182-18 255-182-19 255-182-20 255-182-21 255-182-23 255-280-06 255-280-07 255-280-10 255-280-16 255-280-17 255-280-19 255-280-25 255-280-28 255-280-29 255-290-04 255-290-07 255-290-08 255-290-11 255-290-13 255-290-14 255-290-15 255-290-16 255-290-18 255-290-24 255-370-22 255-630-04 255-630-06 255-640-01 255-640-02 255-640-19	
No Cumulative Effect In Existing Agriculture and Project is Agricultural				
10660	8	Affentranger, Franz, Pine Dairy	463-030-12	5
10213	9	Ag Resources II LLC/David Albers	069-340-32	98
9238	25	Banducci Farming LLC	159-040-18	32
14102	31	Brad McNaughton by Cornerstone	407-320-29	10
9882	44	Chisholm Ranch/EAC Engineering	046-280-03	15
—	52	Cornerstone Engineering, Derrill Whitten	407-320-30	10
10216	53	Costamagna, Ernie/Macedo Engineering	295-040-36	634
10217	54	Costamagna, Ernie/Macedo Engineering	220-170-07	315
10218	55	Costamagna, Ernie/Macedo Engineering	220-170-18	77
10215	63	De Vries Dairy #3/Neil De Vries	060-011-01	78
10212	74	Dykstra Dairies/David Albers	159-020-16	75

Table O-1.1
Cumulative Projects List

Case ID	Project ID	Project Name on County List (CEQA Document Project Name)[9]	Project APN	Acres
12324	98	Garza, Leo by Porter & Associates	088-110-23	9
9525	99	Generations/Michael Mitchell	059-130-19	48
9573	124	J B Calves, Aguerre/Don Newcome	059-242-06 059-242-13 059-243-26	386
10274	205	Rosa Dairy/Agricultural Man Systems	445-041-19	79
10219	206	Rudnick Feedlot/Philip & Daniel Rudnick	295-080-41 295-100-28 295-110-04	633
10056	215	Scofield Road Family Dairy	487-140-01	13
10220	220	Silver Oak/David & Douglas Kaiser	445-042-37	77
10129	247	Vanderpoel Trust/Tina Macedo	059-070-20 059-130-13 059-130-14 059-130-15 059-130-40	398
9556	255	Wildwood - Hettinga, Steve/BSK Associates	059-120-10	64
			Total Acreage – No Cumulative Effect	*33,788*
			Total Acreage of all Projects in the Vicinity	**62,426**

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
—	1	Solar	61LK 8ME LLC	177-230-33	298
—	2	Development	99 Houghton LLC By McIntosh & Associates	185-140-08	314
13759	3	No Cumulative Effect – Within Developed Area	AT&T/Tricia Knight	136-040-14	1
12644	4	Development	Abdo Fadhel by Cornerstone Eng.	177-220-16	5
14148	5	Development	Advanced Geomatices Engineering	174-011-32	19
13004	6	Circulation	AECOM	160-010-02 160-010-07 160-010-21 160-010-22 160-010-59 160-010-60	616
13455	7	Circulation	AERA Energy	390-310-01	18

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
10660	8	No Cumulative Effect – Ag Project Within Existing Ag	Affentranger, Franz, Pine Dairy	463-030-12	5
10213	9	No Cumulative Effect – Ag Project Within Existing Ag	Ag Resources II LLC/David Albers	069-340-32	98
—	10	Development	Al Graves by Wiley D. Hughes Surveying	174-141-14	29
14004	11	No Cumulative Effect – Within Developed Area	Alice Powell	168-253-03	0
9484	13	Development	American Asphalt & Concrete Crushing/J Wilson	364-010-59	3
—	14	No Cumulative Effect - Outside Cumulative Study Area	American Land Fund	093-260-22	980
14355	15	Development	Ana Maria Garay	173-162-09	3
12031	16	Development	Andreatta, Carla/Richard Carr	408-011-50 408-011-51 408-011-52	8
14281	17	No Cumulative Effect – Within Developed Area	Arturo Rodriguez	517-040-12	3
14244	18	Development	Ashley Ross	177-182-32	2
14204	19	No Cumulative Effect – Outside Cumulative Effects Bioregion	AT&T Mobility	504-020-22	237
—	20	Development	Aurelio Reyna	177-182-30	3
—	21	No Cumulative Effect – Within Developed Area	Babby Kurian	517-040-13	9
—	22	Development	Bakersfield Land Co. by Jean Laborde	185-321-20	20
—	23	Development	Bakersfield Land Company LLC by Delmarter	185-321-16	0
—	24	Development	Bakersfield Land Investment/McIntosh & Associates	463-070-21	19

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
9238	25	No Cumulative Effect – Ag Project Within Existing Ag	Banducci Farming LLC	159-040-18	32
13219	26	No Cumulative Effect - Outside Cumulative Study Area	Berganza, Juan	448-051-05	19
11901	28	Development	Blackhawk Land Co. II/ Delamarter & Deifel	463-050-96	18
10221	29	Agricultural Uses	Bloomfield/Tillema, Rich/John Schaap	185-322-36	635
14102	31	No Cumulative Effect – Ag Project Within Existing Ag	Brad McNaughton by Cornerstone	407-320-29	10
14544	32	Development	Brian J. Mettler	238-203-40	26
6500	33	Mining and Reclamation	Cal Cart/WZI	255-620-59	5
11579	34	Development	Calash LLC/John Ferguson	073-160-25	158
8666	35	Mining and Reclamation	Caliente Sand Co/MH Wolfe & Associates	179-110-09 179-110-10 179-110-11 179-110-29 179-110-30	43
13221	36	No Cumulative Effect – Outside Cumulative Effects Bioregion	California Vision Inc.	239-191-24 239-192-01 239-200-02 239-200-03	1,310 (135 acres is within the Analysis Area)
13944	37	Mining and Reclamation	Calmat Co.	239-070-51	148
—	38	Development	Carriage Homes/Carl Moreland	174-150-24	1
12985	39	Solar	CEH Ventures LLC	157-230-33	395
—	40	Development	CEI Engineering Associates Inc.	188-270-02	0
14460	41	No Cumulative Effect – Within Developed Area	Central Metals/Raymond Cordova	140-390-05	7
846	43	Mining and Reclamation	Chevron USA	481-050-01	642

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
9882	44	No Cumulative Effect – Ag Project Within Existing Ag	Chisholm Ranch/EAC Engineering	046-280-03	15
14343	45	Development	Christian Curutehague	407-482-12	1
10114	46	Development	Cingular Wireless/AFL Telecommunications	256-070-31	17
10325	47	Development	Cingular Wireless/Infranext	043-260-29	10
—	48	Circulation	City of Bakersfield	116-010-37 116-010-39 116-080-49 116-080-51 116-090-01 116-101-10 116-101-11 116-101-12 116-130-03 116-130-04 116-130-05 116-130-06 116-130-07 116-130-08 116-130-09 116-130-28 365-011-31	174
12833	49	No Cumulative Effect – Within Developed Area	Clowers, Thomas	113-042-19	0
10072	50	Development	Coe, Donna	492-090-20	6
12198	51	Development	Community Recycling	185-350-55	158
—	52	No Cumulative Effect – Ag Project Within Existing Ag	Cornerstone Engineering, Derrill Whitten	407-320-30	10
10216	53	No Cumulative Effect – Ag Project Within Existing Ag	Costamagna, Ernie/Macedo Engineering	295-040-36	634
10217	54	No Cumulative Effect – Ag Project Within Existing Ag	Costamagna, Ernie/Macedo Engineering	220-170-07	315

ATTACHMENT O-1 (Continued)

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
10218	55	No Cumulative Effect – Ag Project Within Existing Ag	Costamagna, Ernie/Macedo Engineering	220-170-18	77
—	57	Development	Daljit Singh Sidhu & Gurpeet Sidhu by JR Design Group	060-080-03	53
13481	58	Solar	Dave Iadarola	060-030-03	42
13754	59	No Cumulative Effect – Within Developed Area	David Aezah	113-074-09	0
14529	60	Tower/Pole	David Downs	085-190-26	135
14225	61	No Cumulative Effect - Outside Cumulative Study Area	David Firestone	156-080-07	161
13640	62	Development	De La Torre, Cecelia/JR Design Group	238-281-08	1
10215	63	No Cumulative Effect – Ag Project Within Existing Ag	De Vries Dairy #3/Neil De Vries	060-011-01	78
13639	64	Development	Del Toro, Joe	174-011-05	5
14496	65	Development	Delamater Family Trust	436-080-28	8
—	66	Development	Delgado by Jaime Sandoval	185-342-08	21
—	67	Development	Denela LLC/Dewalt Corp.	491-011-41	17
14382	68	Development	Derek Holdsworth-KSA Group Architects	069-053-13	0
—	69	Development	Dewey Maynard	496-010-01	6
12822	70	No Cumulative Effect - Outside Cumulative Study Area	Diatom LLC	379-021-01	79
—	71	Development	Dominguez/Cuevas by Afinar Civil Engineers	185-050-03 185-050-04	17
11925	72	Development	Downs, Gordon/Pinnacle Engineering	482-050-05 482-050-06 482-070-11	1
14189	73	Development	Dwelling in Unity Foundation	144-300-51	0
10212	74	No Cumulative Effect – Ag Project Within Existing Ag	Dykstra Dairies/David Albers	159-020-16	75

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
—	75	Development	Earle Gibbons by Greg Owens	110-170-06	2
14396	76	No Cumulative Effect – Within Developed Area	Edward and Lena Fisher et al.	368-190-30 368-190-33 368-190-54 368-190-57	6
13746	77	No Cumulative Effect – Within Developed Area	Elias Garcia	168-091-01	0
14516	78	No Cumulative Effect – Within Developed Area	Ellis, Stan/Etchechury	452-070-20	10
12094	79	No Cumulative Effect – Within Developed Area	Ellis, Stan/R Lusich	452-070-35	10
—	80	Development	Enos Properties LLC	090-180-40 090-180-41 090-180-42 090-180-43	20
13251	81.1	Solar	Enxco Development Corporation (Valley Solar)	069-162-12	158
13252	81.2	Solar	Enxco Development Corporation (Valley Solar)	298-170-47 298-170-48	80
13250	81.4	Solar	Enxco Development Corporation (Valley Solar)	046-280-08 046-280-13 059-010-03	171
14490	85	Development	E-R Surveying and Consulting	104-220-28	18
10856	87	Development	Etchison Living Trust/Norm Etchison	187-010-19	3
—	88	Development	Felipe Laines Alfaro	518-010-06	10
13772	89	Solar	First Solar Development Inc.	104-012-03 104-012-06	188
1485	90	Development	Flying J/Simpson-Vancuren Inc.	501-020-05	232
14162	91	Development	Ford, Pam by Jodi Jensen	174-250-41	2
		No Cumulative Effect – Outside Cumulative Effects Bioregion			
13859	93	Development	Fuentes, Robin	140-250-08	1
13569	94	Development	Garcia, Eduardo/Eric Sertic	503-041-14 503-041-17	269

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
12407	95	No Cumulative Effect - Outside Cumulative Study Area	Garcia, German by Ward Engineering	156-070-01	26
—	96	Development	Garone, Frank/Rickles	238-205-29 238-205-33 238-205-37	30
14363	97	Development	Gary R. Olson	491-012-17	10
12324	98	No Cumulative Effect – Ag Project Within Existing Ag	Garza, Leo by Porter & Associates	088-110-23	9
9525	99	No Cumulative Effect – Ag Project Within Existing Ag	Generations/Michael Mitchell	059-130-19	48
14468	100	Circulation	George A. Zaninovich	050-260-03	160
12883	101	No Cumulative Effect - Outside Cumulative Study Area	GF Industries	157-240-11	289
13902	102	Development	Gic Corp, Gabriel Cruz	184-392-61	19
11490	103	Development	Gill, Punit K by Gw Wilson	184-490-14	9
11385	104	Development	Goertzen, Vernon	238-390-36	352
11096	105	Development	Golden Estates/BDD Prop by Delmarter and Deifel	465-511-01	1
10174	106	Development	Gonzalez, Olimpo/V Mariscal	521-070-18	4
10214	107	Agricultural Uses	Goose Lake Ranch/Andrew Samarin	069-230-05 069-230-20 069-230-21 069-230-22 069-230-36 069-230-55 086-010-08 086-010-11 086-020-03 086-020-06 086-020-09 086-020-10 086-100-28 086-110-01 086-110-03	2,347

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				086-110-04 086-110-05 086-110-09 087-080-25	
12780	108	Mining and Reclamation	Solari Sand and Gravel by Granite Construction Co.	402-150-01 402-150-06 402-150-09	543
9912	109	No Cumulative Effect – Within Developed Area	Gregory O. Black	166-291-07	0
13368	110	Mining and Reclamation	Griffith Company	068-110-03 068-110-04	318
11378	111	Development	Grimmway Enterprises	295-120-48	618
12298	113	Development	Guadalupe Jimenez	185-520-05	5
—	114	Development	Gulzar Dhindsa	514-050-03	1
14459	115	Development	H.M. Holloway Inc.	057-220-16	446
—	116	No Cumulative Effect – Within Developed Area	Hageman and Allen Inc.	465-020-75	14
13729	117	Development	Harrington, Billy	298-110-21 298-110-22	3
—	118	No Cumulative Effect – Within Developed Area	Hearthstone Adult Services	128-111-17 128-111-18 128-111-19	1
13758	119	Development	Hernandez, Jose	220-030-13	11
—	120	No Cumulative Effect – Within Developed Area	Hinesly, Floyd/Porter-Robertson	463-140-05	3
14386	121	Development	Hughes Surveying	068-191-20	47
—	122	No Cumulative Effect – Within Developed Area	Hughes, Tracy Marie et al.	110-040-18 110-040-19 110-040-20	1
—	123	No Cumulative Effect – Within Developed Area	J & F Properties	452-080-01 452-080-02 452-080-06	2

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
9573	124	No Cumulative Effect – Ag Project Within Existing Ag	J B Calves, Aguerre/Don Newcome	059-242-06 059-242-13 059-243-26	386
14457	125	Development	J+J Clean Up Service Inc.	481-200-06	0
14488	126	Development	Jaime, Jesus and Christina by Rolland Vandevalk	026-252-08	0
13842	127	No Cumulative Effect – Within Developed Area	Javier Zalazar Megoza	144-292-04	7
14337	128	Development	Jesus Reynaldo Portillo	185-381-17	2
14432	129	Development	Joe Gergen	093-200-54	42
—	130	Development	John Giumarra	482-020-09	152
—	131	Development	Jon Moule	184-420-04	20
—	132	Development	Jose Ramos by Jaime Sandoval	185-342-09	21
14439	133	No Cumulative Effect – Within Developed Area	Joseph A. Leon	118-120-27	3
—	134	Development	Joshua Huff	388-290-24	2
14501	135	No Cumulative Effect – Within Developed Area	Juan Carlos Herrera	148-240-07	1
12309	136	Development	Juarez, Ethel	184-150-29	6
14479	137	No Cumulative Effect – Outside Cumulative Effects Bioregion	Judy Warren	505-200-13	25
—	139	Development	KC Waste Management	298-050-16	10
13371	140	Development	Kern County Firefighters/Luis Hinojosa	464-022-46	0
13408	141	Development	Kern County Planning and Community Development Department	529-012-06 529-012-08 529-012-23 529-012-24 529-020-01 529-020-04 529-020-06 529-020-09 529-020-13 529-020-14 529-020-15 529-020-16	53

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
12408	142	Mining and Reclamation	Kern County Planning Department	298-190-19	655
13220	143	Mining and Reclamation	Kern County Planning Department	158-010-24	559
10502	144	Development	Kern County Planning Department	099-310-20	20
14541	145	No Cumulative Effect – Within Developed Area	Klaus Hackel by Alta Design Group	507-280-20	0
14540	146	Solar	Kossie Dethloff	068-080-82	75
13776	147	No Cumulative Effect – Within Developed Area	Lee Benda	256-120-02 156-120-15 256-421-21	7
14053	148	Development	Leona Grant	071-050-33	18
13707	149	No Cumulative Effect - Outside Cumulative Study Area	Liquid Waste Management Inc., LWMI	254-450-23	39
10917	150	Development	Loma Vista Real Estate/D&D	185-010-24	10
14461	151	No Cumulative Effect – Within Developed Area	Lopez, Pablo/Frank Slinkard	148-240-27	0
13256	152	Solar	Lost Hills Solar by Nextlight (Lost Hills Solar)	057-250-17	308
13240	153	No Cumulative Effect - Outside Cumulative Study Area	Makshanoff, Lena	093-260-22	2
—	154	Solar	Maricopa Sun LLC (Maricopa Sun Solar Complex)	220-110-08 220-120-14 220-120-15 220-120-18 220-120-19 220-130-01 220-130-02 220-130-12 220-170-01 220-170-02 220-170-05 295-030-17 295-030-18	5,787

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				295-030-19 295-040-30 295-040-31 295-050-08 295-050-09 295-050-11 295-050-13 295-050-14 295-050-15 295-050-17 295-050-18 295-130-28 295-130-81 295-130-82 295-130-83	
11001	156	Development	Martin Bros Dev/Cornerstone	133-080-09	9
10550	157	No Cumulative Effect – Within Developed Area	Mary Izguierdo	113-081-23	0
13596	158	Development	Mayberry, Danny	173-293-28	2
14419	159	No Cumulative Effect – Within Developed Area	Maynard, Dewey	465-060-15	0
—	160	Development	McIntosh and Associates, Darcie Larman	103-080-32	9
—	161	Development	McIntosh and Associates/Black Ops Real Estate III & Blackhawk Land Co. II \ Lonnie Oman	463-050-35	34
14042	162	Development	McKormick Landscape Inc.	408-122-13	2
14380	163	Development	Michael and Karen Hessel	259-152-10	0
14424	164		Michael T. and Cheryl A. Cooper	104-012-15	10
10365	165	Development	MMR Bakersfield/Matt Wade	463-070-11 463-090-10 463-090-12 463-090-13 463-090-14 463-090-15 463-090-16 463-090-17 463-090-18 463-090-19 463-090-20 463-090-26	19

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
—	166	Development	Munn and Fong Chau	514-060-10	7
—	167	Development	Neighborhood Development LLC by Andreis Lewis	407-112-27	34
10533	168	Development	Nextel/Jeff Lienert	088-140-03	472
—	169	Development	Nick Martin	409-021-17	3
—	170	Development	Nolan Campbell	185-220-12	5
9875	171	Agricultural Uses	North Kern, Stueve Bros/D. Albers	046-020-01 046-020-02 046-020-03 046-050-03 046-050-04 046-050-05 046-050-07 046-050-09	2,134
12214	172	Development	Northstar Energy/Darrell Wagoner	085-130-45	40
—	173	Development	Northwest Land Development LLC/Stantec	463-050-23	17
14308	174	Development	NSM Recycling Inc.	481-200-16	18
11608	175	No Cumulative Effect - Outside Cumulative Study Area	NSR Investors	233-231-07 233-550-14 233-550-19	163
13801	176	Development	Oldenkamp Trucking	184-150-42	20
—	177	No Cumulative Effect – Within Developed Area	O'Malley, Lawrence	140-340-26	4
13405	178	No Cumulative Effect – Within Developed Area	Pascual Garcia	496-050-11 496-050-13	9
14093	179	No Cumulative Effect – Within Developed Area	Pavletich, Neal	464-031-23	5
14309	180	Development	Peggy Schaefer by Delmarter & Associates Bruce Kelsey	060-322-15	615
11249	181	Development	Phillips, Kathy	260-138-29	0
14537	182	Development	Phyllis Turnage	184-530-40	2
10026	183	Development	Pickenpaugh, Robert	104-410-13	5

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
13682	184	No Cumulative Effect – Within Developed Area	Pioneer Place/Delmarter	145-040-10	9
11713	185	Development	Poeschel Land Development	068-080-75	4
13705	186	Development	Quan Phu by Roger Frymire, Vikon	220-110-14 220-110-17	121
13266	187	Development	Quintana, David	060-322-14	419
13115	188	Solar	R. Wyatt Sanders Trust by T-Squared	220-120-09	271
14505	189	Development	Rafael Acosta Jr	026-150-19 026-150-20 026-150-21	2
13263	190	Solar	Recurrent Energy by Seth Israel	104-011-12	40
13264	191	Solar	Recurrent Energy by Seth Israel	298-190-15	160
13265	192	Solar	Recurrent Energy (RE Old River One and RE Old River Two Solar Project)	184-490-31 184-490-33	190
12975	193	Solar	Renewable Ventures LLC	057-250-02 027-250-04	485
14258	194	Tower/Pole	Renia Boudaghian	387-020-51	200
14473	195	Tower/Pole	Renia Boudaghian	142-130-12	5
11597	196	No Cumulative Effect – Within Developed Area	Renia Boudaghian AT&T	496-061-02	3
14453	197	No Cumulative Effect – Within Developed Area	Renia Boudaghian Esq. AT&T	449-210-07	3
14316	198	No Cumulative Effect - Outside Cumulative Study Area	Renia Boudaghian Esq., AT&T	157-090-12	18
8557	199	Development	Responsible Compost Mng/Coffin, John	184-090-09	315
14530	200	Solar	Rival Power and Energy LLC	059-050-33	161
13431	201	Development	Robles, Maria	189-280-03	14
13453	202	Development	Robrahn, Russ & Lolette	255-271-14	1
—	203	No Cumulative Effect - Outside Cumulative Study Area	Rogers Family Cummings Valley LLC by Sikand Eng.	376-011-03 376-011-04 376-011-05 376-011-06 376-011-07 376-011-08	636

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				376-011-09 376-011-10 448-051-28 448-051-41 448-051-42 448-051-43 448-051-44 448-051-45 448-051-46 448-051-47 448-051-48 448-051-49 448-051-50 448-051-51 448-051-52 448-051-53 448-051-54 448-051-55 448-051-56 448-051-57 448-051-58 448-051-59 448-051-60 448-051-61 448-051-62 448-051-63 448-051-64	
14350	204	No Cumulative Effect – Within Developed Area	Roman Morales	137-310-11	0
10274	205	No Cumulative Effect – Ag Project Within Existing Ag	Rosa Dairy/Agricultural Man Systems	445-041-19	79
10219	206	No Cumulative Effect – Ag Project Within Existing Ag	Rudnick Feedlot/Philip & Daniel Rudnick	295-080-41 295-100-28 295-110-04	633
12455	207	Circulation	S & J Alfalfa Inc. by Sikand Engineering	483-010-29	136
—	208	Development	Sadiem LLC	414-140-02	4

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
13998	209	No Cumulative Effect – Within Developed Area	Salvador Cruz	514-211-10	0
14212	210	Development	Samuel & Petra Gutierrez by JR Design Group LLC	069-370-14	20
—	211	No Cumulative Effect – Within Developed Area	San Joaquin Engineering	452-170-33	0
—	212	Development	San Joaquin Land and Cattle Co.	160-060-17	188
—	213	Development	Santos Garcia by Hansen Engineering	178-050-07	5
10084	214	Agricultural Uses	Savannah Farms Dairy/R Vanderweerd	046-280-05	158
10056	215	No Cumulative Effect – Ag Project Within Existing Ag	Scofield Road Family Dairy	487-140-01	13
10511	216	Development	Selinger, Steve	184-030-48	159
11441	217	No Cumulative Effect – Within Developed Area	Sheffield, Richard & Tammy	250-101-21	0
13834	218	Development	Silva, Ilda	071-130-12	19
13621	219	Development	Silvas, Laura	185-442-03	2
10220	220	No Cumulative Effect – Ag Project Within Existing Ag	Silver Oak/David & Douglas Kaiser	445-042-37	77
10903	221	Development	Smoot, Steve/T Fallgatter	093-010-07	228
13873	222	Solar	Solar Land Partners, Attn: Phillip Millenbah, VP	072-050-12	72
11416	223	Development	Solis, Luis Manuel	173-161-18	3
—	224	Development	Soper, Michael/Porter-Robertson	407-040-01	1
—	225	No Cumulative Effect – Within Developed Area	St. Marks United Methodist Church/Sandra Sons	361-032-14	0
—	226	No Cumulative Effect – Outside Cumulative Study Area	Steinbeck, Arthur by Wiley Hughes Surveying	240-291-42	108

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
11392	227	Development	Stockdale Investor LLC\David Wood	104-291-30 104-291-31 104-291-32 104-291-33 104-291-34 160-010-42	312
14361	228	No Cumulative Effect – Within Developed Area	Sturgeon Services Int., John Lucero	452-060-30	4
14524	229	No Cumulative Effect – Within Developed Area	Sun Coast Materials/Larry Clift	482-090-49	3
11660	230	Development	Suncoast Materials/Larry Clift	482-070-24 482-070-26	4
13447	231	Development	Sun-Gro Commodities	073-160-08	50
13218	232	Development	Swan, Murrel/Bruce Anderson	104-012-38	24
14301	233	Development	Swanson Engineering Inc.	482-030-52	6
—	234	Development	T. Square LLC by Marino & Associates	484-010-19 484-010-20	26
13146	235	No Cumulative Effect - Outside Cumulative Study Area	Tehachapi Solar LLC by Recurrent Energy	376-012-26 448-052-12	95
—	236	No Cumulative Effect – Outside Cumulative Effects Bioregion	Tejon Ranchcorp	241-120-16 241-120-17 241-130-07 241-130-09 241-130-10 241-140-01 241-140-02 241-140-03 241-140-04 241-150-01 241-150-02 241-150-03 241-150-07 241-150-08 241-150-09 241-150-10 241-150-11 241-150-12	26,417

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				241-150-13	
				241-200-03	
				241-200-04	
				241-200-05	
				241-210-06	
				241-260-06	
				241-260-07	
				241-260-11	
				241-270-21	
				241-270-23	
				255-020-01	
				255-020-02	
				255-020-03	
				255-020-05	
				255-020-09	
				255-020-10	
				255-070-01	
				255-070-02	
				255-070-03	
				255-070-04	
				255-070-06	
				255-070-10	
				255-070-11	
				255-070-13	
				255-070-14	
				255-070-15	
				255-070-16	
				255-070-17	
				255-070-18	
				255-070-19	
				255-070-20	
				255-070-22	
				255-070-23	
				255-070-24	
				255-080-02	
				255-080-03	
				255-080-04	
				255-080-05	
				255-080-06	
				255-080-07	
				255-080-09	
				255-080-10	
				255-080-11	
				255-080-12	

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				255-080-13	
				255-090-01	
				255-090-03	
				255-090-05	
				255-090-18	
				255-090-19	
				255-090-20	
				255-090-21	
				255-090-24	
				255-090-31	
				255-100-01	
				255-100-02	
				255-100-04	
				255-100-05	
				255-100-07	
				255-100-08	
				255-100-10	
				255-100-11	
				255-100-12	
				255-100-13	
				255-100-15	
				255-100-16	
				255-110-01	
				255-110-02	
				255-120-01	
				255-120-02	
				255-120-03	
				255-120-04	
				255-120-05	
				255-120-06	
				255-120-09	
				255-120-10	
				255-120-11	
				255-120-13	
				255-120-14	
				255-120-15	
				255-120-16	
				255-130-01	
				255-130-02	
				255-130-03	
				255-130-04	
				255-130-05	
				255-130-06	
				255-142-20	

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				255-142-34 255-150-04 255-160-01 255-160-05 255-160-06 255-160-07 255-160-10 255-160-11 255-160-12 255-160-13 255-182-08 255-182-16 255-182-17 255-182-18 255-182-19 255-182-20 255-182-21 255-182-23 255-280-06 255-280-07 255-280-10 255-280-16 255-280-17 255-280-19 255-280-25 255-280-28 255-280-29 255-290-04 255-290-07 255-290-08 255-290-11 255-290-13 255-290-14 255-290-15 255-290-16 255-290-18 255-290-24 255-370-22 255-630-04 255-630-06 255-640-01 255-640-02 255-640-19	
10696	237	Development	Tekaat, Leonard & Brenda	450-060-08	3

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
14521	238	Development	Terra Technologies Ltd by Dewalt Corp.	090-211-07 090-211-08	39
14489	239	Development	Terry Jackson	387-170-02	5
12583	240	Development	Terwilliger, Thomas	255-310-54 255-310-55	7
13479	241	Development	Thomas Nguyen	103-080-48	46
14007	242	Solar	Tom Fitzgerald (Blackwell Solar)	068-191-21	190
13663	243	Development	Torres Sandra by Aaron Byrd	298-300-15	40
10234	244	No Cumulative Effect – Within Developed Area	Tucker, Mark	199-021-09	1
10732	245	Development	Valdez, Maria/San Joaquin Engineering	516-101-05	1
13489	246	Development	Van Pelt, Don	298-120-49 298-120-51	8
10129	247	No Cumulative Effect – Ag Project Within Existing Ag	Vanderpoel Trust/Tina Macedo	059-070-20 059-130-13 059-130-14 059-130-15 059-130-40	398
—	248	Development	Varela, Maria/Hansen Engineering	414-210-16	20
14499	249	Tower/Pole	Verizon Wireless by Rebekah Anderson	220-191-11	626
14466	250	Tower/Pole	Verizon Wireless/Rebekah Anderson	088-150-01	629
11017	251	Development	Wainright, James/French & Associates	255-540-09	2
—	252	Development	Western Ag Realty Inc.	090-211-12 090-211-13 090-211-17 090-211-18 090-211-29 090-211-30 090-211-31 090-211-32 090-224-11 090-230-15	58
13358	253	No Cumulative Effect – Within Developed Area	Whitezell, David/Nelms Surveying	464-022-31	3
9556	255	No Cumulative Effect – Ag Project Within Existing Ag	Wildwood - Hettinga, Steve/BSK Associates	059-120-10	64

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
14216	256	Development	William Bonderov	238-205-14	10
4843	257	Development	Wright, George/Happy Homes	199-191-01	2
13339	258	Development	Zepedahughes Surveying	090-040-52	2
—	259	Development	Tejon Indian Casino	238-204-02 238-204-04 238-204-07 238-204-14	304
—	260	Development	Tejon Ranch Commerce Center	238-082-01 238-204-04 238-204-07 238-091-22 238-091-28 238-091-36 238-182-01 238-182-04 238-190-06 238-190-07 238-390-06 238-390-14 238-390-39 238-390-52 238-390-53 238-390-77 238-450-48 238-450-49 238-460-15 238-460-21 238-460-22 238-460-23 238-460-24 238-460-25 238-460-26 238-460-27 238-460-28 238-460-29 238-460-30 238-460-31 238-460-32 238-460-33 238-460-34 238-470-01 238-470-02 238-470-03	1,466

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				238-470-04 238-470-05 238-470-06 238-470-07 238-470-08 238-470-09 238-470-10 238-470-11 238-470-12 238-470-13 238-480-04 238-480-05 238-480-06 238-480-07 238-480-08 238-480-09 238-480-12 238-480-13 238-480-15 238-480-17 238-480-18 238-480-19 238-480-20 238-480-21 238-480-22 238-480-24 238-480-25 238-480-27 238-480-28 238-490-01 238-490-05 238-490-06 238-490-12 238-490-13 238-490-14 238-490-16 238-490-17 238-490-18 238-490-19 241-230-27 241-340-11 241-370-04 241-370-05 241-370-14	

Table O-1.2
Cumulative Projects List by Project ID

Case ID	Project ID[1]	Project Type	Project Name on County List (CEQA Document Project Name)	Project APN	Acres
				241-370-17 241-370-18 241-440-01 241-440-02 241-440-03 241-440-04 241-440-05 241-440-08 241-440-09 241-440-10 241-440-11 241-440-12 241-440-13	
Total Acreage of all Projects in the Vicinity					**62,426**

1 The following projects were removed because they were duplicates or were removed from the cumulative projects list by the County: 12, 14, 26, 27, 42, 56, 61, 70, 82, 83, 84, 86, 92, 95, 101, 112, 138, 149, 153, 155, 175, 198, 203, 226, 235, and 254

ATTACHMENT O-2

Model Parameters

ATTACHMENT O-2
Model Parameters

Species	Habitat	Model Parameters
	Amphibians and Reptiles	
Blunt-nosed leopard lizard (*Gambelia sila*) (federally endangered (FE), SE, fully protected)	Sparsely vegetated alkali and desert scrubs, including semi-arid grasslands, alkali flats, and washes	0%-15% slopes; alkali desert scrub, desert scrub, grassland, and wash
San Joaquin coachwhip (*Coluber flagellum ruddocki*) (CDFW Species of Special Concern (SSC))	Open, dry treeless areas, including grassland and saltbush scrub	grassland, alkali desert scrub, and desert scrub
Blainville's horned lizard (*Phrynosoma blainvillii*) (SSC)	Open areas of sandy soil in valleys, foothills and semi-arid mountains, including coastal scrub, chaparral, valley/foothill hardwood, conifer, riparian, pine/cypress, juniper, and annual grassland	Alkali desert scrub, cottonwood/willow riparian, desert scrub, grassland, riparian, riparian scrub, riparian woodland, riparian woodland scrub, savannah, scrub, wash
Western spadefoot (*Spea hammondii*) (SSC)	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley/foothill woodlands, and pastures	No model. Suitable breeding and aestivation habitat for western spadefoot was not quantified because their habitat is limited to ephemeral sites with adequate hydroperiods for supporting larval (tadpole) development and adjacent upland areas that support aestivation the rest of the year.
	Birds	
Bald eagle (*Haliaeetus leucocephalus*) (federally delisted (FD), USFWS Bird of Conservation Concern (BCC), Migratory Bird Treaty Act (MBTA), state endangered (SE), fully protected)	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, and large lakes; generally forages over and along water bodies, but will also scavenge within nearby terrestrial areas. Winters at large bodies of water in lowlands and mountains	No model. Bald eagle distribution is limited in the San Joaquin Valley and foraging is probably limited to a few locations rather than spread across the landscape.
Burrowing owl (*Athene cunicularia*) (BCC, MBTA, SSC)	Nests and forages in grassland, open scrub, and agriculture, particularly in association with ground squirrel and other mammalian burrows.	Alkali desert scrub, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, savannah, scrub, and wash
Ferruginous hawk (*Buteo regalis*) (BCC, MBTA)	In California, winters and forages in open, dry country including grasslands, open fields, and agricultural fields	Alkali desert scrub, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, savannah, scrub, and wash
Golden eagle (*Aquila chrysaetos*) (BCC, MBTA, fully protected)	Nests, forages, and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, and open desert rimrock terrain; nests constructed in large trees and on cliff ledges	Alkali desert scrub, chaparral, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, orchards and vineyards, riparian scrub, riparian woodland/scrub, riparian/wetland, savannah, scrub, and wash
Loggerhead shrike (*Lanius ludovicianus*) (BCC, MBTA, SSC)	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Alkali desert scrub, chaparral, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, riparian, riparian scrub, riparian woodland/scrub, savannah, scrub, and wash

Species	Habitat	Model Parameters
Oregon vesper sparrow (*Pooecetes gramineus affinis*) (BCC, MBTA, SSC (wintering))	Winters in open grassland habitat, including stubble fields, meadows, and road edges (Erickson 2008). Breeds in western Washington and Oregon south to Del Norte County, California (Jones and Cornely 2002).	Cropland, cropland and orchards/vineyards, grassland, meadow, wash
	Mammals	
American badger (*Taxidea taxus*) (SSC)	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Alkali desert scrub, desert scrub, grassland, savannah, scrub, wash
Nelson's antelope squirrel (*Ammospermophilus nelsoni*) (state threatened (ST))	Arid annual grassland and shrubland with saltbushes, California ephedra, bladderpod, goldenbushes, matchweed	slopes 0%-25%; alkali desert scrub, desert scrub, grassland, savannah, scrub, wash
San Joaquin kit fox (*Vulpes macrotis mutica*) (FE, ST)	Grasslands and scrublands, including those that have been modified, oak woodland, alkali sink scrubland, vernal pool, and alkali meadow	Cypher et al. (2013) model
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (SSC)	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed area, and rangelands	Alkali desert scrub, chaparral, cropland, desert scrub, grassland, meadow, savannah, scrub, wash
Pallid bat (*Antrozous pallidus*) (SSC)	Grasslands, shrublands, woodlands, and forests; most common in open dry habitats with rocky outcrops for roosting, but also roosts in manmade structures and trees	Alkali desert scrub, chaparral, conifer, conifer/mixed oak, cottonwood/willow riparian, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, open water, orchards and vineyards, riparian, riparian scrub, riparian woodland, riparian woodland/scrub, riparian/wetland, savannah, scrub, wash, wetland, woodland
Townsend's big-eared bat (*Corynorhinus townsendii*) (SSC and state candidate)	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, as well as man-made structures and tunnels	Alkali desert scrub, chaparral, conifer, conifer/mixed oak, cottonwood/willow riparian, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, open water, orchards and vineyards, riparian, riparian scrub, riparian woodland, riparian woodland/scrub, riparian/wetland, savannah, scrub, wash, wetland, woodland
Western mastiff bat (*Eumops perotis californicus*) (SSC)	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, as well as in trees and tunnels	Alkali desert scrub, chaparral, conifer, conifer/mixed oak, cottonwood/willow riparian, cropland, cropland and orchards/vineyards, desert scrub, grassland, meadow, open water, orchards and vineyards, riparian, riparian scrub, riparian woodland, riparian woodland/scrub, riparian/wetland, savannah, scrub, wash, wetland, woodland

Species	Habitat	Model Parameters
Western red bat (*Lasiurus blossevillii*) (SSC)	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy; forages throughout most habitat types, including urban/developed.	Alkali desert scrub, chaparral, conifer, conifer/mixed oak, cottonwood/willow riparian, cropland, cropland and orchards/vineyards, desert scrub, disturbed habitat, grassland, meadow, open water, orchards and vineyards, riparian, riparian scrub, riparian woodland, riparian woodland/scrub, riparian/wetland, savannah, scrub, urban/developed, wash, wetland, woodland

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