B.F. Sisk Dam Raise and Reservoir Expansion Project
Environmental Impact Report/Supplemental Environmental Impact Statement

Appendix K2: B.F. Sisk Dam Raise and Reservoir Expansion Project Biological Survey Report 2020
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Acronyms and Other Abbreviations

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
DPS  Distinct Population Segment
ESA  Environmental Science Associates
FESA  federal Endangered Species Act
IC 1  unnamed intermittent channel 1
MBTA  Migratory Bird Treaty Act
NMFS  National Marine Fisheries Service
SR  State Route
USC  United States Code
USFWS  United States Fish and Wildlife Service
USGS  United States Geological Survey
EXECUTIVE SUMMARY

The United States Department of the Interior, Bureau of Reclamation, the California Department of Water Resources, and the San Luis & Delta-Mendota Water Authority are considering multiple alternatives to improve the reliability of the water supply from San Luis Reservoir. In support of the effort to evaluate a water crest raise of 10 feet, this report describes the biological resources that occur within 61.60 acres of construction areas at State Route 152 and Dinosaur Point, and at an approximately 382.89-acre strip along the edge of the reservoir in Merced County, California.

Vegetation communities and wildlife habitat in the Study Area include: annual grasslands, blue oak woodlands, California sycamore woodland, California sagebrush scrub, urban, intermittent channel, ephemeral channel, freshwater emergent, seep, and lacustrine. Ponds, which are not directly located in the Study Area, are also discussed because of their importance in providing aquatic breeding and non-breeding habitat for special-status species. Potential federal and state jurisdictional wetlands were identified within the Study Area.

A total of 20 special-status species were identified as having moderate to high potential to occur in the Study Area. These include the following wildlife species: San Joaquin coachwhip, California tiger salamander, tricolored blackbird, golden eagle, western burrowing owl, Swainson’s hawk, ferruginous hawk, northern harrier, prairie falcon, bald eagle, American badger, and San Joaquin kit fox. In addition, western pond turtle and California red-legged frog were identified at various locations within the Study Area during March 2020 reconnaissance-level surveys. Special-status plants with potential to occur include Lemmon’s jewelflower, Hospital Canyon larkspur, spiny-sepaled button-celery, arcuate bush-mallow, Hall’s bush mallow, and chaparral ragwort.
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CHAPTER 1

Introduction

1.1 Background and Purpose

The United States Department of the Interior, Bureau of Reclamation, the California Department of Water Resources, and the San Luis & Delta-Mendota Water Authority are considering multiple alternatives to improve water supply reliability from San Luis Reservoir. Previous studies have evaluated alternatives addressing water quality issues, including reservoir expansion (San Luis Low Point Improvement Project), and multiple alternatives addressing dam safety risk (B.F. Sisk Dam Safety of Dams Modification Project).

In support of the effort to evaluate a water crest raise of 10 feet, this report describes the biological resources that would be affected by increased water levels and construction improvements that would accompany the water raise. This report presents the findings of reference vegetation, wildlife, and wetland surveys that identify the potential presence and distribution of common and special-status plant and wildlife species, sensitive natural communities, and federally and state-regulated waters and wetlands. The intent and scope of this document is to characterize biological resources in the new inundation area of San Luis Reservoir and characterize biological resources constraints that may affect the use of the site.

The biological Study Area, as described in this report, consists of areas on the edge of San Luis Reservoir that would be inundated by the 10-foot increase in water crest level, as well as construction improvements to facilities at the Dinosaur Point boat launch and State Route (SR) 152 at Cottonwood Bay. The water elevation would increase by 10 feet from the existing elevation, 544 feet, to 554 feet above mean sea level. The surveys included an additional study buffer of 100 feet in which the presence of biological resources was characterized for most wildlife. Ponds that could support special-status species were assessed up to 1 mile from the inundation footprint.

This report incorporates the findings of the representative biological surveys, which were reconnaissance in level and were conducted in March 2020.

1.2 Property Location

The Study Area is located in Merced County, in the Pacheco Pass United States Geological Survey (USGS) 7.5-minute quadrangle, and is positioned mostly south of SR 152 and west of Interstate 5, in the far northwestern portion of the county (Figure 1-1). Situated on the eastern slopes of the Diablo Range of the California Coast Ranges, the Study Area consists of steep hills
and valleys, with some rocky cliffs to the west progressing to rolling slopes and grasslands on more flat terrain toward the east.

The Study Area includes the shoreline of San Luis Reservoir, excluding areas examined for the B.F. Sisk Dam Safety of Dams Modification Project, located between the 544-foot contour (current reservoir elevation at full capacity) and the 554-foot contour. The immediate area surrounding San Luis Reservoir includes federally owned lands that are leased to the California Department of Parks and Recreation for use as designated State Recreation Areas. Some private lands within the Study Area would also be subject to inundation. State parks, wildlife areas, and open cattle pastures occur beyond the immediate area surrounding San Luis Reservoir (Figure 1-2). SR 152 runs along and through the northern portion of the reservoir and between O’Neill Forebay and San Luis Reservoir.

The Dinosaur Point Use Area is located on the west side of San Luis Reservoir, at the end of Dinosaur Point Road, and contains a boat launch, parking, and picnic area (Figure 1-2). North of Dinosaur Point Road is the San Luis Wildlife Area, which is managed by California Department of Fish and Wildlife (CDFW) and is designated for hiking, bird-watching, and hunting. South of Dinosaur Point Road is Pacheco State Park.
Figure 1-1
Regional Location

Figure 1-2
Land Ownership Adjacent to the Study Area

SOURCE: Property Boundary-CalFire, 2020; ESA, 2020;
National Hydrology Dataset, 2020;
Imagery-ESRI, 2020

2020 Study Area
- Dinosaur Point Boat Launch
- Inundation Area
- State Route 152 Modifications
- 500 foot Buffer
- Safety of Dams Study Area

Water Flowline
- Pipeline
- Stream/River

Bureau of Reclamation
California Department of Fish and Wildlife
California Department of Parks and Recreation
California Department of Water Resources
Department of Defense

B.F. Sisk Dam Raise Project - Biological Survey Report
1.3 Regulatory Context

Biological resources in the Study Area may fall under the jurisdiction of various regulatory agencies and be subject to their regulations. In general, the greatest legal protections are provided for plant and wildlife species that are formally listed by the federal or state government. The following regulations and agencies are commonly associated with projects that have the potential to affect biological resources:

- Federal Endangered Species Act (FESA)
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- Clean Water Act, Section 404
- California Endangered Species Act (CESA)
- California Fish and Game Code Sections 3500–3705, Migratory Bird Protection
- Native Plant Protection Act
- California Fish and Game Code Section 1600, Lake or Streambed Alterations
- Porter-Cologne Water Quality Control Act
- California Environmental Quality Act (CEQA) Guidelines Section 15380

These regulations are presented and discussed in **Attachment A**.
CHAPTER 2
Methods

2.1 Study Area

The term Study Area in this report specifically refers to 382.89 acres along the edge of San Luis Reservoir that would be inundated by the increase in water crest elevation and 61.60 acres of lands at Dinosaur Point that includes the Dinosaur Point Boat Launch and Pacheco Pumping Plant berm. Three areas at SR 152 were also reviewed, including at Cottonwood Bay, the East Dike saddle, located approximately 1,300 feet north of the main dam embankment (near the Romero Visitor Center), and a small highway fill area approximately 2,100 feet southeast of Cottonwood Bay. These areas were used as the starting point to define the biological survey area; however, in practical terms, biological resources have varied sensitivity to disturbance, and a somewhat larger area was considered for many species.

The Study Area for special-status plants and vegetation communities focused on the immediate Study Area; however, areas of potential habitat for special-status wildlife were also considered up to 100 feet beyond the Study Area (Figure 2-1). Ponds that could potentially support special-status species were analyzed at a buffer of up to one mile.

2.2 Survey Methodology

2.2.1 Survey Dates and Personnel

Environmental Science Associates (ESA) wildlife biologists Brian Pittman, Kelly Bayne, Julie McNamara, and Joseph Huang conducted representative reconnaissance-level surveys of the Study Area March 16–19, 2020. The surveys were conducted to observe and characterize vegetation communities in the Study Area and to assess habitat quality and the potential for common and special-status wildlife species and special-status plant species.

California red-legged frog specialists Kelly Bayne and Brian Pittman, CWB, were the lead surveyors for the frog habitat assessment. Dip net surveys for California red-legged frog were performed with advance approval from the United States Fish and Wildlife Service (USFWS) under Ms. Bayne’s and Mr. Pittman’s USFWS 10a(1)(A) recovery permits (#TE-185595 and TE-027422, respectively).

An aquatic resource delineation (ESA 2020) and reconnaissance-level special-status plant survey was conducted by ESA Botanists Chuck Hughes and Joseph Sanders on March 16–19, 2020. All surveys conducted in March 2020 are a representative sample of the Study Area and should not be considered complete coverage of the Study Area. Cottonwood Bay, in the north arm of San Luis Reservoir, is private property and ESA was not able to obtain access for surveys.
because inclement weather conditions resulted in poor road access. This area was surveyed remotely via Google Earth and aerial imagery.

2.2.2 Habitat and Vegetation Surveys

No protocol-level rare plant surveys were performed as part of the 2020 surveys. Botanical surveys were reconnaissance in nature to identify the potential locations of habitat for rare plants and determine which species have the potential to occur in the Study Area. Plant species observed in the Study Area in March 2020 are listed in Attachment B, Table B-1. Plant communities were characterized for their potential to occur within the Study Area and buffer (Attachment C, Table C-1).

Potential federal and state jurisdictional wetlands were identified within the Study Area.

2.2.3 Wildlife Surveys

No focused (i.e., protocol-level) surveys for the B.F. Sisk Dam Raise Project were conducted in March 2020. Wildlife surveys of the Study Area were performed by ESA biologists Brian Pittman, Kelly Bayne, Julie McNamara, and Joseph Huang March 16–19, 2020. Wildlife species observed in the Study Area during these surveys are listed in Attachment D, Table D-1. Wildlife surveys cataloged all common and special-status wildlife species observed within the Study Area or nearby, and determined the potential presence of suitable habitat for special-status wildlife species (Attachment C, Table C-2).

During each survey, biologists were dropped off by boat and surveyed accessible locations in the Study Area on foot to assess habitat features that support wildlife species. Wildlife species were documented when encountered. When access was possible, biologists walked up to about one-half mile to investigate the suitability of seasonal and perennial ponds to support special-status species. Ponds beyond this distance or on private property were reviewed using aerial imagery.
Figure 2-1  Study Area and Survey Buffers

2020 Study Area
- Dinosaur Point Boat Launch
- Inundation Area
- State Route 152 Improvements
- 100 foot Buffer
- Safety of Dams Study Area
- Pipeline
- Stream/River


Imagery-ESRI, 2020
2. Methods

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2.3 Review of Background Information

Existing biological survey data were available for the Study Area from previous studies for San Luis Reservoir. The following are the main documents used for this report:


Before performing field surveys, ESA biologists reviewed publicly available and subscription-based biological resource data. In part, the field surveys confirmed the general accuracy of the publicly available data.

The following data sources assisted in this analysis:

- USGS topographic maps (Pacheco Pass and surrounding eight quadrangles)
- Historic and current aerial imagery (Google Earth 2020).
- California Wildlife Habitat Relationships database (CDFW 2020a).
- CDFW California Natural Diversity Database (CNDDB) (CDFW 2020b).
- The California Native Plant Society (CNPS) online database (CNPS 2020).
- A USFWS Information for Planning and Consultation species list (USFWS 2020).
CHAPTER 3
Environmental Setting

This chapter provides the environmental baseline for natural communities and habitats, wetlands, and special-status plant and wildlife species in the Study Area.

3.1 Natural Communities and Associated Wildlife Habitats

Ten habitat types were identified within the Study Area and the 100-foot buffer. They can be divided into two main classifications: uplands and aquatic habitats.

Natural communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. The natural community classification presented herein is based on field observations and the current California Natural Community List maintained by CDFW (2019) at the alliance level. Plant communities generally correlate with wildlife habitat types; wildlife habitats were classified and evaluated using A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988). The distribution of vegetation communities in the Study Area is presented in Figure 3-1 and in Attachment E, Detailed Mapbook of Habitat Mapping in the Study Area.

Table 3-1 provides a summary and acreages of the habitat types in the Study Area. Note that the acreages presented exclude the 100-foot buffer. Ponds are included in the discussion of habitats, as they relate to wildlife species, but they are not located within the Study Area. Commonly occurring wildlife are identified for each habitat type.

3.1.1 Annual Grassland

Description

Annual grassland composes the majority of the terrestrial habitat in the San Luis Reservoir region. Annual grassland corresponds to the wild oats and annual brome grassland (Avena spp.–Bromus spp.) alliance recognized by CDFW (2019). Most of the east side of the Study Area consists of annual grassland. Most grassland areas have not been grazed recently and are dominated by tall non-native annual grasses interspersed with forbs.

The annual grassland is heavily invaded by non-natives overall, but natives are still common in some areas, particularly in rockier areas. Dominant plants include bromes (Bromus spp.), wild oat (Avena spp.), Italian ryegrass (Festuca perennis), clovers (Trifolium spp.), bur clover (Medicago polymorpha), and stork’s bill (Erodium spp.).
Figure 3-1
Vegetation Communities in the Study Area

SOURCE: ESA, 2020; Merced County GIS - Original Habitat Mapping, B.F. Sisk Dam Raise Project - Biological Survey Report Imagery-ESRI, 2020

* A detailed mapbook of vegetation communities in the Study Area can be found in the Attachments.
### TABLE 3-1
**Habitat Types by Acreages**

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<th>Habitat Type</th>
<th>Acreage</th>
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<td>Annual Grassland</td>
<td>336.34</td>
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<tr>
<td>Perennial Grassland</td>
<td>3.95</td>
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<tr>
<td>Blue Oak Woodland</td>
<td>55.13</td>
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<tr>
<td>California Sycamore Woodland</td>
<td>0.36</td>
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<tr>
<td>California Sagebrush Scrub</td>
<td>4.21</td>
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<tr>
<td>Urban</td>
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<tr>
<td><strong>Aquatic Features</strong></td>
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<td>Pond</td>
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<tr>
<td>Intermittent Channel</td>
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<tr>
<td>Ephemeral Channel</td>
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<tr>
<td>Freshwater Emergent</td>
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<tr>
<td>Seep</td>
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<tr>
<td>Lacustrine</td>
<td>12.79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>444.55</td>
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</table>

**SOURCE:**
Data compiled by Environmental Science Associates in 2020

1 Geographic information system calculations may not reflect exact acreage of study area due to rounding.

Native perennial purple needlegrass (*Stipa pulchra*), a CDFW sensitive natural community, is present in low abundance in some grassland areas, totaling 3.95 acres. Patches of native perennial Stanislaus milkvetch (*Astragalus oxyphysus*) are also present, particularly in the more eastern portions of the study area. Isolated trees and shrubs occur in the grassland. Figure 3-2 provides representative photos of Study Area grasslands. Annual grassland is not a sensitive natural community (CDFW 2019).

**Wildlife Habitat Relationships with Annual Grassland**

Annual grassland provides little cover for wildlife, yet numerous species forage and several species breed in this habitat. Some areas of grasslands in the Study Area are seasonally grazed. Grasslands attract reptiles and amphibians such as western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus viridis*).

Bird species that nest in grasslands include northern harrier (*Circus cyaneus*), burrowing owl (*Athene cunicularia*), western meadowlark (*Sturnella neglecta*), and California horned lark (*Eremophila alpestris*). Birds that commonly forage in grasslands include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and golden eagle (*Aquila chrysaetos*).

Common small mammals expected in the Study Area include western harvest mouse (*Reithrodontomys megalotis*), California ground squirrel (*Otospermophilus beecheyi*), California vole (*Microtus californicus*), Botta’s pocket gopher (*Thomomys bottae*), desert cottontail (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*).
Figure 3-2
Typical Annual Grassland Habitat in the Study Area
Photo dates: March 18 and 19, 2020

Source: Environmental Science Associates
Grasslands are important foraging grounds for aerial and ground-foraging insect eaters such as *Myotis* bat species and pallid bat (*Antrozous pallidus*). Larger mammal species such as tule elk (*Cervus canadensis nannodes*), black-tailed deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), and San Joaquin kit fox (*Vulpes macrotis mutica*) may use grasslands in the Study Area.

### 3.1.2 Blue Oak Woodland

#### Description

Blue oak woodlands tend to occur on the west side of the Study Area. They are dominated by blue oak (*Quercus douglasii*), with California buckeye (*Aesculus californica*) trees occurring in lower abundance, mostly on northern aspect slopes. Trees are well-spaced and in most places lack a shrub understory. The herb layer is similar to the grassland community, except that in general there is a higher component of native species. **Figure 3-3** provides representative photos of woodlands and forests.

Some associations of blue oak woodland are sensitive natural communities. The CDFW (2019) list was reviewed; none of the sensitive associations occur in the Study Area because some of the co-dominant species either do not occur in the Study Area at all, or occur only in low abundance.

#### Wildlife Habitat Relationships with Blue Oak Woodland

Animals within blue oak woodlands in the Study Area are those that rely heavily on acorns, such as the acorn disseminators western scrub jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), and western gray squirrel (*Sciurus griseus*). Wild turkey (*Meleagris gallopavo*), California quail (*Callipepla californica*), dusky-footed woodrat (*Neotoma fuscipes*), feral pig (*Sus scrofa*), and black-tailed deer use acorns as a major food source.

Chestnut-backed chickadee (*Poecile rufescens*), oak titmouse (*Baeolophus inornatus*), Hutton’s vireo (*Vireo huttoni*), dark-eyed junco (*Junco hyemalis*), ash-throated flycatcher (*Myiarchus tyrulentus*), brown creeper (*Certhia americana*), northern flicker (*Colaptes auratus*), Lawrence’s goldfinch (*Carduelis lawrencei*), and lesser goldfinch (*Spinus psaltria*), also nest in woodland habitat. Cavity nesters include great horned owl (*Bubo virginianus*), western bluebird (*Sialia mexicana*), and ash-throated flycatcher. Special-status birds such as Cooper’s hawk (*Accipiter cooperi*) and sharp-shinned hawk (*Accipiter striatus*) are known to nest in this habitat classification; and pallid bat, also a special-status species, inhabits cismontane woodlands.

Many amphibians and reptiles are found on the forest floor where moisture is retained under fallen wood and in tree crevices. Among these species are arboreal salamander (*Aneides lugubris*), Pacific slender salamander (*Batrachoseps pacificus*), ensatina (*Ensataina eschscholtzii*), and Sierran treefrog (*Pseudacris sierra*). Reptiles include western fence lizard, southern alligator lizard (*Elgaria multicolor ssp. multicolor*), ringneck snake (*Diadophis punctatus*), western skink (*Eumeces skiltonianus*), rubber boa (*Charina bottae*), pacific gopher snake (*Pituophis catenifer catenifer*), western rattlesnake (*Crotalus viridis helleri*), California kingsnake (*Lampropeltis zonata*), and sharp-tailed snake (*Contia tenuis*). Wildlife species observed during the field surveys are listed in Attachment D, Table D-1.
Figure 3-3
Typical Blue Oak Woodland Habitats in the Study Area
Photo date: March 16, 2020
3.1.3 California Sycamore Woodland

**Description**

California sycamore woodland occurs in two limited areas in the study area: along San Luis Creek and an unnamed intermittent channel (channel IC 1). California sycamore (*Platanus racemosa*) is the dominant tree. Along San Luis Creek the sycamores are widely spaced, few other trees are present along the margins of the creek, and the understory is similar to that of annual grassland. Along IC 1, the sycamores exist with an understory of willows (*Salix* sp.) and mule fat (*Baccharis salicifolia*) providing more shade to the creek. California sycamore woodland is a sensitive natural community (CDFW 2019). **Figure 3-4** provides a representative photo of California sycamore woodland.

**Wildlife Habitat Relationships with California Sycamore Woodland**

California sycamore woodland habitat in the Study Area is not extensive and runs adjacent to San Luis Creek. Therefore, wildlife expected to use this habitat include species similar to those that use blue oak woodlands and annual grasslands, but may also use or need an aquatic feature for their life cycle. Amphibians may use the overhanging roots as refuge. Avian species such as belted kingfisher (*Megaceryle alcyon*) may use sycamores as perches for hunting.

3.1.4 California Sagebrush Scrub

**Description**

Chaparral in the Study Area is dominated by California sagebrush (*Artemisia californica*). California buckwheat (*Eriogonum fasciculatum*) and chamise (*Adenostoma fasciculatum*) are present in lower abundance. Trees are isolated and uncommon. The herb layer is sparse and non-native annual grasses are a substantial component. **Figure 3-4** provides a representative photo of chaparral.

Some associations of California sagebrush scrub are sensitive natural communities. The CDFW (2019) list was reviewed; none of the sensitive associations occur within the Study Area because some of the co-dominant species either do not occur in the Study Area at all or occur only in low abundance.

**Wildlife Habitat Relationships with California Sagebrush Scrub**

California sagebrush habitat provides cover for wildlife including desert, western rattlesnake, coyote, and special-status San Joaquin coachwhip (*Masticophis flagellum*).
Source: Environmental Science Associates

Figure 3-4
California Sycamore Woodland (top) and California Sagebrush Scrub (bottom).
Photo date: March 17, 2020
3. Environmental Setting

3.1.5 Pond

**Description**

Pond habitat in the Study Area includes any aquatic habitat that contains relatively slow-moving to stagnant perennial water up to about 5 acres in size. These ponds can result from either human manipulation or a natural process and include bermed ponds within existing perennial streams, stock ponds, and natural ponds disconnected from any aboveground water sources. Often these ponds do not contain a complex vertical structure, but they can contain some aquatic vegetation or woody debris. Associated plants can include cattail (*Typha* sp.), curly dock (*Rumex crispus*), clustered dock (*Rumex conglomeratus*), and rough cocklebur (*Xanthium strumarium*). Some ponds are used as stock ponds (water sources for cattle), as indicated by their low vegetative cover and the presence of hoof prints, while others appear to have cattle access. Representative photographs of the pond classification in the Study Area are presented in Attachment F.

**Wildlife Habitat Relationships with Ponds**

Ponds provide habitat for species that either live in them or use them for breeding or foraging. These species include California newt (*Taricha torosa*) and occasionally western pond turtle (*Actinemys marmorata*). One western pond turtle was observed at a perennial pond within the current reservoir footprint above San Luis Creek (Attachment G).

A few ponds in the Study Area also provide potential breeding habitat for California tiger salamander (*Ambystoma californiense*) and/or California red-legged frog (*Rana draytonii*), which are discussed in the following sections. Ponds with dense enough emergent vegetation provide habitat for the special-status tricolored blackbird (*Agelaius tricolor*).

3.1.6 Freshwater Emergent Wetland

**Description**

Emergent wetlands are a small component of the Study Area, mostly occurring downhill from seeps or stock ponds. Many of the stock ponds are uphill and outside of the Study Area. They impound water well into the dry season and leak water downhill into the emergent wetlands.

The emergent wetlands are dominated by perennial hydrophytic vegetation including Baltic rush (*Juncus balticus*), iris-leaved rush (*J. xiphioides*), cattail (*Typha* sp.), hedge-nettle (*Stachys ajugoides*), dock (*Rumex sp.*), and rye grass (*Festuca perennis*). Soils are hydrophytic. Surface water, or saturation in the upper 12 inches of the soil, was present in most of the emergent wetlands during the March 2020 surveys. **Figure 3-5** provides a representative photo of freshwater emergent wetlands.

**Wildlife Habitat Relationships with Freshwater Emergent Wetlands**

Emergent wetlands are important foraging and breeding habitat for many species of waterbirds: wading birds such as great egret (*Ardea alba*); waterfowl including green-winged teal (*Anas crecca*), mallard (*A. platyrhynchos*), and American coot (*Fulica americana*); shorebirds.
Figure 3-5

Freshwater Emergent Wetlands (top) and Seep (bottom) Habitats in the Study Area.

Photo date: March 19, 2020
including killdeer (*Charadrius vociferous*), black-necked stilt (*Himantopus mexicanus*), greater yellowlegs (*Tringa melanoleuca*), and American avocet (*Recurvirostra americana*); and passerines including Brewer’s blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), brown-headed cowbird (*Molothrus ater*), and American pipit (*Anthus rubescens*). Emergent wetlands provide wildlife habitat similar to that provided by ponds.

### 3.1.7 Seeps

**Description**

Seeps are a small component of the Study Area. Areas mapped as seeps were categorized by locations where groundwater appeared to be expressing at the surface, and not merely collecting or flowing from uphill runoff. The USGS topographic quadrangle map names two of the seeps as springs: Coyote Spring and La Baig Spring. Figure 3-5 provides a representative photo of seep habitat.

Like emergent wetlands, seeps are dominated by perennial hydrophytic vegetation. Soils are hydrophytic. Surface water, or saturation in the upper 12 inches of the soil, was present in most of the emergent wetlands during the March 2020 surveys.

**Wildlife Habitat Relationships with Seeps**

Wildlife species associated with seeps are similar to those associated with freshwater emergent wetlands. The seeps may provide water for wildlife farther into the dry season than the emergent wetlands.

### 3.1.8 Intermittent Channels

**Description**

Intermittent channels have flowing water seasonally. Groundwater is the primary component of flow, and runoff from precipitation is a supplemental flow source. Intermittent channels are generally dry by the mid to late summer. Three of the intermittent channels in the Study Area are named San Luis Creek, Portuguese Creek, and Cottonwood Creek.

San Luis Creek, the largest intermittent channel in the Study Area, was flowing during the March 2020 surveys. This creek has a bed composed mostly of cobble and gravel. San Luis Creek is large enough to support a narrow band of California sycamores (*Platanus racemosa*) that grow along the reach in the Study Area.

Portuguese Creek has a bed composed primarily of boulders and cobble, and was flowing during the March 2020 surveys. The creek bed is mostly unvegetated, but sparse perennial hydrophytic vegetation occurs, mostly mule fat. There is no riparian corridor outside of the creek bed and bank.

Cottonwood Creek, at the far northern end of San Luis Reservoir, drains into the Cottonwood Bay area. Cottonwood Creek appears to have a bed composed primarily of bedrock and cobble. No woody riparian vegetation is visible along the creek in the Study Area.
Intermittent channel 1 (IC 1), the largest unnamed channel in the Study Area, is located slightly north of Dinosaur Point Road. IC 1 has a bed composed of cobble and gravel. It was flowing during the March 2020 surveys. The creek bed is mostly unvegetated, but occasional woody riparian species do occur. IC 1 is large enough in the Study Area to support a narrow band of riparian vegetation. The riparian vegetation is dominated by California sycamore, is relatively dense, and shades much of the channel.

The other intermittent channels in the Study Area are smaller than the four described separately above. They generally have a bed composed of either scoured rock or thick mud. Several are downhill from stock ponds that appear to leak water into the channels well into the dry season in some years. In addition, the USGS topographic quadrangle maps show numerous springs in the small watersheds west of the reservoir. Figure 3-6 provides a representative photo of an intermittent channel.

**Wildlife Habitat Relationships with Intermittent Channels**

Wildlife associated with intermittent channels include amphibians, such as California red-legged frog, that may use the channels during the wet season for dispersal and foraging. Mammals may also use intermittent channels for dispersal and access to water during the spring into the summer. Avian species likely use intermittent channels for foraging.

**3.1.9 Ephemeral Channels**

**Description**

Ephemeral channels flow sporadically and temporarily in response to precipitation during the wet season, but their flow is too brief to support a riparian community. Groundwater is not a component of flow. The ephemeral channels were dry during the March 2020 surveys. Most of the ephemeral channels have beds of scoured soil, and many are on very steep slopes above the reservoir. Figure 3-6 provides a representative photo of an intermittent channel.

**Wildlife Habitat Relationships with Ephemeral Channels**

Wildlife species associated with ephemeral channels are similar to those associated with intermittent channels. This community provides less access to water for wildlife because it flows only sporadically, in response to precipitation.

**3.1.10 Lacustrine**

**Description**

Lacustrine habitat in the Study Area includes San Luis Reservoir. This natural community is used for large, permanent bodies of water that do not support emergent vegetation and are not subject to tidal exchange; these water bodies include lakes, ponds, oxbows, gravel pits, and flooded islands.

Pond plant associates may be present along the edges of the reservoir in low-water years and where the water is shallow.
Intermittent Channel (top) and Ephemeral Channel (bottom) in the Study Area. Photo dates: March 17 and 16, 2020
3.1.11 Disturbed/Urban

Description

Urban/disturbed areas include the boat ramp, facilities, roads, and roadsides. These areas have either maintained landscapes or ruderal vegetation.

Wildlife Habitat Relationships with Disturbed/Urban

Developed areas provide limited habitat for wildlife. However, bird species typically found in developed areas include American robin (*Turdus migratorius*), mockingbird (*Mimus polyglottos*), American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia*). Other wildlife adapted to living in developed areas include Norway rat (*Rattus norvegicus*), western gray squirrel (*Sciurus niger*), opossum (*Didelphis virginiana*), and raccoon (*Procyon lotor*).

3.2 Potential Waters of the United States

The intermittent/ephemeral channels, freshwater emergent wetland, and seeps are a special-status natural community because they are potential waters of the United States and state subject to regulation by the United States Army Corps of Engineers and the Central Valley Water Quality Control Board. These areas are depicted in Figure 3-7.

3.3 Special-Status Species

Several species known to occur in or near the Study Area are protected by federal and/or state endangered species laws, or have been designated as Species of Special Concern by CDFW. In addition, Section 15380(b) of the CEQA Guidelines defines rare, endangered, or threatened species that are not included in any listing. Species recognized under these terms are collectively referred to as special-status species.

A list of special-status wildlife and plant species with potential to occur in or near the Study Area was compiled from nine-quadrangle searches of the CNDDB (CDFW 2020b) and CNPS’s Rare Plant Inventory (CNPS 2020); a search of the USFWS Information for Planning and Consultation database (USFWS 2020); and review of biological literature of the region for the following 7.5-minute USGS topographic quadrangles:

<table>
<thead>
<tr>
<th>Mustang Peak</th>
<th>Crevison Peak</th>
<th>Howard Ranch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacheco Peak</td>
<td>Pacheco Pass</td>
<td>San Luis Dam</td>
</tr>
<tr>
<td>Three Sisters</td>
<td>Mariposa Peak</td>
<td>Los Banos Valley</td>
</tr>
</tbody>
</table>

---

1 For example, vascular plants listed as rare or endangered or as Rare Plant Rank 1 or 2 by CDFW are considered to meet the requirements of CEQA Guidelines Section 15380(b).
### 2020 Study Area
- Dinosaur Point Boat Launch
- Inundation Area
- State Route 152 Modifications
- 100 foot Buffer
- 2018 Study Area

### Other Waters
- Ephemeral Channel
- Intermittent Channel
- Seep

### Wetlands
- Emergent Wetlands
- Stockpond
- Water Flowline
- Pipeline

### Potential Waters of the United States


B.F. Sisk Dam Raise Project - Biological Survey Report **Figure 3-7**
From the full list of species, each species was individually assessed based on habitat requirements and distribution relative to the vegetation communities present in and around the Study Area, and on the results of previous surveys and assessments. Special-status fish species are not analyzed in this report and do not occur in the Study Area. Comprehensive lists of the special-status plant and wildlife species considered in the analysis are provided in Attachment C and Attachment H. The species with moderate or high potential to occur in the Study Area are described below in greater detail.

**Figure 3-8** presents a map of CNDDB special-status species occurrences within 5 miles of the Study Area. A total of 20 special-status plants and wildlife species were identified as having moderate or high potential to occur in or near the Study Area. The special-status plants include Lemmon’s jewelflower, Hospital Canyon larkspur, spiny-sepaled button-celery, arcuate bushmallow, Hall’s bush mallow, and chaparral ragwort. The special-status wildlife species include San Joaquin coachwhip, California tiger salamander, tricolored blackbird, golden eagle, western burrowing owl, Swainson’s hawk, ferruginous hawk, northern harrier, prairie falcon, bald eagle, American badger, and San Joaquin kit fox. Western pond turtles and California red-legged frogs were present in the Study Area during the March 2020 reconnaissance-level surveys.

### 3.3.1 Special-Status Plants

**Lemmon’s Jewelflower**

Lemmon’s jewelflower (*Caulanthus lemmonii*) is not listed under the FESA or CESA. It has a California Rare Plant Rank (CRPR) of 1B.2.

Lemmon’s jewelflower is an annual herb found in pinyon and juniper woodland, chaparral, and valley and foothill grassland from 250 to 5,200 feet in elevation. The blooming period is from February through May. It is known from the Bay Area, San Joaquin Valley, and south Coast Ranges (CNPS 2020; Jepson 2020). There is one record in the vicinity of San Luis Reservoir (CNDDB Occurrence #48). The record is a 1986 collection about 5.4 miles to the southeast. The habitat is described as an exposed south-facing conglomerate rock outcrop on middle and lower slopes along a creek (CCH 2020).

Some of the soils in the study area have conglomerate as the parent material. Rock outcrops or areas of thin soil over bedrock in the Study Area, especially in drier areas such as grassland, chaparral, and south-facing slopes, provide potential habitat for Lemmon’s jewelflower. Lemmon’s jewelflower has moderate potential to occur in the Study Area. During the reconnaissance survey, several rock outcrops were inspected for special-status plants in general and Lemmon’s jewelflower was not observed.

**Hospital Canyon Larkspur**

Hospital Canyon larkspur (*Delphinium californicum ssp. interius*) is not listed under the FESA or CESA. It has a CRPR of 1B.2.
Figure 3-8
CNDDB Occurrence Records within 5-miles of the Study Area


B.F. Sisk Dam Raise Project - Biological Survey Report
Hospital Canyon larkspur is a perennial herb found in chaparral openings, mesic cismontane woodland, and coastal scrub from 600 to 3,600 feet in elevation. The blooming period is from April through June. It is known from the Bay Area and inner south Coast Ranges (CNPS 2020; Jepson 2020). There is one record in the vicinity of San Luis Reservoir (CNDDDB Occurrence #3). The occurrence is about 3.5 miles to the north and based on a 1995 collection (CCH 2020). The habitat is described as a “canyon bottom setting bordering woodland” downhill from a spring. The woodland is described with California buckeye and holly leaf cherry (*Prunus ilicifolia*).

Chaparral and woodland in the Study Area, especially in more mesic areas such as north-facing slopes or areas near intermittent creeks or seeps, provide potential habitat for Hospital Canyon larkspur. Hospital Canyon larkspur has moderate potential to occur in the Study Area. This species was not observed during the reconnaissance survey.

**Spiny-Sepaled Button-Celery**

Spiny-sepaled button-celery (*Eryngium spinosepalum*) is not listed under the FESA or CESA. It has a CRPR of 1B.2.

Spiny-sepaled button-celery is a biennial to perennial herb found in vernal pools, swales, and ditches of valley and foothill grassland from 250 to 3,200 feet in elevation. The blooming period is from April through June. It is known from the San Joaquin Valley and southern Sierra Nevada foothills (CNPS 2020; Jepson 2020). There are two records in the vicinity of San Luis Reservoir (CNDDDB Occurrences #91 and #103). Occurrence #103 is about 4 miles to the east near Santa Nella on clay soil in grassland. Occurrence #91 is based on a 2010 collection in the Study Area, although the CNDDDB record is mapped along SR 152 (CCH 2020). The elevation of the collection was reported at 545 feet, very near the elevation of the San Luis Reservoir spillway (544 feet). The habitat of the collection was described as grassland, with species associates that are common in the study area, and also just below the Study Area at the highest elevations reached by the water surface when the reservoir is full.

*Eryngium* was observed in another area during the reconnaissance survey. The specimens were observed near a swale in a grassy area a few feet above the spillway elevation. They were not in or near bloom and could not be identified to species. Spiny-sepaled button-celery is differentiated from common *Eryngium* species that also occur in the area, primarily on floral and fruit characteristics.

The habitat described for the location of the 2010 collection is common in the study area. Spiny-sepaled button-celery and *Eryngium* in general tend to occur in areas of seasonally mesic conditions. The 2010 collection is along the reservoir margin. It is possible that spiny-sepaled button-celery occurs in multiple locations along the reservoir margin, as there is nothing unique about the habitat or location where the collection was made. Spiny-sepaled button-celery has high potential to occur in the Study Area.
Arcuate Bush-mallow

Arcuate bush-mallow (*Malacothamnus arcuatus*) is not listed under the FESA or CESA. It has a CRPR of 1B.2. Arcuate bush-mallow is recognized at the species level by CNPS, but Jepson (2020) treats it as a synonym of *M. fasciculatus*.

Arcuate bush-mallow is a perennial evergreen shrub found in open chaparral and cismontane woodland from 250 to 1,200 feet in elevation. The blooming period is from April through September. There are no CNDDB records near the Study Area. There are multiple collection records of *M. fasciculatus* from 1894 to 1950 in the vicinity of Pacheco Pass, approximately 1 mile west of the Study Area (CCH 2020). Some subspecies of *M. fasciculatus* circumscribe the taxon described as *M. arcuatus* by CNPS and previous authors. The older collections of *M. fasciculatus* near Pacheco Pass do not report a subspecies.

The Study Area, especially chaparral and the edges of woodland, could provide potential habitat for arcuate bush-mallow. Arcuate bush-mallow has moderate potential to occur in the Study Area. Arcuate bush-mallow was not observed during the reconnaissance survey.

Hall’s Bush-mallow

Hall’s bush-mallow (*Malacothamnus hallii*) is not listed under the FESA or CESA. It has a CRPR of 1B.2.

Hall’s bush-mallow is a perennial evergreen shrub found in open chaparral and cismontane woodland from 30 to 2,500 feet in elevation. The blooming period is from April through October. It is known from the north Coast Ranges, Bay Area, San Joaquin Valley, Sierra Nevada foothills, and central high Sierra Nevada (CNPS 2020; Jepson 2020).

There are seven records of Hall’s bush-mallow in the vicinity of San Luis Reservoir:

- One occurrence (CNDDB #1) is about 4 miles to the south from 1986, at a seep in grassland on a south-facing slope.
- One occurrence (CNDDB #48), from 2016, is about 0.7 mile to the north in the Cottonwood Creek Wildlife Area.
- Three occurrences (CNDDB #2, 3, 18) along SR 152 west of the Study Area encompass several historical collections from the 1800s until 1950.
- One occurrence (CNDDB #33) is just south of SR 152, about 0.3 mile from the study area. There are two collections from that location, from 1994 and 1995. The habitat is described as “open chaparral on sedimentary rocks” and “open slope” (CCH 2020).
- The last occurrence (CNDDB #39) is very near the study area, but there are some uncertainties regarding the precise location. The occurrence is based on a 2002 collection. The CNDDB mapped the occurrence around a pull-off along SR 152. The pull-off is about 250 feet from the Study Area. The coordinates in CCH (2020) place the location below the San Luis Reservoir spillway’s elevation (which is not consistent with the species’ biology), but the reported elevation is 662 feet, which is even higher than SR 152 at the pull-off. The likely location is one of two small hills between SR 152 and the reservoir, adjacent to the

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ESA / 201901099.00
May 2020
pull-off. Both hills rise to at least 662 feet and are within walking distance of the pull-off. That location would place the collection no more than a few hundred feet from the Study Area.

The portion of one of the hills that is within the Study Area was walked during the reconnaissance survey; Hall’s bush-mallow was not observed. The hill is covered in grassland, and no chaparral or woodland is present. Hall’s bush-mallow could be present higher on the hill outside the Study Area. Much of the Study Area provides potential habitat, and because of the number and proximity of records, the potential for Hall’s bush-mallow to occur is high.

**Chaparral Ragwort**

Chaparral ragwort (*Senecio aphanactis*) is not listed under the FESA or CESA. It has a CRPR of 2B.2.

Chaparral ragwort is an annual herb found in dry, open, rocky areas of chaparral, cismontane woodland, and coastal scrub from 50 to 2,650 feet in elevation. The blooming period is from January through April, and sometimes into May. It is known from the Bay Area, the central and south coast, south Coast Ranges, and Channel Islands (CNPS 2020; Jepson 2020). There are no CNDDB records in the vicinity of the Study Area. There are two collection records approximately 11 miles southeast of the Study Area, from 1938 and 2003. The 2003 record describes the habitat as conglomerate outcrops.

Some of the soils in the Study Area have conglomerate as the parent material. Rock outcrops or areas of thin soil over bedrock in the Study Area, especially in drier areas such as grassland and chaparral, provide potential habitat for chaparral ragwort. Chaparral ragwort is usually less than 7 inches tall and would be unlikely to occur in areas of dense non-native grasses. Chaparral ragwort has a moderate potential to occur in the Study Area. During the reconnaissance survey, several rock outcrops were inspected for special-status plants in general and chaparral ragwort was not observed.

**Sylvan Microseris**

Sylvan microseris (*Microseris sylvatica*) is not listed under the FESA or CESA. It has a CRPR of 4.2. CRPR 3 or 4 plants are not evaluated in the San Luis Reservoir State Recreation Area General Plan Environmental Impact Statement/Environmental Impact Report (Reclamation 2013) or in Attachment G of this report. Sylvan microseris is discussed here because it was found in the Study Area during the reconnaissance survey.

Sylvan microseris is a perennial herb found in chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, and serpentine valley and foothill grassland from 150 to 5,000 feet in elevation. The blooming period is from March through June. It is known from the inner north Coast Ranges, Bay Area, Sacramento Valley, south Coast Ranges, Sierra Nevada foothills, southern high Sierra Nevada, Tehachapi Mountains, western Transverse Ranges, Mojave Desert, and desert mountains (CNPS 2020; Jepson 2020).
Oak woodlands and chaparral in the Study Area provide potential habitat for sylvan microseris. There are no serpentine areas. Sylvan microseris was found in two locations in the southwestern portion of the Study Area. Hundreds of individuals were observed.

CRPR Rank 4 plants may qualify for consideration as endangered, rare, or threatened species pursuant to California Code of Regulations Title 14, Section 15380 if the species can be shown to meet the criteria. CNPS (2020) identifies the following considerations that may be appropriate for evaluating Rank 4 plants: (1) the type locality, (2) populations at the periphery of a species’ range, (3) areas where the taxon is especially uncommon, (4) areas where the taxon has sustained heavy losses, and (5) populations exhibiting unusual morphology or occurring on unusual substrates. Each of these items is considered below.

(1) The type specimen for sylvan microseris is an 1848 collection with a locality description of “Sacramento” (CCH 2020). The project would not affect the type locality.

(2) The range extends from the north Coast Ranges, Sacramento Valley, and northern Sierra Nevada foothills in the north to the Transverse Ranges and Mojave Desert in the south (Jepson 2020). The range includes mountains and foothills on both sides of the San Joaquin Valley. The occurrence in the Study Area is not at the periphery of the species’ range.

(3) There are three collections regionally near San Luis Reservoir and more extending both north and south through the south Coast Ranges (CCH 2020). The pattern of collection records does not indicate that the species is especially uncommon in this portion of the range relative to other portions of the range.

(4) Most of the collections in the south Coast Ranges are in remote areas where there is little or no development pressure. There is no evidence that the species has sustained heavy losses regionally.

(5) The occurrences observed in the Study Area were growing in the grassy understory of open blue oak woodland. The substrate was typical of the Study Area and the region. Individuals appeared to have morphology characteristic of the species.

The occurrence of sylvan microseris in the Study Area does not meet the criteria for endangered, rare, or threatened under California Code of Regulations Title 14, Section 15380(b). The project would result in impacts on some sylvan microseris individuals that are growing within 10 vertical feet of the current maximum surface elevation. Most observed individuals in the occurrence, both inside and outside the Study Area, are higher than the area of project impacts.

3.3.2 Special-Status Wildlife Species

Western Pond Turtle

Western pond turtle (Actinemys marmorata) is considered a California Species of Special Concern by CDFW.

Western pond turtles are commonly found in ponds, lakes, marshes, rivers, streams, and irrigation ditches with rocky or muddy substrates surrounded by aquatic vegetation. These watercourses usually are within woodlands, grasslands, and open forests, at elevations between sea level and 6,000 feet. Turtles bask on logs or other objects when water temperatures are lower than air.
temperatures. Nests are located at upland sites, often up to 0.25 mile from an aquatic site (Jennings and Hayes 1994; Stebbins 2003; Zeiner et al. 1988).

The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. The species’ elevation range extends from near sea level to 4,690 feet (1,430 meters).

The CNDDB (CDFW 2020b) reports nine occurrences of western pond turtle within 5 miles of the Study Area, occurring primarily on the west side of San Luis Reservoir in Pacheco State Park, south of Dinosaur Point Road. Additionally, in 2004, western pond turtle was reported in the Portuguese Creek Area in the southern arm of the reservoir. During the March 2020 reconnaissance-level surveys, this species was observed in Pond 18 in the Portuguese Creek Area. This species has the potential to occur in other major drainages and associated uplands areas in the Study Area.

**San Joaquin Coachwhip**

San Joaquin coachwhip (*Coluber flagellum ruddock*) is considered a California Species of Special Concern by CDFW.

San Joaquin coachwhip inhabits open, dry, treeless areas with little or no cover, including valley grasslands and saltbush scrub. This species avoids areas with dense vegetation where it cannot move quickly, such as mixed oak chaparral woodland. San Joaquin coachwhip takes refuge in rodent burrows, under shaded vegetation and beneath surface objects. This species feeds on small mammals including bats, nesting and adult birds, bird eggs, lizards, snakes, amphibians, and carrion. San Joaquin coachwhips emerge from winter sites in late April to May, breed in May, and lay clutches of eggs in early June to July.

San Joaquin coachwhip is endemic to California, ranging from Arbuckle in the Colusa County portion of the Sacramento Valley southward to the Grapevine in the Kern County portion of the San Joaquin Valley, and westward into the inner South Coast Ranges (Calherp 2020).

The CNDDB (CDFW 2020b) reports one occurrence within 5 miles of the Study Area, on the southeast side of San Luis Reservoir, dated 1985. CNDDB Occurrence record #19 states that one adult was observed in annual non-native grasslands. This species was not observed during the March 2020 reconnaissance-level surveys. The Study Area provides suitable habitat in annual grasslands that have a low density of trees and shrubs, along with small-mammal burrows. Therefore, this species has moderate potential to occur in the Study Area.

**California Tiger Salamander**

California tiger salamander (*Ambystoma californiense*) is a federally listed and state-listed as threatened. Critical habitat was designated for the Central California Distinct Population Segment (DPS) in 2005. The Study Area is not within federally designated critical habitat for this species. Critical habitat lies approximately 1 mile south of the Portuguese Creek Area on Los Banos Creek and surrounding grasslands.
California tiger salamander is principally an upland species found in annual grasslands and in the grassy understory of valley-foothill hardwood habitats in central and Northern California. They require underground refuges (usually ground squirrel or other small-mammal burrows), where they aestivate\(^2\) for the majority of their annual cycle. Between December and February, when seasonal ponds begin to fill, adult California tiger salamanders engage in mass migrations to aquatic sites during a few rainy nights and are explosive breeders (Barry and Shaffer 1994). After breeding, eggs are laid in seasonal and perennial water sources such as vernal pools, streams, and stock ponds. Common breeding sites include stock ponds and vernal pools, while streams are rarely used (Stebbins 2003; Zeiner et al. 1988; Petranka 1998).

During drought years when ponds do not form, adults may spend the entire year in upland environments, while juveniles may spend 4 to 5 years in their upland burrows before reaching sexual maturity and breeding for the first time (Petranka 1998; Trenham et al. 2000). Adult tiger salamanders swiftly disperse after breeding and have been documented to migrate up to 423 feet (129 meters) the first night after leaving a breeding pond (Loredo and Van Vuren 1996). Adult California tiger salamanders readily aestivate in grasslands near ponds and at great distances from breeding ponds. Adults are known to regularly travel distances greater than 0.62 mile (1 kilometer) from breeding ponds and have been documented at distances of 1.2 miles (2 kilometers) or more (Orloff 2007).

California tiger salamanders occur in suitable habitat across central and Northern California. Currently, they range from Kings and Tulare Counties north to Butte County in the Central Valley, and from Santa Barbara County north to Sonoma County along the coast (Zeiner et al. 1988). It is estimated that they have disappeared from nearly 55 percent of their historic range (Stebbins 2003).

The CNDDB (CDFW 2020b) reports six California tiger salamander sightings within 5 miles of the Study Area, with the most recent sighting dated 2015. CNDDB Occurrence record #1225, located 4.6 miles west of the Study Area, states that habitat is an impounded body of water that is fed by a permanent water seep. Three CNDDB records (Occurrences #136, #137, and #138) occur within the critical habitat approximately 1 mile south of the Study Area, dated 1985. Habitat is a stock pond surrounded by oak savanna.

Ponds within one mile of the Study Area were identified before the March 2020 reconnaissance-level surveys from aerial imagery. Based on this desktop review, the entire Study Area is within the potential movement capabilities of California tiger salamander. During the surveys, when access was possible, biologists walked up to one-half mile to investigate potential breeding ponds for California tiger salamander and California red-legged frog. Table 3-2 identifies the locations of the assessed ponds relative to the Study Area, with details about each pond’s likelihood of providing California tiger salamander breeding habitat (see also Figure 3-9).

\(^2\) *Aestivation* is a state of dormancy similar to hibernation that occurs during the summer and fall.
### TABLE 3-2
**Ponds Assessed for Potential Breeding Sites for Special-Status Species**

<table>
<thead>
<tr>
<th>Pond Identification</th>
<th>Estimated Maximum Size</th>
<th>Location to Study Area</th>
<th>Potential Species Habitat</th>
<th>Habitat Conditions</th>
<th>Hydrology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Within the Study Area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest Reservoir Pond (Pond 44)</td>
<td>0.09 acre</td>
<td>Within the Study Area</td>
<td>CRLF, CTS</td>
<td>Emergent vegetative cover along edge of pond, surrounded by annual grasslands.</td>
<td>Open water that is approximately 2 to 3 feet deep. Pond connected via culvert to Pond 43.</td>
</tr>
<tr>
<td><strong>Within the Current Inundation Area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest Reservoir Pond (Pond 0)</td>
<td>0.05 acre</td>
<td>Within current inundation area</td>
<td>--</td>
<td>Emergent vegetative cover with willows along edge of pond. Surrounded by annual grasslands. Subject to active cattle grazing. Inundation by San Luis Reservoir makes pond unsuitable for CTS/CRLF breeding</td>
<td>Open water that is approximately 4 to 6 feet deep or deeper. Pond is approximately 120 feet by 60 feet.</td>
</tr>
<tr>
<td>Portuguese Creek Pond (Pond 18)</td>
<td>0.44 acre</td>
<td>Within current inundation area</td>
<td>Non-breeding CRLF, western pond turtle present</td>
<td>Stock pond with dead willow trees along the edges with minimal emergent vegetative cover. An unidentified large ranid frog, likely a California red-legged frog, jumped into the pond when biologists arrived. Bullfrogs were not observed in the watershed. Two western pond turtles were seen basking. A dead red-eared slider was found in the pond as well. Pond is surrounded by steep annual grasslands. Inundation by San Luis Reservoir makes pond unsuitable for CTS/CRLF breeding</td>
<td>Shallow-edged stock pond that is approximately 10 feet deep. Pond is approximately 80 feet by 250 feet.</td>
</tr>
<tr>
<td>San Luis Creek Seasonal Creek</td>
<td></td>
<td>Within current inundation area</td>
<td>Non-breeding CRLF present</td>
<td>CRLF was captured likely using San Luis Creek as a means of dispersal. Found in small pool just out of the main flow of water. Small adult approximately 2.8 inches (72 millimeters) from snout to vent. Surrounding habitat is grasslands with upland scrub.</td>
<td>Small protected pool approximately 2 feet deep.</td>
</tr>
<tr>
<td><strong>Outside the Study Area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lone Oak Bay Stock Pond (Pond 10)</td>
<td>0.05 acre</td>
<td>Outside the Study Area</td>
<td>CRLF present</td>
<td>Stock pond with minimal vegetative cover along the edges of the pond. Pond was almost 100% covered with algae. Four small adult frogs were captured. They measured between 1.8 and 2.2 inches (45 and 55 mm) from snout to vent. Surrounding habitat was steep rocky annual grasslands. Subject to active cattle grazing. Numerous ground squirrel burrows on surrounding hills.</td>
<td>Stock pond is approximately 4 to 10 feet deep. Pond is approximately 70 feet by 60 feet.</td>
</tr>
</tbody>
</table>
### TABLE 3-2 (CONTINUED)
**PONDS ASSESSED FOR POTENTIAL BREEDING SITES FOR SPECIAL-STATUS SPECIES**

<table>
<thead>
<tr>
<th>Pond Identification</th>
<th>Estimated Maximum Size</th>
<th>Location to Study Area</th>
<th>Potential Species Habitat</th>
<th>Habitat Conditions</th>
<th>Hydrology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lone Oak Bay Pond (Pond 12)</td>
<td>0.39 acre</td>
<td>Outside the Study Area</td>
<td>CRLF, tricolored blackbird</td>
<td>Stock pond with shallow edges with ring of dense cattails in middle of pond. Nesting red-winged blackbirds present. Surrounded by grazed annual grasslands. Numerous ground squirrel burrows on surrounding hills.</td>
<td>Stock pond is approximately 4 to 6 feet deep. Pond is approximately 35 feet by 120 feet.</td>
</tr>
<tr>
<td>West Reservoir Pond (Pond 33)</td>
<td>0.35 acre</td>
<td>Outside the Study Area</td>
<td>CRLF present</td>
<td>Stock pond with shallow edge. The north and east edges had emergent vegetative cover. Fifteen small adults found in main pond. They measured approximately 2.8 to 3.1 inches (70 to 80 mm) from snout to vent. Surrounded by blue oak woodlands, annual grasslands, and California sagebrush scrub.</td>
<td>Stock pond is approximately 6 to 8 feet deep. Pond is approximately 120 feet by 140 feet.</td>
</tr>
<tr>
<td>West reservoir drainage below Pond 33</td>
<td>Seasonal creek</td>
<td>Outside the Study Area</td>
<td>CRLF present</td>
<td>Two dead and one live CRLF were captured in the drainage below Pond 33. Oil sheen was seen on the surface of the water. The dead CRLFs measured approximately 1.2 to 2.2 inches (30 to 55 mm) from snout to vent. The live CRLF was approximately 1.2 to 1.4 inches (30 mm to 35 mm) from snout to vent. Drainage was surrounded by annual grasslands and blue oak woodlands. Subject to active cattle grazing.</td>
<td>Drainage water was less than 1 foot deep and almost stagnant. Pools were formed and ranged from less than 1 foot deep to 3 feet deep.</td>
</tr>
<tr>
<td>South of Dinosaur Point Boat Launch Pond (Pond 38)</td>
<td>0.07 acre</td>
<td>Outside the Study Area</td>
<td>CRLF, CTS</td>
<td>Stock pond with shallow edges and no emergent vegetative cover. Subject to cattle grazing. Surrounded by annual grasslands and oak scrub.</td>
<td>Stock pond that is approximately 2-3 feet deep. Pond is approximately 35 feet by 70 feet.</td>
</tr>
<tr>
<td>Northwest reservoir drainage (Pond 43)</td>
<td>1.13 acre</td>
<td>Outside the Study Area</td>
<td>Tricolored blackbird</td>
<td>Shallow drainage that is connected to Pond 44. Dense emergent vegetative cover and cattails. Red-winged blackbirds present. Surrounded by annual grasslands.</td>
<td>Drainage no deeper than 1 foot throughout until pooling up at Pond 44.</td>
</tr>
</tbody>
</table>

SOURCE: Data compiled by Environmental Science Associates in 2020  
CRLF = California red-legged frog; CTS = California tiger salamander
California tiger salamanders were not observed during the March 2020 reconnaissance-level surveys. Based on the assessment findings, Pond 44 in the northwest area of San Luis Reservoir may provide suitable breeding habitat. Several other ponds adjacent to the Study Area may also provide suitable breeding habitat (Table 3-2). Suitable refugia in the form of small-mammal burrows occur throughout the Study Area. Therefore, California tiger salamander has moderate potential to occur in portions of the Study Area.

**California Red-Legged Frog**

California red-legged frog (*Rana draytonii*) is a federally listed threatened species with revised critical habitat designated in 2010. A recovery plan for California red-legged frog was finalized in 2002 (USFWS 2002). The Study Area is within federally designated critical habitat for this species. The entire west side of San Luis Reservoir from Cottonwood Bay to San Luis Creek is considered critical habitat for California red-legged frog.

California red-legged frog is a largely aquatic frog that is found at ponds and slow-moving streams with permanent or semi-permanent water, using vegetated shorelines or creek banks for cover and open water sites for reproduction. California red-legged frogs opportunistically migrate into upland habitats during normal dispersal and may aestivate in upland environments when aquatic sites are unavailable or environmental conditions are inhospitable. If aquatic sites are unavailable, they shelter from dehydration in a variety of refuges, including under boulders and downed wood, and in desiccation cracks of dry ponds (Alvarez 2004) and moist leaf litter or small-mammal burrows (USFWS 2010a).

California red-legged frogs generally lay their eggs on emergent vegetation in standing or slow-moving water, but they are known to breed in unvegetated pools (USFWS 2005). After hatching, the herbivorous larvae take 3.5 months (Storer 1925) to 13 months (Fellers et al. 2001) to mature, depending on water temperatures. Adults will consume essentially any invertebrate or vertebrate prey they can capture (Jennings and Hayes 1994; USFWS 2005; Zeiner et al. 1988). California red-legged frog is subject to predation by aquatic invertebrates, fish, amphibians, snakes, mammals, and larger birds.

Historically, California red-legged frogs were distributed along the coast from southern Mendocino County and inland from Redding, Shasta County southward to northwestern Baja California, Mexico (Jennings and Hayes 1994). Currently, this species occurs in isolated portions of the Sierra Nevada, northern Coast Ranges, and northern Transverse Ranges. It was believed to be extirpated from the southern Transverse and Peninsular Ranges until recently, when two populations were discovered.

The CNDDB (CDFW 2020b) reports 36 California red-legged frog sightings within 5 miles of the Study Area, with the most recent dated 2017. The majority of these sightings occur on the west side of San Luis Reservoir in Pacheco State Park and the San Luis Reservoir Wildlife Area. The sightings are congregated to the north and south of Dinosaur Point Road. CNDDB Occurrence Record #316 states that two adult frogs were observed in the Portuguese Creek Area, which is fed by San Luis Creek, dated 1999.
Table 3-2 identifies the locations of the assessed ponds relative to the Study Area and provides details about each pond’s likelihood of providing California red-legged frog breeding habitat. Based on this desktop review, the entire Study Area is within the potential movement capabilities of California red-legged frog. During the March 2020 reconnaissance-level surveys, this species was observed at two ponds (Ponds 10 and 33), in the drainage below Pond 33, and in San Luis Creek (Table 3-2; Figure 3-9). All of these locations are located outside of the Study Area, but near or within the current inundation area. The California red-legged frog was observed in San Luis Creek and suspected to be using the area for dispersal. During the March 2020 surveys, an unidentified large ranid—likely a California red-legged frog—jumped into Pond 18 when biologists approached; bullfrogs were not identified in the watershed during surveys. Only one pond, Pond 44, is located in the Study Area and provides suitable breeding habitat, although numerous ponds surrounding the Study Area provide suitable breeding habitat and aquatic non-breeding habitat. The nearby rolling hills of non-native annual grasslands in and adjacent to the Study Area provide high-quality upland habitat for this species. Reservoir construction would affect an estimated 207.77 acres within designated critical habitat. Within this area, 18.3 acres are developed and do not support primary constituent elements for California red-legged frog, 30.57 acres are within the construction footprint, and 158.90 acres are within the future inundation footprint.

**Tricolored Blackbird**

Tricolored blackbird (*Agelaius tricolor*) is state listed as threatened.

Tricolored blackbirds usually nest in large flocks, with greater than 50 breeding pairs, in dense vegetation near water or by emergent wetlands. Nesting sites are typically associated with cattails, tules, willows, blackberry, and wild rose. Nests can be built a few centimeters above the ground or water level to 2 meters high. Nesting typically occurs from April to July, although it may extend later into the year. In the Sacramento Valley, breeding has been observed as late as October and November. During the non-breeding season, tricolored blackbirds can be found foraging in open habitats such as croplands and grassy fields. Their diet consists mostly of grains, but insects are occasionally eaten as well.

Tricolored blackbird is largely found in the Central Valley, extending into the south Coast Ranges from Monterey County south. Populations are also documented from the Peninsular Range near San Diego County and extreme Northern California.

The CNDDB (CDFW 2020b) reports seven tricolored blackbird sightings within 5 miles of the Study Area, with the most recent dated 2012. These records are all located on the east side of San Luis Reservoir. CNDDB Occurrence Record #34920 is located in the Study Area near the Basalt Area. The record states that 150 adults were observed using a marsh area surrounded by grasslands. During the March 2020 reconnaissance-level surveys, this species was observed at the State Parks Station near Basalt Campground in the Basalt Area. About a dozen non-breeding individuals were present. The Study Area provides suitable nesting habitat for tricolored blackbird. Therefore, this species has a high potential to occur locally, although potential breeding habitat in the Study Area is considered limited.
Golden Eagle

Golden eagle (*Aquila chrysaetos*) is a state fully protected species, is a USFWS Bird of Conservation Concern, and is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Golden eagle is uncommon throughout California. It ranges from sea level to approximately 12,575 feet (3,833 meters) above mean sea level, using habitats in rolling foothills, mountain areas, sage-juniper flats, and desert. Grasslands, deserts, savannas, and early successional stages of forest and shrub habitats provide necessary foraging habitat. Golden eagles feed on lagomorphs, large rodents, birds, reptiles, and carrion. They often hunt in pairs, working cooperatively to bring down prey. Nests are placed on cliffs or large trees and are used for nesting in successive years. Golden eagles prefer to nest in open habitats with canyons and escarpments. Breeding occurs from late January through August (Beebe 1974).

The CNDDB (CDFW 2020b) has no reports of nesting golden eagles within 5 miles of the Study Area. During the March 2020 reconnaissance-level surveys, an eagle pair was observed in the Portuguese Creek Area of San Luis Reservoir. Additionally, golden eagle individuals were seen foraging at various locations throughout the reservoir. The Study Area provides suitable nesting habitat and the surrounding undeveloped parcels provide suitable foraging habitat. Therefore, this species has high potential to occur.

Western Burrowing Owl

Western burrowing owl (*Athene cunicularia*) is considered a California Species of Special Concern by CDFW. Although this designation does not provide formal protection for the species or its habitat under the FESA or the CESA, potential impacts on burrowing owls and their nests fall under the jurisdiction of the Migratory Bird Treaty Act, CEQA, and Sections 3500, 3503.5, and 3800 of the Fish and Game Code.

Burrowing owl is a small, ground-nesting bird that is predominantly nocturnal but is also active during the day. Burrowing owls are found in a variety of habitats that include annual grasslands with mammal burrows. Burrowing owls require low vegetative cover and adequate perch sites from which to forage and to act as lookout points for predators. Burrowing owls also require level to gently sloping areas (Haug et al. 1993; Dechant et al. 2003). Specifically, breeding habitat includes annual grasslands, shortgrass prairie, pastures, hayfields, and fallow fields (Dechant et al. 2003). Burrowing owls also occur in a variety of urban and agricultural habitats: areas adjacent to roads and railroads, irrigation ditches, golf courses, airports, university campuses, and vacant dirt lots where grasses are regularly mowed (Coulombe 1971; Thomsen 1971; Collins and Landry 1977; Trulio 1995; Dechant et al. 2003).

Burrowing owls are opportunistic feeders. Their diet consists primarily of arthropods (e.g., spiders, beetles, grasshoppers, crickets, earwigs, crustaceans), in addition to small mammals (e.g., voles, mice, pocket mice, kangaroo rats) and birds (e.g., blackbirds, horned larks, mourning doves) and, to a lesser extent, reptiles and amphibians (Haug and Oliphant 1990).
Burrow availability is a major factor in defining suitable burrowing owl habitat (Coulombe 1971; Green and Anthony 1989). Most importantly, western burrowing owls require the presence of a mammal burrow or cavity (natural or human-made) that is the appropriate size for a nest burrow. Although western burrowing owls can excavate holes where burrowing mammals are absent, they rarely do so (Thomsen 1971). Throughout California, western burrowing owls primarily use California ground squirrel burrows. Burrowing owls also use human-made cavities for nest burrows. Examples include pipes, culverts, rock piles, concrete debris, and artificial burrows.

Burrowing owls range from the southern portions of the western Canadian provinces through southern Mexico and western Central America. They are also found in Florida and many Caribbean islands. In South America, they are patchy in the northwest and through the Andes, but widely distributed from southern Brazil to Patagonia and Tierra del Fuego. Burrowing owls are year-round residents in most of their range. Birds that breed in Canada and the northern United States usually migrate south to Mexico and the southern U.S. during winter months.

Burrowing owls tend to stay close to the nest burrow during the day and forage farther from the nest between dusk and dawn (Haug 1985; Haug and Oliphant 1990). According to a study conducted in California’s Central Valley, average home range size during the breeding season varied between 242 and 343 acres (98 and 139 hectares) (Gervais et al. 2003). Although home range includes the nest territory and overall foraging areas, most foraging efforts of male owls tend to be concentrated within 1,968.5 feet (600 meters) of the nest (Gervais et al. 2003; Rosenberg and Haley 2004).

Burrowing owls are year-round residents in much of California (Shuford and Gardali 2008). Relatively little is known about migration routes, times, and wintering areas (Haug et al. 1993). However, observations indicate that populations of western burrowing owl in the northernmost and highest-elevation portions of the species’ range are migratory. The migratory individuals leave their breeding grounds in the fall, around September or October, and return to the same or nearby burrows each spring, around March or April (Center for Biological Diversity 2003; Klute et al. 2003). Wintering areas include Arizona, California, New Mexico, Oregon, Texas, and Mexico south to western Panama (Klute et al. 2003).

California supports a large wintering population of burrowing owls. Many of the wintering individuals are assumed to come from snow-covered areas where burrows and food are inaccessible (Center for Biological Diversity 2003).

The primary threats to western burrowing owl across its North American range are habitat loss and fragmentation, resulting primarily from intensive agricultural and urban development, and habitat degradation caused by declining populations of colonial burrowing mammals and non-native grasses (Dechant et al. 2003). Other human-made threats to burrowing owl populations include vehicle collisions, destruction of burrows by disking or grading, increased predation by feral dogs and cats, shooting, and harassment.

The CNDDB (CDFW 2020b) reports nine occurrences within 5 miles of the Study Area, occurring predominantly on the east side of San Luis Reservoir. The most recent CNDDB occurrence record—#2006, dated 2016—is located northwest of the Study Area. This record
states that one adult was flushed from grazed annual grasslands at the confluence of steep hills and an alluvial plain, and retreated to a large burrow.

During the March 2020 reconnaissance-level surveys, this species was observed in the rocky annual grasslands near Pond 10 in Lone Oak Bay, the southeastern area of San Luis Reservoir. Habitat included steep rocky hills with actively grazed annual grasslands. The Study Area provides pockets of patchily distributed ground squirrel burrows, and grazed annual grasslands provide potential foraging habitat. Some grasslands in the Study Area would not provide suitable habitat based on the height of the grass and absence of burrows. Therefore, western burrowing owl has high potential to occur in the Study Area.

**Swainson’s Hawk**

Swainson’s hawk (*Buteo swainsoni*) is a state-listed threatened species.

Swainson’s hawks are medium-sized opportunistic predators that feed on rodents, rabbits, bats, large arthropods, amphibians, reptiles, birds, and rarely, fish. This species arrives in California in late February and departs for wintering grounds in early September. Eggs are typically laid in April and early May. Swainson’s hawks reside in a wide variety of open habitats, including prairies, grasslands, and intensively farmed areas. They nest on platforms of sticks, bark, fresh leaves in a tree, bush, or utility pole that is 4 to 100 feet above ground. Nests are usually constructed in riparian corridors adjacent to agricultural fields or pastures.

Swainson’s hawks were historically distributed throughout the lowlands of California, absent only from the Sierra Nevada, north Coast Ranges, and Klamath Mountains, and portions of the Southern California deserts. Currently, the highest density occurs in the Central Valley, between Sacramento and Modesto, and in the northern San Joaquin Valley.

The CNDDB (CDFW 2020b) reports nine occurrences within 5 miles of the Study Area, with the most recent dated 2016 and predominantly occurring on the northeastern side of O’Neill Forebay. The two most recent CNDDB occurrence records, #2715 and #2716, are located northeast of the Study Area. These records state that the birds were nesting in a eucalyptus tree and in a small grove of oak trees, but surrounded by grasslands actively used for cattle grazing. This species was not observed during the March 2020 reconnaissance-level surveys. The Study Area provides suitable foraging grassland habitat along with potential suitable nesting locations. Therefore, Swainson’s hawk has moderate potential to nest and forage in the Study Area.

**Ferruginous Hawk**

Ferruginous hawk (*Buteo regalis*) is not a listed species or a California Species of Special Concern, but this species is on a CDFW watch list.

Ferruginous hawk is a winter resident of California, with no breeding records throughout the state. This species is uncommon at lower elevations and in open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges, but common in grasslands and agricultural areas in southwestern California (Garrett and Dunn 1981). Ferruginous hawk frequents open grasslands, sagebrush flats, desert scrub, and low foothills of surrounding valleys and fringes of pinyon-
3. Environmental Setting

juniper habitats. They feed on lagomorphs, ground squirrels, and mice, but will also eat birds, reptiles, and amphibians. Ferruginous hawks roost in open areas, usually in a lone tree or a utility pole.

The CNDDB (CDFW 2020b) reports 15 wintering occurrences within 5 miles of the Study Area, with the most recent dated 2013 and predominantly occurring on the southeastern side of San Luis Reservoir. All of these records state that between one and five wintering individuals were observed in open grasslands. During the March 2020 reconnaissance-level surveys, this species was observed in the northwest area of San Luis Reservoir and at the Basalt Boat Launch in the southeastern area of the reservoir. The Study Area provides suitable foraging grassland habitat along with numerous roost and perch locations. The surrounding undeveloped parcels around the Study Area additionally provide foraging habitat. Minimal to no suitable nesting habitat for this species exists in the Study Area. Therefore, wintering ferruginous hawk has moderate potential to occur in the Study Area.

**Northern Harrier**

Northern harrier (*Circus hudsonius*) is considered a California Species of Special Concern by CDFW. Although this designation does not provide formal protection for the species or its habitat under the FESA or the CESA, potential impacts on northern harriers and their nests fall under the jurisdiction of the Migratory Bird Treaty Act, CEQA, and Sections 3500, 3503.5, and 3800 of the Fish and Game Code.

Northern harriers occur year-round in the Central Valley, along the coast, in the Sierra Nevada, and in northeastern California. They winter throughout California in suitable habitat including meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands, and very occasionally in wooded areas. Suitable foraging habitat consists of open areas, such as grassland or agricultural fields, where they can fly close to the ground. Northern harriers roost on the ground in tall grasses or emergent wetland species including cattails. Nesting habitat occurs primarily in marshes or emergent wetlands or along rivers or lakes, and occasionally in grasslands, grain fields, or on sagebrush flats. Nesting season occurs from April to September (Craighead and Craighead 1956).

The CNDDB (CDFW 2020b) reports three occurrences within 5 miles of the Study Area, with the most recent dated 2001. Two CNDDB occurrence records are located around O’Neill Forebay (Occurrences #41 and #42). The other record, Occurrence #39, is located on the west side of San Luis Reservoir directly adjacent to Dinosaur Point Road. This record states that two adults were observed breeding in steep annual grasslands. During the March 2020 reconnaissance-level surveys, this species was observed foraging in the grasslands at Honker Bay, in the northwestern arm of San Luis Reservoir. The Study Area provides suitable foraging grassland habitat along with potential suitable nesting locations at water sources with marsh vegetation. Therefore, northern harrier has moderate potential to occur in the Study Area.
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**Prairie Falcon**

Prairie falcon (*Falco mexicanus*) is not a listed species or a California Species of Special Concern, but this species is on a CDFW watch list.

Prairie falcon is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. These birds can be found primarily using perennial grasslands, savannas, rangeland, some agricultural fields, and desert scrub. Prairie falcons feed on small mammals, some small birds, and reptiles. This species nests in open terrain with canyons, cliffs, escarpments, and rock outcrops. The nest is usually a scrape on a sheltered ledge or cliff overlooking a large area. Prairie falcons will use old raven or eagle nests.

The CNDDB (CDFW 2020b) reports 13 occurrences within 5 miles of the Study Area, with the most recent dated 1998. The occurrence records for this species are mapped as entire USGS 7.5-minute quadrangles. These quadrangles are located to the south, southwest, and west of the Study Area. The CNDDB provides few to no details about habitat use for these records. This species was not observed during the March 2020 reconnaissance-level surveys. The Study Area provides suitable foraging grassland habitat and forages in the undeveloped parcels surrounding the Study Area. The Study Area is within the known wintering range for this species. Therefore, prairie falcon has moderate potential to occur in the Study Area.

**Bald Eagle**

Bald eagle (*Haliaeetus leucocephalus*) is a state-listed endangered, state fully protected, and federally delisted species. This species is also protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act.

Bald eagles are permanent residents and uncommon winter migrants in California. Breeding is now mostly restricted to Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties. This species is generally found near large bodies of water, or free-flowing rivers with abundant fish. Bald eagles require adjacent snags and perches near water for foraging and nesting. Bald eagles prefer eating fish, and they seek out aquatic habitats for foraging (Buehler 2000). However, they will feed opportunistically, feeding on a variety of mammals and birds. Typical nesting areas for bald eagles are in forested areas, relatively close (usually less than approximately 1.24 miles [2 kilometers]) to water. Their nest is a stick platform placed below the tree crown, 50 to 200 feet above ground. Breeding begins in February through July, with a peak in March to June.

The CNDDB (CDFW 2020b) reports one occurrence within 5 miles of the Study Area, dated 2011, located to the north near Cottonwood Bay. This occurrence record, #365, states that one adult was observed at a nest with eggs or young. During the March 2020 reconnaissance-level surveys, a bald eagle nest was identified outside of the Study Area near Pond 12, on the southwest side of San Luis Reservoir by Lone Oak Bay. The Study Area and reservoir provide suitable foraging habitat, along with potential suitable nesting locations in adjacent trees. Therefore, bald eagle has high potential to occur in the Study Area.
Other Nesting Birds

Fish and Game Code Sections 3503 and 3503.5 and the Migratory Bird Treaty Act protect raptors and passerines and their eggs and nests from incidental take. These protections apply to the special-status birds identified in Attachment B, Table B-2, and other common birds that may nest in or near the Study Area.

American Badger

American badger (*Taxidea taxus*) is considered a California Species of Special Concern by CDFW.

American badgers are uncommon, permanent residents throughout California, except in the northern North Coast area (Grinnell et al. 1937). They are most abundant in dry, open habitats including grassland and open woodland with friable soils. Suitable burrowing habitat requires dry, often sandy soil. American badgers frequently reuse old burrows, although some may dig a new den each night (Messick and Hornocker 1981). Badgers are carnivorous and eat fossorial rodents such as rats, mice, chipmunks, ground squirrels, and pocket gophers. Some will eat reptiles, insects, earthworms, eggs, birds, and carrion, with their diet shifting seasonally and yearly. American badgers breed in summer and early fall, with young born from March to April (Long 1973).

The CNDDB (CDFW 2020b) reports 11 occurrences within 5 miles of the Study Area, with the most recent dated 2014. These occurrences are predominantly located on the northeastern or east side of San Luis Reservoir. The most recent occurrence record, #493, is located west of San Luis Reservoir, just south of SR 152. This record states that one adult was observed using blue and valley oak savanna habitat with non-native annual grasslands. The habitat was actively used for cattle grazing. This species was not observed during the March 2020 surveys. The Study Area provides suitable grassland foraging habitat, along with suitable denning locations. Therefore, American badger has high potential to occur in the Study Area.

San Joaquin Kit Fox

San Joaquin kit fox (*Vulpes macrotis mutica*) is federally listed as endangered and state listed as threatened. Critical habitat has not been designated for this species.

San Joaquin kit fox is the smallest fox in North America, with an average body length of 20 inches and a weight of about 5 pounds. It is a member of the Canidae family, which includes dogs, wolves, and foxes. San Joaquin kit foxes are lightly built, with long legs and large ears. Their coat ranges from tan to buffy gray in the summer to silvery gray in the winter. Their belly is whitish and their tail is black-tipped.

The diet of the San Joaquin kit fox varies geographically, seasonally, and annually, based on the abundance of prey. In the southern part of the range, one-third of the kit fox’s diet consists of kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), white-footed mice (*Peromyscus* spp.), and other nocturnal rodents (USFWS 2010b). In the northern portion of the range (San Joaquin, Alameda, and Contra Costa Counties), kit foxes most often prey on California ground
squirrel (*Otospermophilus beecheyi*). Kit foxes also prey on black-tailed hare (*Lepus californicus*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), desert cottontail (*Sylvilagus audubonii*), ground-nesting birds, and insects (USFWS 2010b).

Dens are used for temperature regulation, shelter from adverse weather, and protection from predators. Kit foxes either dig their own dens, use those constructed by other animals, or use human-made structures (culverts, abandoned pipelines, or banks in sumps or roadbeds). Kit foxes often change dens and many dens may be used throughout the year. However, evidence that a den is being used by kit foxes may be absent (USFWS 2010b).

Kit foxes can breed when they are 1 year old. Adult pairs stay together all year. During September and October, females begin to clean and enlarge their pupping dens. Mating occurs between December and March. Litters of two to six pups are born in February or March. Pups emerge from the den after about a month (USFWS 2010b).

San Joaquin kit fox is a permanent resident of arid grasslands and open scrubland, where friable soils are present. Historically the species’ habitat included native alkali marsh and saltbush scrub of the valley floor, but the availability of such habitats has diminished markedly as a result of agricultural conversion. Grasslands with friable soils are considered the principal habitat for denning, foraging, and dispersal, while open oak woodlands provide lower quality foraging and dispersal habitat.

The availability of suitable den sites is a critical habitat requirement for San Joaquin kit foxes throughout the year, both as shelter and to escape predators. Individuals range over a broad area that may exceed several hundred acres, using 30 or more dens. During their normal movement, kit foxes may also traverse “non-habitat” areas that do not appear to provide obvious benefits to this species in terms of prey availability or den availability; however, the continued availability of such connectivity corridors is considered key to maintaining regional connectivity between kit fox populations.

San Joaquin kit foxes occur only in and around California’s Central Valley, inhabiting open habitat in the San Joaquin Valley and surrounding foothills. Kit fox population densities are greatest in the southern portion of the species’ range. Populations in the northern portion of the range are highly fragmented and sparsely distributed (Orloff et al. 1986).

In the northern portion of its range, kit fox is present primarily in foothill grasslands because much of the species’ former habitat on the valley floor has been eliminated. The northern population has different habitat characteristics than the southern population. Orloff found that the northern population’s habitats have steeper slopes than those of the southern population, with slopes of up to 40 degrees for the northern population and dens on slopes ranging from 2 to 14 percent (Orloff et al. 1986). Thus, slope is important to keep in mind when considering potential effects on kit fox and the suitability of mitigation lands for this species.

Kit foxes have been observed to use areas with low to moderate slopes (Morrell 1971, 1975; O’Farrell et al. 1980; O’Farrell and McCue 1981; Orloff et al. 1986). However, this species
prefers to dwell and migrate on relatively flat or low-gradient slopes (e.g., less than 15 degrees) rather than on more extreme slopes (Orloff et al. 1986).

Most studies quantify only the slopes where dens are found, and do not quantify slopes in dispersal areas. Morrell (1971) studied kit fox in Kern County and found that most dens were on flat or gently sloping ground; some were on hillsides of up to 30 degrees. Dens on very steep slopes were rare. Koopman et al. (2001) conducted a telemetry study in Kern County and found that most kit foxes used slopes that were generally less than 6 degrees. The mean slope for movements was 3.3 degrees (range = 0 to 71 degrees), with only 0.9 percent of movements occurring on slopes greater than 6 degrees. A study at Camp Roberts in Monterey County showed that the average slope of hillsides with dens was 19 degrees (Reese et al. 1992).

The CNDDB (CDFW 2020b) reports 18 occurrences of San Joaquin kit fox within 5 miles of the Study Area, with the most recent dated 2005. These occurrences are predominantly located on the east side of San Luis Reservoir. The most recent occurrence records (#125, #127, and #211) are all located on the southeast side of the reservoir in annual grasslands. Two records report only one adult observed, while Occurrence Record #125 reports kit fox at this location since 1984 with natal dens. This species was not identified during the March 2020 reconnaissance-level surveys. The Study Area provides suitable grassland foraging habitat, potential prey throughout, and suitable denning locations. Burrows of suitable size were markedly absent during the March 2020 reconnaissance-level surveys, although the Study Area has connectivity to sparsely populated ranch lands to the northeast, east, and southeast. Therefore, San Joaquin kit fox has moderate potential to occur in the Study Area.

**3.4 Critical Habitat for Listed Fish and Wildlife Species**

USFWS defines the term *critical habitat* in the FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. *Figure 3-10* shows the locations of USFWS-designated critical habitat in and near the Study Area. The Study Area is within designated critical habitat for California red-legged frog. The entire west side of San Luis Reservoir from Cottonwood Bay to the San Luis Creek Area is considered critical habitat for this species. The Study Area does not include designated critical habitat for California tiger salamander.
CHAPTER 4
References and Report Preparation

4.1 References


Center for Biological Diversity. 2003. *Petition to the State of California Fish and Game Commission and Supporting Information for Listing the California Population of the Western Burrowing Owl (Athene cunicularia hypugaea) as an Endangered or Threatened Species under the California Endangered Species Act.*


4. References and Report Preparation


4.2 Document Preparation

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