14. Terrestrial Biological Resources

14.1 Introduction

This chapter describes the terrestrial biological resources setting for the Extended, Secondary, and Primary study areas. Descriptions and maps of these three study areas are provided in Chapter 1 Introduction. Terrestrial biological resources include wildlife habitats and their associated invertebrates, reptiles, amphibians, birds, and mammals. Wildlife habitat descriptions focus on the value of the vegetation community to wildlife, rather than on the plant species that comprise the habitat type. For more detailed descriptions of vegetation communities, refer to Chapter 13 Botanical Resources.

Permits and authorizations for terrestrial biological resources are presented in Chapter 4 Environmental Compliance and Permit Summary. The regulatory setting for terrestrial biological resources is presented in Appendix 4A Environmental Compliance.

The regulatory setting for terrestrial biological resources is presented in Chapter 4 Environmental Compliance and Permit Summary.

This chapter focuses primarily on the Primary Study Area. Potential impacts in the Secondary and Extended study areas were evaluated and discussed qualitatively. Potential local and regional impacts from constructing, operating, and maintaining the alternatives were described and compared to applicable significance thresholds. Mitigation measures are provided for identified potentially significant impacts, where appropriate.

The identification and analysis of the effects on terrestrial biological resources that may be caused by construction and operation of each of the various alternatives is intended to inform decision makers and the public of potential environmental consequences prior to selecting an alternative. Once an action alternative is selected, compliance with the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) will be required. While the analysis of federal and State-listed species contained in this chapter addresses currently listed species, it is not intended as an effects analysis for FESA and CESA regulatory compliance. However, the analysis in this chapter is intended to support the development of permitting documents (e.g., biological assessment) needed for regulatory approvals.

14.2 Environmental Setting/Affected Environment

14.2.1 Extended Study Area

14.2.1.1 Methodology

Wildlife Habitats and Associated Wildlife

California Department of Fish and Wildlife's (CDFW's; formerly called California Department of Fish and Game [CDFG]) California Wildlife Habitat Relationships (WHR) System (CDFG, 2008a; CDFG, 2014) was used to identify the potential number of species that could exist within the Extended Study Area. WHR is a predictive model that relates the suitability of each of California's habitat types to individual wildlife species based on their reproductive, cover, and feeding requirements. For the WHR analysis of the contracted municipal, industrial, and agricultural water deliveries within the Extended Study Area, only the urban and agricultural habitat types were considered. WHR separates agriculture

into crop types. The crops that could be affected by a more reliable water source are rice, irrigated grain crops, irrigated row and field crops, irrigated hayfields, evergreen orchard, deciduous orchard, pasture, and vineyard.

A WHR species list was generated for each habitat type listed above based on their occurrence within the 33 counties of the Central Valley Project (CVP) and State Water Project (SWP) service areas. Because only 10 counties can be entered into the WHR System at one time, four species lists were generated and then merged for each habitat type. The habitat types listed above may not occur in every county within the Extended Study Area.

For the analysis of wildlife refuges and wildlife areas (WAs) that receive Level 4 water deliveries within the Extended Study Area,[1] a WHR species list was generated for fresh emergent wetland habitat based on its occurrence within seven counties (Colusa, Fresno, Glenn, Kern, Kings, Merced, and Tulare).

For the analysis of wildlife that occur within San Luis Reservoir, a WHR species list was generated for lacustrine habitat based on its occurrence in Merced County.

Special-status Wildlife Species

A list of special-status wildlife species that may occur within the service areas of the Extended Study Area was generated using the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) website (USFWS, 2017). The list includes federal endangered, threatened, and candidate species that may be affected within the 33 counties of the Extended Study Area, as well as areas of designated critical habitat. Critical habitat is habitat that is essential to the conservation of the species and is protected pursuant to FESA. A list of special-status wildlife species was also generated using the IPaC (USFWS, 2017) for the four U.S. Geological Survey (USGS) 7.5 minute quadrangles within which San Luis Reservoir is located (map numbers are provided in parentheses): Los Banos Valley (384A), Mariposa Peak (384B), Pacheco Pass (404C), and San Luis Dam (404D).

The California Natural Diversity Database (CNDDB) Quick View Tool was also used to identify State-listed species and species of special concern (CDFW, 2017a). The generated lists include the entire county, and therefore may contain species that would be found within the county but not within the specific habitat types listed above.

Commercially or Recreationally Important Wildlife Species

The agricultural lands and wildlife refuges within the Extended Study Area provide seasonal and year-round habitat for a variety of commercially or recreationally important wildlife species. The WHR System (CDFG, 2008a) was used to generate a list of all harvest (hunted or trapped) species that could occur within the rice, irrigated grain crops, irrigated row and field crops, irrigated hayfields, evergreen orchard, deciduous orchard, pasture, and vineyard habitats within the 33 counties that comprise the Extended Study Area. Because only 10 counties can be entered into the WHR System at one time, four species lists were generated and then merged for each habitat type. A separate list was generated for all harvest species that could occur within fresh emergent wetland habitat within the counties that are in the Extended Study Area wildlife refuges and areas (Colusa, Fresno, Glenn, Kern, Kings, Merced, and

[1]The Level 4 water deliveries that could be affected by Project operation are contracted to the Sacramento and Colusa NWRs within the Sacramento River Basin; to the West Bear Creek unit of the San Luis NWR Complex and the Merced unit of the Merced NWR, as well as the Los Banos, Volta, and Mendota WAs, the China Island and Salt Slough units of the North Grasslands WA, and private wetlands of the Grassland Resource Conservation District within the San Joaquin River Basin; and to the Kern and Pixley NWRs within the Tulare Lake Basin.

Tulare). Finally, a list of harvest species that could occur within the lacustrine habitat of San Luis Reservoir was generated for Merced County.

14.2.1.2 Wildlife Habitats and Associated Wildlife

Urban

Urban habitat includes vegetation in city parks, tree strips along city streets, residential gardens, and landscaping, such as shrubs, shade trees, and lawns. Vegetation in urban habitat is composed of native and nonnative species that usually receive some level of maintenance. The species found in urban habitat are greatly influenced by the type of habitat that is adjacent to the urban area; most large cities are surrounded by agricultural and grazing lands. Many nonnative wildlife species thrive in urban areas (Mayer and Laudenslayer, 1988a).

Up to 225 species (170 birds, 43 mammals, 8 reptiles, and 4 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with urban habitat include the Virginia opossum (*Didelphis virginiana*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), house mouse (*Mus musculus*), striped skunk (*Mephitis mephitis*), western fence lizard (*Sceloporus occidentalis*), pacific chorus frog (*Pseudacris egilla*), rock pigeon (*Columba livia*), numerous hummingbird species, western scrub jay (*Aphelocoma californica*), yellow-billed magpie (*Pica nuttalli*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), and American robin (*Turdus migratorius*).

Rice

Rice is a flood-irrigated annual crop that is usually planted in the spring and harvested in the fall. Rice is typically grown in leveed fields that have heavier clay soils that hold water well – many rice field locations historically supported seasonal wetlands. Flooded rice fields support many species that were once supported by wetlands, and some waterfowl species depend on waste rice (Mayer and Laudenslayer, 1988a).

Up to 196 species (137 birds, 33 mammals, 20 reptiles, and 6 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with rice habitat include the ring-necked pheasant (*Phasianus colchicus*), sandhill crane (*Grus canadensis*), greater white-fronted goose (Anser *albitrons*), common muskrat (*Ondatra zibethicus*), numerous waterfowl species, herons, egrets, and the giant garter snake (*Thamnophis gigas*).

Irrigated Grain Crops

Irrigated grain and seed crops include corn, safflower, dry beans, milo, grain sorghum, and sunflowers. These crops are annuals that are typically planted in the spring and harvested in the summer or fall. Wheat and barley are also irrigated grain crops, but are typically planted in the fall and harvested in the spring. Approximately 50 percent of all barley crops and 75 percent of wheat crops are irrigated. Irrigated grain and seed crops are established on very fertile soils, which historically supported native vegetation that provided high habitat suitability and an associated abundance of wildlife. Irrigated grain and seed crops do not support that same abundance of wildlife, but several species have adapted to this habitat type, and some species depend on the waste grain that remains in the field after harvesting (Mayer and Laudenslayer, 1988a).

Up to 173 species (108 birds, 53 mammals, 5 reptiles, and 7 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated grain and seed crops include the black rat (*Rattus rattus*), Botta's pocket gopher, wild pig (*Sus scrofa*), mule deer (*Odocoileus hemionus*), gopher snake (*Pituophis catenifer*), greater white-fronted goose, Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), northern harrier (*Circus cyaneus*), ring-necked pheasant, killdeer (*Charadrius vociferus*), barn owl (*Tyto alba*), tri-colored blackbird (*Agelaius tricolor*), herons, egrets, and numerous bat species.

Irrigated Row and Field Crops

Irrigated row and field crops include cotton, asparagus, strawberries, tomatoes, lettuce, melons, broccoli, cauliflower, carrots, celery, cucumber, potatoes, and onions. Most of these crops are annual, but some, such as asparagus and strawberries, are perennial. Similar to irrigated grain and seed crops, most row and field crops are planted on very fertile soils and do not support the abundance of wildlife that the historical native vegetation once supported (Mayer and Laudenslayer, 1988a).

Up to 116 species (46 birds, 51 mammals, 10 reptiles, and 9 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated row and field crops include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel, Botta's pocket gopher, western harvest mouse (*Reithrodontomys megalotis*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snow goose (*Chen caerulescens*), ring-necked pheasant, killdeer, barn owl, red-winged blackbird (*Agelaius phoeniceus*), and numerous bat species.

Irrigated Hayfield

Irrigated hayfields include alfalfa fields and grass hayfields. Alfalfa fields are plowed every 3 to 6 years, with some fields plowed every year. Within the Central Valley, alfalfa fields can be harvested as many as 6 times per year. Alfalfa fields are an important part of a crop rotation, because alfalfa renews soil nitrogen. Grass hayfields are intensively mowed and managed fields of annually-planted introduced grasses, or can also be naturally-occurring perennial grasses and sedges. A mixture of these grass types is common. This habitat provides a high quality seasonal resource for many wildlife species, but frequent harvesting makes this habitat type unsuitable for ground nesting species (Mayer and Laudenslayer, 1988a).

Up to 223 species (158 birds, 58 mammals, 6 reptiles, and 1 amphibian) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated hayfields include the great blue heron, great egret, cattle egret (*Bubulcus ibis*), tundra swan (*Cygnus columbianus*), several goose species, mallard, northern pintail (*Anas acuta*), northern harrier, ring-necked pheasant, sandhill crane, long-billed curlew (*Numenius americanus*), burrowing owl (*Athene cunicularia*), red-winged blackbird, Botta's pocket gopher, and gopher snake.

Evergreen Orchard

Evergreen orchards are single species tree-dominated habitats in which the trees are arranged in a linear pattern and are spaced evenly. Understory species may include low-growing grasses or other herbaceous plants, but evergreen orchards are typically managed to prevent any understory growth. Evergreen orchards include avocados, dates, grapefruit, lemons, limes, olives, oranges, tangerines, and tangelos. Evergreen orchards are planted on fertile soil that once supported diverse habitats and numerous wildlife species. This heavily managed monoculture does not support the abundance of wildlife once associated

with the native vegetation, but some species have adapted and have become pests by feeding on the leaves and fruit of the trees. Other wildlife species use evergreen orchards for cover and nesting sites, with the year-round tree canopy providing shelter from hot or cold temperatures (Mayer and Laudenslayer, 1988a).

Up to 90 species (30 birds, 45 mammals, 9 reptiles, and 6 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with evergreen orchards include the mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), barn owl, European starling, western gray squirrel (*Sciurus griseus*), Botta's pocket gopher, black-tailed jackrabbit, and mule deer.

Deciduous Orchard

Similar to evergreen orchards, deciduous orchards are single species tree-dominated habitats in which the trees are arranged in a linear pattern and are spaced evenly. Understory species may include low-growing grasses or other herbaceous plants, but some deciduous orchards are managed to prevent any understory growth. Deciduous orchards include almonds, apples, apricots, cherries, figs, nectarines, peaches, pears, pecans, pistachios, plums, prunes, and walnuts. The tree canopy can provide shelter from heat, but does not provide much cover from rain and cold during the winter after the leaves have dropped (Mayer and Laudenslayer, 1988a).

Up to 167 species (107 birds, 48 mammals, 9 reptiles, and 3 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with deciduous orchards include the northern flicker (*Colaptes auratus*), western scrub jay, American crow (*Corvus brachyrhynchos*), oak titmouse (*Baeolophus inornatus*), Brewer's blackbird (*Euphagus cyanocephalus*), American robin, western gray squirrel, California ground squirrel, raccoon (*Procyon lotor*), and black bear (*Ursus americanus*).

Pasture

Pasture habitat is a mix of perennial grasses and legumes that is irrigated and used for grazing livestock. The height of the vegetation depends on management practices, the type of livestock, stocking rates, and grazing duration. Pasture is typically planted on soils that are not suitable for other crops. Ground-nesting birds will nest in pasture habitat when adequate vegetation is present at the start of the nesting season, and flood-irrigated pasture provides feeding and roosting sites for shorebirds, wading birds, and waterfowl. Large mammals, such as deer, antelope, and elk will graze pastures if adjacent escape cover exists (Mayer and Laudenslayer, 1988a).

Up to 108 species (9 birds, 69 mammals, 13 reptiles, and 17 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with pasture include the bullfrog (*Rana catasbeiana*), burrowing owl, broad-footed mole (*Scapanus latimanus*), black-tailed jackrabbit, California ground squirrel, Botta's pocket gopher, San Joaquin pocket mouse (*Perognathus inornatus*), pronghorn (*Antilocapra americana*), and gopher snake.

Vineyard

Vineyards are composed of a single species planted in rows, with the vines supported by a trellis. The area beneath the vines is usually managed to prevent plant growth, but the area between rows is typically planted with grasses or other herbaceous plants. Vineyards include boysenberries, raspberries, kiwifruit, and grapes. Vineyards are planted on highly fertile soils that once supported diverse native habitats

which, in turn, supported an abundance and diversity of wildlife. Some wildlife have adapted to vineyards by browsing on the vines, eating the fruit, or using the habitat for nesting and cover. Raptors use vineyards to feed on rodents and other crop pests (Mayer and Laudenslayer, 1988a).

Up to 105 species (43 birds, 46 mammals, 10 reptiles, and 6 amphibians) may be found within this habitat type within the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with vineyards include the mule deer, black-tailed jackrabbit, California ground squirrel, mourning dove, barn owl, northern mockingbird, Brewer's blackbird, house finch, Botta's pocket gopher, and American kestrel (*Falco sparverius*).

Fresh Emergent Wetland

Fresh emergent wetlands are one of the most productive wildlife habitats in California. Located in land depressions, these wetlands are flooded frequently and are dominated by rooted perennial vegetation, such as cattail (*Typha* spp.), bulrush (*Scirpus* spp.), and arrowhead (*Sagittaria* spp.). The wetlands of the wildlife refuges and WAs are primarily managed to provide wintering habitat for waterfowl, but many other species benefit from their management practices, including special-status species that depend on ponded water for all or part of their life cycles (Mayer and Laudenslayer, 1988a).

Up to 180 species (119 birds, 32 mammals, 12 reptiles, and 17 amphibians) may be found within this habitat type within the wildlife refuges and WAs in the Extended Study Area (CDFG, 2008a). Wildlife species commonly associated with fresh emergent wetland include the California newt (*Taricha torosa*), western spadefoot (*Spea hammondii*), Pacific chorus frog, California red-legged frog (*Rana draytonii*), eared grebe (*Podiceps nigricollis*), black-crowned night heron (*Nycticorax nycticorax*), Canada goose, mallard, northern shoveler (*Anas clypeata*), sandhill crane, white-faced ibis (*Plegadis chihi*), short-eared owl (*Asio flammeus*), red-winged blackbird, American beaver (*Castor canadensis*), common muskrat, American mink (*Mustela vison*), raccoon, western pond turtle (*Actinemys marmorata*), and giant garter snake.

Lacustrine

Lacustrine habitat includes permanently flooded lakes and reservoirs, intermittent lakes, and ponds – some of which may be shallow enough to support rooted plants (Mayer and Laudenslayer, 1988a). Operations at San Luis Reservoir cause severe reservoir level fluctuations, but the fluctuations are gradual enough to support some wetland and riparian scrub vegetation species in seeps within the drawdown zone.

Up to 130 species (103 birds, 14 mammals, 5 reptiles, and 8 amphibians) may be found within this habitat type within Merced County at San Luis Reservoir (CDFG, 2008a). Wildlife species commonly associated with lacustrine open-water habitat include the bald eagle (*Haliaeetus leucocephalus*), western grebe (*Aechmophorus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), common loon (*Gavia immer*), and osprey (*Pandion haliaetus*). Bats and some insectivorous bird species can be found foraging over open water.

Wildlife species commonly associated with the nearshore portion of lacustrine habitat include the great blue heron, snowy egret (*Egretta thula*), killdeer, and long-billed curlew. Shallow areas also provide habitat for amphibians and reptiles. Lacustrine habitat also serves as a source of drinking water for wildlife that uses adjacent habitat types.

14.2.1.3 Special-status Wildlife Species

More than 300 State- or federally listed threatened or endangered species, candidate species, and State species of special concern may occur within the 33 counties that are included in the Extended Study Area (USFWS, 2017; CDFW, 2017a). The counties of the Extended Study Area also include numerous areas of designated critical habitat. However, most of these special-status species would be unlikely to occur in, or depend upon, the urban habitat type.

Although agricultural habitat types tend to be of less value to wildlife than native habitats, some special-status species have adapted to agricultural lands. Species, such as the Swainson's hawk (*Buteo swansoni*), greater sandhill crane (*Grus canadensis tabida*), and bank swallow (*Riparia riparia*) use agricultural fields as foraging areas. Flooded fields and deciduous orchards have the potential to meet the cover, feeding, and reproduction needs of the giant garter snake and the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), respectively (CDFG, 2008a).

The fresh emergent wetlands of the wildlife refuges and WAs within the Extended Study Area have the potential to meet the cover, feeding, and reproduction needs of special-status species such as the California tiger salamander (*Ambystoma californiense*), California red-legged frog, greater sandhill crane, and giant garter snake (CDFG, 2008a).

The lacustrine habitat of San Luis Reservoir has the potential to support several special-status wildlife species, including the bald eagle and osprey. However, there are no known occurrences of bald eagles or osprey within the four USGS 7.5 minute quadrangles within which San Luis Reservoir is located. The nearest known locations are in eastern Merced County for both species (CDFG, 2010b). No bald eagle perch sites have been documented around the reservoir, which is surrounded by annual grassland and blue oak woodland habitats, but occasionally winter use by bald eagles may occur (Bureau of Reclamation [Reclamation], 2007). The open water habitat of the reservoir has the potential to support special-status species, such as the common loon, redhead (*Aythya americana*), Barrow's goldeneye (*Bucephala islandica*), black tern (*Chlidonias niger*), western snowy plover (*Charadrius alexandrinus nivosus*), and American white pelican (*Pelecanus erythrorhyncos*).

14.2.1.4 Commercially or Recreationally Important Wildlife Species

Many of the harvest species (i.e., those species hunted or trapped) found on agricultural lands are considered to be crop pests, and landowners consequently provide hunting opportunities to control these species. Up to 67 harvest species (39 birds, 27 mammals, and 1 amphibian) may occur within the urban and agricultural habitat types within the Extended Study Area, and up to 38 harvest species (26 birds, 11 mammals, and 1 amphibian) may occur within the fresh emergent wetland habitat on the WAs and refuges within the Extended Study Area (CDFG, 2008a). Seasonal waterfowl hunting occurs at San Luis Reservoir. Up to 27 waterfowl harvest species may occur within the lacustrine habitat of this reservoir.

Harvest birds include waterfowl, such as the mallard and greater white-fronted goose, and upland game birds, such as the ring-necked pheasant and wild turkey (*Meleagris gallopavo*). The WAs and refuges within the Extended Study Area have wetlands that are managed for waterfowl and provide waterfowl hunting opportunities to the public in designated areas. Private hunting opportunities exist on the flooded rice fields that are also managed for waterfowl.

Harvest mammals include furbearers, such as the American beaver and American mink; small game, such as the black-tailed jackrabbit and western gray squirrel; and big game, such as the black bear, wild pig, and mule deer.

14.2.2 Secondary Study Area

14.2.2.1 Methodology

Wildlife Habitats and Associated Wildlife

The WHR System (CDFG, 2008a; CDFG, 2014) was used to identify the potential number of species that could occur within the 18 counties included in the Secondary Study Area. A WHR species list was generated for the lacustrine, riverine, estuarine, montane riparian, valley foothill riparian, fresh emergent wetland, saline emergent wetland, barren, rice, irrigated grain crops, and irrigated row and field crops habitat types. Because only 10 counties can be entered into the WHR System at one time, three species lists were generated and then merged for each habitat type.

Special-status Wildlife Species

A list of special-status wildlife species that may occur within the Secondary Study Area was generated using the USFWS IPaC website (USFWS, 2017). The list includes federal endangered, threatened, and candidate species that may be affected within the 18 counties within the Secondary Study Area, as well as areas of designated critical habitat. The CNDDB Quick View Tool was also used to identify State-listed species and species of special concern (CDFW, 2017a). The generated lists include the entire county, and therefore, may contain species that would be found within the county, but not within the specific habitat types listed above. In addition, CNDDB's Rarefind 4 was queried for known occurrences within the 18 counties in the specified habitat types.

Commercially or Recreationally Important Wildlife Species

The Secondary Study Area provides seasonal and year-round habitat for a variety of commercially or recreationally important wildlife species. The WHR System (CDFG, 2008a) was used to generate a list of all harvest (hunted or trapped) species that could occur within the lacustrine, riverine, estuarine, valley foothill riparian, fresh emergent wetland, saline emergent wetland, and barren habitat types within the 18 counties listed above. Because only 10 counties can be entered into the WHR System at one time, three species lists were generated and then merged. A separate list was generated of all harvest species that could exist within the rice, irrigated grain crops, and irrigated row and field crops habitat types within the bypasses of Yolo and Sutter counties.

14.2.2.2 Wildlife Habitats and Associated Wildlife

Lacustrine

Lacustrine habitat is described in the Extended Study Area discussion. Lacustrine habitat within the Secondary Study Area primarily exists at the reservoirs, as well as at the Thermalito Forebay and Afterbay. The Forebay does not experience large water level fluctuations and, is therefore, able to support emergent aquatic vegetation (California Department of Water Resources [DWR], 2007a). Portions of the drawdown zone at Shasta Lake are also able to support limited amounts of early successional vegetation, such as willow, cottonwood, and various grasses and forbs (Reclamation, 2004).

Up to 166 species (120 birds, 18 mammals, 9 reptiles, and 19 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with lacustrine habitat are listed in the Extended Study Area discussion (Section 14.2.1.2).

Riverine

Riverine habitat includes free-flowing streams and rivers (Mayer and Laudenslayer, 1988a). Riverine habitat within the Secondary Study Area includes the Feather, Sacramento, Trinity, Lower Klamath, and American rivers, as well as Clear and Spring creeks.

Up to 159 species (101 birds, 26 mammals, 8 reptiles, and 24 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with the open-water zones of large rivers include the osprey, bald eagle, gulls, terns, and waterfowl. Insectivorous species, such as the Yuma myotis (*Myotis yumanensis*), bank swallow, black swift (*Cypseloides niger*), and black phoebe forage over open water.

Wildlife species commonly associated with the near-shore portions of rivers and streams include the belted kingfisher (*Megaceryle alcyon*), mallard, great egret, killdeer, American dipper (*Cinclus mexicanus*), foothill yellow-legged frog (*Rana boylii*), western pond turtle, northern river otter, American mink, and common muskrat. Riverine habitat also serves as a source of drinking water for wildlife.

Estuarine

Estuarine habitat occurs on periodically or permanently flooded substrates where tidal seawater mixes with, and is diluted by, flowing fresh water (Mayer and Laudenslayer, 1988a). Estuaries within the Secondary Study Area include the San Francisco, San Pablo, and Suisun bays, the mouth of the Klamath River, and the Sacramento-San Joaquin Delta.

The salinity of estuarine habitats varies seasonally depending on freshwater inflow and tidal action. Estuarine habitat has a low number of species, but a high density of those species that can tolerate the fluctuating salinity levels, such as benthic (bottom dwelling) invertebrates and plankton. Many bird and mammal species use estuarine habitat for feeding, resting, reproduction, and cover. Estuarine sub-tidal habitat supports eel grass (*Zostera* sp.), which the brant (*Branta bernicla*) depends on (Mayer and Laudenslayer, 1988a).

Up to 127 species (120 birds and 7 mammals) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with estuaries include the common loon, western grebe, double-crested cormorant, red-breasted merganser (*Mergus serrator*), lesser scaup (*Aythya affinis*), black-necked stilt (*Himantopus mexicanus*), Caspian tern (*Hydroprogne caspia*), and harbor seal (*Phoca vitulina*).

Montane Riparian

Montane riparian habitat usually occurs as a narrow, often dense, grove of broad-leaved winter deciduous trees, such as maple (*Acer* spp.), cottonwood (*Populus* spp.), and alder (*Alnus* spp.), with a sparse understory. This habitat type is found associated with montane lake, ponds, seeps, bogs, and meadows, as well as rivers, streams and springs, typically below 2,440 meters (m) (8,000 feet) in elevation (Mayer and Laudenslayer, 1988a).

Within the Secondary Study Area, montane riparian habitat that could be affected by the Sites Reservoir Project (Project) operation exists along the Trinity and Klamath rivers. In Trinity County, dominant tree species include bigleaf maple (*Acer macrophyllum*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), black cottonwood (*Populus balsamifera*), and black willow (*Salix gooddingii*). Typical understory species include mugwort (*Artemisia douglasiana*), virgin's bower (*Clematis*

ligusticifolia), American dogwood (*Cornus sericea*), Oregon golden-aster (*Heterotheca oregona*), straggly gooseberry (*Ribes divaricatum*), Himalayan blackberry (*Rubus discolor*), California blackberry (*Rubus ursinus*), narrow-leaved willow, arroyo willow (*Salix lasiolepis*), and California wild grape (*Vitis californica*) (Reclamation, 2009).

Up to 300 species (159 birds, 91 mammals, 22 reptiles, and 28 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with montane riparian habitat include the roughskin newt (*Taricha granulosa*), Pacific chorus frog, Pacific giant salamander (*Dicamptodon tenebrosus*), osprey, peregrine falcon, great horned owl, belted kingfisher, vagrant shrew (*Sorex vagrans*), long-eared myotis (*Myotis evotis*), western harvest mouse, common muskrat, American mink, California mountain kingsnake (*Lampropeltis zonata*), and western terrestrial garter snake (*Thamnophis elegans*).

Valley Foothill Riparian

Valley foothill riparian habitat occurs in valleys and foothills and is usually associated with low-velocity flows or floodplains. The canopy is dominated by cottonwood, California sycamore (*Platanus racemosa*), and valley oak (*Quercus lobata*). The sub-canopy is dominated by white alder, box elder (*Acer negundo*), and Oregon ash (*Fraxinus latifolia*). The typically impenetrable understory shrub layer includes wild grape, California blackberry, poison oak (*Toxicodendron diversilobum*), and willows. Elderberry shrubs (*Sambucus* sp.) are often associated with this habitat type (Mayer and Laudenslayer, 1988a).

CDFW has designated riparian habitat as a sensitive habitat because of its limited abundance and high value to wildlife. Numerous wildlife species use this habitat type for food, water, migration corridors, escape habitat, nesting habitat, and thermal cover. Valley foothill riparian habitat exists within the Secondary Study Area along the rivers and creeks, as well as within the Yolo and Sutter bypasses. Most remaining stretches of riparian habitat are narrow and fragmented. However, the Oroville WA contains over 3,000 acres of valley foothill riparian habitat, representing the largest remaining block of riparian habitat along the Feather River (DWR, 2007b).

Up to 312 species (188 birds, 73 mammals, 27 reptiles, and 24 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with valley foothill riparian habitat include the California slender salamander (*Batrachoseps attenuatus*), foothill yellow-legged frog, green heron (*Butorides virescens*), osprey, California quail, great horned owl (*Bubo virginianus*), belted kingfisher, downy woodpecker (*Picoides pubescens*), black phoebe, bank swallow, canyon wren (*Catherpes mexicanus*), vagrant shrew, several bat species, western gray squirrel, ringtail (*Bassariscus astutus*), American mink, western pond turtle, western skink (*Eumeces skiltonianus*), common kingsnake (*Lampropeltis getula*), and western aquatic garter snake (*Thamnophis couchii*). The WHR System does not include invertebrates, but the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is also associated with this habitat type when elderberry shrubs are present.

Fresh Emergent Wetland

Fresh emergent wetland is described in the Extended Study Area discussion (Section 14.2.1.2). Fresh emergent wetland occurs throughout the secondary study area at the confluence of streams and reservoirs, in landscape depressions along the creeks and rivers, in backwater areas of the rivers, in dredger ponds, around Thermalito Forebay and Afterbay, and in the Yolo and Sutter bypasses. Wetlands also occur in seeps and springs above the high water lines of the reservoirs, but typically are absent within the

drawdown zone of the reservoirs. More than 850 acres of wetlands are present within the Thermalito Complex (DWR, 2007b; Reclamation, 2009).

Up to 189 species (121 birds, 36 mammals, 12 reptiles, and 20 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with fresh emergent wetland are listed in the Extended Study Area discussion (Section 14.2.1.2).

Saline Emergent Wetland

Saline emergent wetland consists of salt or brackish marshes and contains vegetation, such as cordgrass (*Spartina* sp.), pickleweed (*Salicornia* sp), saltgrass (*Distichlis spicata*), and glasswort (*Salicornia* sp.). These wetlands occur above intertidal sand and mud flats and below upland communities not subject to tidal action, mainly along the margins of bays, lagoons, and estuaries. Within the Secondary Study Area, saline emergent wetland habitat occurs around San Pablo Bay, Suisun Bay, and portions of the Delta, with the largest stands of saline emergent wetland occurring in San Francisco Bay (Mayer and Laudenslayer, 1988a).

Up to 119 species (112 birds and 17 mammals) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with saline emergent wetland include the eared grebe, black-crowned night heron, peregrine falcon (*Falco peregrinus*), California black rail (*Laterallus jamaicensis coturniculus*), California Ridgway's rail (*Rallus obsoletus obsoletus*), short-eared owl, red-winged blackbird, salt marsh harvest mouse (*Reithrodontomys raviventris*), and American mink.

Barren

Barren habitat is defined by the absence of vegetation, although opportunistic grasses and forbs or weedy species may occur. Barren habitat exists in many forms throughout the Secondary Study Area. The mudflats surrounding estuarine, fresh emergent wetland, and saline emergent wetland habitats are considered to be barren habitat. Along rivers, barren habitat includes vertical river banks and canyon walls, sealed rip-rap features, dredger tailings, rock outcrops, and gravel bars adjacent to the rivers. Barren habitat also includes the drawdown zone of reservoirs (Mayer and Laudenslayer, 1988a; Reclamation, 2004; Reclamation, 2009).

Up to 124 species (86 birds, 35 mammals, 2 reptiles, and 1 amphibian) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with barren habitat include the killdeer, bank swallow, belted kingfisher, black swift and American avocet (*Recurvirostra americana*).

Rice

Rice habitat is described in the Extended Study Area discussion (Section 14.2.1.2). Rice is the predominant crop type within the Yolo and Sutter bypasses. Up to 194 species (136 birds, 33 mammals, 19 reptiles, and 6 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with rice are listed in the Extended Study Area discussion (Section 14.2.1.2).

Irrigated Grain Crops

Irrigated grain crops are described in the Extended Study Area discussion (Section 14.2.1.2). Crops, such as corn and safflower, are grown in the Secondary Study Area within the Yolo and Sutter bypasses. Up to

157 species (98 birds, 50 mammals, 5 reptiles, and 4 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated grain crops are listed in the Extended Study Area discussion (Section 14.2.1.2).

Irrigated Row and Field Crops

Irrigated row and field crops are described in the Extended Study Area discussion (Section 14.2.1.2). Crops, such as tomatoes and melons, are grown in the Secondary Study Area within the Yolo and Sutter bypasses. Up to 107 species (43 birds, 50 mammals, 9 reptiles, and 5 amphibians) may be found within this habitat type within the Secondary Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated row and field crops are listed in the Extended Study Area discussion (Section 14.2.1.2).

14.2.2.3 Special-status Wildlife Species

More than 170 State- and federally listed species, candidate species, and species of special concern may occur within the counties of the Secondary Study Area (USFWS, 2017; CDFW, 2017a). These counties also include numerous areas of designated critical habitat. Many of these special-status species would not be affected by changes in stream flow patterns or fluctuating reservoir levels. Twelve of these special-status species are associated with habitats that could be affected by changes to existing facility operations in the Secondary Study Area as a result of the Project. The 12 listed species that could be affected by these operational changes are discussed below.

Reptiles and Amphibians

California Red-legged Frog

The California red-legged frog inhabits humid forests, woodlands, grasslands, and stream sides where dense shrubby or riparian vegetation provides good cover. This species can be found in streams, lakes, reservoirs, ponds, or other permanent sources of water, but is generally absent from water sources that are inhabited by the bullfrog (Stebbins, 1985, Stebbins and Cohen, 1995).

The California red-legged frog is known to occur in streams in 13 of the 18 counties within the Secondary Study Area. The locations of those occurrences include tributary creeks, small ponds, and lakes (CDFG, 2010b). In 2002, USFWS prepared the *Recovery Plan for the California Red-Legged Frog*. The objective of the plan is to reduce threats and improve the population status of the California red-legged frog sufficiently to warrant delisting. The plan contains maps of recovery units. Within the recovery units, there are several areas that have been identified as core areas where recovery actions will be focused. Two of those core areas are located within the Secondary Study Area. The Cottonwood Creek Core Area includes Lower Cottonwood Creek and its confluence with the Sacramento River in Shasta and Tehama counties. The South San Francisco Bay Core Area includes the edge of San Francisco Bay within Marin County (USFWS, 2002).

Foothill Yellow-legged Frog

The foothill yellow-legged frog ranges from the Oregon border to Los Angeles County along the Coast Ranges, in Northern California west of the Cascade Crest, and along the Sierras to Kern County at elevations ranging from near sea level to 1942 m (6,370 feet). This frog is found in a variety of habitats in or near rocky streams, including valley foothill riparian, mixed chaparral, mixed conifer, and wet meadow.

This species uses submerged rock or sediment as cover when disturbed, and seeks cover under rocks instream or near water during periods of inactivity. The foothill yellow-legged frog is rarely found away

from a permanent water source, and tadpoles require a permanent water source for up to 4 months during development. Breeding and egg-laying occur from mid-March to May following spring flooding (Mayer and Laudenslayer, 1988b).

The foothill yellow-legged frog is known to occur in 17 of the 18 counties within the secondary study area, but is not found in the valley portions of many of those counties. Foothill yellow-legged frogs have been observed in the canyon reach of lower Clear Creek downstream of Whiskeytown Dam, and are known to occur in the Trinity River from Lewiston Dam to the North Fork Trinity River (Reclamation, 2009; Bureau of Land Management [BLM], 2008).

Giant Garter Snake

The giant garter snake inhabits agricultural wetlands and other waterways, such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley. Because of the direct loss of natural habitat from agricultural and urban development, the giant garter snake relies heavily on rice fields and their associated drains and canals in the Sacramento Valley. Giant garter snakes are typically absent from larger rivers because of lack of suitable habitat and emergent vegetative cover, and from wetlands with sand, gravel, or rock substrates. Riparian woodlands typically do not provide suitable habitat because of excessive shade, lack of basking (sunning) sites, and absence of prey populations (USFWS, 2009).

Within the Secondary Study Area, the giant garter snake is presumed to occur in Butte, Colusa, Glenn, Sacramento, Solano, Sutter and Yolo counties. Suitable giant garter snake habitat exists within portions of the Thermalito Forebay and Afterbay, the Oroville WA, lands subject to rice agriculture adjacent to Thermalito Afterbay, and in isolated patches of backwater habitats along the Feather River (DWR, 2007a). This species is known to occur along the western border of the Yolo Bypass, and was documented in the western Delta in 1998 in the vicinity of Sherman Island. Although giant garter snakes have not been documented within the Sutter Bypass, they are known to occur on the lands immediately adjacent to the bypass and therefore may occur within suitable habitat in the bypass.

USFWS has proposed recovery units where recovery actions are needed to benefit the giant garter snake. The Sacramento Valley and Mid Valley recovery units, which are located within the Secondary Study Area, include stretches of the Sacramento, Feather, and American rivers, the Yolo and Sutter bypasses, and portions of the Sacramento-San Joaquin Delta (USFWS, 1999a). Although the rivers are not expected to provide suitable habitat for the giant garter snake, some of the oxbows and backwater sloughs, as well as the lands immediately adjacent to the rivers, may provide suitable habitat.

Western Pond Turtle

The western pond turtle ranges throughout California west of the Sierra-Cascade crest, with the exception of the desert regions, at elevations ranging from near sea level to 1430 m (4,690 feet). This turtle is associated with water that is permanent or nearly permanent in a variety of habitats. The western pond turtle uses rocks, floating vegetation, or other partially submerged substrates as basking sites, and seeks cover underwater when disturbed. Females travel on land to seek out suitable nest sites in spring or early summer, laying eggs from March to August (Mayer and Laudenslayer, 1988b).

Western pond turtles can be found throughout the Secondary Study Area in lacustrine, riverine, fresh emergent wetland, montane riparian, and valley foothill riparian habitats.

Birds

Bald Eagle

Wintering bald eagles use a wide variety of habitats including lacustrine, riverine, riparian, emergent wetland, and agricultural croplands. Nesting bald eagles are restricted to habitats associated with large fish-bearing lakes, reservoirs, and rivers with suitable nest trees (Lehman, 1979; Mayer and Laudenslayer, 1988c). The breeding season ranges from February through July.

Bald eagles winter throughout most of the Secondary Study Area in suitable habitat, with extensive winter use occurring at Lake Oroville and Lake Shasta, and regular use occurring along the Feather and Sacramento rivers. A substantial number of bald eagle nests have been documented at Lake Shasta. Nesting bald eagles have also been documented on Lake Oroville and at the Diversion Pool; on the Feather, Klamath, Sacramento, and Trinity rivers; and at Folsom, Lewiston, Trinity, and Whiskeytown lakes (CDFG, 2007b; BLM, 2008; DWR, 2007a; Reclamation, 2008; CDFG, 2010a).

Bank Swallow

Bank swallows are migratory birds that live in colonies and nest in cavities. Bank swallows use a variety of habitats in and around the Sacramento Valley. Nesting is restricted to riparian, lacustrine, or riverine habitats with vertical cliffs or banks composed of sandy or loamy soils near water (Garrison et al., 1987, Mayer and Laudenslayer, 1988c). Nesting does not normally occur on ephemeral streams or on compacted clay or gravelly substrates. The breeding season ranges from mid-March through July. Foraging activities occur primarily over riparian habitat where insects are taken while flying.

Within the Secondary Study Area, bank swallows are known to occur in many areas, including along the Sacramento River in Shasta, Tehama, Butte, Glenn, Colusa, Sutter and Yolo counties, along the Feather River, and along the American River in the San Juan Rapids area, and along Seven-Mile slough near Three-Mile Slough in the Sacramento-San Joaquin Delta. Nesting bank swallows have also been observed on lower Clear Creek.

Protocol-level bank swallow surveys are conducted on the Sacramento and Feather rivers by CDFW, USFWS, and DWR. Surveys on the Sacramento River in 2008 and 2009 documented 65 and 64 active bank swallow colonies, respectively. The 2008 surveys were conducted from the Red Bluff Diversion Dam to Verona, and the 2009 surveys were conducted from Keswick Dam to Verona. Surveys on the Feather River in 2008 and 2009 documented 18 and 20 active bank swallow colonies, respectively, located from downstream of the Thermalito Afterbay outlet to the confluence with the Sacramento River (CDFG, 2008b; CDFG, 2009d).

California Black Rail

The California black rail is found in the high wetland zones of saline or brackish emergent wetlands associated with heavy growth of pickleweed or with bulrush in association with pickleweed. In freshwater emergent wetlands, it prefers bulrushes, cattails, and saltgrass. This species typically does not occur in low wetland areas with considerable fluctuations in water levels. This species is mostly resident, but may winter in areas where it does not breed (Mayer and Laudenslayer, 1988c).

Within the Secondary Study Area, California black rails occur in San Francisco, San Pablo, and Suisun bays, as well as in portions of the Delta. The majority of breeders occur at San Pablo Bay. While this

species occurs within the Secondary Study Area, it is unlikely that its habitat would be affected by the Project.

California Ridgway's Rail

The California Ridgway's rail (formerly California clapper rail) is a resident in saline, fresh, or brackish emergent wetlands in the vicinity of San Francisco Bay. This species is restricted to emergent wetlands and tidal sloughs with heavy growth of pickleweed and cordgrass, and in brackish wetlands with pickleweed, cordgrass, and bulrush. California Ridgway's rails require shallow water and mudflats for foraging, as well as adjacent higher vegetation for cover during high water (Mayer and Laudenslayer, 1988c).

Within the Secondary Study Area, the California Ridgway's rail is known to occur along San Francisco Bay, San Pablo Bay, and Suisun Bay and Marsh. While this species occurs within the Secondary Study Area, it is unlikely that its habitat would be affected by the Project.

Greater Sandhill Crane

Greater sandhill cranes breed in Great Basin habitats in Northern California where they select open, shallow lacustrine, irrigated pasture, or wetland habitats for nesting. Saline waters are avoided. Winter habitat consists of annual and perennial grasslands, moist croplands (corn, sorghum, barley, and rice), or emergent wetlands (Mayer and Laudenslayer, 1988c).

Within the Secondary Study Area, many greater and lesser sandhill cranes winter in the interior of the Sacramento Valley. The emergent wetlands of the Delta also provide suitable foraging habitat for these species.

Willow Flycatcher

The willow flycatcher prefers montane riparian areas and large wet meadows with abundant willows. They are most numerous where there are extensive thickets of low dense willows on the edge of wet meadows, ponds, or backwaters (Mayer and Laudenslayer, 1988c).

Within the Secondary Study Area, willow flycatchers have been regularly observed foraging along lower Clear Creek during spring and fall migration, but no nesting has been observed in the lower Clear Creek watershed (BLM, 2008). This species has also been observed along the Trinity River corridor (Reclamation, 2009), and may use riparian woodlands during migration along the Upper Sacramento River from the Red Bluff Diversion Dam to Shasta Dam (Reclamation, 2008).

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is a migratory species that does not winter in California. Suitable nesting habitat, typically in dense mixed riparian forest habitat, consists of extensive (25 acres or larger) riparian forest with dense understory (willow) near slow moving waters (Mayer and Laudenslayer, 1988c). Walnut orchards adjacent to riparian areas have also been used successfully as nesting habitat (Laymon, 1980).

Within the Secondary Study Area, several small isolated breeding populations occur in suitable habitat along the upper Sacramento River, as well as along the lower Feather River. One individual western yellow-billed cuckoo was observed in lower Clear Creek in 2004, but this species is not believed to nest in that area (CDFG, 2008a; Reclamation, 2008; DWR, 2007a; BLM, 2008).

Mammals

Salt-marsh Harvest Mouse

The salt-marsh harvest mouse (*Reithrodontomys raviventris*) is found only in saline emergent wetland habitat, with a preference for areas of dense pickleweed. This species also requires nearby non-submerged, salt-tolerant vegetation for escape during highest tides (Mayer and Laudenslayer, 1988d).

The salt-marsh harvest mouse is found within the Secondary Study Area in the saline emergent wetlands around San Francisco, San Pablo, and Suisun bays, as well as portions of the Delta (CDFG, 2008a; Reclamation, 2006). While this species occurs within the Secondary Study Area, it is unlikely that its habitat would be affected by the Project.

14.2.2.4 Commercially or Recreationally Important Wildlife Species

Up to 67 harvest species (43 birds, 23 mammals, and 1 amphibian) may occur in the Secondary Study Area within the 7 natural habitat types, and up to 52 harvest species (31 birds, 20 mammals, and 1 amphibian) may occur in the Sutter and Yolo county portion of the Secondary Study Area within the 3 agricultural habitat types (CDFG, 2008a). Examples of harvest bird and mammal species are listed in the Extended Study Area discussion (Section 14.2.1.4).

The Secondary Study Area includes portions of 11 of the State's deer hunting zones (CDFG, 2009a). The Oroville WA, as well as the managed wetlands and flooded rice fields of private duck clubs within the Sutter and Yolo bypasses, provide waterfowl hunting opportunities (DWR, 2007a).

14.2.3 Primary Study Area

14.2.3.1 Methodology

Wildlife Habitats and Associated Wildlife

The vegetation types within the proposed Sites Reservoir footprint were delineated by hand on aerial photo overlays, field-verified, and digitized. Vegetation types in other Project facility locations were delineated using ArcView GIS software, aerial photo interpretation, and field verification. A detailed description of survey methods used to map vegetation is provided in Chapter 13 Botanical Resources. Mapped vegetation types were reclassified into WHR habitat types. The WHR System (CDFG, 2008a; CDFG, 2014) was then used to identify the potential number of wildlife species that could occur within the habitat types in the Primary Study Area.

A variety of research and field survey methods were used to sample wildlife. Preliminary research included general literature searches, consultation with agency and species experts, aerial photo habitat interpretations, and landowner interviews. In addition, reviews of the CNDDB, WHR System, and the *Federal Register* of Threatened, Endangered, and Special-status Species were conducted.

Initial field surveys were conducted within the Primary Study Area from 1998 to 2004 at all Project facility locations, then again in 2010 to 2011 at newly proposed Project facility locations. Amphibian and reptile surveys included night driving, dip-netting, seining, ground searches, and habitat assessment. Avian surveys included line transects and bank swallow, yellow-billed cuckoo, and owl surveys. Mammal surveys included small mammal trapping, mist netting, acoustical surveys, roost searches, track plates, camera stations, spotlighting, general habitat measurements and assessment, and incidental observation.

Detailed descriptions of these survey methods are listed in their associated survey progress reports (CDFG, 2003a; CDFG, 2003b; DWR, 2003).

The suite of field surveys described above was intended to characterize habitat and wildlife communities in the Primary Study Area under Existing Conditions. These conditions are not expected to change in a meaningful way in the near term; however, additional general wildlife and habitat surveys prior to Project construction will be conducted. It is recognized that he distribution of special-status species or important habitat features (e.g., nest sites) may change during the period prior to construction, which could influence the location and extent of mitigation. Accordingly prior to construction, additional special-status species surveys will be conducted as necessary in consultation with USFWS and CDFW. Any additional special-status species surveys will be conducted according to established guidelines or protocols as described in Mitigation Measures (Section 14.4).

Special-status Wildlife Species

A current list of special-status wildlife was generated using the USFWS's IPaC website (USFWS, 2017). The list covered the following USGS 7.5-minute quadrangle maps (map numbers are provided in parentheses): Leesville (547B), Manor Slough (547A), Lodoga (563C), Sites (563D), Maxwell (562C), Moulton Weir (562D), Rail Canyon (563B), and Logan Ridge (563A). The list includes federal endangered, threatened, and candidate species that may be affected within the Primary Study Area, as well as areas of designated critical habitat. The list was generated prior to initiation of field surveys (September 1997 and October 1998), updated during the development of the progress report (July 2002), and updated again during the preparation of this environmental document (October 2009 and January 2017).

The CNDDB Quick View Tool (CDFW, 2017a) and Special Animals List (CDFW, 2017b) were used in conjunction with the WHR System (CDFG, 2008a) to identify State-listed wildlife species and species of special concern. Wildlife species listed as federal species of concern, State species of special concern, or State fully protected species were included. Species which were listed at the start of field surveys, but have since been delisted, were not included. Species designated as only BLM or U.S. Forest Service (USFS) Sensitive Species were not included because the Project features are not proposed to be constructed on USFS or BLM land. In addition, bat species designated as High Priority by the Western Bat Working Group, but not with a State or federal status, were not included.

The CNDDB's Rarefind 3 and Rarefind 4 software were used to document the nearest known locations to the Primary Study Area of threatened or endangered species that were not observed during field surveys. Lack of documentation in the Rarefind database within a county does not imply absence of the species in that county.

During field surveys, the valley elderberry longhorn beetle (VELB) was surveyed according to procedures outlined in the USFWS 1996 report on mitigation guidelines. Subsequent surveys followed the 1999 guidelines. Vernal pool crustaceans were sampled in accordance with the USFWS protocols contained in "Interim Survey Guidelines to Permittees for Recovery Permits pursuant to Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods" (April 19, 1996).

Commercially or Recreationally Important Wildlife Species

The Primary Study Area provides seasonal and year-round habitat for a variety of commercially or recreationally important wildlife species. The WHR System (CDFG, 2008a) was used to generate a list of

all harvest (hunted or trapped) species that could occur in Colusa and Glenn counties within the habitat types present in the Primary Study Area.

14.2.3.2 Wildlife Habitats and Associated Wildlife

Eighteen wildlife habitat types were identified within the Primary Study Area. Of those 18 wildlife habitat types, the principal types, based on total acreage within the Primary Study Area, include annual grassland, blue oak woodland, rice, dryland grain and seed crops, irrigated row and field crops, pasture, lacustrine, urban/disturbed, and valley foothill riparian. The total acreage of each habitat type within the Primary Study Area, as well as the percent that each habitat type represents of the total Project acreage, is presented in Table 14-1. Acreage totals reflect baseline conditions[2] and represent the Project alternative that has the largest construction-related on-the-ground disturbance (Alternative C). Acreage totals include the footprint of each Project facility and the defined construction disturbance area for the Delevan Pipeline. The principal habitat types are described below.

Table 14-1
Wildlife Habitat Types within the Primary Study Area

Habitat Type	Acreage	
	Primary Study Area[a]	Percent of Primary Study Area Total
Annual grassland	14,765.5	75.4
Barren[b]	21.6	0.1
Blue oak woodland	1,531.9	7.8
Canal	22.4	0.1
Chamise-redshank chaparral	2.5	0[e]
Deciduous orchard	188.6	1.0
Dryland grain and seed crops	535.9	2.7
Eucalyptus	46.2	0.2
Fresh emergent wetland[c]	18.5	0.1
Irrigated row and field crops	366.1	1.9
Lacustrine[d]	28.8	0.2
Mixed chaparral	2.6	0[e]
Pasture	312.7	1.6
Rice	1,493.7	7.6
Riverine	1.6	0[e]
Urban/disturbed	136.8	0.7
Valley foothill riparian	113.6	0.6
Valley oak woodland	3.5	0[e]
TOTAL	**19,592.0**	**100**

[a]The Primary Study Area acreage totals include the proposed Alternative C facility footprints, and the construction disturbance area for the Road Relocations, Sites/Delevan Overhead Power Line, Delevan and Terminal Regulating Reservoir (TRR) pipelines, TRR to Funks Creek Pipeline, Holthouse to Tehama-Colusa Canal Pipeline, and Glenn-Colusa Irrigation District (GCID) Canal Facilities Modifications. This total does not include acreage occupied by existing facilities, namely Funks Reservoir and the GCID Main Canal. These totals are similar to those anticipated for Alternative D and more than would be anticipated for the other alternatives.

[b]Barren habitat includes fallowed agricultural fields.

[c]Fresh Emergent Wetland includes alkaline wetlands.

[d]Lacustrine habitat includes ponds.

[e]Represents less than 0.1 percent of total.

[2] Agricultural habitat types change from year to year and vary between actively managed and fallowed fields. Additional acreage of natural habitat types have been converted to agricultural habitat types since the time of baseline.

Annual Grassland

Annual grassland habitat occurs mostly on flat plains to rolling foothills and is composed primarily of introduced annual plant species. Perennial species can occur in moist areas, and vernal pools can occur within annual grassland habitat where depressions are underlain by impervious clay or hardpan soils. Grassland composition and structure depends on precipitation and grazing practices (Mayer and Laudenslayer, 1988a).

Approximately 75 percent of the Primary Study Area is annual grassland habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Extensive annual grassland habitat occurs at all Project facility locations, except for the Delevan Pipeline Intake/Discharge Facilities. Within the grassland areas are livestock ponds, small rock outcrops, and vernal pools and swales. Yellow star thistle infestations are common.

Up to 196 species (116 birds, 51 mammals, 18 reptiles, and 11 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in annual grassland habitat included the Pacific chorus frog, western fence lizard, western rattlesnake (*Crotalus viridis*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), American kestrel, turkey vulture (*Cathartes aura*), deer mouse (*Peromyscus maniculatus*), San Joaquin pocket mouse, California ground squirrel, black-tailed jackrabbit, American badger (*Taxidea taxus*), mule deer, and coyote (*Canis latrans*).

Blue Oak Woodland

Blue oak woodland habitat generally has an overstory of scattered trees, with varying densities of blue oaks (*Quercus douglasii*) comprising 85 to 100 percent of the trees present. This habitat includes the interior live oak (*Q. wislizenii*) and the valley oak. Shrubs, such as chamise (*Adenostoma fasciculatum*), buckbrush (*Ceanothus cuneatus*), and whiteleaf manzanita (*Arctostaphylos viscida*), are often present, and the typical understory is composed of an extension of annual grassland vegetation. Blue oaks grow slowly and regeneration is rarely successful on grazed lands (Mayer and Laudenslayer, 1988a).

More than 7 percent of the Primary Study Area is blue oak woodland habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Blue oak woodland habitat occurs in varying forms within the Primary Study Area in smaller valleys, on slopes, on ridge tops, and in moderately rocky to well-drained areas. Project facility locations vary widely in the representation of blue oak-dominated woodlands. Woodlands range from sparse stands of large-diameter trees to dense stands of small-diameter trees. Stands include a few snags and logs, as well as brush piles and stumps that are the result of fuel wood harvest activities. Blue oak woodland exists within the proposed Sites Reservoir footprint, along portions of most of the road relocations (excluding the North Road and Eastside Road), and at all of the Recreation Areas, with the exception of Saddle Dam.

Up to 227 species (141 birds, 54 mammals, 19 reptiles, and 13 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in blue oak woodland habitat included the California slender salamander, western fence lizard, southern alligator lizard (*Elgaria multicarinata*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), brush mouse, California ground squirrel, black-tailed jackrabbit, raccoon, and wild pig.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat includes non-irrigated barley, oats, and wheat. These grain and seed crops are typically planted in the fall and harvested in the spring, often in rotation with irrigated crops or fallowed for a few seasons. Dryland grain and seed crops are usually planted on fertile soils that once supported diverse native habitats, although barley can be grown on poor quality saline or alkaline soils. These monoculture, harvested, and chemically-controlled crops have limited value to most wildlife, but species, such as deer, Tule elk, and pigs, have adapted and can be crop pests (Mayer and Laudenslayer, 1988a).

More than 2 percent of the Primary Study Area is dryland grain and seed crops (representing less than 1 percent of the total acreage of this habitat type found throughout California). Dryland grain and seed crops exist within the Primary Study Area mainly within the proposed Sites Reservoir footprint, and in smaller amounts along the Delevan Pipeline, within the footprints of the TRR and Holthouse Reservoir, and along Sulphur Gap Road.

Up to 106 species (54 birds, 42 mammals, 6 reptiles, and 4 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species commonly associated with dryland grain and seed crops include the northern harrier, ring-necked pheasant, red-winged blackbird, and Botta's pocket gopher.

Irrigated Row and Field Crops

Irrigated row and field crops are described in the Extended Study Area discussion (Section 14.2.1.2). Nearly 2 percent of the Primary Study Area is irrigated row and field crops (representing less than 1 percent of the total acreage of this habitat type found throughout California). This crop type is found within the footprint of Holthouse Reservoir, and within the construction disturbance areas of the Delevan Pipeline and Sites/Delevan Overhead Power Line.

Up to 94 species (41 birds, 43 mammals, 6 reptiles, and 4 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species commonly associated with irrigated row and field crops habitat are described in the Extended Study Area discussion (Section 14.2.1.2).

Lacustrine

Lacustrine habitat is described in the Secondary Study Area discussion (Section 14.2.2.2). Approximately 1 percent of the Primary Study Area is lacustrine habitat.[3] Lacustrine habitat, in the form of human-made ponds, is found in small amounts within the proposed Sites Reservoir footprint and Saddle Dam and Lurline Headwaters recreation areas, as well as along the portions of all road segments and the Delevan Pipeline. The majority of the acreage of lacustrine habitat occurs at the existing Funks Reservoir.

Up to 135 species (103 birds, 17 mammals, 5 reptiles, and 10 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in lacustrine habitat included the mallard, western grebe, great blue heron, and American coot.

[3] The total acreage of lacustrine habitat throughout California is not available. Therefore, the percentage of total lacustrine habitat that the lacustrine habitat in the Primary Study Area would encompass cannot be determined.

Pasture

Pasture habitat is described in the Extended Study Area discussion (Section 14.2.1.2). More than 1 percent of the Primary Study area is pasture habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Within the Primary Study Area, pasture is found mainly within the proposed Sites Reservoir footprint. Pasture is also found to a lesser extent along the Delevan Pipeline and within the footprint of the TRR.

Up to 72 species (9 birds, 49 mammals, 10 reptiles, and 4 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species commonly associated with pasture habitat are described in the Extended Study Area discussion (Section 14.2.1.2).

Rice

Rice habitat is described in the Extended Study Area discussion (Section 14.2.1.2). More than 7 percent of the Primary Study Area is rice habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Within the Primary Study Area, the Delevan Pipeline route and TRR have substantial rice coverage.

Up to 186 species (133 birds, 33 mammals, 15 reptiles, and 5 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in rice habitat included the great blue heron, great egret, and raccoon.

Urban/Disturbed

Urban/disturbed habitat is described in the Extended Study Area discussion (Section 14.2.1.2). Less than 1 percent of the Primary Study Area is urban/disturbed habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Urban/disturbed habitat exists within the Primary Study Area in the form of residences, outbuildings, and stockyards. These sites may include nonnative ornamental varieties of plants, or may support very little or no vegetation. Urban areas are located within most of the Project facility locations, with the exception of the Delevan Pipeline Intake/Discharge Facilities, Holthouse Reservoir, Funks Reservoir, and the Recreation Areas. Up to 192 species (147 birds, 34 mammals, 7 reptiles, and 4 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in this habitat type and associated with structures included the house sparrow, yellow-billed magpie, and pallid bat (*Antrozous pallidus*).

Valley Foothill Riparian

Valley foothill riparian habitat is described in the Secondary Study Area discussion (Section 14.2.2.2). Less than 1 percent of the Primary Study Area is valley foothill riparian habitat (representing less than 1 percent of the total acreage of this habitat type found throughout California). Valley foothill riparian habitat was mapped in areas where no single woody species dominated the riparian canopy, and where streamside vegetation was dominated by the valley oak. Mexican elderberry (*Sambucus mexicana*) occurs within or adjacent to riparian areas, as individuals or in small stands. Streams within this habitat type are intermittent, and streambeds are typically dry or contain only isolated pools of water during summer.

Disturbed valley foothill riparian is scattered in small patches throughout the proposed Sites Reservoir footprint, at Funks and Holthouse reservoirs, at the Delevan Pipeline Intake/Discharge Facilities, and is

found in very small amounts along portions of most roads (excluding the saddle dam and recreation area access roads) and the Delevan Pipeline route. Up to 267 species (176 birds, 58 mammals, 19 reptiles, and 14 amphibians) may be found within this habitat type within the Primary Study Area (CDFG, 2008a). Wildlife species frequently observed during field surveys in this habitat type included the bullfrog, western toad, western fence lizard, common garter snake, killdeer, raccoon, gray fox (*Urocyon cinereoargenteus*), coyote, and mule deer.

14.2.3.3 Wildlife Habitats at the Project/Action Facility Locations

The wildlife habitat types at each Project facility location are presented in Table 14-2.

Table 14-2
Wildlife Habitat Types at Each Project Facility Location

Project facility	Annual Grassland	Barren	Blue oak Woodland	Canal	Chamise-redshank Chaparral	Deciduous Orchard	Dryland grain and Seed Crops	Eucalyptus	Fresh Emergent Wetland	Irrigated row and Field Crops	Lacustrine	Mixed Chaparral	Pasture	Rice	Riverine	Urban/Disturbed	Valley Foothill Riparian	Valley Oak Woodland
Sites Reservoir and Dams	X		X				X				X		X			X	X	X
Recreation Areas	X		X		X						X							
Road Relocations and South Bridge	X		X	X	X		X				X	X				X	X	
Sites Reservoir Inlet / Outlet Structure and Sites Pumping / Generating Plant	X										X					X	X	
Tunnel from Sites Pumping / Generating Plant to Sites Inlet / Outlet Structure	X																	
Sites Electrical Switchyard	X																	
Field Office Maintenance Yard	X																	
Holthouse Reservoir Complex	X			X			X			X	X					X	X	
GCID Main Canal Facilities Modifications				X												X		
GCID Main Canal Connection to the TRR				X			X											
Terminal Regulating Reservoir							X						X	X		X		
TRR Pumping / Generating Plant and TRR Electrical Switchyard														X				
TRR Pipeline and TRR Pipeline Road				X			X						X	X				
Delevan Pipeline and Delevan Pipeline Electrical Switchyard		X		X		X	X	X	X	X	X		X	X		X		
Sites/Delevan Overhead Power Line (Alternatives A, B, C/C_1)	X	X		X		X	X	X	X	X	X		X	X		X	X	

Project facility	Annual Grassland	Barren	Blue oak Woodland	Canal	Chamise-redshank Chaparral	Deciduous Orchard	Dryland grain and Seed Crops	Eucalyptus	Fresh Emergent Wetland	Irrigated row and Field Crops	Lacustrine	Mixed Chaparral	Pasture	Rice	Riverine	Urban/Disturbed	Valley Foothill Riparian	Valley Oak Woodland
Delevan Overhead Power Line and Substation (Alternative D)										X						X		
Delevan Pipeline Intake / Discharge Facilities				X		X									X	X	X	
Project Buffer	X	X	X	X	X	X	X			X	X		X	X		X	X	X

14.2.3.4 Special-status Wildlife Species – Threatened, Endangered, or Candidate Species

Fifteen threatened, endangered, or candidate wildlife species have the potential to occur within the Primary Study Area (Table 14-3) (USFWS, 2017; CDFW, 2017a). Of those 15 species, field surveys, consultations, and post-survey observations resulted in the documentation of five species. Brief descriptions of these 15 species are provided below. No critical habitat for any species has been designated within the Primary Study Area.

Table 14-3
State- and Federally Listed Terrestrial Wildlife Species that Potentially Occur in the Primary Study Area

Species	Scientific Name	Status[a]	Habitat Association[b]	Potential for Occurrence[f]
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	AGS	Low
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	AGS	Low
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	AGS	Low
Valley elderberry longhorn beetle[c]	*Desmocerus californicus dimorphus*	FT	VRI	High
Reptiles and Amphibians				
California red-legged frog	*Rana aurora draytonii*	FT	FEW, AGS, BOW, BOP	Moderate
California tiger salamander	*Ambystoma californiense*	FT, ST[e]	AGS, VOW	Low
Giant garter snake[d]	*Thamnophis gigas*	FT, ST	FEW, RIC, VRI	High
Birds				
Bald eagle[c]	*Haliaeetus leucocephalus*	D, SE	LAC, RIV, VRI	High
Bank swallow	*Riparia*	ST	BAR, RIV	High

Species	Scientific Name	Status[a]	Habitat Association[b]	Potential for Occurrence[f]
Northern spotted owl	*Strix occidentalis caurina*	FT	DFR, RDW, MHC	Low
Greater sandhill crane[c]	*Grus canadensis tabida*	ST	FEW, WTM, PAS	High
Swainson's hawk[c]	*Buteo swansoni*	ST	AGS, BOW, VRI, VOW	High
Tricolored blackbird	*Agelaius tricolor*	CSE	AGS, FEW	High
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT, SE	DOR, VRI	Moderate
Mammals				
Pacific fisher	*Martes pennanti pacifica*	CST or CSE	MHC, SMC	Low

[a]Status Key

FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate
D = Delisted
SE = State Endangered
ST = State Threatened
CSE = Candidate State Endangered
CST = Candidate State Threatened

[b]Habitat Key

AGS = Annual grassland
BAR = Barren
BOP = Blue oak-foothill pine
BOW = Blue oak woodland
DFR = Douglas Fir
FEW = Freshwater emergent wetland
LAC = Lacustrine
MHC = Mixed hardwood conifer
RDW = Redwood
RIC = Rice
RIV = Riverine
SMC = Sierran Mixed Conifer
VOW = Valley oak woodland
VRI = Valley/foothill riparian
WTM = Wet meadow

[c]Species documented during field surveys.

[d]Species confirmed as present within Primary Study Area by USFWS.

[e]Status changed from CSE to ST on 03-03-10.

[f]Potential for occurrence:

High = Species documented during field surveys in the Primary Study Area or recorded in CNDDB.
Moderate = Species not detected, but study area contains suitable habitat.
Low = Species not detected and no suitable habitat in the study area.

Invertebrates

Conservancy Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Vernal Pool Fairy Shrimp

Fairy and tadpole shrimps are restricted to temporary pools in California. Typical habitat includes vernal pools, ponded areas within vernal swales, rock outcrop ephemeral pools, playas, alkali flats, and salt lakes (Eng et al., 1990). Fairy shrimp are typically absent from permanent water bodies. These shrimp are not abundant in ponds that contain large invertebrate predators, and are rarely found in bodies of water that contain carnivorous fish (Smith, 2001).

The federally endangered Conservancy shrimp is known to exist in a pool located within 10 miles of the Primary Study Area. The federally threatened vernal pool fairy shrimp and the federally endangered vernal pool tadpole shrimp are widespread throughout the Central Valley, and are reported to occur within Glenn and Colusa counties.

The quality of potential habitat found within the proposed reservoir footprint is marginal. Many of the pools do not remain ponded for entire seasons, and some potential habitats do not pond at all. The pools are dominated by nonnative vegetative species and are heavily affected by cattle ranching. The soils are alkaline and are unsuitable for many species (Eng et al., 1990; Eriksen and Belk, 1999). Conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp were not identified within the Primary Study Area during protocol-level field surveys.

Valley Elderberry Longhorn Beetle

The federally threatened VELB is endemic to riparian systems along the margins of rivers and streams, occasional seeps, and in adjacent grassy savannas in the Sacramento and San Joaquin valleys. VELB feeds on two species of elderberry shrubs, and the adult females deposit eggs in the crevices of the bark of these plants. Emergence holes are typically observed in shoots or branches of mature healthy plants (Barr, 1991).

The elderberry shrubs within the Primary Study Area are individuals with multiple trunks and range from unhealthy stressed plants to occasional large healthy plants. During protocol-level field surveys, VELB emergence holes were found on 18 (3 percent) of 672 elderberry stems surveyed within the proposed Sites Reservoir footprint, primarily along Grapevine and Antelope creeks. Elderberry shrubs were also surveyed east of the proposed reservoir along Funks Creek, along a previously proposed road route west of the reservoir footprint, and at the proposed Delevan Pipeline Intake/Discharge Facilities, but no emergence holes were observed.

Amphibians

California Red-legged Frog

The federally threatened California red-legged frog is described in the Secondary Study Area discussion (Section 14.3.2.3). The nearest known locations of red-legged frogs to the Primary Study Area are in Butte and Tehama counties, typically in meadow or grassland ponds that are surrounded by pine forest or blue-oak woodland. All water sources within the primary study area are considered suitable, although most ponds contain bullfrogs. The California red-legged frog was not observed within the Primary Study Area during protocol-level field surveys.

California Tiger Salamander

The federally and State-threatened California tiger salamander is most commonly found in annual grassland habitat, but can also occur in the understory of hardwood habitats. The adults spend most of the year underground, inhabiting the burrows of ground squirrels, gophers, and badgers. This species lays eggs in vernal pools or other temporary ponds that contain submerged and/or emergent vegetation, and will use permanent human-made ponds if predatory fish are absent (Mayer and Laudenslayer, 1988b; Stebbins, 1985).

The nearest known locations of tiger salamanders to the Primary Study Area are in Sacramento and Yolo counties, typically in ponds, vernal pools, or slow-moving creeks surrounded by grassland or oak savanna. The USFWS list does not include this species as potentially occurring in the Primary Study Area, and Colusa County appears to be outside of its current range. However, the WHR System lists this species as potentially occurring in Colusa County within the habitat types of the Primary Study Area. The California tiger salamander was not observed during protocol-level field surveys within the proposed Sites Reservoir Inundation Area, although potentially suitable habitat exists within the Primary Study Area.

Reptiles

Giant Garter Snake

The federally and State-threatened giant garter snake is described in the Secondary Study Area discussion (Section 14.2.2.3). Consultation with the USFWS confirmed that giant garter snakes occur in the Primary Study Area, mainly within rice habitat found along portions of the Delevan Pipeline.

Birds

Bald Eagle

The federally delisted and State-endangered bald eagle is described in the Secondary Study Area discussion (Section 14.2.2.3). Sporadic winter use by adult and immature bald eagles in the Primary Study Area has been documented. During initial field surveys, no nests, adult pairs, or nesting behavior were observed at any Project facility location. However, during subsequent visits to the Primary Study Area a nesting pair of bald eagles was observed at the proposed Golden Gate Dam site. This pair successfully reproduced in 2008, 2009, 2010, 2011, and 2012.

Bank Swallow

The State-threatened bank swallow is described in the Secondary Study Area discussion (Section 14.2.2.3). The nearest known locations of nesting bank swallows to the Primary Study Area are in Glenn and Colusa counties along the Sacramento River.

The incised channels of virtually all of the streams within the Primary Study Area contain some unvegetated vertical banks, and all streams are ephemeral with only limited ponded water present by June 15 during most years. Sandy or loamy soils are generally absent. Bank swallow surveys along the streams within the Primary Study Area failed to detect any sign of nesting bank swallows.

The Delevan Pipeline Intake/Discharge Facilities are proposed to be located on the Sacramento River at River Mile (RM) 158.5 on the right bank. The proposed facility location is geologically stable, with geologic control upstream and downstream along the levee (refer to Chapter 8 Fluvial Geomorphology and Riparian Habitat for a detailed description of this location). Annual bank swallow surveys are conducted along the Sacramento River in June by USFWS, CDFW, and DWR personnel. Bank swallow survey data for most years between 2000 and 2009 showing the nearest colony locations to the proposed intake/discharge facility location, as well as the number of burrows in each colony, are presented in Table 14-4.

Table 14-4
Nearest Bank Swallow Colony Locations to the Delevan Pipeline Intake/Discharge Facilities

Bank Swallow Survey Year	Locations Upstream of Intake/ Discharge Facilities		Locations Downstream of Intake/Discharge Facilities	
	Nearest River Mile (Side of Bank)	Estimated Number of Burrows in Colony	Nearest River Mile (Side of Bank)	Estimated Number of Burrows in Colony
2009	161.6 (L)	80	158.1 (L)	103
2008	161.4 (L)	32	157.0 (L)	160
2007	162.6 (L)	250	158.4 (R)	10
2006*				

Bank Swallow Survey Year	Locations Upstream of Intake/ Discharge Facilities		Locations Downstream of Intake/Discharge Facilities	
	Nearest River Mile (Side of Bank)	Estimated Number of Burrows in Colony	Nearest River Mile (Side of Bank)	Estimated Number of Burrows in Colony
2005	162.0 (R)	280	157.0 (L)	910
2004	159.0 (R)	100	156.8 (L)	370
2003	162.5 (R)	170	157.0 (L)	50
2002*				
2001	162.1 (R)	240	156.6 (L)	1270
2000	162.7 (L)	280	157.3 (L)	260

*Surveys were not conducted in 2002, and the stretch of the river near the proposed Delevan Pipeline Intake/Discharge Facilities was not surveyed in 2006.

Northern Spotted Owl

The federally threatened northern spotted owl occurs throughout the mountainous portions of northwest California, including the extreme western portions of Glenn and Colusa counties. Suitable nesting habitat includes extensive stands (100 to 600 acres) of dense, multilayered, mature or old growth coniferous forest. Although some downslope movement during winter has been observed, little or no use of low-elevation grassland or open oak habitat has been observed in Northern California (Mayer and Laudenslayer, 1988c). Suitable nesting and foraging habitat for the northern spotted owl is absent in the vicinity of the Primary Study Area.

Greater Sandhill Crane

The State-threatened greater sandhill crane is described in the Secondary Study Area discussion (Section 14.3.2.3). Within the Primary Study Area, wintering sandhill cranes (possibly greater sandhill cranes) were observed along Sacramento Valley floor habitats, including the Delevan Pipeline and the valley portion of Sulphur Gap Road.

Swainson's Hawk

The State-threatened Swainson's hawk is a migratory raptor present within the Sacramento Valley during the breeding season (March through September). Swainson's hawks use desert, grassland, and cropland where scattered large individual trees or small groves of large trees are present. This species forages primarily over irrigated pasture or croplands. Approximately 80 percent of the estimated statewide population occurs in the Central Valley (CDFG, 1993).

Suitable nesting and foraging habitat is present within portions of the Primary Study Area. Foraging Swainson's hawks were observed on the Sacramento Valley floor adjacent to the Sites Reservoir footprint, as well as along the Delevan Pipeline and valley portion of Sulphur Gap Road.

Tricolored Blackbird

The tricolored blackbird is a colonial year-round resident of the Sacramento Valley that uses freshwater emergent wetland habitats (primarily cattail and tules) for nesting. This blackbird forages on the ground in a variety of habitats including grasslands, croplands, and seasonally flooded areas. Tricolored blackbirds may travel many miles between nesting and foraging areas (Mayer and Laudenslayer, 1988c).

Foraging tricolored blackbirds were commonly observed in open grassland habitats within the proposed Sites Reservoir footprint, as well as along the North and Sulphur Gap roads, at Funks Reservoir, and within the Saddle Dam Recreation Area. Although no nesting was observed within the Primary Study Area, suitable nesting habitat is present within the Delevan National Wildlife Refuge (NWR) near the proposed Delevan Pipeline route. Tricolored blackbirds frequently occurred in mixed flocks with Brewer's blackbirds, red-winged blackbirds, and European starlings.

Western Yellow-billed Cuckoo

The federal threatened and State-endangered western yellow-billed cuckoo is described in the Secondary Study Area discussion (Section 14.2.2.3). Suitable nesting habitat within the Primary Study Area is associated with portions of the Delevan Pipeline and the Delevan Pipeline Intake/Discharge Facilities. The mature riparian habitat and adjacent walnut orchards in this area were surveyed intensively for cuckoos during the breeding season, but none were detected during Project surveys.

In 2010, the Point Reyes Bird Observatory, in coordination with USFWS and CDFG, conducted yellow-billed cuckoo surveys along the Sacramento River from Red Bluff to Colusa. A total of 18 individual cuckoos were detected ranging from RM 157 to RM 240. The detection locations nearest to the Primary Study Area included one detection at Princeton South (RM 163 - CDFG land) and one detection at Moulton Island (RM 157 - private land). Both locations are within Colusa County (Dettling and Howell, 2011).

Mammals

Pacific Fisher

The Pacific fisher is listed as a State Species of Special Concern and as of 2011 is a candidate for federal protection. This species is known to occur at high elevations in extreme western Glenn and Colusa counties. Fisher habitat includes large areas of mature dense coniferous forests and deciduous-riparian habitat with high percent canopy closures (Mayer and Laudenslayer, 1988d). Coniferous and hardwood forests usually provide these habitat requirements. The fisher also prefers forests with hollow trees, rock crevices, slash piles, and porcupine dens. These habitat features provide suitable denning sites.

Following USFS guidelines for fisher survey methods (Zielinski and Kucera, 1995), field crews determined that suitable fisher habitat is not present within the Primary Study Area. However, track plate and camera station sampling were conducted in areas of marginal habitat that occur only sporadically within the Primary Study Area. These efforts failed to detect fishers.

14.2.3.5 Species of Concern and Fully Protected Species

Forty-five federal and/or State terrestrial wildlife species of special concern have the potential to occur in the wildlife habitats identified within the Primary Study Area (CDFG, 2008a; CDFW, 2017b). Field surveys resulted in the documentation of 29 of these species (Table 14-5). Life history accounts for these species are provided below.

Table 14-5
Terrestrial Wildlife Species of Special Concern that Potentially Occur in the Primary Study Area

Common Name	Scientific Name	Status[a]	Habitat Association[b]	Potential for Occurrence[d]
Amphibians				
Foothill yellow-legged frog[c]	*Rana boylii*	SC	VRI	Moderate
Western spadefoot[c]	*Spea hammondii*	SC	AGS, BOW	High
Reptiles				
Western pond turtle[c]	*Emys marmorata*	SC	VRI	High
Birds				
American peregrine falcon	*Falco peregrinus anatum*	FSC, SFP	AGS, BOW, BOP, VOW	High
American white pelican[c]	*Pelecanus erythrorhyncos*	SC	LAC	High
Barrow's goldeneye	*Bucephala islandica*	SC	LAC, RIV	Moderate
Bell's sage sparrow[c]	*Artemisiospizabelli belli*	FSC	CRC, MCH	High
Black swift	*Cypseloides niger*	FSC, SC	VOW, BOW, BOP	Low
Black tern[c]	*Chlidonias niger*	SC	LAC, FEW, IGR, AGS	High
Burrowing owl[c]	*Athene cunicularia*	FSC, SC	AGS	High
Caspian tern[c]	*Hydroprogne caspia*	FSC	LAC, BAR	High
Common loon[c]	*Gavia immer*	SC	LAC	High
Ferruginous hawk[c]	*Buteo regalis*	FSC	AGS, FEW, PAS	High
Golden eagle[c]	*Aquila chrysaetos*	FSC, SFP	AGS, BOW, FEW	High
Lawrence's goldfinch[c]	*Spinus lawrencei*	FSC	BOW	High
Least bittern	*Ixobrychius exilis*	FSC, SC	FEW	Moderate
Lesser sandhill crane[c]	*Grus canadensis*	SC	FEW, WTM, PAS	High
Lewis' woodpecker[c]	*Melanerpes lewis*	FSC	VOW	High
Loggerhead shrike[c]	*Lanius ludovicianus*	FSC, SC	AGS	High
Long-billed curlew[c]	*Numenius americanus*	FSC	AGS, IRH	High
Long-eared owl[c]	*Asio otus*	SC	VRI, AGS, BOW	High
Mountain plover	*Charadrius montanus*	FSC, SC	AGS, BAR, IRF, IRH	Moderate
Northern goshawk	*Accipiter gentilis*	SC	MHC, JPN, PPN	Low
Northern harrier[c]	*Circus cyaneus*	SC	AGS, FEW, IGR, IRH	High
Olive-sided flycatcher	*Contopus cooperi*	FSC, SC	MHC, JPN	Low
Prairie falcon[c]	*Falco mexicanus*	FSC	AGS, BOW, BOP, VOW	High
Purple martin	*Progne subis*	SC	VRI, BOW, MCH	Low
Redhead[c]	*Aythya americana*	SC	FEW, LAC	High
Rufous hummingbird	*Selasphorus rufus*	FSC	BOW, VOW	Moderate
Short-eared owl[c]	*Asio flammeus*	SC	AGS, FEW, IGR	High
Tule greater white-fronted goose	*Anser albifrons elgasi*	SC	AGS, FEW, WTM, IGR	Moderate
Vaux's swift	*Chaetura vauxi*	SC	VRI, LAC	Low

Common Name	Scientific Name	Status[a]	Habitat Association[b]	Potential for Occurrence[d]
Western snowy plover	*Charadrius alexandrinus nivosus*	FSC, SC	LAC	Moderate
White-tailed kite[c]	*Elanus leucurus*	SFP	BOW, FEW, AGS, IRH	High
Yellow-breasted chat	*Icteria virens*	SC	VRI	Low
Yellow-headed blackbird[c]	*Xanthocephalus xanthocephalus*	SC	FEW, WTM	High
Yellow warbler[c]	*Setophaga petechia*	FSC, SC	VRI	High
Mammals				
American badger[c]	*Taxidea taxus*	SC	AGS, BOW, VOW	High
Pallid bat[c]	*Antrozous pallidus*	SC	AGS, BOW, BOP, VOW	High
Ringtail[c]	*Bassariscus astutus*	SFP	BOP, BOW, JPN, MHC, PPN, VOW, VRI	High
Spotted bat	*Euderma maculatum*	SC	BOP	Low
Townsend's big-eared bat	*Corynorhinus townsendii*	SC	BOW, BOP, VOW	Moderate
Western mastiff bat	*Eumops perotis californicus*	SC	BOW, BOP, VOW	Low
Western red bat[c]	*Lasiurus blossevillii*	SC	VRI, VOW, BOW	High

[a]Status Key (from Special Animals List [CDFW, 2017b])

FSC = Federal species of concern
SC = State species of special concern
SFP = State fully protected species

[b]Habitat Key

AGS = Annual grassland
BAR = Barren
BOP = Blue oak-foothill pine
BOW = Blue oak woodland
CRC = Chamise-redshank chaparral
FEW = Freshwater emergent wetland
GR = Irrigated grain and seed crops
IRH = Irrigated hayfield
JPN = Jeffrey pine
LAC = Lacustrine
MCH = Mixed chaparral
MHC = Mixed hardwood conifer
PAS = Pasture
PPN = Ponderosa pine
RIV = Riverine
VOW = Valley oak woodland
VRI = Valley/foothill riparian
WTM = Wet meadow

[c]Species documented during field surveys.

[d]Potential for occurrence:

High = Species documented during field surveys of the Primary Study Area or recorded in CNDDB.
Moderate = Species not detected, but study area contains suitable habitat.
Low = Species not detected and no suitable habitat in the study area.

Amphibians

Foothill Yellow-legged Frog

The foothill yellow-legged frog is described in the Secondary Study Area discussion (Section 14.2.2.3). This species is known to occur in southwest and western Colusa County. Although potentially suitable habitat exists, foothill yellow-legged frogs were not observed during extensive field surveys in the Primary Study Area.

Western Spadefoot

The western spadefoot is a toad that ranges throughout the Central Valley and foothills at elevations ranging from near sea level to 1359 m (4,460 feet). This toad is typically found in grasslands with shallow temporary pools, but some populations survive in orchards or vineyards. The western spadefoot spends

most of the year in underground burrows. Breeding and egg-laying occurs during winter rains when temporary pools are formed. Eggs are attached to small submerged rocks or plants. Adults move above ground when the rains start, and normally end breeding activities by the end of March. Juveniles leave the breeding ponds in late spring. Adults tend to avoid predation in their underground burrows, but tadpoles are preyed upon by wading birds and some mammals, such as raccoons (Mayer and Laudenslayer, 1988b).

Within the Primary Study Area, one western spadefoot toad was observed during field surveys in grassland habitat along a formerly proposed road route. Although the location is no longer included in the Primary Study Area, it is adjacent to the southern portion of the proposed Sites Reservoir footprint, where similar suitable habitat exists.

Reptiles

Western Pond Turtle

The western pond turtle is described in the Secondary Study Area discussion (Section 14.2.2.3). Within the Primary Study Area, western pond turtles were observed during field surveys in riparian areas and at ponds along a canal within the Delevan Pipeline route, near Funks Reservoir, within the proposed Sites Reservoir footprint, and at the Sites Dam site.

Birds

American Peregrine Falcon

The peregrine falcon is a very uncommon nesting species within the northern Coast Range. This species generally selects high cliffs near lakes, rivers, or wetlands for nesting. Human-made structures, including tall buildings or bridges, have also been used in California for nesting (Jurek, 1989). During winter, peregrine falcons use a wide variety of habitats including agricultural croplands and annual grasslands for foraging.

The nearest known nesting locations of peregrine falcons to the Primary Study Area are in Butte and Tehama counties, typically on volcanic rock or limestone cliffs surrounded by mixed hardwood conifer habitat. No peregrine falcons were observed within the Primary Study Area during field surveys, and no potentially suitable cliff nest sites exist at any Project facility location.

American White Pelican

Habitat for the American white pelican includes rivers, natural lakes, reservoirs, and larger farm ponds containing fish. Historically, white pelicans nested on large lakes throughout California (Grinnell and Miller, 1944). This species may travel long distances between forage and resting areas. These pelicans are gregarious, and flocks can contain large numbers of individuals.

No American white pelicans were observed within the proposed Sites Reservoir footprint. Suitable habitat is generally lacking except on the larger farm ponds. Small groups of American white pelicans were observed on Funks Reservoir during winter and fall. Small numbers of American white pelicans were observed year-round along the proposed Delevan Pipeline route. Most observations of habitat use along this route occurred at the Sacramento River or near the Delevan NWR.

Barrow's Goldeneye

Barrow's goldeneye is an uncommon winter visitor to California. No breeding by this secondary cavity nester has been documented within California for many years. Nesting habitat is near alkaline lakes or slow moving rivers with abundant submerged aquatic vegetation and open water. Wintering habitats are riverine and lacustrine waters with rocky bottoms (Mayer and Laudenslayer, 1988c).

No Barrow's goldeneye has been observed within the Primary Study Area. However, a landowner within the proposed Sites Reservoir footprint reported the presence of a single Barrow's goldeneye within an ephemeral stock pond during winter 1998. This report was not confirmed. No suitable nesting habitat currently exists within the Primary Study Area. Potentially suitable wintering habitat is present at Funks Reservoir and along portions of the proposed Delevan Pipeline route.

Bell's Sage Sparrow

The Bell's sage sparrow is a subspecies of the common sage sparrow. This species occurs year-round in western Glenn and Colusa counties where it frequents dense chaparral stands dominated by chamise (Mayer and Laudenslayer, 1988c). Sage sparrows are absent from the proposed Sites Reservoir footprint. However, a sage sparrow was observed in suitable chaparral habitat along a formerly proposed road route, which is adjacent to the southern portion of the proposed Sites Reservoir footprint. Similar chaparral habitat occurs within or adjacent to several of the Recreation Areas.

Black Swift

The black swift is a migratory species that has very specific habitat requirements for nesting. This species nests on cliffs and frequently occurs in moist microhabitats including behind or adjacent to waterfalls (Mayer and Laudenslayer, 1988c).

The nearest occurrences of black swifts to the Primary Study Area are generally restricted to the eastern edge of Tehama County in the Sierra Nevada. No black swifts were detected during the field surveys, and potentially suitable nesting habitat is absent from the Primary Study Area.

Black Tern

The black tern is a migratory species that occurs in the Central Valley portion of Glenn and Colusa counties. Black terns use lakes, ponds, rivers, wetlands, moist grassland, and agricultural habitats. It is unknown if this species breeds within the Sacramento Valley (Mayer and Laudenslayer, 1988c).

No black tern habitat use was observed within the proposed Sites Reservoir footprint. The proposed Delevan Pipeline route was the only Project feature where black terns were observed, with most use associated with foraging birds over flooded rice fields. No black tern use was observed at Funks Reservoir, which provides potentially suitable foraging habitat.

Burrowing Owl

The western burrowing owl is a semi-colonial year-round resident that uses grassland habitats and a variety of early successional stages of open shrub and forest vegetative types where suitable burrows and perches are present. The burrowing owl uses old burrows of ground squirrels or other small mammals, or may dig its own burrow in soft soil, for roosting and nesting cover (Mayer and Laudenslayer, 1988c).

Small scattered groups of burrowing owls were detected within the proposed Sites Reservoir footprint during diurnal avian line transect sampling. Most of these observations were in upland settings near the

grassland/blue oak habitat edge. However, a few individual sightings were made in open grassland habitat along stream channels. Sampling with pre-recorded calls was useful for determining the presence of burrowing owls. Responses were received at 42 percent of the call locations within the proposed Sites Reservoir footprint, indicating wide distribution at this location. Burrowing owls were also detected during winter and fall along a formerly proposed road route, which is adjacent to Road 69 and the North Road.

Caspian Tern

The Caspian tern is common to very common along the California coast and at scattered locations inland from April through early August. This species winters in Southern California, and nests in colonies in the San Francisco, San Pablo, Humboldt, and San Diego bays. The Caspian tern feeds primarily on small fish in freshwater lakes, estuaries, and salt ponds (Mayer and Laudenslayer, 1988c).

Within the primary study area, Caspian terns were observed along the Delevan Pipeline route. Potentially suitable foraging habitat exists at Funks Reservoir.

Common Loon

The common loon has an inland distribution that is extremely irregular and associated with large natural lakes and some reservoirs. This uncommon wintering species requires deep freshwater lakes with adequate small food fish (Mayer and Laudenslayer, 1988c).

Common loons were observed only at Funks Reservoir and only during spring and fall migration. Individual loons were observed on Funks Reservoir on two occasions. Funks Reservoir represents the only lacustrine habitat within the Primary Study Area, excluding some of the larger farm ponds.

Ferruginous Hawk

The ferruginous hawk is a relatively uncommon winter migrant. Ferruginous hawks are present in the Sacramento Valley from September through mid-April and use large tracts of open grasslands for winter foraging habitat (Mayer and Laudenslayer, 1988c).

Within the Primary Study Area, sporadic individual sightings of wintering ferruginous hawks were made within the proposed Sites Reservoir footprint.

Golden Eagle

The golden eagle nests throughout Northern California, with the exception of the dense forests along the North Coast. Extensive wintering use of the Sacramento Valley can occur. This species forages in open habitats including grasslands, savannas, and early successional stages of open shrub and tree habitats (Mayer and Laudenslayer, 1988c).

The golden eagle is one of the most common large raptors year-round within the Primary Study Area. Several active golden eagle nests were identified around the proposed Sites Reservoir rim areas, including nesting activity in, or near, three of the five proposed Recreation Areas. Golden eagle densities varied, with the highest density recorded during the winter. The highest densities associated with any Project features were spring and fall densities on a formerly proposed road route, which is southeast of the proposed Sites Reservoir footprint. Along the proposed Delevan Pipeline route, golden eagles were recorded only during winter and only along the western end of the route where agricultural croplands meet the foothills.

Lawrence's Goldfinch

The Lawrence's goldfinch primarily occurs in Glenn and Colusa counties during the breeding season (March through September). Limited wintering use has been observed. This species breeds and forages in open oak or shrub habitats near water (Mayer and Laudenslayer, 1988c).

Lawrence's goldfinches were observed only sporadically within the Primary Study Area, although suitable nesting habitat exists. Observations were made in the reservoir footprint, at Funks Reservoir, and along a formerly proposed road route, which is southwest of the proposed Sites Reservoir footprint. Lawrence's goldfinches were frequently encountered in mixed flocks with other goldfinches. Only rarely were individuals of this species encountered, even during the breeding season.

Least Bittern

The least bittern occurs along the Sacramento River in eastern Glenn and Colusa counties from April through September. Least bitterns use dense emergent wetland vegetation for reproduction and foraging (Mayer and Laudenslayer, 1988c).

No least bitterns were detected within the Primary Study Area. Adequate amounts of suitable habitat for this reclusive species are present along portions of the proposed Delevan Pipeline route. Some of the farm ponds and roadside ditches within the proposed Sites Reservoir footprint have a limited amount of emergent vegetation present. However, adequate amounts of potentially suitable habitat for this species are absent from all Project features.

Lesser Sandhill Crane

Lesser sandhill cranes do not breed in California, but winter mainly in the Central Valley, including areas of Glenn and Colusa counties west of the Sacramento River. Winter habitat consists of annual and perennial grasslands, moist croplands (corn, sorghum, barley, and rice), or emergent wetlands (Mayer and Laudenslayer, 1988c).

Within the Primary Study Area, wintering sandhill cranes (possibly lesser sandhill cranes) were observed along Sacramento Valley floor habitats, including the Delevan Pipeline route and the valley portion of Sulphur Gap Road.

Lewis' Woodpecker

Lewis's woodpecker occurs year-round in western Glenn and Colusa counties. Preferred habitat includes open oak and conifer habitats that have snags with cavities (Mayer and Laudenslayer, 1988c).

This woodpecker occurred infrequently within the proposed Sites Reservoir footprint during spring and fall, as well as along the North and Sulphur Gap roads. Suitable habitat is generally lacking in the northern portion of the proposed reservoir area. No summer use was recorded.

Loggerhead Shrike

The loggerhead shrike occurs in open habitats with infrequent perch sites (trees, shrubs, fences, and power lines). Loggerhead shrikes forage over open sparse, low herbaceous cover. This territorial species occurs yearlong in Glenn and Colusa counties with resident and migrants present during the winter (Mayer and Laudenslayer, 1988c).

The loggerhead shrike is one of the more common and widespread avian species in grassland habitats within the Primary Study Area. This shrike's abundance appears to decrease rapidly with increasing tree density. Loggerhead shrike densities varied within the proposed Sites Reservoir footprint.

Long-billed Curlew

The long-billed curlew winters in the Sacramento Valley. This large shorebird uses a variety of open habitats in the Sacramento Valley during the winter including croplands, mudflats, flooded areas, and open grasslands (Mayer and Laudenslayer, 1988c).

Long-billed curlews were present sporadically within the proposed Sites Reservoir footprint throughout the winter and spring. Large flocks were occasionally encountered foraging in the grassland habitats when the soils were at or near saturation. Extensive use of vernal pool areas was also observed. All curlew observations at Funks Reservoir were of birds foraging in exposed mudflats. The grasslands surrounding Funks Reservoir are ungrazed, relatively tall, dense, and apparently unsuitable for curlew foraging habitat. Long-billed curlew use along the proposed Delevan Pipeline route occurred in flooded rice fields and within annual grassland habitats along the westernmost end of the proposed route. The long-billed curlew was also observed along Sulphur Gap Road, as well as within the Saddle Dam Recreation Area.

Long-eared Owl

The long-eared owl occurs year-round in valley and foothill locations in Glenn and Colusa counties. Preferred nesting habitat is reported as dense riparian and live oak stands near open areas or forest/grassland edges (Mayer and Laudenslayer, 1988c).

Long-eared owls were observed regularly at a single location along the proposed Delevan Pipeline route during summer. Although no long-eared owls were detected along diurnal transect routes, nocturnal censusing with prerecorded taped calls indicate that long-eared owls are common along the blue oak/grassland edge habitats within the Primary Study Area. Long-eared owl responses were obtained at 54 percent of the half-mile segments sampled within the proposed Sites Reservoir footprint. This species appears to be less common in extensive open grassland habitats. However, an active nesting pair of long-eared owls was observed 0.5 mile northeast of the proposed Sites Reservoir footprint in an isolated cottonwood tree in grassland habitat.

Mountain Plover

The mountain plover is a winter resident in California, typically found on short open grasslands and plowed fields with little vegetation (Mayer and Laudenslayer, 1988c). This species is known to occur in southeast Colusa County.

No mountain plovers were observed within the Primary Study Area, but potentially suitable habitat exists at many of the Project facility locations.

Northern Goshawk

The northern goshawk is an uncommon year-round resident that frequents mid- to high-elevation mature dense coniferous forests for reproduction. Some limited winter use of low-elevation foothill riparian habitat has been documented (Mayer and Laudenslayer, 1988c). This species is known from the higher elevations of Glenn and Butte counties.

No goshawks were encountered during avian transect sampling within the Primary Study Area. Further, potentially suitable nesting habitat is not present at this low elevation.

Northern Harrier

The northern harrier is a common year-round resident that uses a variety of open habitats including meadows, wetlands, and annual and perennial grasslands. This species seldom uses forest or woodland habitats, although some forest/grassland edge habitats are used. Agricultural habitats that mimic tall dense grasslands or freshwater emergent vegetation types are also used as foraging habitats (Mayer and Laudenslayer, 1988c).

Northern harriers were observed at all Project features. Northern harriers are a relatively common species in the proposed Sites Reservoir footprint during fall, spring, and winter. Relatively minor summer use has been documented within the proposed reservoir footprint. Relatively high densities have been documented at Funks Reservoir and along the proposed Delevan Pipeline route.

Olive-sided Flycatcher

The olive-sided flycatcher occurs in western Glenn and Colusa counties. Preferred habitat includes mixed conifer, montane hardwood conifer, Douglas fir, redwood, red fir, and lodgepole pine. It is most common in forested habitats near open terrain (Mayer and Laudenslayer, 1988c).

Olive-sided flycatchers were not observed within the Primary Study Area, and potentially suitable habitat is generally absent at this low elevation.

Prairie Falcon

The prairie falcon nests in inland portions of the northern Coast Ranges, and winters in that area as well as within the Sacramento Valley. Preferred nesting habitat is a variety of open habitats (primarily perennial grasslands, savannas, rangeland, or open agricultural types) with a nearby sheltered cliff ledge. Winter migrants use a variety of open habitats (Mayer and Laudenslayer, 1988c).

Individual prairie falcons are occasionally present at the proposed Sites Reservoir footprint during winter and fall, but densities are generally low. The seasonal occurrence of this species suggests that breeding does not occur in the Primary Study Area. Prairie falcons were observed at Funks Reservoir and along the Delevan Pipeline and Sulphur Gap Road. A single prairie falcon was also sighted within the Antelope Island Recreation Area.

Purple Martin

The purple martin is a migratory species that returns to Northern California during March and migrates south during September. A variety of habitat types are used for reproduction in the Coast Range including hardwood and coniferous habitats. Preferred breeding habitat includes open older forests and woodlands with suitable snags for nesting. This species forages for insects over a variety of habitats near the nest site including forest, woodland, chaparral, and riparian habitats (Mayer and Laudenslayer, 1988c). This species is known from Lake and Shasta counties.

Potential breeding habitat is generally absent from the Primary Study Area, and no purple martins were observed during field surveys.

Redhead

The redhead is found year-round in the Central Valley. This species nests in fresh emergent wetlands where dense stands of cattails and tules border open water (Mayer and Laudenslayer, 1988c). Redheads are known to occur in eastern Glenn and Colusa counties.

Within the Primary Study Area, redheads were observed at Funks Reservoir, and suitable habitat exists at the duck clubs along the proposed Delevan Pipeline route.

Rufous Hummingbird

The rufous hummingbird is a common migrant and uncommon summer resident in California. This hummingbird is found in a variety of habitats that provide nectar-producing flowers, including riparian, open woodland, and chaparral habitats. Breeding occurs only in Trinity and Humboldt counties, but spring migration occurs mostly in the lowlands and foothills (Mayer and Laudenslayer, 1988c).

Rufous hummingbirds were not observed within the Primary Study Area, but could occur during migration.

Short-eared Owl

The short-eared owl occurs in open habitats with dense vegetation, including annual and perennial grasslands, irrigated pasture, and fresh emergent wetlands. Forest and woodland areas are avoided (Mayer and Laudenslayer, 1988c).

Short-eared owls were observed during diurnal avian line transects at Funks Reservoir and along the proposed Delevan Pipeline route only. No summer use was recorded at any Project facility location. Short-eared owls were regularly observed along the proposed Delevan Pipeline route in the vicinity of Delevan NWR in winter. Nocturnal owl calling identified the presence of a short-eared owl at two locations along the proposed Delevan Pipeline route.

Tule Greater White-fronted Goose

The tule greater white-fronted goose winters in California's Central Valley, where it prefers wetlands dominated by tules, rushes, and cattails. This species also forages in agricultural fields, including rice fields (Shuford and Gardali, 2008). Tule greater white-fronted geese are known to occur in southeastern Glenn County and northeastern Colusa County, mainly on State and federal managed wetlands, but also on private wetlands managed for waterfowl hunting.

No tule greater-white fronted geese were observed within the Primary Study Area, but potentially suitable habitat exists along the proposed Delevan Pipeline route.

Vaux's Swift

The Vaux's swift is frequently observed in Northern California during migration and less often during the breeding season. No winter use occurs. Preferred nesting habitat includes an appropriate nest site in a large hollow tree, primarily redwood or Douglas fir. This swift may also nest in chimneys or buildings. Vaux's swifts forage in flight for insects over many habitat types near the nest tree, including riparian and lacustrine habitat (Mayer and Laudenslayer, 1988c).

While Vaux's swifts may pass through the Primary Study Area during migration, suitable nesting habitat is not expected to occur in the Primary Study Area. No Vaux's swifts were observed during surveys conducted within the Primary Study Area.

Western Snowy Plover

The western snowy plover occurs year-round along the California coast with a very limited summer distribution inland. Central Valley records are primarily from the San Joaquin Valley. This species frequents sandy or gravelly beaches of estuarine salt ponds or alkali lakes for foraging and nesting (Mayer and Laudenslayer, 1988c).

No western snowy plovers were identified within the Primary Study Area. However, potentially suitable habitat is present along the proposed Delevan Pipeline route.

White-tailed Kite

The white-tailed kite is found year-round throughout the Sacramento Valley and adjacent foothill areas. Habitat preference includes open or herbaceous stages of most low-elevation vegetative types, primarily grasslands, meadows, farmland, and emergent wetlands. However, white-tailed kites are frequently associated with agricultural areas. Dense stands of trees are used as communal night roost sites (Mayer and Laudenslayer, 1988c).

White-tailed kites were an uncommon species within the proposed Sites Reservoir footprint. However, one pair of nesting kites was observed in open blue oak habitat near the southern end of the proposed Sites Reservoir in 1999. This species was commonly observed in cropland habitat downstream of Funks Reservoir and less frequently foraging the ungrazed grasslands around Funks Reservoir. Kites were observed along the length of the proposed Delevan Pipeline route, with the greatest habitat use associated with irrigated pasture or croplands as opposed to the more commonly occurring rice fields. Kites were also observed along Sulphur Gap Road. No communal roost trees were identified.

Yellow-breasted Chat

The yellow-breasted chat, an uncommon warbler, is a migratory species that arrives in California during April and departs by October. Nesting habitats consist of dense riparian understory and other dense shrub habitats near water. Willow and blackberry patches are used extensively (Mayer and Laudenslayer, 1988c).

No yellow-breasted chats were observed within the Primary Study Area. Potentially suitable nesting habitat is generally absent except for a narrow strip of mature riparian habitat along the Sacramento River portion of the proposed Delevan Pipeline route.

Yellow-headed Blackbird

The yellow-headed blackbird nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds. This species forages in emergent wetland and moist open areas, especially in cropland and the muddy shores of lacustrine habitat (Mayer and Laudenslayer, 1988c). The yellow-headed blackbird is known to breed in Colusa County, including areas of the Delevan NWR.

This species was observed within the Primary Study Area at Funks Reservoir and along the proposed Delevan Pipeline route.

Yellow Warbler

The yellow warbler occurs in a variety of woodland and forest habitats in Northern California during the breeding season (April through September). This species prefers open to moderate density forests or woodlands with a dense shrub understory. Yellow warblers are most common in open canopy riparian deciduous habitat (Mayer and Laudenslayer, 1988c).

Yellow warblers are a very uncommon species within the Primary Study Area. Sightings within the proposed Sites Reservoir footprint were restricted to spring in a short reach of riparian habitat between the community of Sites and the Sites Dam Site. Habitat use along the proposed Delevan Pipeline route primarily occurred in the vicinity of the Colusa Basin Drain (CBD) and the Delevan NWR.

Mammals

American Badger

The American badger is an uncommon permanent resident found throughout most of California, except for the northern North Coast area. It is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Cultivated lands have been reported to provide little usable habitat for this species. The badger digs burrows in friable ("crumbly") soil types for cover and remains underground during the day. The badger frequently reuses old burrows, although it has been known to dig a new den each night, especially in summer (Messick and Hornocker, 1981; Mayer and Laudenslayer, 1988d).

Field surveys documented the American badger in grassland and oak woodland areas at Funks Reservoir, within the proposed Sites Reservoir footprint, at all proposed Recreation Areas, and along portions of all roads. Possible suitable habitat exists at all other Project facility locations.

Pallid Bat

The pallid bat occurs throughout California, except in the high Sierra Nevada from Shasta to Kern counties, and the northwestern portion of California in Del Norte and western Siskiyou counties (Mayer and Laudenslayer, 1988d). This bat inhabits a variety of habitats, including grasslands, shrublands, woodlands, and forests, from sea level up through mixed coniferous forests below 2438 m (8,000 feet). In California, the pallid bat is associated with oak woodlands at lower elevations, and may roost in a variety of places including tree cavities, rock crevices, and human-made structures. The pallid bat prefers roosts where it can be out of sight and wedged into small tight crevices. Such sites include rock crevices, bridges, caves, mines, and hollow trees. The pallid bat roosts in tight spaces to thermoregulate, especially during cooler weather. However, during warmer weather periods, it will roost in open areas, such as the sides of rafters and open barns. Barns seem to be a preferred roost. Breeding occurs from October to February, and young are born from May to June. The young are capable of flight at 6 weeks of age (Davis and Schmidly, 1947).

Field surveys documented the presence of the pallid bat in the grassland and oak woodland habitat within the proposed Sites Reservoir footprint and along the formerly proposed North and Sulphur Gap roads. A maternity roost was discovered in an abandoned ranch house near the North Road. Possible suitable habitat exists at all other Project facility locations.

Ringtail

Ringtails are a widely distributed, common to uncommon permanent resident in California. This species occurs in various riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Suitable habitat for ringtails consists of a mixture of forest and shrubland in close association with rocky areas or riparian habitats. Hollow trees, logs, snags, cavities in talus and other rocky areas, and other recesses are used for cover. Ringtails nest in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests. Ringtails are primarily carnivorous, eating mainly rodents (e.g., woodrats and mice) and rabbits, but they also feed on birds and eggs, reptiles, invertebrates, fruits, nuts, and some carrion (Mayer and Laudenslayer, 1988d). Potential competition for food exists between ringtails and many sympatric species (e.g., raccoons, gray foxes, coyotes, barn owls, great horned owls, rattlesnakes, and gopher snakes).

Field surveys documented ringtails within the riparian habitat that would be removed during construction of the proposed Delevan Pipeline Intake/Discharge Facilities. Possible suitable habitat exists at other Project facility locations.

Spotted Bat

The spotted bat was thought to be found primarily in the southeastern Sierra foothills, mountains, and desert regions, but range expansions have been documented to include Ventura, Riverside, Mariposa, Kern, San Bernardino, San Diego, Fresno, Inyo, Shasta, Siskiyou, Tehama, Tuolumne, Mono, and Tulare counties (Pierson and Rainey, 1998a). Horizontal rock crevices provide optimal roost sites, although the spotted bat may occasionally also use caves and buildings. The spotted bat is apparently a solitary animal. It mates in the fall, with a single pup born before mid-June. Lactating females have been found from June to August (Mayer and Laudenslayer, 1988d).

Due to the rare nature of this animal and minimal information about its range, it has been included as a potentially occurring species. Field surveys failed to document the presence of the spotted bat within the Primary Study Area.

Townsend's Big-eared Bat

The Townsend's big-eared bat is found throughout California, in all but subalpine and alpine habitats (Mayer and Laudenslayer, 1988d) Suitable roosting sites are restricted to caves and cave-like structures, such as tunnels, mines, and buildings, where this species roosts in the open, rather than in crevices (Pierson and Rainey, 1998b). Hibernation occurs from October to April. Females return to their natal group every spring, and young are born from May to June. One young is born per year and can fly by 3 weeks of age. Young are typically weaned at 6 weeks of age. This species is extremely sensitive to disturbance of roosting sites (Mayer and Laudenslayer, 1988d).

Field surveys failed to document the presence of Townsend's western big-eared bat within the Primary Study Area.

Western Mastiff Bat

The western mastiff bat is an uncommon resident ranging from Monterey County southward through Southern California, and from the coast eastward to the Colorado Desert. This species occurs in semi-arid to arid habitats, including deciduous woodlands and annual and perennial grasslands (Mayer and Laudenslayer, 1988d). It primarily roosts in crevices in vertical cliffs of granite or consolidated sandstone,

and in broken terrain with exposed rock faces (Dalquest, 1946). It is also occasionally found in high buildings (Howell and Little, 1920), trees, and tunnels. Roost sites may change from season to season. Due to its large size, this bat needs vertical faces to drop from to take flight. The western mastiff bat mates in the months surrounding the early spring, and one young is born between April and September (Mayer and Laudenslayer, 1988d).

No western mastiff bats were documented on Anabat recordings or during field surveys within the Primary Study Area.

Western Red Bat

The western red bat is locally common in some areas of California, occurring from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. The winter range includes western lowlands and coastal regions south of San Francisco Bay. This species is considered to be highly migratory, with migration occurring between summer and winter ranges. The western red bat roosts primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores). This species feeds on insects over a wide variety of habitats, including grasslands, shrublands, open woodlands, and forests. Red bats have been observed feeding around street lights and flood lights. Mating occurs in August and September, and young are born from late May through early June (Mayer and Laudenslayer, 1988d).

During surveys within the Primary Study Area, a juvenile male and juvenile female western red bat were captured along Sulphur Gap Road, immediately adjacent to the southern end of the proposed Sites Reservoir footprint. This species was captured in blue oak woodland habitat; similar suitable habitat exists in the proposed Sites Reservoir footprint, all Recreation Areas with the exception of Saddle Dam, and along portions of most of the roads.

14.2.3.6 Commercially or Recreationally Important Wildlife Species

Up to 58 harvest species (33 birds, 24 mammals, and 1 amphibian) may be found within the Primary Study Area (CDFG, 2008a) (Table 14-6).

Wild pigs, and to a lesser extent black bear and mule deer, are important big game species within Colusa and Glenn counties. Field personnel often encountered hunters while conducting wildlife surveys. Detailed information is not available specifically for the Primary Study Area, but figures are available and presented at the county level. During the 2008 hunting season, 56 black bears were reported killed within Colusa and Glenn counties by licensed hunters, representing 2.8 percent of California's total bear harvest for the year (CDFG, 2009b). A reported 307 mule deer were killed within Colusa and Glenn counties by licensed hunters, representing 1.9 percent of California's total deer harvest for the year (CDFG, 2009c). During the 2006-2007 wild pig hunting season, a reported 374 wild pigs were killed within Colusa and Glenn counties by licensed hunters, representing 8.2 percent of California's total pig harvest for the year (CDFG, 2007a).

Table 14-6
Commercially or Recreationally Important Wildlife Species that May Occur within the Primary Study Area

Common Name	Scientific Name
Harvested Amphibians	
Bullfrog*	*Rana catasbeiana*
Harvested Birds	
American coot*	*Fulica Americana*
American crow*	*Corvus brachyrhynchos*
American wigeon*	*Anas Americana*
Band-tailed pigeon	*Columba fasciata*
Blue-winged teal*	*Anas discors*
Bufflehead*	*Bucephala albeola*
California quail*	*Callipepla californica*
Canada goose*	*Branta Canadensis*
Canvasback*	*Aythya valisineria*
Cinnamon teal*	*Anas cyanoptera*
Common goldeneye*	*Bucephala clangula*
Common merganser*	*Mergus merganser*
Common moorhen*	*Gallinula chloropus*
Eurasian wigeon	*Anas Penelope*
Gadwall*	*Anas strepera*
Greater white-fronted goose*	*Anser albifrons*
Green-winged teal*	*Anas crecca*
Hooded merganser*	*Lophodytes cucullatus*
Lesser scaup*	*Aythya affinis*
Mallard*	*Anas platyrhynchos*
Mountain quail	*Oreortyx pictus*
Mourning dove*	*Zenaida macroura*
Northern pintail*	*Anas acuta*
Northern shoveler*	*Anas clypeata*
Redhead*	*Aythya Americana*
Ring-necked duck*	*Aythya collaris*
Ring-necked pheasant*	*Phasianus colchicus*
Ross's goose	*Chen rossii*
Ruddy duck*	*Oxyura jamaicensis*
Sooty grouse	*Dendragapus fuliginosus*
Snow goose*	*Chen caerulescens*
Wild turkey*	*Meleagris gallopavo*
Wood duck*	*Aix sponsa*
Harvested Mammals	
American badger*	*Taxidea taxus*
American beaver*	*Castor Canadensis*

Common Name	Scientific Name
American mink	*Mustela vison*
Black bear*	*Ursus americanus*
Black-tailed jackrabbit*	*Lepus californicus*
Bobcat*	*Felis rufus*
Brush rabbit*	*Sylvilagus bachmani*
Common muskrat*	*Ondatra zibethicus*
Coyote*	*Canis latrans*
Desert cottontail	*Sylvilagus audubonii*
Eastern fox squirrel	*Sciurus niger*
Tule Elk	*Cervus canadensis nannodes*
Ermine	*Mustela ermine*
Gray fox*	*Urocyon cinereoargenteus*
Long-tailed weasel	*Mustela frenata*
Mule deer*	*Odocoileus hemionus*
Pronghorn	*Antilocapra Americana*
Raccoon*	*Procyon lotor*
Red fox*	*Vulpes*
Striped skunk*	*Mephitis*
Virginia opossum*	*Didelphis virginiana*
Western gray squirrel*	*Sciurus griseus*
Western spotted skunk	*Spilogale gracilis*
Wild pig*	*Sus scrofa*

*Species documented during field surveys.

The Delevan NWR and several private duck clubs along the eastern portion of the Delevan Pipeline route provide seasonal waterfowl and pheasant hunting opportunities.

Thirteen of the 58 harvest species that could occur within the Primary Study Area were not observed during field surveys: the Ross' goose, Eurasian wigeon, sooty grouse, mountain quail, band-tailed pigeon, desert cottontail, Eastern fox squirrel, long-tailed weasel, American mink, ermine, western spotted skunk, pronghorn, and Tule elk.

Southwestern Colusa County includes a large portion of the management unit for the free-ranging Cache Creek Tule elk herd, which is estimated at a minimum of 187 animals. Two sub-herds frequent the Colusa County portion of the management area, which is southwest of the Primary Study Area. The range of these sub-herds has not been documented to include the Primary Study Area. The East Park Reservoir Tule elk herd, which is estimated at a minimum of 95 animals, is located west of the Primary Study Area. This herd tends to stay within 2 miles of East Park Reservoir and has not been documented within the Primary Study Area, but the hunt zone for this herd overlaps with the northern half of the footprint of the proposed Sites Reservoir, as well as with the Stone Corral, Peninsula Hills, and Saddle Dam recreation areas, Funks Reservoir, Holthouse Reservoir, most roads (excluding Sulphur Gap, Com, and Lurline roads), and portions of the Delevan Pipeline and Tehama-Colusa and GCID Main canals (Hobbs, 2010, pers. comm.).

A small herd of pronghorn is present in Glenn County, north of the Primary Study Area. This herd was incidentally observed several times by field personnel, including along Maxwell Sites Road and Road 68, but their range has not been documented to include the footprint or construction disturbance area of facilities included in the Primary Study Area.

The remaining 11 unobserved wildlife species were not the focus of survey efforts. Suitable habitat exists for each, so it is, therefore, possible that they are present within the Primary Study Area.

14.2.3.7 Migratory Birds

The Primary Study Area supports numerous special-status and common bird species that are protected under the federal Migratory Bird Treaty Act. This act implements a series of international treaties that protect migratory birds and authorize the Secretary of the Interior to regulate the taking of migratory birds by prohibiting (unless permitted) both direct and indirect acts that result in direct loss of birds, nests, or eggs. Many species of migratory birds occur within the Primary Study Area. Examples of these species are presented in the descriptions of wildlife habitats and associated wildlife in Section 14.2.3.2, above.

14.3 Environmental Impacts/Environmental Consequences

14.3.1 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be potentially significant. Appendix G of the *California Environmental Quality Act* (CEQA) *Guidelines* suggests the following evaluation criteria for biological resources:

Would the Project:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS?
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS?
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State HCP?

The evaluation criteria used for this impact analysis represent a combination of the Appendix G criteria and professional judgment that considers current regulations, standards, and/or consultation with agencies, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to National Environmental Policy Act (NEPA). For the purposes of this analysis, an alternative would result in a potentially significant impact if it would result in any of the following:

- A substantial adverse effect, including mortality, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- A substantial adverse effect, including alteration of habitat suitability, on any wildlife habitat, especially riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS.
- Substantial interference with the movement of any native resident or migratory wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- A substantial adverse effect, including alteration of habitat suitability or human disturbance, on common wildlife species.
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local or regional HCP, or conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

14.3.2 Impact Assessment Assumptions and Methodology

Combinations of Project facilities were used to create Alternatives A, B, C, C_1, and D. In all resource chapters, the Sites Project Authority (Authority) and Reclamation described the potential impacts associated with the construction, operation, and maintenance of each of the Project facilities for each of the five action alternatives. Some Project features/facilities and operations (e.g., reservoir size, overhead power line alignments, provision of water for local uses) differ by alternative, and are evaluated in detail within each of the resource areas chapters. As such, the Authority has evaluated all potential impacts with each feature individually, and may choose to select or combine individual features as determined necessary.

Impacts associated with the construction, operation, and maintenance for Alternative C_1 would be the same as Alternative C and are therefore not discussed separately below.

14.3.2.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts to terrestrial biological resources:

- Direct Project-related construction, operation, and maintenance activities would occur in the Primary Study Area.
- Direct Project-related operational effects would occur in the Secondary Study Area.
- The only direct Project-related construction activity that would occur in the Secondary Study Area is the installation of two additional pumps into a existing bays at the Red Bluff Pumping Plant.
- The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the sediment removal and disposal at the two intake/discharge locations (i.e., GCID Main Canal Intake and Red Bluff Pumping Plant).
- No direct Project-related construction or maintenance activities would occur in the Extended Study Area.

- Direct Project-related operational effects that would occur in the Extended Study Area are related to San Luis Reservoir operation; increased reliability of water supply to agricultural, municipal, and industrial water users; and the provision of an alternate Level 4 wildlife refuge water supply. Indirect effects to the operation of certain facilities that are located in the Extended Study Area, and indirect effects to the consequent water deliveries made by those facilities, would occur as a result of implementing the alternatives.
- The existing bank protection located upstream of the proposed Delevan Pipeline Intake/Discharge Facilities would continue to be maintained and remain functional.
- No additional channel stabilization, grade control measures, or dredging in the Sacramento River at or upstream of the Delevan Pipeline Intake/Discharge Facilities would be required.
- Borrow areas for dam construction materials would be located within the proposed Sites Reservoir footprint, or materials would be obtained from sources outside of the Primary Study Area.
- Frequent Sites Reservoir water level fluctuations would create a barren drawdown zone.
- For all Project facilities that do not have a defined construction disturbance area, an additional 10 percent of the facility footprint acreage is assumed to be the size of the associated disturbance area.
- Periodic maintenance of the proposed pipelines and Sites/Delevan Overhead Power Line would be conducted on foot and/or by using established roads for vehicle access, and would not require vehicle access over established or restored vegetation.

14.3.2.2 Methodology

The Existing Conditions/No Project/No Action Condition was assumed to be similar in the Primary Study Area given the generally rural nature of the area and limited potential for growth and development in Glenn and Colusa counties within the 2030 study period used for this EIR/EIS as further described in Chapter 2 Alternatives Analysis. As a result, within the Primary Study Area, it is anticipated that the Existing Conditions/No Project/No Action Condition would not entail material changes in conditions as compared to the existing conditions baseline.

With respect to the Secondary and Extended study areas, the effects of the proposed action alternatives would be primarily related to changes to available water supplies in the Secondary and Extended study areas and the Project's cooperative operations with other existing large reservoirs in the Sacramento watershed, and the resultant potential impacts and benefits to biological resources, land use, recreation, socioeconomic conditions, and other resource areas. DWR has projected future water demands through 2030 conditions that assume the vast majority of CVP and SWP water contractors would use their total contract amounts, and that most senior water rights users also would fully use most of their water rights. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the EIR/EIS would constitute the Existing Conditions/No Project/No Action Condition. As described in Chapter 2 Alternative Analysis, the primary difference in these projected water demands would be in the Sacramento Valley; and as of the time of preparation of this EIR/EIS, the water demands have expanded to the levels projected to be achieved on or before 2030.

Accordingly, existing conditions and the No Project/No Action alternatives are assumed to be the same for this EIR/EIS and as such are referred to as the Existing Conditions/No Project/No Action Condition, which is further discussed in Chapter 2 Alternatives Analysis. With respect to applicable reasonably foreseeable plans, projects, programs and policies that may be implemented in the future but that have not yet been approved, these are included as part of the analysis of cumulative impacts in Chapter 35 Cumulative Impacts.

Impacts to common wildlife were assessed in relation to habitat alteration or destruction. Direct wildlife impacts include permanent loss of habitat, mortality, injury, displacement, disruption of travel corridors, and disturbance. Indirect wildlife impacts include disturbance activities that result indirectly from the Project (i.e., increased vehicle traffic, increased foot traffic, and noise), as well as changes to habitat suitability. Analysis of the impacts of human disturbance to common wildlife included consideration of the impacts of human disturbance to special-status wildlife species. Impacts can be positive or negative, and can be short-term (temporary) or long-term (permanent).

Approximately 15 percent of the total footprint of each Recreation Area would be subject to permanent construction disturbance. Because the exact location and area affected by the construction of the recreation facilities within the Recreation Areas is not known, the extent of permanent habitat loss was estimated by applying a 15 percent multiplier to each habitat type present.

Of the 200-foot-wide total construction disturbance area associated with road construction, an approximate average of 60 feet (30 percent) would result in the permanent loss of wildlife habitats. A 30 percent multiplier was, therefore, applied to each habitat type present.

For the Sites/Delevan Overhead Power Line, a worst-case scenario of 144 overhead power line towers/poles with a concrete pad for a base along the entire length of the power line was used to calculate the area of permanent disturbance for Alternatives A and C. A worst-case scenario of 40 overhead power line towers/poles with a concrete pad for a base for the length of the Sites/Delevan Overhead Power Line was used to calculate the area of permanent disturbance for Alternative B. For Alternative D, the number of towers/poles for the Delevan Overhead Power Line is not yet known; however, based on the length as compared to the Sites/Delevan Overhead Power Line, there would be approximately 114 overhead power line towers/poles needed for Alternative D plus the 40 towers/poles needed from the existing transmission lines for the Sites Pumping/Generating Plant (as for Alternative B).

As described above under Section 14.2.3.1 Methodology, a variety of research and field survey methods were used to sample wildlife. Preliminary research included general literature searches, consultation with agency and species experts, aerial photo habitat interpretations, and landowner interviews. In addition, reviews of the CNDDB, WHR System, and the *Federal Register* of Threatened, Endangered, and Special-status Species were conducted.

Field surveys described above were intended to characterize habitat and wildlife communities in the Primary Study Area. While these conditions are not expected to change in a meaningful way in the near term, additional general wildlife and habitat surveys prior to Project construction will be conducted. It is recognized that he distribution of special-status species or important habitat features (e.g., nest sites) may change during the period prior to construction, which could influence the location and extent of mitigation.

The terrestrial biological resources impact assessment relied on hydrologic and operational modeling performed using CALSIM II to provide a quantitative basis from which to assess the potential impacts of

the alternatives on riparian and wetland habitat in portions of the Secondary and Extended study areas. Monthly river flows, and water surface elevations derived based on monthly river flows and end-of-month reservoir storages from CALSIM II, provided a quantitative basis to assess the potential impacts of operations on these habitat types, relative to the CEQA and NEPA bases of comparison, for the period of simulation extending from water year 1922 through 2003 (82-year simulation period). While indicative of real-time operations, the CALSIM II model monthly simulation of an actual daily (or even hourly) operation of the CVP and SWP results is not intended to specifically match real-time observations. Therefore, the model results are used in a comparative manner to reveal important differences among alternatives.

The CALSIM II model output is based upon a monthly time step, and includes minor fluctuations of up to 5 percent due to the model assumptions and approaches. Therefore, for the purposes of this analysis, quantitative differences between a specific alternative and Existing Conditions and the No Project/No Action Alternative of 5 percent or less were considered "similar" and not necessarily representative of a real change. Differences greater than 5 percent were considered to represent actual differences that carried the potential to influence terrestrial biological resources. For CEQA purposes, the significance of an impact was determined in consideration of the context within which the effect occurred. That is, the significance of an impact depended not only on the magnitude of the change, but the timing, location, or duration of the impact. A detailed discussion of the CALSIM II model is provided in Appendix 6B Water Resources System Modeling.

Further, in assessing the impacts to the valley foothill riparian vegetation along the Sacramento River in the Secondary Study Area, modeling specific to riparian vegetation, including results from the SRH-1DV and SacEFT models, were used for Alternatives A, B, and C. The effects of Alternative D were inferred from the effects associated with similar alternatives and the CALSIM II results specific to Alternative D.

The SRH-1DV model simulated the establishment, growth, and mortality of vegetation, in addition to computing hydraulics and groundwater surface in the riparian zone near the river. The simulation tracked daily vegetation changes through 82 years of simulated flow, within the 107 river miles of Sacramento River from upstream of Red Bluff (RM 250) to upstream of Colusa (RM 143). SRH-1DV analysis focused on four key valley foothill riparian vegetation types: cottonwood, mixed forest, Gooding's black willow, and narrow leaf willow. The detailed description of the SRH-1DV model and the associated alternatives evaluation is provided in Appendix 8A Sedimentation and River Hydraulics Modeling.

The SacEFT is a decision support tool that linked flow management actions on the Sacramento River to changes in the physical habitats for several focal species of concern. It specifically includes performance measures for evaluating the effects of various flow scenarios on the initiation success and post-initiation scour risk of the Fremont Cottonwood seedlings, as well as on habitat potential/suitability and peak flow during the nesting period for bank swallows. These performance measures were used as a general indicator for assessing the impacts on riparian vegetation and bank swallow colonies along the Sacramento River in the Secondary Study Area. The detailed description of the SacEFT model and the associated alternatives evaluation is provided in Appendix 8B Sacramento River Ecological Flows Tool.

14.3.3 Topics Eliminated from Further Analytical Consideration

Because no Project facilities would be constructed or maintained within the Extended Study Area, only operational impacts associated with Alternatives A, B, C and D are discussed in the impacts analysis for the Extended Study Area for the four alternatives.

Because no construction or maintenance activities would occur within the Secondary Study (with the exception of the Red Bluff Pumping Plant), only operational impacts associated with Alternatives A, B, C, and D are discussed in the impacts analysis for the reservoirs and waterways included in the Secondary Study Area for the four alternatives.

Several SWP/CVP re-regulating reservoirs that are located within the Secondary Study Area, including Lewiston Lake downstream of Trinity Dam, Whiskeytown Lake downstream of Lewiston Dam, Keswick Reservoir downstream of Shasta Dam, the Thermalito Complex downstream of Oroville Dam, and Lake Natoma downstream of Folsom Dam, have been eliminated from consideration for these analyses. No storage- or elevation-related impacts on terrestrial biological resources in these reservoirs are expected to occur with implementation of the alternatives, relative to the bases of comparison. As regulating afterbays, the re-regulating reservoirs are operated to receive highly variable flows and, as a result, monthly storage and elevation fluctuate significantly on a daily and hourly basis. Therefore, changes in releases from upstream reservoirs under the alternatives would not affect monthly mean storage or elevation relative to the CEQA or NEPA baseline conditions. Consequently, no assessment of potential storage- or elevation-related impacts on terrestrial biological resources in re-regulating reservoirs is warranted.

None of the project alternatives (A through D) are expected to translate into meaningful effects on the hydrology of San Pablo and San Francisco bays because of the distance downstream, the size of these water bodies, and the tidal influence. Therefore, potential impacts in San Pablo and San Francisco bays are not discussed further.

Because the Primary Study Area Project facilities with an above-ground footprint would result in permanent wildlife habit loss during their construction, the impact of the operation and maintenance of those facilities on wildlife habitat (**Impact Wild-1**) is not discussed.

Similarly, when the permanent loss or conversion of a wildlife habitat type resulting from Project facility construction would make that location unsuitable for, or unable to support, specific special-status wildlife species, the impact of the operation and maintenance of that facility on the species (**Impact Wild-2**) is not discussed. Operation and maintenance impacts are discussed, however, for the bald eagle and golden eagle because those species would still be located in the Sites Reservoir and Dams area after Project construction is complete. Operation and maintenance impacts are not discussed for the remaining wildlife species because those species would lose their suitable habitat during Project construction, and would, therefore, no longer be present.

Operation and maintenance of the GCID Main Canal Facilities would resume following completion of the Project's construction activities associated with the proposed GCID Main Canal Facilities Modifications, and would have no Project-related impacts on wildlife or wildlife habitat. Therefore, operation and maintenance impacts associated with this facility are not discussed further.

For the proposed underground pipelines within the Primary Study Area, operations would occur underground and be coordinated remotely; therefore, the impacts of pipeline operation are not discussed.

Within the Project Buffer, no on-the-ground activities would occur during Project operation. Therefore, the impact of Project operation within the Project Buffer is not discussed.

No adopted HCP, NCCP, or other approved local or regional HCP, or local policies/ordinances protecting biological resources such as tree preservation policies or ordinances cover the Primary Study Area;

therefore, potential impacts related to these plans, policies, and ordinances are not discussed further for the Primary Study Area.

14.3.4 Impacts Associated with Alternative A

14.3.4.1 Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use

Implementation of Alternative A would result in increased water supply reliability in most years for agricultural water users, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Changes in water operations to facilitate increased agricultural water supply reliability would alter flow levels in the waterways (e.g., rivers and canals) that supply agricultural areas in the Extended Study Area. However, these changes in flow under Alternative A would remain within the range of natural variation and thus would not be expected to directly affect wildlife habitats associated with these waterways and would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

As described above for **Impact Wild-1**, the increase in agricultural water supply reliability associated with Alternative A is expected to have a **less-than-significant impact** on wildlife habitat along waterways conveying water to agricultural areas and in crop lands. No other direct impacts on special-status species are anticipated and Alternative A would have a **less-than-significant impact** on special-status terrestrial wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with the increased water supply reliability resulting from implementation of Alternative A. Therefore, there would be **no impact** on wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Potential effects of increased water supply reliability to agricultural water users would be small, and they would, therefore, not be expected to have a substantial adverse effect on wildlife or wildlife habitat. Therefore, increased water supply reliability associated with implementation of Alternative A would not conflict with any HCPs, NCCPs, or local ordinances, and would result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Municipal and Industrial Water Use

Operational modeling indicates that implementation of Alternative A would result in increased water supply reliability to municipal and industrial water users in Dry years, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFG or USFWS

Changes in water operations to facilitate increased water supply reliability to municipal and industrial water users would influence flow levels in the waterways (e.g., rivers) that convey water to these users in the Extended Study Area. However, these changes in flow under Alternative A would remain within the range of natural variation and thus would not be expected to directly affect wildlife habitats associated with these waterways and would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

As described above for **Impact Wild-1**, the increase in municipal and industrial water supply reliability associated with Alternative A is expected to have a **less-than-significant impact** on wildlife habitat along waterways conveying water to these users. No other direct impacts on special-status species are anticipated and Alternative A would have a **less-than-significant impact** on special-status terrestrial wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with the increased water supply reliability resulting from implementation of Alternative A. Therefore, there would be **no impact,** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Increased water supply reliability for municipal and industrial use would not be expected to result in projects that would adversely affect wildlife or wildlife habitat. In addition, any future municipal or industrial projects would require compliance with any adopted HCPs, NCCPs, or local ordinances. Therefore, Alternative A would result in **no impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Wildlife Refuge Water Use

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Level 4 water supply currently benefits numerous wildlife species that use fresh emergent wetland habitat on the wildlife refuges. The historical practice of purchasing Level 4 water supplies on interim water transfers would continue under Alternative A. The Project would replace at least some volume of Level 4 water supplies with a more reliable water supply than interim water transfers, but would not change the volume of water delivered to the refuges under either Level 2 or Level 4. Therefore, the provision of an alternate source of wildlife refuge water supply would have **no impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Because the provision of an alternate source of wildlife refuge water supply would have **no impact** on wildlife habitat, it would also be expected to have **no impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with the provision of an alternate source of wildlife refuge water supply. Therefore, there would be **no impact** on wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The provision of an alternate source of wildlife refuge water supply would not affect wildlife or wildlife habitat, and wildlife refuges are not covered by HCPs, NCCPs, or local ordinances. Therefore, Alternative

A would result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

San Luis Reservoir

Operational modeling for San Luis Reservoir indicates that implementation of Alternative A would result in similar changes in end-of-month water surface elevations when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Anticipated changes in water surface elevation under Alternative A would be similar to the changes under the Existing Conditions/No Project/No Action Condition. Therefore, water levels at San Luis Reservoir resulting from implementation of Alternative A would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The changes in water surface elevations in San Luis Reservoir would be similar to the changes under the Existing Conditions/No Project/No Action Condition. Therefore, water levels at San Luis Reservoir resulting from implementation of Alternative A would have a **less-than-significant impact** on special-status terrestrial wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with the operational changes at San Luis Reservoir resulting from implementation of Alternative A. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

San Luis Reservoir is not covered by an adopted HCP, NCCP, or local ordinance related to wildlife habitat. In addition, anticipated changes in water surface elevation at San Luis Reservoir resulting from implementation of Alternative A would be similar to the Existing Conditions/No Project/No Action Condition. Therefore, there would be **no impact,** when compared to the Existing Conditions/No Project/No Action Condition.

14.3.4.2 Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Frequent and severe drawdowns tend to produce a barren drawdown zone around the margin of reservoirs that are subject to seasonal fluctuations in water levels. This condition typically prohibits the establishment of riparian vegetation along the shoreline. While a reduction in the reservoir level fluctuations has the potential to allow the establishment of riparian habitat in these shoreline areas, the changes in operations at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake associated with implementation of Alternative A would result in water surface elevations similar to those of the Existing Conditions/No Project/No Action Condition. Therefore, operation under Alternative A would have **no impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The lacustrine habitat of these reservoirs supports numerous species of terrestrial wildlife, including the special-status bald eagle. Nesting bald eagles have been documented along the edge of each of these reservoirs. Bald eagle productivity can be influenced by water surface elevation, as can lacustrine wildlife species that use open water habitat, and wildlife that depend on the reservoirs as a source of drinking water. However, the modeling indicates that water surface elevations in these reservoirs under Alternative A would remain similar to those under the Existing Conditions/No Project/No Action Condition. Therefore, changes in operations at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake associated with implementation of Alternative A would result in **no impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion for Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with increased storage at these reservoirs. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Anticipated changes to the flow regime or storage conditions of Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake resulting from implementation of Alternative A would be within the historical range of operation, and would not adversely affect wildlife or wildlife habitat. In addition, the operation of these reservoirs is not covered by adopted HCPs, NCCPs, or local ordinances. Therefore, Alternative A would result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Trinity River

Operational modeling indicates that Trinity River flows would meet or exceed the Trinity River Record of Decision (ROD) requirements with implementation of Alternative A (Appendix 6B Water Resources System Modeling). Project operations could change the timing of flows through the Clear Creek Tunnel, but not the amount supplied. Modeling results show little change from the existing flow schedule, and the small amount of change would rarely occur.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Modifications to the existing flow regime could affect the montane and valley foothill riparian habitats along the Trinity River. However, under Alternative A, the Trinity River would experience only occasional small changes to flows, and the requirements of the ROD would continue to be met or exceeded. Therefore, changes to the flow regime of the Trinity River resulting from implementation of Alternative A would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The montane and valley foothill riparian habitats along the Trinity River support numerous wildlife species, including the special-status bald eagle, osprey, and willow flycatcher. The nearshore portion of the riverine habitat also supports numerous wildlife species, including the special-status foothill yellow-legged frog. Modifications of the existing flow regime could affect these habitat types and their associated wildlife species. However, because the ROD requirements would be met or exceeded, and implementation of Alternative A would result in only occasional small changes to the existing flow schedule, these habitat types would not be expected to be substantially adversely affected. Therefore, changes to the Trinity River flow regime resulting from implementation of Alternative A would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes in Trinity River flows resulting from implementation of Alternative A. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Anticipated changes to the flow regime of the Trinity River resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. In addition, water operations are not covered by adopted HCPs, NCCPs, or local ordinances. Therefore, Alternative A would result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Klamath River downstream of the Trinity River

Operational modeling for the Trinity River suggests that implementation of Alternative A would have little effect on the Klamath River flow regime.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Montane and valley foothill riparian habitats are located along the Klamath River downstream of the confluence with the Trinity River. Modifications of the existing flow regime in the Trinity River could affect flows in the Klamath River and indirectly affect riparian habitat. However, implementation of Alternative A would not substantially change the existing flow regime of the Trinity River, and these flow changes would translate into even smaller changes in flow in the Klamath River. Therefore, there would be a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The montane and valley foothill riparian habitats along the lower Klamath River support numerous wildlife species, including the special-status bald eagle and osprey. The nearshore portion of the riverine habitat also supports numerous wildlife species. Modifications of the existing flow regime could affect these wildlife species. However, implementation of Alternative A would not substantially change the existing flow regime of the Klamath River. Therefore, there would be a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Implementation of Alternative A would not substantially change the existing flow regime of the lower Klamath River. Therefore, there would be a **less-than-significant impact** on native resident or migratory

wildlife species, or to wildlife nursery sites, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with operational effects to the Klamath River resulting from implementation of Alternative A. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There are adopted HCPs for both terrestrial wildlife species covering timber harvest activities on lands adjacent to the Klamath River downstream of the confluence with the Trinity River. Because the flow regime of the Klamath River under Alternative A is not expected to significantly affect wildlife or wildlife habitat, no conflict with any HCPs, NCCPs, or local ordinances is expected. Therefore, Alternative A would result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Spring Creek

Operational modeling was not performed for Spring Creek. Flows from Whiskeytown Lake are introduced into the Spring Creek Tunnel before the flows enter the Sacramento River.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Implementation of Alternative A would not change operation of Whiskeytown Lake or Keswick Reservoir, and therefore, would not be expected to affect the released flows into Spring Creek. Because no change in flows introduced into Spring Creek is expected as a result of implementation of Alternative A, there would be **no impact** on wildlife habitat, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Because implementation of Alternative A would have **no impact** on Spring Creek wildlife habitat, it would not be expected to adversely affect the wildlife species associated with that habitat. Therefore, implementation of Alternative would have **no impact** on special-status wildlife species on Spring Creek, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with flows introduced into Spring Creek. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Because there is not an adopted HCP or NCCP covering wildlife habitat along Spring Creek and no change in operation is expected at Spring Creek as a result of implementation of Alternative A, there would be no conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, result in **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Sacramento River

Operational modeling indicates that Sacramento River flows would meet or exceed the *Biological Opinion for the Long-term Central Valley Project Operations Criteria and Plan* requirements with or without the Project (USFWS, 2008a). When compared to the Existing Conditions/No Project/No Action Condition, Alternative A operations would result in changes to the flow regime upstream of the location of Project diversions as a result Project-related operational changes at Shasta Lake. Systematic changes in flows downstream of each of the Project diversions would occur as a result of the combination of Shasta Lake operational changes and the diversion of up to 5,900 cubic feet per second (cfs) at the Project intakes when diversions occur.

Modeling performed using SRH-1DV and SacEFT indicates that the coverage of the valley foothill riparian vegetation alliance along the Sacramento River would increase or would remain similar with implementation of Alternative A relative to the Existing Conditions/No Project/No Action Condition. For bank swallows, SacEFT modeling indicates negligible effects resulting from peak flow during nesting season and a slight decrease in habitat potential and suitability with implementation of Alternative A, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Valley foothill riparian and backwater habitats are located along the Sacramento River. Modifications to the existing flow regime could alter the formation of off-channel habitats. New off-channel habitat is created during large fall and winter flow events, and existing off-channel backwater areas can fill in with sediment and vegetation if these flow events do not occur. However, modeling results (Appendix 6B Water Resources System Modeling) indicate that the timing and magnitude of flood events, and consequently the conditions required for creating and maintaining these backwater habitats, would not be expected to change with implementation of Alternative A.

Modifications to the existing flow regime could also affect the establishment of riparian habitat, or reduce the survival rate of early successional stages of riparian habitat that already exist. Elderberry shrubs are associated with riparian habitat, but are typically located higher up the slope of the bank rather than at the water's edge. An increase in river stage has the potential to cause inundation of some shrubs. However, the shrubs likely to be affected are already subjected to seasonal inundation, and the minor increase in

river stage during the winter months would be within the historical range of conditions. Operational modeling for Alternative A, including modeling that is specific to riparian habitat (see Chapter 8 Fluvial Geomorphology and Riparian Habitat), indicates a minimal effect to riparian habitat resulting from the described changes in the flow regime. Therefore, elderberry shrubs are not likely to be adversely affected. Similarly, riparian habitat in general would not be expected to be adversely affected.

Impacts of changes in the flow regime in the Sacramento River that would result from implementation of Alternative A would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The Sacramento River's backwater habitats support the western pond turtle, and are included in a recovery unit for the giant garter snake. The river's riparian habitat, which includes elderberry shrubs essential to the survival of the valley elderberry longhorn beetle, is known to support osprey, ringtail, and nesting bald eagles and western yellow-billed cuckoos. The largest known breeding population of bank swallows in California nests along the river. Riparian habitat along the Sacramento River may also support Swainson's hawks, long-eared owls, several special-status bat and songbird species, as well as willow flycatchers during migration. Modifications to the existing flow regime of the Sacramento River could have substantial adverse effects on these species.

Modifications to the existing flow regime could alter the formation of off-channel habitats, which could affect the western pond turtle and giant garter snake. However, modeling results indicate that the timing and magnitude of flood events, and consequently the conditions required for creating and maintaining these backwater habitats, would not be expected to change with implementation of Alternative A.

Modifications to the existing flow regime could also affect the establishment of riparian habitat, or reduce the survival rate of early successional stages of riparian habitat that already exist, which in turn could adversely affect species associated with riparian habitats. However, modeling that is specific to riparian habitat indicates a minimal effect to riparian habitat resulting from the described changes in the flow regime associated with implementation of Alternative A. Therefore, the special-status birds and mammals associated with riparian habitat would not be expected to be adversely affected.

Changes in the existing flow regime could result in changes to the frequency of the high flows required to cause sloughing of river banks, which are used by bank swallows, or could result in higher spring flows that have the potential to inundate nesting bank swallows. Modeling results indicate that that there would be no change in the frequency or severity of flood events, and a potentially slight increase in river stage with implementation of Alternative A but not so as inundate bank swallow nests, as the lowest nests are typically located a greater distance from the water level.

Impacts of changes in the flow regime in the Sacramento River that would result from implementation of Alternative A would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes to the Sacramento River flow regime. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The Natomas Basin HCP (USFWS and CDFG, 2003) is currently the only adopted wildlife habitat plan adjacent to the Sacramento River. It does not cover activities in the riparian habitats along the river and would not be affected by changes in flows in the Sacramento River. In addition, the anticipated changes to the flow regime of the Sacramento River resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. Consequently, Alternative A would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Pump Installation at the Red Bluff Pumping Plant

Two pumps would be installed within a existing bays at the existing Red Bluff Pumping Plant. The construction activities associated with installing two pumps at the existing pumping plant, which would require the use of a crane, are expected to occur along existing construction or access roads. Dewatering of the afterbay would likely be required, and would occur during regularly scheduled maintenance periods or during the non-irrigation season.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Installation of the pump at the existing pumping plant is not expected to involve any ground-disturbing activity, and therefore, would not result in a loss or alteration in habitat suitability. There would, therefore, be **no impact** on wildlife habitat associate with construction activities at the Red Bluff Pumping Plant, when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the additional pump could increase the rate of diversion from the Sacramento River by up to 250 cfs. This small increase would not be expected to adversely affect wildlife habitat downstream of the diversion. Therefore, changes in the flow regime that would result from the operation of two additional pumps at the Red Bluff Pumping Plant with implementation of Alternative A would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the additional pump could increase the amount of sediment that requires removal. However, sediment removal would occur during the regularly scheduled maintenance period for the canal and

would involve the same maintenance activities conducted for Existing Conditions. Maintenance associated with the installation of a pump into an existing pumping plant would, therefore, have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Because pump installation, operation, and maintenance at the Red Bluff Pumping Plant would not be expected to adversely affect wildlife habitat, it would also not be expected to affect the special-status wildlife species associated with those habitat types. Therefore, installation of two pumps at the Red Bluff Pumping Plant would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

The addition of one pump would not be expected to impact wildlife above the existing level of disturbance already present from operation and maintenance of the other pumps in the pumping plant bay. Therefore, the human disturbance associated with installation and maintenance of this pump would be expected to have **no impact** on wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There is not an adopted HCP or NCCP covering the area where the existing pumping plant is located. In addition, the installation of an additional pump under implementation of Alternative A would not adversely affect wildlife or wildlife habitat, and consequently would not conflict with any HCPs, NCCPs, or local ordinances. There would, therefore, be **no impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Clear Creek

Operational modeling (Appendix 6B Water Resources System Modeling) indicates that Clear Creek flow requirements would be met or exceeded in all scenarios.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Valley foothill riparian habitat is located along Lower Clear Creek. Modifications to the Clear Creek flow regime could affect this habitat type. However, flows associated with implementation of Alternative A

would be generally similar when compared to the Existing Conditions/No Project/No Action Condition. Flows in Clear Creek would be similar to those associated with the Existing Conditions/No Project/ No Action Condition. Therefore, Alternative A would have **no impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The valley foothill riparian habitat along Lower Clear Creek supports numerous terrestrial wildlife species, including the foothill yellow-legged frog. Bank swallows and willow flycatchers have been observed foraging over the riverine and adjacent habitats, and some bank swallow nesting has been documented. Implementation of Alternative A would be similar to the existing Clear Creek flow regime, and therefore, would have **no impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes to the flow regime of Clear Creek. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There is not an adopted HCP or NCCP that covers Clear Creek. In addition, implementation of Alternative A would not affect the Clear Creek flow regime and would not adversely affect wildlife or wildlife habitat. Consequently, these changes would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Feather River

The operations under implementation of Alternative A would result in stabilizing Feather River temperatures through increased flows that would be generally higher during summer and fall months (within the constraints of Lake Oroville Federal Energy Regulatory Commission criteria), when compared to the Existing Conditions/No Project/No Action Condition. Flows would be generally decreased during October, November, and December (Appendix 6B Water Resources System Modeling).

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Increased flows during the summer months resulting from implementation of Alternative A would not have a substantial adverse effect on established riparian habitat because the increases would remain within the historic range of summer flows experienced by the riparian vegetation, and to which it has become adapted. In addition, winter peak flows and peak flows during the germination period (generally May and June) that could affect recruitment would remain similar for Alternative A as compared to the Existing Conditions/No Project/No Action Condition. Implementation of Alternative A would not be expected to adversely affect riparian habitat or reduce the habitat suitability of the riverine or backwater habitats, and would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

As identified above increased summer flows associated with implementation of Alternative A would not adversely affect established riparian habitat or; consequently, candidate, sensitive, or special status species associated with riparian habitats. The higher summer flows would also not be likely to adversely affect the hydrology of backwater habitats used by the giant garter snake or nesting sites used by bank swallows. Because changes in the flow regime in the Feather River would not be expected to adversely affect riparian habitat or riverine/backwater habitats, this change would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The valley foothill riparian habitat of the Feather River supports at least two large mixed heron/egret rookeries. Increased summer flows associated with implementation of Alternative A would not have a substantial adverse effect on established riparian habitat. Consequently, these species would not be expected to be adversely affected. Because changes in the flow regime in the Feather River would not be expected to adversely affect riparian habitat or heron/egret rookeries, this change would have a **less-than-significant impact** on the mixed heron/egret rookeries, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes in the flow regime in the Feather River. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There are no adopted HCPs or NCCPs as or date that cover the Feather River. In addition, anticipated changes to the flow regime of the Feather River resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. Consequently, these changes would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Sutter Bypass

Implementation of Alternative A would result in the diversion of up to 5,900 cfs during winter flows. These diversions would occur at the Tehama-Colusa, GCID, and Delevan intake/discharge structures, all of which are located upstream of, and therefore would affect the hydrology of, the Sutter Bypass. The spills into the Sutter Bypass would consequently be reduced, which would reduce the volume of water entering the bypass, and could delay the point at which the weirs begin to spill.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Both riparian and wetland habitats exist within the Sutter Bypass. Most of the riparian habitat is located along the margins of the bypass, typically in association with low-flow channels that are wetted year-round. Wetland habitats within the bypass are primarily managed for wildlife and are supported by irrigation water. Both riparian and wetlands within the bypass are benefitted by sediment and nutrient contributions associated with periodic inundation when the weirs spill, but the maintenance of these habitats is not dependent upon these inundation events. A reduction of the frequency and volume of floodwaters entering the bypass from the Sacramento River as a result of implementation of Alternative A could influence wetland and riparian habitat by reducing the extent of inundation and its beneficial influence. Modeling suggests that the frequency of flows entering the Sutter Bypass through natural overflows near Ord Ferry and at the Moulton, Colusa, and Tisdale weirs resulting from implementation of Alternative A would be similar, but could reduce the extent of inundation and, in turn, the amount of habitat flooded, although it is uncertain how much habitat would be inundated. Given that the bypass would still be activated at a similar frequency and that the riparian and wetland habitats are not dependent upon inundation, the changes in the flow entering the Sutter Bypass as a result of implementing Alternative A would have a **less-than-significant impact** on riparian and wetland habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Approximately 80 percent of the Sutter NWR is located in the Sutter Bypass. The agricultural, riparian, and wetland habitats within the Sutter Bypass support numerous species of terrestrial wildlife, including a large mixed heron and egret rookery and the special-status giant garter snake, Swainson's hawk, white-tailed kite, bald eagle, western yellow-billed cuckoo, American white pelican, redhead, least bittern, western pond turtle, and State fully-protected ringtail. The open water habitat created during flooding can provide value to migratory waterbirds similar to that provided by permanent wetlands. The

flooding that occurs during high flow events can create deep water suitable for diving ducks. Raptor species forage in and along the margins of flooded areas. The shallow water habitat associated with bypass inundation is also valuable to wintering dabbling ducks, shorebirds, and wading birds. Modifications of the existing frequency and duration of inundation in the Sutter Bypass could affect these species.

A reduction in the volume of floodwaters entering the Sutter Bypass from the Sacramento River as a result of implementation of Alternative A could reduce the amount of flooding that the refuge experiences, and affect the use of the bypass by waterbirds. However, the inundation would continue at a similar frequency, and flooded area would continue to be available to waterbirds. Therefore, given that riparian and wetland habitats would not be adversely affected and the frequency of inundation would remain similar, the reduced volume of floodwaters entering the Sutter Bypass as a result of implementing Alternative A would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The riparian habitat within the Sutter Bypass supports a large mixed heron and egret rookery. Because the changes in flows entering the Sutter Bypass under Alternative A would not be expected to have an adverse effect on riparian habitat or loss of the nesting colony, the change in flows would have a **less-than-significant impact** on the heron and egret rookery, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes to the flows entering the Sutter Bypass. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There are no adopted HCPs or NCCPs covering the Sutter Bypass. In addition, anticipated changes to the flow regime of the Sutter Bypass resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. Consequently, these changes would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Yolo Bypass

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Operational modeling indicates that implementation of Alternative A could reduce the amount of flow entering the Yolo Bypass from the Sacramento River in some years and may have the potential to decrease the extent and frequency of inundation, when compared to the Existing Conditions/No Project/

No Action Condition. However, these changes would occur infrequently, and the magnitude of change in the bypass and the extent of impact would also be influenced by flows entering the bypass from westside streams. The potential benefits of inundation to riparian and wetland habitats within the Yolo Bypass could be smaller because the extent of inundation (area covered) could be less as a result of these changes. However, given that the riparian and wetland habitats within the Yolo Bypass are not dependent on inundation by floodwaters, implementation of Alternative A would have a **less-than-significant impact** on riparian and wetland habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The agricultural, riparian, and wetland habitats within the Yolo Bypass, which includes the Yolo Bypass WA, support numerous species of terrestrial wildlife, including special-status species. Inundation of the bypass may create foraging opportunities for American white pelican, bald eagle, and greater sandhill crane, whereas the flooding may temporarily reduce the rodent and invertebrate prey base for Swainson's hawk. In addition, inundation of the bypass provides habitat for numerous wintering or migrating waterbirds. The implementation of Alternative A would reduce the flow entering the bypass as well as the area, and possibly the frequency, of flooding. However, the maintenance of riparian and wetland habitats is not dependent on flooding, and flood flows would continue to regularly enter the bypass and provide benefits to various terrestrial species. In addition, peak flows during wet years would remain similar. Therefore, implementation of Alternative A would have a **less-than-significant impact** on terrestrial special-status species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. The changes in flow entering the Yolo Bypass as a result of implementing Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with changes in flow entering the Yolo Bypass. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There are no adopted HCPs or NCCPs covering the Yolo Bypass. In addition, anticipated changes to the flow entering the Yolo Bypass resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. Consequently, these changes would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

American River

Operational modeling (Appendix 6B Water Resources System Modeling) indicates that implementation of Alternative A would result in a more stable American River flow regime to support improved temperature conditions during the summer months/early fall than the Existing Condition/No Project/ No Action Condition.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The more stable flow regime resulting from implementation of Alternative A during the summer months would result in a more natural flow condition with gradual flow reductions over the course of the summer. Changes in the flow regime in the American River that would result from implementation of Alternative A compared to the Existing Conditions/No Project/No Action Condition are not expected to substantially affect riparian habitat or reduce the habitat suitability of the riverine or backwater habitats, and would, therefore, have a **less-than-significant impact** on these wildlife habitats, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

As identified stabilized summer flows associated with implementation of Alternative A would not adversely affect established riparian habitat or; consequently, candidate, sensitive, or special status species associated with riparian habitats. Because changes in the flow regime in the American River that would result from implementation of Alternative A are not expected to adversely affect riparian habitat and would not be expected to reduce the habitat suitability of the riverine or backwater habitats, this change would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with flow regime changes on the American River. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

There are no adopted HCPs or NCCPs covering the American River. In addition, anticipated changes to the flow regime of the American River resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect wildlife or wildlife habitat. Consequently,

these changes would not conflict with any HCPs, NCCPs, or local ordinances, and would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Sacramento-San Joaquin Delta and Suisun Bay

Operational modeling indicates that the position of X2 with implementation of Alternative A would be similar (less than 5 percent difference) to the positions under the Existing Conditions/No Project/ No Action Condition (Appendix 6B Water Resources System Modeling).

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The Sacramento-San Joaquin Delta contains sloughs, emergent wetlands, and saline wetlands. Modifications to the existing flow regime of the Delta could affect these habitat types. Similarly, wetland habitats in Suisun Marsh could be affected. However, because the position of X2 associated with implementation of Alternative A would be similar to the Existing Conditions/No Project/No Action Condition, there would be a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The Sacramento-San Joaquin Delta supports numerous wildlife species, including the special-status giant garter snake in the vicinity of Sherman Island, bank swallows along Seven-Mile and Three-Mile sloughs, the California black rail, the greater sandhill crane in emergent wetlands, and the salt marsh harvest mouse in saline wetlands. Modifications to the existing flow regime of the Delta could affect these species. However, the flow regime associated with implementation of Alternative A would result in shifts in X2 that are similar to the Existing Conditions/No Project/No Action Condition. Therefore, implementation of Alternative A would result in a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

No Project-related human disturbance would be associated with flow regime changes in the Delta. Therefore, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The San Joaquin County Multi-Species Conservation Plan (an adopted HCP) and the East Contra Costa County HCP/NCCP cover lands that are located within the Sacramento-San Joaquin Delta. These plans are intended to facilitate orderly development and the protection of special-status species and open space. Implementation of Alternative A would not result in substantial environmental changes or any construction activities within the boundaries of these plans that could conflict with their provisions or objectives. The anticipated changes to the flow regime of the Delta resulting from implementation of Alternative A would be within the historical range of operation and would not adversely affect the ongoing implementation of these plans. Therefore, it is unlikely that these projects would be in conflict with adopted HCPs and NCCPs or with local policies or ordinances. Alternative A would, therefore, have **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

14.3.4.3 Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Sites Reservoir Inundation Area and Sites Reservoir Dams

The construction of a 1.3-million acre-foot (MAF) Sites Reservoir requires the construction of Sites Dam, Golden Gate Dam, and seven saddle dams. Construction-related ground-disturbing activities, vegetation removal, and the subsequent filling of the reservoir, would result in the direct and permanent loss of wildlife habitats, or the direct conversion of wildlife habitats to lacustrine habitat (Table 14-7).

Table 14-7
Acres of Wildlife Habitat Subject to Direct Permanent Loss from the Construction and Filling of the 1.3-MAF Sites Reservoir and Associated Dams: Alternative A

Habitat	Permanent Loss (Acres)
Annual grassland	11,654.6
Blue oak woodland	353.5
Dryland grain and seed crops	206.9
Lacustrine	20.2
Pasture	61.0
Urban/disturbed	76.1
Valley foothill riparian	81.5
Valley oak woodland	3.4
TOTAL	**12,457.2**

In addition to the permanent loss of habitat, there would also be temporary disturbance of habitat associated with a construction disturbance area outside of the reservoir footprint. The construction disturbance area would be located on the northeast side of the reservoir in the vicinity of the proposed Sites and Golden Gate dams, and could disturb as much as 1,000 acres of land. Disturbed areas would be restored to their original habitat type after construction is complete. The majority of wildlife habitat that would be disturbed in that area is annual grassland habitat, but disturbance of valley foothill riparian habitat could also occur.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland habitat within the proposed footprint of Sites Reservoir and its dams provides foraging habitat for special-status species, such as the loggerhead shrike, northern harrier, tri-colored blackbird, and pallid bat. Annual grassland also provides burrowing and foraging habitat for the burrowing owl and American badger, and wintering habitat for the ferruginous hawk and prairie falcon. Annual grassland provides potential habitat for the western spadefoot, which was observed southwest of the reservoir footprint, but not within the footprint itself. Along the annual grassland/blue oak woodland edge, annual grassland provides foraging habitat for the golden eagle, long-eared owl, and white-tailed kite. The vernal pools within annual grassland provide foraging habitat for the long-billed curlew. Annual grassland also provides habitat for numerous general wildlife species. In the vicinity of Golden Gate Dam and within the potential construction disturbance area, there are two elderberry shrubs in the middle of annual grassland habitat. The permanent loss of 11,654.6 acres and the additional temporary disturbance of up to 1,000 acres of annual grassland habitat, resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Blue Oak Woodland

Blue oak woodland habitat within the proposed footprint of Sites Reservoir and its dams provides nesting and foraging habitat for special-status species, such as the golden eagle, Lawrence's goldfinch, long-eared owl, and white-tailed kite, and wintering habitat for the prairie falcon. Blue oak woodland also provides roosting and foraging habitat for the pallid bat and western red bat, as well as burrowing and foraging habitat for American badger. Blue oak woodland also provides habitat for numerous general wildlife species. The permanent loss of 353.5 acres of blue oak woodland habitat resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat within the proposed footprint of Sites Reservoir and its dams may provide habitat for many species of rodents and birds that have adapted to this annual crop, and hawks, owls, and other predators that feed on the rodents, including the northern harrier. The permanent loss of 206.9 acres of dryland grain and seed crops habitat resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Lacustrine

The 20.2 acres of existing lacustrine habitat within the proposed reservoir footprint consists of man-made ephemeral stock ponds. The filling of Sites Reservoir would replace these stock ponds with more than 12,000 acres of lacustrine habitat. The new reservoir would create shoreline and shallow water habitat, as well as open water habitat. The increase in open water habitat associated with implementation of Alternative A would have a **beneficial effect** on many common avian species by providing additional

area for large aggregations ("rafts") of ducks and diving birds during the winter, when compared to the Existing Conditions/No Project/No Action Condition. This habitat type could also create nesting opportunities for a few of these species (Table 14-8). In addition, the reservoir could provide foraging habitat for bats.

Table 14-8
Avian Species Expected to Benefit from an Increase in Open Water Habitat within the Sites Reservoir Inundation Area

Avian Species			
American coot	Cinnamon teal	Great blue heron*	Northern shoveler
American white pelican	Clark's grebe	Great egret	Osprey
American wigeon	Cliff swallow*	Greater scaup	Peregrine falcon
Bald eagle*	Common goldeneye	Green-winged teal	Pied-billed grebe
Barrow's goldeneye	Common loon	Herring gull	Redhead
Blue-winged teal	Common merganser*	Hooded merganser	Ring-billed gull
Bufflehead	Double-crested cormorant	Horned grebe	Ring-necked duck
California gull	Eared grebe	Killdeer*	Rock pigeon*
Canada goose	Eurasian wigeon	Lesser scaup	Ruddy duck
Canvasback	Forster's tern	Mallard	Spotted sandpiper
Caspian tern	Gadwall	Northern pintail	Western grebe

*Potential nesting opportunity for these species.

After filling, Sites Reservoir would be operated in a way that would cause frequent and often times severe drawdowns. The fluctuation of surface water elevation could impact wildlife that use the reservoir as a drinking source, as they would have to travel farther from the cover of adjacent habitat to reach the water. This increased travel distance can increase the risk of predation, especially for small mammals, reptiles, and amphibians. However, terrestrial wildlife within the area currently do not have access to a large permanent water source. Water sources around the rim of the proposed reservoir include seasonal wetlands, ephemeral streams, and stock ponds. Most stock ponds do not have year-round water. Wildlife could continue to use these existing water sources when the reservoir is drawn down. Although suitable habitat occurs for both California red-legged frog and tiger salamander, they are not likely to occur within the Project site based on lack of occurrences in the area and the presence of nonnative bullfrogs in most of the ponds. Therefore, the fluctuations of surface water elevations during operation of Sites Reservoir associated with implementation of Alternative A would have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Pasture

Pasture habitat within the proposed footprint of Sites Reservoir and its dams provides potential wintering habitat for the special-status ferruginous hawk. When it is not overgrazed, pasture also provides potential habitat for ground-nesting birds and numerous general wildlife species. The permanent loss of 20.2 acres of pasture habitat resulting from construction activities and filling of the reservoir associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the footprint of Sites Reservoir and its dams provides marginal habitat for common wildlife species, including numerous nonnative species. Existing structures located within urban/disturbed habitat within the Sites Reservoir footprint provide roosting habitat for bats, including a pallid bat maternity colony observed during field surveys. The demolition of these individual structures would adversely affect the maternity colony if demolition occurs before young are weaned and would adversely affect all roosting bat species if they are not excluded prior to demolition.

While impacts to individual structures could impact roosting bats, the permanent loss of 76.1 acres of urban/disturbed habitat resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Foothill Riparian Habitat

Valley foothill riparian habitat within the proposed footprint of Sites Reservoir and its dams provides nesting and foraging habitat for special-status species, such as the bald eagle, long-eared owl, and yellow warbler, and provides roosting and foraging habitat for the western red bat. Valley foothill riparian also provides habitat for the western pond turtle, and potential habitat for the Swainson's hawk, which was observed adjacent to, but outside of, the footprint. When elderberry shrubs are present, valley foothill riparian provides habitat for the valley elderberry longhorn beetle. Valley foothill riparian also provides habitat for numerous general wildlife species. The permanent loss of 81.5 acres and the potential temporary disturbance of additional acreage of valley foothill riparian habitat, resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Valley Oak Woodland Habitat

Valley oak woodland habitat within the proposed footprint of Sites Reservoir and its dams has the potential to provide nesting and foraging habitat for special-status species, such as the Lewis' woodpecker, roosting and foraging habitat for the pallid bat and western red bat, and wintering habitat for the prairie falcon. Valley oak woodland provides burrowing and foraging habitat for the American badger, and potential habitat for the Swainson's hawk, which was observed in an area adjacent to the reservoir footprint, but not within the footprint. However, the valley oak woodland within the reservoir footprint represents a small isolated patch of marginal habitat. Therefore, the permanent loss of 3.4 acres of valley oak woodland habitat resulting from the construction activities and filling of the reservoir associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Construction, operation, and maintenance activities within the Primary Study Area have the potential to affect special-status species. The potential impacts on the species most likely to be affected are described below as well as potential impacts on migratory birds covered under the Migratory Bird Treaty Act.

Migratory Birds and Roosting Bats

Construction-related ground-disturbance activities and vegetation removal, and the subsequent filling of the proposed reservoir have the potential to affect migratory birds, particularly if those activities occur during the nesting season when nests, eggs, or young could be vulnerable. As described above, construction activities within the urban/disturbed habitat category would include the demolition of existing structures. Demolition of these structures has the potential to result in the loss of roosting habitat for special-status bats. The extent of impact would be influenced by the distribution of nesting birds and roosting bats in the affected areas and the timing of the activity. Therefore, construction, operations, and maintenance activities associated with Sites Reservoir and Dams would have a **potentially significant impact** on migratory birds and roosting bats, when compared to the Existing Conditions/No Project/ No Action Condition (**Impact Wild-2a**).

Bald Eagle

Construction-related ground-disturbing activities and vegetation removal, and the subsequent filling of the proposed reservoir, would result in the direct and permanent loss of the valley foothill riparian habitat that is used as bald eagle nesting and foraging habitat. No nests occur within the proposed reservoir footprint, but the construction of Golden Gate Dam would result in the indirect take of an established bald eagle nest tree, which is located immediately adjacent to the footprint of the dam and within the construction disturbance area. Bald eagles tend to use the same nest for multiple years, and the nesting pair at this location has successfully reproduced in consecutive years. The disturbance or removal of this nest tree during the nesting season could result in the direct mortality of eggs or young, which would be a **potentially significant impact**. If removed, the permanent loss of this nest tree would be a **potentially significant impact** on bald eagles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2b**).

The conversion of valley foothill riparian habitat to lacustrine habitat as a result of filling of the reservoir would provide new foraging habitat and an increase in prey for bald eagles, and the lacustrine/blue oak woodland edge could provide new roosting habitat. However, during operation, recreational boating on the reservoir and its associated noise, as well as the noise and disturbance associated with campground use, could make potential nesting habitat unsuitable or result in nest abandonment. The disturbance to bald eagles caused by recreation activities would be a **potentially significant impact** on bald eagles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2b**).

Periodic maintenance activities, such as garbage removal, and maintenance of signs, culverts, and buoys, would not be expected to have a substantial adverse effect on bald eagles and would, therefore, have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Golden Eagle

Construction-related ground-disturbing activities and vegetation removal, and the subsequent filling of the proposed reservoir, would result in the direct and permanent loss of annual grassland, blue oak woodland, and valley oak woodland habitat that is used by the golden eagle as nesting and foraging habitat. Golden eagles were observed foraging within the proposed reservoir footprint. This foraging habitat would be converted to lacustrine habitat, which is not suitable foraging habitat for golden eagles. Therefore, the loss of foraging habitat would be a **potentially significant impact** on golden eagles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2e**).

Construction activities associated with the construction of Sites Dam could disturb an active golden eagle nest located adjacent to the construction footprint in Sites Canyon. Although the location of the nest does not have a direct line of sight to the dam construction disturbance area, and although the nest is already subject to traffic noise, construction activities associated with Sites Dam could have a **potentially significant impact** on these nesting golden eagles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2e**).

During operation of the dam, the portion of the road that the nest is located along would be restricted to authorized vehicles only; public vehicle access would be eliminated. Operation- and maintenance-related traffic at the dam would have a **less-than-significant impact** on these nesting golden eagles, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Elderberry Longhorn Beetle

Construction-related ground-disturbing activities and vegetation removal, and the subsequent filling of the proposed reservoir, would result in the direct and permanent loss of elderberry stems. Valley elderberry longhorn beetle emergence holes were observed on some of the surveyed stems. Four elderberry shrubs, which were not surveyed for emergence holes, are located within the footprint of Sites Dam and would consequently experience direct loss during construction of the dam. Outside of the reservoir footprint, but within the potential construction disturbance area, two elderberry shrubs exist within the annual grassland. Emergence holes were documented on one of these shrubs. The permanent loss of these elderberry shrubs would be a **potentially significant impact** on valley elderberry longhorn beetles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2g**).

Western Burrowing Owl

Construction-related ground-disturbing activities and vegetation removal could result in the destruction of occupied or unoccupied burrows used by burrowing owls, or mortality of owls through vehicle collisions with this species. In addition, the subsequent filling of the proposed reservoir, would result in the direct and permanent loss of annual grassland and blue oak woodland habitat. Burrowing owls were observed within the reservoir footprint at the annual grassland/blue oak woodland edge. These habitat types would be converted to lacustrine habitat, which is unsuitable habitat for burrowing owls. The conversion of these habitat types to lacustrine habitat and destruction of burrows or mortality during construction would, therefore, have a **potentially significant impact** on burrowing owls, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2h**).

Western Pond Turtle

Construction-related ground-disturbing activities and vegetation removal could result in the destruction of occupied pond turtle nests, or mortality of turtles through vehicle collisions with this species. In addition, the subsequent filling of the proposed reservoir, would result in the direct and permanent loss of ponds and streams that are used by the western pond turtle. Pond turtles were observed within the reservoir footprint and at the Sites Dam site. This loss of habitat could adversely affect this species. In addition, construction activities and the subsequent filling of the reservoir could result in direct mortality to this species. During operation, the reservoir's lacustrine habitat has the potential to provide suitable pond turtle habitat along the shallow edges of the reservoir. However, the expected surface water elevation fluctuations associated with reservoir operation would reduce the potential habitat value and likely be unsuitable for this species. Therefore, the construction and operation of Sites Reservoir and Dams would

have a **potentially significant impact** on western pond turtles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2i**).

Because the reservoir's surface water elevation fluctuations would likely make the reservoir's lacustrine habitat unsuitable for pond turtles, the proposed maintenance activities (including law enforcement, garbage removal, and maintenance of signs, culverts, and buoys) would not be expected to have a substantial adverse effect on this species. Therefore, maintenance activities associated with Sites Reservoir and Dams would have a **less-than-significant impact** on western pond turtles, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The proposed Sites Reservoir Inundation Area is used by a small resident deer herd. The herd makes small seasonal movements; it does not make large seasonal migrations to critical habitat areas. The proposed inundation area may also be used by a small herd of Tule elk. Construction activities within the reservoir footprint would not be expected to affect the movement of these herds. Construction activities at the dam sites would likely cause the herds to travel over the hillside rather than through the gap, but this change in travel route would not cause substantial interference to the herds' movements. Filling and operation of the reservoir would displace these herds into adjacent suitable habitat, and could restrict the herds' seasonal movements. However, the deer and Tule elk herds would be able to travel around the rim of the reservoir, and could swim across the reservoir. Maintenance activities would not be expected to affect the movement of these herds. Therefore, the impact of interference to resident deer and roaming Tule elk herd movement caused by the construction, operation, and maintenance of Sites Reservoir and Dams would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Common wildlife and wildlife habitats would be directly or indirectly affected by Project-related construction and maintenance activities associated with the proposed Sites Reservoir and dams, as well as by recreation activities associated with reservoir operation. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Recreational use of the reservoir would include the use of watercraft such as powerboats, fishing boats, personal watercraft, and canoes. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with construction, maintenance, and recreation at Sites Reservoir and dams is expected to be a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The Primary Study Area is not included in any HCPs or NCCPs. The Colusa County Voluntary Oak Woodlands Management Plan provides guidelines for voluntary participation, and Project mitigation for

oak woodlands would exceed those guidelines. Therefore, there would be no conflict with this plan, and consequently **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Recreation Areas and Associated Electrical Distribution Lines

The proposed Antelope Island, Lurline Headwaters, Stone Corral, Peninsula Hills, and Saddle Dam recreation areas all have a footprint that represents the total area within which land-based recreation could occur. However, only approximately 15 percent of each footprint would experience a permanent loss of habitat as a result of the construction of facilities, such as boat ramps, picnic areas, roads, restroom facilities, and campgrounds. The remainder of the acreage could experience impacts from activities that would occur during Project operation and maintenance, such as hiking, camping in undesignated areas, firewood collection, fuelbreak and vegetation maintenance, and off-road vehicle or mountain bike use. Three of the Recreation Areas would also have overhead power lines associated with them, and the temporary construction disturbance area for the electrical distribution lines is included in addition to the recreation area footprint acreage. The total acreage of wildlife habitat within each recreation area is presented in Table 14-9.

Table 14-9
Permanent Wildlife Habitat Loss and Temporary Disturbance Due to the Construction of the Recreation Areas and Associated Electrical Distribution Lines: Alternative A

Habitat	Total Number of Acres Affected					TOTAL Disturbance	Permanent Loss[b]
	Saddle Dam[a]	Peninsula Hills[a]	Stone Corral	Antelope Island	Lurline Headwaters[a]		
Annual grassland	271.6	78.2	132.8	12.3	79.2	**574.1**	**86.1**
Blue oak woodland	0	301.3	102.3	36.9	156.2	**596.7**	**89.2**
Chamise-redshank chaparral	0	0			1.0	**1.0**	**0.2**
Lacustrine	1.2	0	0	0	0[c]	**1.2**	**0.2**
TOTAL	**272.8**	**379.5**	**235.1**	**49.2**	**236.4**	**1,173.0**	**175.7**

[a]Acreage includes construction disturbance area for associated electrical distribution line.
[b] Permanent loss is calculated as 15 percent of the total construction disturbance area.
[c]This facility has a small amount of lacustrine habitat, but the total amount is less than 0.1 acre.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland habitat within the proposed footprint of each of the Recreation Areas does not contain vernal pools, but otherwise has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. However, the Saddle Dam Recreation Area contains seasonal wetlands that are considered to be part of the annual grassland habitat. The special-status long-billed curlew and tri-colored blackbird were observed using this habitat, and foraging golden eagles were observed. The potential disturbance of up to 574.1 acres and permanent loss of approximately 86 acres of annual grassland habitat resulting from construction and the recreation activities associated with the operation of the Alternative A

Recreation Areas would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Blue Oak Woodland

Blue oak woodland habitat within the proposed footprint of four of the five Recreation Areas has similar value to wildlife as described in the impact assessment for Sites Reservoir and Dams, although portions of the blue oak woodland on Antelope Island and Lurline Headwaters have an understory of mixed chaparral. The special-status American badger and golden eagle were observed within this habitat. The potential disturbance of up to 596.7 acres and permanent loss of approximately 89 acres of blue oak woodland habitat resulting from construction and the recreation activities associated with operation of the Alternative A Recreation Areas would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Chamise-redshank Chaparral

Chamise-redshank chaparral habitat is located within the construction disturbance area associated with the proposed Lurline Headwaters Recreation Area. This chaparral provides potential habitat for Bell's sage sparrow, which was observed west of the Sites Reservoir footprint. The construction disturbance area represents an area of potential temporary disturbance that would be returned to chaparral habitat after completion of the Project. Because of the above-ground nature of overhead power line construction, impacts to this habitat could be avoided. The potential disturbance of up to 1.0 acre of chamise-redshank chaparral habitat resulting from overhead power line construction activities under Alternative A would have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Lacustrine Habitat

The lacustrine habitat within the proposed footprint of two of the Recreation Areas is made up of man-made ephemeral stock ponds. The three ponds that exist within the footprint of the Saddle Dam Recreation Area are not located within an area designated for construction, but are spread out through the center of the recreation area footprint and could be subject to disturbance from recreation activities. The one pond that exists within the footprint of the Lurline Headwaters Recreation Area is located at the north edge of the recreation area footprint and is not located within an area designated for construction. The potential disturbance to the 1.2 acres of stock ponds could adversely impact terrestrial wildlife.

However, the inundation area of Sites Reservoir would be located immediately adjacent to these Recreation Areas, and implementation of Alternative A would provide over 12,000 acres of lacustrine habitat, including shoreline, shallow water, and open water habitat. The increase in adjacent lacustrine habitat could benefit the wildlife species that use these stock ponds. Therefore, the potential disturbance to these stock ponds resulting from recreation activities associated with operation of the Alternative A Recreation Areas would have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Golden Eagle

The construction-related ground-disturbing activities, and the associated recreation activities that would occur during operation in the proposed Recreation Areas, would result in the direct and permanent loss or disturbance of annual grassland and blue oak woodland habitat that is used by golden eagles as nesting and foraging habitat. Golden eagles were observed foraging at the proposed Recreation Areas year-round, and were observed nesting at Stone Corral, Lurline Headwaters, and Peninsula Hills recreation areas. The permanent loss or disturbance of annual grassland and blue oak woodland habitat resulting from construction and operation of the Recreation Areas would be a **potentially significant impact** on golden eagles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2e**).

Nest tree removal during construction, and the potential disturbance to nesting golden eagles from recreation activities that would occur during Project operation, or from maintenance activities, could cause nest abandonment or direct mortality to eggs or young, and therefore, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2e**).

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Limited construction would occur within the proposed footprint of each recreation area. Permanent structures could include vault toilets, picnic tables, and boat ramps. Portions of the existing vegetation within the Recreation Areas could be cleared to provide hiking trails, campsites, and gravel parking areas. After construction is complete, it is possible that larger areas of disturbance, such as gravel parking lots or multiple-site campgrounds, could interfere with the movement of small mammals, reptiles, or amphibians due to the lack of vegetative cover. However, the surrounding native habitat would be preserved, and vegetation would be planted and maintained around these disturbed areas. These disturbed areas would not be expected to substantially interfere with the movement of resident wildlife species because those species would be able to travel around the areas of disturbance. Therefore, construction, operation, and maintenance of the Recreation Areas would have a **less-than-significant impact** on the movement of small mammals, reptiles, and amphibians, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, maintenance, and recreation activities associated with the proposed Recreation Areas. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials but only during the construction phases. During this time, it is anticipated that common wildlife species would utilize and inhabit adjacent areas and habitat. Human disturbance associated with maintenance, and recreational use during Project operation of the Recreation Areas would be generally limited to the recreation season. Impacts to common species given most species would become accustomed to occasional human activity would result in a **less-than-significant impact**

on common terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Road Relocations and South Bridge

Construction of the proposed road relocations would require a 100-foot-wide buffer on each side of the road, measured from the roadway centerline, which would result in the temporary disturbance of wildlife habitat. Disturbed areas would be restored to their original habitat type after construction is completed. The roads would be fenced on both sides, as most are now. The affected habitat types and total acreage impacted for each habitat type are listed in Table 14-10. Acreage for the proposed South Bridge is not included in this analysis because the bridge's on-the-ground footprint (i.e., bridge piers) and its construction disturbance area would be within the footprint of Sites Reservoir; the acreage is, therefore, already accounted for in the permanent loss of habitat associated with the proposed reservoir.

Table 14-10
Permanent Wildlife Habitat Loss and Temporary Disturbance Due to the Construction of the Road Relocations and South Bridge: Alternative A

Habitat	Total Number of Acres Affected	Permanent Loss* (Acres)
Annual grassland	719.9	216.0
Blue oak woodland	195.8	58.7
Canal	0.6	0.2
Chamise-redshank chaparral	1.5	0.4
Dryland grain and seed crops	15.9	4.8
Lacustrine	0.5	0.2
Mixed chaparral	2.6	0.8
Urban/disturbed	9.7	2.9
Valley foothill riparian	4.2	1.3
TOTAL	**950.7**	**285.3**

*Permanent loss is calculated as 30 percent of the total construction disturbance area.

The permanent loss of wildlife habitat resulting from the proposed footprint of the roads and the required cut and fill would be approximately 285 acres. The majority of the habitat acreage affected by construction of the roads would be annual grassland habitat and blue oak woodland habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The special-status long-billed curlew, prairie falcon, tri-colored blackbird, white-tailed kite, American badger, and pallid bat were observed within this habitat along the North Road and/or Southeast Road. The loggerhead shrike, white-tailed kite, golden eagle, northern harrier, tri-colored blackbird, and long-billed curlew were observed within this habitat type along the Eastside Road. The temporary disturbance of 719.9 acres, of which up to 285 acres could represent a permanent loss, of annual grassland habitat resulting from road construction activities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Blue Oak Woodland

Blue oak woodland habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The special-status Lewis' woodpecker, western red bat, and American badger were observed in this habitat along the North and/or Southeast Road. The temporary disturbance of 195.8 acres, all of which could represent a permanent loss, of blue oak woodland habitat resulting from road construction activities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Canal

The construction of a bridge would be required where the proposed footprint and construction disturbance area of the road relocations would cross existing canals. Because no loss of canal habitat or disturbance of the main channel of any canal would occur as a result of road construction associated with implementation of Alternative A, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Chamise-redshank Chaparral

Chamise-redshank chaparral habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for the Recreation Areas. The temporary disturbance of 1.5 acres or potential permanent loss of chamise-redshank chaparral habitat, resulting from road construction activities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The special-status Swainson's hawk was observed foraging, and sandhill cranes were observed flying, over this habitat type along the Southeast Road. The temporary disturbance of

15.9 acres or potential permanent loss of dryland grain and seed crops habitat, resulting from road construction activities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Lacustrine

The lacustrine habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for the Recreation Areas. The construction disturbance areas for Lurline Road and Com Road converge east of the Lurline Headwaters Recreation Area. At the point of convergence, the disturbance areas overlap with a pond that is located within blue oak woodland habitat. Several other stock ponds are located adjacent to, but outside of, the construction disturbance area of other road segments. The temporary disturbance of up to 0.5 acre of lacustrine habitat resulting from road construction activities associated with implementation of Alternative A would not be expected to adversely affect wildlife, and would, therefore, have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Mixed Chaparral

The mixed chaparral habitat within the proposed footprint and construction disturbance area of the road relocations has the potential to support numerous species of terrestrial wildlife, including Bell's sage sparrow, which was observed west of the Sites Reservoir footprint along a formerly proposed road route. The temporary disturbance of 2.6 acres or potential permanent loss of mixed chaparral habitat, resulting from road construction activities associated with implementation of Alternative A, would have a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. Although construction of the proposed South Bridge could provide roosting habitat for bats if niches are incorporated into the design, construction of the proposed roads could require the demolition of a few existing individual structures that may provide roosting habitat for bats. Temporary disturbance of 9.7 acres or potential permanent loss of urban/disturbed habitat, resulting from road construction activities associated with implementation of Alternative A, would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Foothill Riparian

Valley foothill riparian habitat within the proposed footprint and construction disturbance area of the road relocations has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The special-status western pond turtle was observed within this habitat type along Stone Corral Creek. The temporary disturbance of 4.2 acres or potential permanent loss of valley foothill riparian habitat, resulting from road construction activities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/ No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Migratory Birds and Roosting Bats

Construction-related ground-disturbance activities and vegetation removal, have the potential to affect migratory birds, particularly if those activities occur during the nesting season when nests, eggs, or young could be vulnerable. As described above, construction activities within the urban/disturbed habitat category would include the demolition of existing structures. Demolition of these structures has the potential to result in the loss of roosting habitat for special-status bats. The extent of impact would be influenced by the distribution of nesting birds and roosting bats in the affected areas and the timing of the activity. Therefore, construction, operations, and maintenance activities associated with road relocations and south bridge would have a **potentially significant impact** on migratory birds and roosting bats, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2a**).

Valley Elderberry Longhorn Beetle

There are more than 60 elderberry shrubs along Stone Corral Creek within 100 feet of Maxwell Sites Road, located approximately 0.5 to 0.75 mile northwest from the road's intersection with the proposed Eastside Road. There is also one shrub within 100 feet of the road located approximately 0.5 mile southeast of the same intersection. Although construction would not occur on Maxwell Sites Road, construction vehicles and equipment would use this road. The expected increase in recreational visitors to the area would also increase the use of this road. Traffic associated with maintenance activities is expected to be minimal, resulting in a **less-than-significant impact** on elderberry shrubs, when compared to the Existing Conditions/No Project/No Action Condition.

The increase in construction and recreation traffic associated with construction and operation of Alternative A has the potential to adversely affect these elderberry shrubs by increasing the amount of dust in the area. Increased dust would have a **potentially significant impact** on elderberry shrubs, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2g**).

Western Burrowing Owl

Construction-related ground-disturbing activities associated with the proposed road relocations would result in the permanent loss and temporary disturbance of annual grassland habitat and the destruction of burrows used by burrowing owls. Burrowing owls were observed along the proposed North Road and Eastside Road in the vicinity of road cuts. Due to their proximity to the road, vehicle collisions with this species could increase due to increased recreation and maintenance traffic on existing and proposed new roads. The loss of annual grassland habitat and burrows during Project construction, as well as the increased traffic associated with operation and maintenance activities resulting from implementation of Alternative A, would be a **potentially significant impact** on burrowing owls, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2h**).

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Construction of new roads can result in habitat fragmentation or reduced habitat connectivity. Improvement (such as from gravel to asphalt) or widening of existing roads can make it more difficult for

small mammals, reptiles, or amphibians to cross them. However, each of the proposed new roads would be two-lane roads that, combined with their shoulders, are only approximately 60 feet wide. The roads would, therefore, not be expected to prohibit wildlife movement. Roadside fencing can also restrict wildlife movement. However, the fencing along existing roads and fencing that would be constructed along new roads consist of barbed wire fencing that does not obstruct the movement of these wildlife species. Construction of the roads associated with implementation of Alternative A would, therefore, have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/ No Project/No Action Condition.

Increased traffic associated with the operation and maintenance of the roads could result in increased mortality for individual wildlife species traveling across or basking on the roads. However, the mortality rate would not be expected to increase to a level that would adversely affect local populations. Therefore, the increased traffic associated with the operation and maintenance of the roads would have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of the roads and bridge. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with construction, operation, and maintenance of the South Bridge and roads would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Sites Pumping/Generating Plant, Sites Electrical Switchyard, Sites Reservoir Inlet/Outlet Structure, and Field Office Maintenance Yard

The construction of the proposed Sites Pumping/Generating Plant, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and the Field Office Maintenance Yard would require ground-disturbing activities that would result in the direct and permanent loss of wildlife habitats (Table 14-11).

Table 14-11
Acres of Wildlife Habitat Subject to Direct and Permanent Habitat Loss from Construction of the Sites Pumping/Generating Plant, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and the Field Office Maintenance Yard: Alternative A

Habitat	Permanent Loss (Acres)
Annual grassland	81.6
Lacustrine	0.2
Urban/disturbed	4.3
Valley foothill riparian	3.1
TOTAL	**89.2**

Additional acreage of temporary disturbance (9 acres) would occur as a result of a construction disturbance area for these proposed facilities. Disturbed areas would be restored to their original habitat type after construction is complete. The majority of wildlife habitat affected by these facilities and their construction disturbance areas would be annual grassland habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland within the proposed footprint of each of these facilities has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The permanent loss of 81.6 acres and the potential temporary disturbance of an additional 9 acres of annual grassland habitat, resulting from the construction of these facilities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Lacustrine

The lacustrine habitat that is located within the proposed footprint of the Sites Reservoir Inlet/Outlet Structure consists of a man-made ephemeral stock pond. However, the existing Funks Reservoir is located adjacent to this structure and provides over to 220 acres of lacustrine habitat, including shoreline, shallow water, and open water habitat. Therefore, the loss of 0.2 acre of lacustrine habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the proposed footprint of these facilities (i.e., Sites Pumping/Generating Plant, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and the Field Office Maintenance Yard) has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. Construction of the proposed outlet structure would require the demolition of a few individual existing structures that may provide roosting habitat for bats. Permanent loss of 4.3 acres of urban/disturbed habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Foothill Riparian

Valley foothill riparian habitat within the proposed footprint of these facilities (i.e., Sites Pumping/Generating Plant, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and the Field Office Maintenance Yard) has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams, with the exception of elderberry shrubs, which are not present within the footprint of any of these facilities. The permanent loss of 3.1 acres of valley foothill riparian habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Migratory Birds and Roosting Bats

Although no special-status species were observed within the vicinity of the proposed footprint of the Sites Reservoir Inlet/Outlet Structure or associated facilities, construction-related ground-disturbance activities and vegetation removal, have the potential to affect migratory birds, particularly if those activities occur during the nesting season when nests, eggs, or young could be vulnerable. As described above, construction activities within the urban/disturbed habitat category would include the demolition of existing structures. Demolition of these structures has the potential to result in the loss of roosting habitat for special-status bats. The extent of impact would be influenced by the distribution of nesting birds and roosting bats in the affected areas and the timing of the activity. Therefore, construction of these facilities would have a **potentially significant impact** on migratory birds and roosting bats, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2a**).

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

It is possible that the construction and operation of these proposed facilities could interfere with the movement of small mammals, reptiles, or amphibians. However, more than 90 percent of the disturbance would occur in annual grassland habitat, and the surrounding grassland habitat would be preserved. These facilities would not be expected to substantially interfere with the movement of resident wildlife species because those species would be able to travel around the areas of disturbance. Maintenance activities, including vehicle access to these facilities, would not be expected to substantially interfere with wildlife movement. Therefore, construction, operation, and maintenance of these facilities associated with implementation of Alternative A would have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of these facilities. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials, Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins.

Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with construction, operation, and maintenance of these facilities resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The proposed tunnel from the Sites Pumping/Generating Plant to the Sites Reservoir Inlet/Outlet Structure would be constructed underground and would not have any above-ground disturbance. Staging areas would be situated at either end of the tunnel within the construction footprint of the Sites Pumping/Generating Plant and the Sites Reservoir Inlet/Outlet Structure. These staging areas are addressed in the impact analysis for those facilities. The tunnel would be operated remotely, and maintenance activities would not occur above ground. Therefore, construction, operation, and maintenance of the tunnel would have **no impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

No special-status species were observed within the vicinity of the proposed construction footprint of the tunnel. Because no above-ground disturbance would occur during construction, operation would occur remotely, and maintenance activities would not occur above ground, these activities associated with the tunnel would be expected to have **no impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction and maintenance of the tunnel and inlet/outlet structure. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and

most species would be expected to re-inhabit the area after construction is complete and operation begins. Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with the construction, operation, and maintenance of these facilities resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Holthouse Reservoir Complex

The construction of the Holthouse Reservoir Complex would require the dredging of Funks Reservoir. The existing Funks Reservoir provides up to 228 acres of lacustrine habitat and more than 3 miles of associated shoreline. The reservoir would be drained for approximately 2 years, with construction activities occurring during months other than November through April.

Construction of the rest of the proposed Holthouse Reservoir Complex would result in the direct and permanent loss of the following wildlife habitats, with the exception of the Holthouse to Tehama-Colusa Canal Pipeline, which would result in the temporary disturbance of wildlife habitat (Table 14-12).

Table 14-12
Permanent Wildlife Habitat Loss and Temporary Disturbance Due to the Construction of the Holthouse Reservoir Complex: Alternative A

Habitat	Temporary Disturbance[a] (Acres)	Permanent Loss (Acres)
Annual grassland	9.7	112.7
Canal	0.4	7.3
Dryland grain and seed crops	0	60.5
Fresh Emergent Wetland[b]	0	0.5
Irrigated row and field crops	14.2	151.8
Urban/disturbed	0	0.6
Valley foothill riparian	0	7.0
TOTAL	**24.3**	**340.4**

[a]Acreage represents temporary disturbance associated with the defined construction disturbance area of the Holthouse to Tehama-Colusa Canal Pipeline.

[b]Fresh Emergent Wetland includes alkaline wetland.

Additional acreage of temporary disturbance would occur as a result of a construction disturbance area for these proposed facilities. The construction disturbance areas for the Sites/Delevan Overhead Power Line and the Delevan and TRR pipelines are located adjacent to the footprint of these facilities. The construction disturbance area acreage for the Holthouse Reservoir Complex would be approximately 36 acres in size, but could overlap with the pipeline disturbance area. Disturbed areas would be restored to their original habitat type after construction is complete. The majority of wildlife habitat affected by

these facilities and their construction disturbance area would be irrigated row and field crops, followed by annual grassland and dryland grain and seed crops habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland within the footprint of the proposed Holthouse Reservoir facilities has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. Northern harriers and white-tailed kites were observed foraging over this habitat within the footprint of the reservoir. The permanent loss of 112.7 acres and the potential additional temporary disturbance of annual grassland habitat, resulting from the construction of these facilities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Canal

Canal habitat within the proposed footprint of the Holthouse Reservoir facilities consists of a portion of the existing concrete-lined Tehama-Colusa Canal. Wildlife species observed using this habitat within the construction footprint include the double-crested cormorant, mallard, and river otter. Killdeer are usually present along the canal's levee. A portion of the canal would be relocated, and the previous location would be converted to lacustrine habitat. The conversion of 7.3 acres of canal habitat to lacustrine habitat resulting from the construction of these facilities and the filling of the reservoir associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat within the proposed footprint of the Holthouse Reservoir facilities has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The permanent loss of 60.5 acres and the potential additional temporary disturbance of dryland grain and seed crops habitat, resulting from the construction of these facilities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Fresh Emergent Wetland

The fresh emergent wetland wildlife habitat within the Holthouse Reservoir Complex footprint is represented by an alkaline wetland swale within the annual grassland. This wetland habitat has the potential to support numerous species of wildlife. Construction of the Holthouse Reservoir Complex would result in the permanent loss of 0.5 acre of this habitat type, and could result in the disruption of the water supply to this alkaline wetland. Therefore, the permanent loss of up to 0.5 acre of fresh emergent wetland habitat, and the potential disruption of its hydrology, resulting from construction of the Holthouse Reservoir Complex, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Irrigated Row and Field Crops

Irrigated row and field crops habitat within the proposed footprint of the Holthouse Reservoir facilities provides foraging habitat for the northern harrier. The permanent loss of 151.8 acres, and the potential additional temporary disturbance of irrigated row and field crops habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Lacustrine

The existing Funks Reservoir is used extensively by many water-dependent species of waterfowl and shorebirds, including the American bittern, American coot, black-necked stilt, canvasback, double-crested cormorant, great blue heron, killdeer, northern shoveler, wood duck, and five species of grebes. The projected 2-year absence of lacustrine habitat and associated shoreline habitat at the reservoir during Project construction would eliminate habitat that has been available to these water-dependent avian species since 1976. However, the reservoir would be drained during the non-breeding season, and nearby East Park, Stony Gorge, and Indian Valley reservoirs, the Delevan and Sacramento NWRs, and the adjacent rice fields could be used during the period of construction. The lacustrine habitat would be restored after construction is complete. Therefore, Funks Reservoir dredging associated with implementation of Alternative A would have a **less-than-significant impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat that is located within the proposed footprint of the Holthouse Reservoir facilities consists of the existing Funks Dam maintenance road. The gravel road provides little habitat value for wildlife. Therefore, the permanent loss of 0.6 acre of urban/disturbed habitat resulting from the construction of the Holthouse Reservoir Complex associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Foothill Riparian

Valley foothill riparian habitat within the proposed footprint of the Holthouse Reservoir facilities has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams, with the exception of elderberry shrubs, which are not present within the footprint of this complex of facilities. Nesting great horned owls and red-tailed hawks were observed in this habitat within the footprint of the reservoir. The permanent loss of 7.0 acres of valley foothill riparian habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The existing Funks Reservoir is used by the special-status American white pelican, common loon, and long-billed curlew. The projected 2-year absence of lacustrine habitat and associated shoreline habitat at the reservoir during Project construction would eliminate habitat that has been available to these water-dependent avian species since 1976. However, nearby East Park, Stony Gorge, and Indian Valley reservoirs could be used during the period of maintenance, and the lacustrine habitat would be restored

after construction is complete. Operation and maintenance impacts would be expected to be the same as for the existing Funks Reservoir. Therefore, Funks Reservoir dredging associated with implementation of Alternative A would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Western Pond Turtle

Western pond turtles were observed downstream of Funks Reservoir along Funks Creek in an area that would be within the proposed footprint of the Holthouse Reservoir Complex. Construction activities could result in the destruction of occupied pond turtle nests, or mortality of turtles through vehicle collisions with this species. In addition, the subsequent filling of the reservoir would result in habitat loss and could result in direct mortality of this species. Therefore, construction activities and inundation associated with the Holthouse Reservoir Complex resulting from implementation of Alternative A would have a **potentially significant impact** on western pond turtles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2i**).

During operation of the reservoir, releases would be made downstream to the remaining Funks Creek channel to maintain flows. Operation and maintenance impacts would be expected to be the same as for the existing Funks Reservoir. Therefore, operation and maintenance of the Holthouse Reservoir Complex would have a **less-than-significant impact** on the western pond turtle, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The existing Funks Reservoir is used by a few pair of nesting western grebes annually. The projected 2-year absence of lacustrine habitat and associated shoreline habitat at the reservoir during construction would eliminate habitat that has been available to these water-dependent grebes since 1976. However, the reservoir would be drained during the non-breeding season and nearby East Park, Stony Gorge, and Indian Valley reservoirs could be used during the period of construction. The lacustrine habitat would be restored after construction is complete. Therefore, Funks Reservoir dredging associated with implementation of Alternative A would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

After Project construction is complete, it is possible that larger areas of disturbance associated with the Holthouse Reservoir Complex could interfere with the movement of small mammals, reptiles, or amphibians. However, almost 80 percent of the disturbance would occur in annual grassland habitat and irrigated row and field crops. The surrounding grassland and field crop habitat would be preserved. The reservoir complex would not be expected to substantially interfere with the movement of resident wildlife species because those species would be able to travel around the areas of disturbance. Therefore, construction, operation, and maintenance of these facilities associated with implementation of Alternative A would have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/No Project/No Action Condition.

Additionally, filling Holthouse Reservoir would effectively enlarge the surface area of Funks Reservoir. If emergent vegetation is present, the larger reservoir size and increased availability of shallow water habitat could benefit the western grebes that already nest at Funks Reservoir. This potential increase in

available nesting habitat associated with implementation of Alternative A would have a **beneficial effect** on nesting western grebes, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of the proposed Holthouse Reservoir Complex. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with construction, operation, and maintenance of the Holthouse Reservoir Complex resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Glenn-Colusa Irrigation District Canal Facilities Modifications

Proposed modifications to the existing GCID Main Canal Facilities would require associated construction disturbance areas that would create a temporary disturbance to wildlife habitats (Table 14-13).

Table 14-13
Temporary Disturbance of Wildlife Habitat Due to Modifications of the Glenn-Colusa Irrigation District Canal Facilities: Alternative A

Habitat	Temporary Disturbance (Acres)
Canal (existing GCID Main Canal)	3.1
Urban/disturbed	1.6
TOTAL	**4.7**

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Canal

Canal habitat within the proposed construction disturbance area of the GCID Main Canal Facilities Modifications consists of a portion of the existing GCID Main Canal. The canal would be dewatered to line 200 feet, making the open water portion of that section unavailable to wildlife during construction. However, construction would occur during the annual maintenance period when the canal is already dewatered. Therefore, the temporary disturbance of approximately 3 acres of canal habitat resulting from canal modifications associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat that is located within the proposed construction disturbance area of the GCID Main Canal Facilities Modifications consists of roads and a railroad, which provide little habitat value for wildlife. Therefore, the temporary disturbance of almost 2 acres of urban/disturbed habitat resulting from the canal modifications associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Giant Garter Snake

Areas of giant garter snake habitat exist within 200 feet of the GCID Main Canal. Proposed construction activities have the potential to disturb giant garter snakes or cause direct mortality by excavation of hibernating snakes if work is conducted from October 1 through May 1. Construction activities associated with modification of the GCID Main Canal resulting from implementation of Alternative A would, therefore, have a **potentially significant impact** on the giant garter snake, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2d**).

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Proposed canal modifications would occur within the existing canal or siphon locations and would have small associated construction disturbance areas for a temporary period of time. After construction is complete, the areas would be returned to their original condition. Because construction activities would occur along a maintained canal and at a railroad track siphon where disturbance is frequent, modifications to these facilities associated with implementation of Alternative A would be expected to have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by the proposed construction activities associated with GCID Main Canal Modifications. Increased vehicle traffic associated with the transportation of personnel and materials to the site Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Therefore, human disturbance associated with construction activities at the GCID Main Canal Modifications resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Terminal Regulating Reservoir, Terminal Regulating Reservoir Pumping/Generating Plant, Terminal Regulating Reservoir Electrical Switchyard, and Glenn-Colusa Irrigation District Canal Connection to the Terminal Regulating Reservoir

Construction of the proposed TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, and GCID Main Canal Connection to the TRR facilities would require ground-disturbing activities that would result in the direct and permanent loss of wildlife habitats (Table 14-14).

Table 14-14
Permanent Wildlife Habitat Loss and Temporary Disturbance Due to the Construction of the Terminal Regulating Reservoir Facilities: Alternative A

Habitat	Temporary Disturbance* (Acres)	Permanent Loss (Acres)
Canal	0	0.9
Deciduous orchard	0	0.6
Dryland grain and seed crops	0	60.8
Pasture	0	11.7
Rice	13.6	120.9
Urban/disturbed	0.8	
TOTAL	**14.4**	**194.9**

*Acreage represents temporary disturbance associated with the defined construction disturbance area of the TRR to Funks Creek Pipeline.

Additional temporary disturbance of wildlife habitat would occur as a result of a construction disturbance area for these facilities. Construction disturbance associated with the proposed TRR to Funks Creek Pipeline would also be temporary. Two sides of the proposed reservoir would be surrounded by the construction disturbance area for the Delevan and TRR pipelines, which overlaps with the footprint of the reservoir. The construction disturbance area acreage would be approximately 19 acres in size, but could overlap with the pipeline disturbance area. Disturbed areas would be restored to their original habitat type after construction is complete. The majority of wildlife habitat affected by these facilities is rice habitat, followed by dryland grain and seed crops.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Canal

The existing GCID Main Canal is within the proposed footprint of the bay associated with the GCID Main Canal Connection to the TRR. The canal would still exist upstream and downstream of this bay, and the portion of the canal that would be within the proposed footprint of the connection would be expanded during the annual maintenance period for the canal when the canal is dewatered. This modification of the canal associated with implementation of Alternative A would not be expected to adversely affect wildlife, and therefore, would have a **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Deciduous Orchard

Deciduous orchards are used by numerous wildlife species. It is possible that the permanent loss of 0.6 acre of deciduous orchard habitat resulting from the construction of the TRR facilities could be

avoided by revising the siting of the facilities. Due to the small amount of acreage that could be lost, and due to the possibility of avoiding this loss, the potential loss of deciduous orchard associated with construction of the TRR facilities would have a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat within the proposed footprint of these facilities has the same habitat value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The permanent loss of 60.8 acres and the potential additional temporary disturbance of dryland grain and seed crops, resulting from the construction of these facilities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Pasture

Pasture habitat within the proposed footprint of these facilities has the same habitat value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The permanent loss of 11.7 acres of pasture habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **potentially significant impact,** when compared to the Existing Conditions/ No Project/No Action Condition.

Rice

Rice habitat, especially when flooded, supports numerous species of wildlife. The special-status sandhill crane, black tern, Caspian tern, long-billed curlew, yellow-headed blackbird, long-eared owl, short-eared owl, and white-tailed kite were observed using this habitat within or adjacent to the proposed footprint of these facilities. The permanent loss of 120.9 acres and the potential additional temporary disturbance of rice habitat, resulting from the construction of these facilities associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the proposed footprint of these facilities consists of maintenance roads. These roads provide little habitat value for wildlife. Therefore, the temporary disturbance of 0.8 acre of urban/disturbed habitat resulting from the construction of these facilities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

No special-status species were observed within the vicinity of the proposed construction footprint of the TRR or associated facilities. Therefore, construction, operation, and maintenance activities associated with these facilities resulting from implementation of Alternative A would be expected to have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

After construction is complete, it is possible that larger areas of disturbance associated with these proposed facilities could interfere with the movement of small mammals, reptiles, or amphibians. However, all of the disturbance would occur in agricultural, urban/disturbed, or canal habitat. The surrounding area that includes these habitats would be preserved. These facilities would not be expected to substantially interfere with the movement of resident wildlife species because those species would be able to travel around the areas of disturbance. Therefore, construction, operation, and maintenance of these facilities associated with implementation of Alternative A would have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of these facilities. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Some species would be expected to benefit by the availability of lacustrine habitat and increased access to water in the area. Therefore, human disturbance associated with construction, operation, and maintenance of these facilities resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Delevan Pipeline, Terminal Regulating Reservoir Pipeline, Terminal Regulating Reservoir Pipeline Road, and Delevan Pipeline Electrical Switchyard

The proposed TRR Pipeline would be aligned parallel and adjacent to the western 3.5 miles of the proposed Delevan Pipeline, and would be completely within the construction disturbance area of the Delevan Pipeline. The TRR Pipeline Road would be located atop the length of the TRR Pipeline, and the Delevan Pipeline Electrical Switchyard would be located where the Delevan Pipeline would cross the existing Pacific Gas and Electric Company (PG&E) transmission line. The construction of the pipelines would require ground-disturbing activities that would result in the temporary disturbance of wildlife habitats that would be restored to their original habitat type after construction is complete. The construction of the TRR Pipeline Road and Delevan Pipeline Electrical Switchyard would require ground-disturbing activities that would result in permanent habitat loss (Table 14-15).

Table 14-15
Permanent Wildlife Habitat Loss and Temporary Disturbance Due to the Construction of the Delevan and Terminal Regulating Reservoir Pipelines, Terminal Regulating Reservoir Pipeline Road, and Delevan Pipeline Electrical Switchyard: Alternative A

Habitat	Temporary Disturbance (Acres)	Permanent Loss (Acres)
Barren*	20.9	0.2
Canal	8.2	0.1
Deciduous orchard	173.2	3.7
Dryland grain and seed crops	190.1	0.2
Eucalyptus	46.2	0
Fresh emergent wetland	18.5	0
Irrigated row and field crops	196.3	3.8
Lacustrine	5.1	0
Pasture	240.0	0
Rice	1,358.9	0.3
Urban/disturbed	36.8	0
TOTAL	**2,294.2**	**8.3**

*Barren habitat includes fallowed agricultural fields

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Barren

Barren habitat within the construction disturbance area of the proposed Delevan and TRR pipelines consists of fallowed agricultural fields. The only special-status species that has the potential to use this type of barren habitat is the wintering mountain plover. This species was not observed within any of the Project facility sites, but is known to occur in southeast Colusa County. Depending on the time of year and duration of construction activities, the temporary disturbance of 20.9 acres of barren habitat and permanent loss of 0.2 acre resulting from construction of the Delevan and TRR pipelines, TRR Pipeline Road, and Delevan Pipeline Electrical Switchyard associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Canal

The canal habitat within the construction disturbance area of the proposed Delevan and TRR pipelines is represented by the locations where the Delevan Pipeline would cross the GCID Main Canal and the CBD. The special-status American white pelican and yellow warbler were observed at the CBD.

At the GCID Main Canal and CBD crossing locations, construction would include tunneling below the canal without disturbing the existing infrastructure. Because no loss of canal habitat would occur as a result of pipeline construction associated with implementation of Alternative A, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Deciduous Orchard

Deciduous orchard within the construction disturbance area of the proposed Delevan and TRR pipelines consists of almond trees and provides little to no habitat for most species. The temporary disturbance of 173.2 acres and permanent loss of 3.7 acres of deciduous orchard habitat resulting from the construction of the Delevan and TRR pipelines, TRR Pipeline Road, and Delevan Pipeline Electrical Switchyard would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops habitat within the construction disturbance area of the proposed Delevan and TRR pipelines has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The temporary disturbance of 190.1 acres and permanent loss of 0.2 acre of dryland grain and seed crops habitat resulting from the construction of the Delevan and TRR pipelines, TRR Pipeline Road, and Delevan Pipeline Electrical Switchyard associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Eucalyptus

The eucalyptus habitat within the construction disturbance area of the proposed Delevan and TRR pipelines is located along the sides of an unlined irrigation canal, and consequently functions in a capacity similar to riparian habitat for many wildlife species. Eucalyptus habitat provides roosts, perches, and nest sites for numerous bird species, including raptors. The temporary disturbance of 46.2 acres of Eucalyptus habitat resulting from the construction of the Delevan and TRR pipelines associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Fresh Emergent Wetland

The fresh emergent wetland habitat within the construction disturbance area of the proposed Delevan and TRR pipelines, which includes alkaline wetlands, has the potential to support numerous species of wildlife, including the special-status giant garter snake, sandhill crane, black tern, northern harrier, short-eared owl, tri-colored blackbird, white-tailed kite, and yellow-headed blackbird. All of these species were observed along the pipeline disturbance area in adjacent habitat types. The temporary disturbance of 18.5 acres of fresh emergent wetland habitat resulting from the construction of the Delevan and TRR pipelines associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Irrigated Row and Field Crops

Irrigated row and field crops habitat within the construction disturbance area of the proposed Delevan and TRR pipelines has the same value to wildlife as described in the impact assessment for the Holthouse Reservoir Complex. The temporary disturbance of 196.3 acres and permanent loss of 3.8 acres of irrigated row and field crops habitat resulting from the construction of the Delevan and TRR pipelines, TRR Pipeline Road, and Delevan Pipeline Electrical Switchyard associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Lacustrine

The lacustrine habitat within the construction disturbance area of the proposed Delevan and TRR pipelines represents a large pond, which has the same value to wildlife as described in the impact assessment for lacustrine habitat within the Recreation Areas. This pond is located in proximity to the fresh emergent wetlands of the adjacent Delevan NWR, and therefore, may provide habitat for numerous wildlife species. The temporary disturbance of 5.1 acres of lacustrine habitat resulting from pipeline construction activities associated with implementation of Alternative A would have a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Pasture

Pasture habitat within the construction disturbance area of the proposed Delevan and TRR pipelines has the same habitat value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The special-status golden eagle and prairie falcon were observed within this habitat type along the pipeline disturbance area. The temporary disturbance of 240.0 acres of pasture habitat resulting from pipeline construction activities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Rice

Rice habitat within the construction disturbance area of the proposed Delevan and TRR pipelines has the same value to wildlife as described in the impact assessment for the TRR, TRR Pumping/Generating Plant, and GCID Main Canal Connection to the TRR. The special-status western pond turtle was observed along an irrigation canal associated with rice habitat. The black tern, long-billed curlew, Caspian tern, sandhill crane, long-eared owl, short-eared owl, white-tailed kite, and yellow-headed blackbird were observed in rice fields or adjacent habitats within this construction disturbance area. The temporary disturbance of 1,358.9 acres and permanent loss of 0.3 acre of rice habitat resulting from pipeline, road, and electrical switchyard construction activities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the construction disturbance area of the proposed Delevan and TRR pipelines consists of roads and several structures. The structures would not be demolished, and the roads provide little habitat value for wildlife. Therefore, the permanent loss of 36.8 acres of urban/disturbed habitat resulting from pipeline construction activities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Bank Swallow

Construction of the proposed Delevan and TRR pipelines would require the creation of trenches that would have steep cut banks made of sandy loam soils. Due to the proximity of the trench to the Sacramento River and to known breeding populations of bank swallows, the banks of the trenches could

attract nesting bank swallows. Nesting bank swallows within the construction area would be at high risk of injury or death. Therefore, the construction of the pipelines associated with implementation of Alternative A could have a **potentially significant impact** on bank swallows, when compared to the Existing Conditions/No Project/No Action Condition.

Giant Garter Snake

Giant garter snakes use the rice fields and fresh emergent wetlands within the construction disturbance area of the proposed Delevan Pipeline. Giant garter snakes are also known to occur in the CBD, which could have construction-related impacts where the pipeline crosses the CBD. The pipeline would take approximately 2 years to build, and would be conducted outside of the November through April timeframe for protection of the giant garter snake. The pipeline would likely be constructed in sections, thus loss of habitat would occur in stages, rather than for the entire length of the pipeline all at once. Because dredged material from the underground construction of the pipeline would potentially be spread over the entire width of the construction disturbance area, total loss of habitat would occur temporarily within the disturbance area. Fallowing of rice fields would not only temporarily remove giant garter snake habitat, but could also have adverse effects on the reproduction, recruitment, and survival of this species that could continue beyond the 2-year construction schedule. The temporary loss of fresh emergent wetland habitat, as well as the extensive temporary loss of rice habitat resulting from construction activities associated with implementation of Alternative A, would have a **potentially significant impact** on the giant garter snake, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2d**).

Western Pond Turtle

Construction of the proposed Delevan Pipeline would temporarily disturb existing canal habitat within the construction disturbance area and could result in the destruction of occupied pond turtle nests, or mortality of turtles through vehicle collisions with this species. Western pond turtles were observed within the disturbance area along an irrigation canal. Although the area would be restored after construction is complete, construction activities could result in the direct mortality of this species. Therefore, construction of the Delevan Pipeline associated with implementation of Alternative A would have a **potentially significant impact** on western pond turtles, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2i**).

Western Yellow-billed Cuckoo

Construction of the proposed Delevan and TRR pipelines, TRR Pipeline Road, and Delevan Pipeline Electrical Switchyard would temporarily disturb existing deciduous orchards within the construction disturbance area. The special-status western yellow-billed cuckoo has been known to use deciduous orchards when the orchards are located near riverine and riparian habitat. However, the orchards within the construction disturbance area of these pipelines are located approximately 11 miles west of the Sacramento River, and therefore, do not represent suitable habitat for this species. Therefore, construction of the Delevan and TRR pipelines associated with implementation of Alternative A would have a **no impact** on western yellow-billed cuckoos, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Construction of the proposed pipelines would require an open trench. Exposed pipeline trenches could trap small mammals, amphibians, or reptiles moving through the area, including the special-status giant garter snake. Nocturnal wildlife would have a high risk of falling into the trenches. Wildlife could be injured during the fall into the trench, and once trapped would have no access to food, water, or shelter. Trapped wildlife would also be at risk of predation. The open trench associated with construction of the pipelines resulting from implementation of Alternative A would have a **potentially significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-3a**).

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction and maintenance of the proposed pipelines, road, and electrical switchyard. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Therefore, human disturbance associated with construction and maintenance of the pipelines, road, and electrical switchyard resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Sites/Delevan Overhead Power Line

The Sites/Delevan Overhead Power Line would parallel, and be completely within the construction disturbance area of, the proposed Delevan Pipeline, with the exception of the westernmost 3.5 miles. Because the impacts of the eastern approximately 9 miles of the Sites/Delevan Overhead Power Line route construction disturbance area are already accounted for in the impact assessment for the Delevan Pipeline, only the temporary ground disturbance of the remaining 3.5 miles of the Sites/Delevan Overhead Power Line are analyzed here. Disturbed habitats would be restored to their original habitat type after construction is complete. The construction disturbance area of the Sites/Delevan Overhead Power Line would result in the temporary disturbance of wildlife habitats (Table 14-16).

Table 14-16
Temporary Disturbance of Wildlife Habitat from Construction of the Sites/Delevan Overhead Power Line: Alternative A

Habitat	Number of Acres Affected for the Entire Length of the Sites/Delevan Overhead Power Line	Number of Acres Affected for the Section of the Sites/Delevan Overhead Power Line Outside of the Delevan Pipeline Construction Disturbance Area
Annual grassland	69.5	69.5
Barren*	0.5	0.5
Canal	1.5	1.2
Dryland grain and seed crops	25.6	1.5
Deciduous orchard	0.4	0
Eucalyptus	0.3	0
Fresh emergent wetland	2.1	0
Irrigated row and field crops	9.4	0
Lacustrine	1.0	0
Pasture	24.5	0
Rice	143.0	0
Urban/disturbed	1.1	0
Valley foothill riparian	1.1	1.1
TOTAL	**280.0**	**73.8**

*Barren habitat includes fallowed agricultural fields.

Although the Sites/Delevan Overhead Power Line would be an above-ground feature and have no associated permanent ground disturbance, the footings of the overhead power line towers/poles would result in the permanent loss of wildlife habitat. Based on a worst-case scenario, the total permanent habitat loss associated with the footings would be approximately 5.0 acres of a combination of rice and annual grassland habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland

Annual grassland within the construction disturbance area of the proposed Sites/Delevan Overhead Power Line has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The temporary disturbance of 69.5 acres and the potential permanent loss of up to 5.0 acres of annual grassland habitat, resulting from the construction of the Sites/Delevan Overhead Power Line associated with implementation of Alternative A, would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Barren

Barren habitat within the construction disturbance area of the proposed Sites/Delevan Overhead Power Line consists of fallowed agricultural fields. During Project construction, additional agricultural fields would be temporarily fallowed. The only special-status species that has the potential to use fallowed agricultural fields is the wintering mountain plover. This species was not observed within any of the Project facility sites, but is known to occur in southeast Colusa County. Depending on the time of year

and duration of construction activities, the temporary disturbance of 0.5 acre of barren habitat resulting from construction of the Sites/Delevan Overhead Power Line associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Canal

The canal habitat within the construction disturbance area of the proposed Sites/Delevan Overhead Power Line is represented by the location where the construction disturbance area crosses the Tehama-Colusa Canal. The Sites/Delevan Overhead Power Line would be aligned above and across the canal, but would not disturb existing infrastructure. Because no loss of canal habitat or disturbance of the main channel would occur as a result of Sites/Delevan Overhead Power Line construction associated with implementation of Alternative A, there would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Dryland Grain and Seed Crops

Dryland grain and seed crops within the construction disturbance area of the proposed Sites/Delevan Overhead Power Line have the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. The temporary disturbance of 1.5 acres of dryland grain and seed crops resulting from the construction of the Sites/Delevan Overhead Power Line associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Valley Foothill Riparian

Valley foothill riparian habitat within the construction disturbance area of the proposed Sites/Delevan Overhead Power Line has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams, with the exception of elderberry shrubs, which are not present within the disturbance area. The temporary disturbance of 1.1 acres of valley foothill riparian habitat resulting from the construction of the Sites/Delevan Overhead Power Line associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

No special-status species were observed within the vicinity of the construction disturbance area for the proposed Sites/Delevan Overhead Power Line, and on-the-ground disturbance would be limited to tower/pole footings. Therefore, construction activities associated with these facilities resulting from implementation of Alternative A would be expected to have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Overhead power lines can provide perch sites for birds, but the length of the overhead power line that would be aligned from the Sacramento River to the proposed Sites Electrical Switchyard also has the potential to create conflicts with birds. Raptors and other birds may collide with the conductors (i.e., wires) on the overhead power line towers/poles during their construction and operation; however, the construction activities associated with the towers/poles are not expected to interfere with bird movement. The eastern end of the Sites/Delevan Overhead Power Line would be located adjacent to the Delevan NWR, and could, therefore, disrupt a migratory corridor by causing collisions. The potential disruption of a migratory corridor, as well as the increased risk of collisions resulting from the construction and operation of the Sites/Delevan Overhead Power Line associated with implementation of Alternative A would have a **potentially significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-3b**).

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of the Sites/Delevan Overhead Power Line. Construction activities would include the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Therefore, human disturbance associated with construction, operation, and maintenance of the Sites/Delevan Overhead Power Line resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Delevan Pipeline Intake/Discharge Facilities

Construction activities associated with the proposed Delevan Pipeline Intake/Discharge Facilities, which includes a fish screen and pumping/generating facility located on the Sacramento River, would result in the direct and permanent loss of wildlife habitats (Table 14-17).

Table 14-17
Permanent Wildlife Habitat Loss Due to the Construction of the Delevan Pipeline Intake/Discharge Facilities: Alternative A

Habitat	Permanent Loss (Acres)
Canal	0.6
Deciduous orchard	11.1
Riverine	1.6
Urban/disturbed	4.2
Valley foothill riparian	1.6
TOTAL	**19.1**

Additional acreage of temporary disturbance would occur as a result of a construction disturbance area for these proposed facilities. The construction disturbance area for the Delevan Pipeline is located adjacent to these facilities and could potentially be used as a staging area. Disturbed areas would be restored to their original habitat type after construction is complete. The wildlife habitat that would be most affected by this construction disturbance area would be deciduous orchard habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Canal

Canal habitat within the footprint of the proposed Delevan Pipeline Intake/Discharge Facilities consists of a small irrigation canal, and has the same value to wildlife as described in the impact assessment for Holthouse Reservoir and Dam. The permanent loss of 0.6 acre of canal habitat resulting from construction activities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Deciduous Orchard

Deciduous orchard habitat within the footprint of the proposed intake/discharge facilities, which consists of walnut orchards, is located immediately adjacent to the Sacramento River. Deciduous orchards with a riverine/riparian edge are used by numerous wildlife species, including the special-status western yellow-billed cuckoo. The permanent loss of 11.1 acres of deciduous orchard habitat resulting from the construction of the Delevan Pipeline Intake/Discharge Facilities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Riverine

Riverine habitat within the footprint of the proposed Delevan Pipeline Intake/Discharge Facilities consists of a portion of the Sacramento River. The construction disturbance area would be located immediately downstream of the existing Maxwell Irrigation District (ID) Pumping Plant. The Sacramento River supports numerous wildlife species, including the special-status bank swallow, American white pelican, and bald eagle. The permanent loss of 1.6 acres of riverine habitat associated with construction of the Delevan Pipeline Intake/Discharge Facilities resulting from implementation of Alternative A would have a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the footprint of the proposed Delevan Pipeline Intake/Discharge Facilities consists of small maintenance buildings and associated access roads. Construction of the intake/discharge facilities would require the demolition of individual maintenance buildings, which could provide roosting habitat for bats. The permanent loss of 4.2 acres of urban/disturbed habitat resulting from the construction of the Delevan Pipeline Intake/Discharge Facilities associated with implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Valley Foothill Riparian

Valley foothill riparian habitat within the footprint of the proposed Delevan Pipeline Intake/Discharge Facilities has the same value to wildlife as described in the impact assessment for Sites Reservoir and Dams. There is one elderberry shrub within the construction footprint and a second elderberry shrub adjacent to the footprint. The State fully-protected ringtail was observed using this habitat within the footprint of the intake/discharge facilities. This riparian habitat has the potential to support the special-status western yellow-billed cuckoo, Swainson's hawk, western pond turtle, long-eared owl, and the yellow warbler. The permanent loss of 1.6 acres of valley foothill riparian habitat resulting from the construction of the Delevan Pipeline Intake/Discharge Facilities associated with implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition**.**

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Migratory Birds and Roosting Bats

Construction of the proposed Delevan Pipeline Intake/Discharge Facilities has the potential to affect migratory birds, particularly if those activities occur during the nesting season when nests, eggs, or young could be vulnerable. As described above, construction activities within the urban/disturbed habitat category would include the demolition of existing structures. Demolition of these structures has the potential to result in the loss of roosting habitat for special-status bats. The extent of impact would be influenced by the distribution of nesting birds and roosting bats in the affected areas and the timing of the activity. Therefore, construction of these facilities would have a **potentially significant impact** on migratory birds and roosting bats, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2a**).

Bank Swallow

Construction of the proposed Delevan Pipeline Intake/Discharge Facilities would result in the loss of approximately 660 linear feet (0.1 mile) of river bank. This section of the bank supports riparian habitat. There are no steep barren banks that are suitable for bank swallow excavation. Bank swallow colonies have been documented near this location in previous years, but the lack of vertical banks and the geologic control in this section of the river makes it unsuitable for excavation, and therefore, unsuitable nesting habitat, for the bank swallow. Therefore, the habitat loss associated with the construction of the Delevan Pipeline Intake/Discharge Facilities resulting from implementation of Alternative A would have **no impact** on bank swallows, when compared to the Existing Conditions/No Project/No Action Condition.

Ringtail

The State fully-protected ringtail was observed within the riparian habitat that would be removed during construction of the proposed Delevan Pipeline Intake/Discharge Facilities. The loss of 1.6 acres and 660 linear feet of this habitat type would further reduce the connectivity of the riparian corridor at this location, which could reduce the value of the adjacent riparian habitat to the ringtail. The loss of 1.6 acres of riparian habitat resulting from the construction of the Delevan Pipeline Intake/Discharge Facilities associated with implementation of Alternative A would be a **potentially significant impact** on the ringtail, when compared to the Existing Conditions/No Project/No Action Condition.

Operation and maintenance activities would occur within the footprint of the facilities and would not further disrupt habitat connectivity. However, noise and night-time lighting associated with these activities could affect habitat quality for the ringtail and would have a **potentially significant impact**.

Valley Elderberry Longhorn Beetle

One elderberry shrub exists within the riparian habitat that would be displaced as a result of construction of the proposed Delevan Pipeline Intake/Discharge Facilities. Protocol-level surveys were conducted on this elderberry shrub, and no emergence holes were found. A second elderberry shrub is located adjacent to the footprint of the proposed facility, within an orchard on the edge of an irrigation canal that is aligned parallel to an access road. This road may be used during construction, operation, and maintenance activities; consequently, the shrub could be adversely affected. This second elderberry shrub has not been surveyed.

Although no emergence holes were found on the surveyed shrub, the loss of this elderberry shrub and the possible disturbance of a second shrub during construction associated with implementation of Alternative A would be a **potentially significant impact** on the valley elderberry longhorn beetle, when compared to the Existing Conditions/No Project/No Action Condition.

Western Yellow-billed Cuckoo

The 1.6 acres of riparian habitat that would be lost as a result of construction of the proposed Delevan Pipeline Intake/Discharge Facilities are located immediately adjacent to walnut orchards, of which 11.2 acres would be lost. Both of these habitat types are used by the western yellow-billed cuckoo along the Sacramento River. During a 2010 survey, cuckoos were detected along the river 4.5 miles upstream and 1.5 miles downstream of the footprint of the proposed intake/discharge facility. It is possible that the habitat within the construction footprint is also used by this species, although it was not detected during Project surveys or during the 2010 survey at this location. The loss of riparian and deciduous orchard habitat along the Sacramento River resulting from construction of the Delevan Pipeline Intake/Discharge Facilities associated with implementation of Alternative A would be a **potentially significant impact** on the western yellow-billed cuckoo, when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities would occur within the footprint of the facilities and would not be expected to adversely affect the surrounding riparian or orchard habitat. Noise levels associated with maintenance activities, such as sediment removal, are expected to be similar to the levels associated with the proposed pumps, as well as the existing Maxwell ID pumps, and would not be expected to substantially adversely affect this species. Therefore, maintenance activities associated with these facilities would have a **less-than-significant impact** on the western yellow-billed cuckoo.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The valley foothill riparian habitat that exists along the banks of the Sacramento River provides a travel corridor for numerous terrestrial wildlife species, including the fully-protected ringtail. Gaps in the connectivity of this corridor create higher risks of predation for wildlife that travel through these areas. Therefore, the removal of 660 linear feet of valley foothill riparian habitat along the Sacramento River associated with construction of the proposed Delevan Pipeline Intake/Discharge Facilities resulting from implementation of Alternative A would have a **potentially significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-3c**).

Operation and maintenance activities would not be expected to result in additional ground disturbance or placement of facilities, and therefore, would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Refer to the **Impact Wild-2** discussion for the potential impact of noise and night-time lighting on the ringtail.

Wildlife and wildlife habitats may be directly or indirectly affected by Project-related construction, operation, and maintenance of the intake/discharge facilities. Construction activities would include sheet pile driving and the use of heavy equipment, and would result in increased traffic from the transportation of personnel and materials. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Therefore, human disturbance associated with construction, operation, and maintenance of these facilities resulting from implementation of Alternative A would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/ No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Project Buffer

Within the Proposed Take Line, the following activities are expected to occur: fence construction, the demolition of existing structures, and fuelbreak maintenance. The acreage of wildlife habitats included within the Proposed Take Line buffer is presented in Table 14-18.

Table 14-18
Acres of Wildlife Habitat within the Project Buffer[a]: Alternative A

Habitat	Acres within Project Buffer
Annual grassland	8,083.1
Barren[b]	2.9
Blue oak woodland	4,180.1
Canal	15.8
Chamise-redshank chaparral	1.9
Deciduous orchard	77.8
Dryland grain and seed crops	134.3
Irrigated row and field crops	151.2
Lacustrine	17.2
Pasture	15.7
Rice	21.1
Riverine	0.1
Urban/disturbed	35.4
Valley foothill riparian	63.4
TOTAL	**12,800.0**

[a]Calculated by subtracting the acreage of permanent disturbance associated with each Project facility that is surrounded by the Project Buffer, the acreage of existing Funks Reservoir, and the acreage of the portion of the existing GCID Main Canal that is surrounded by the Project Buffer, from the total acreage of land that would be acquired for the Project.
[b]Barren includes fallow/idle agricultural fields.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Annual Grassland, Barren, Blue Oak Woodland, Canal, Chamise-redshank Chaparral, Lacustrine, and Valley Foothill Riparian

The above-listed wildlife habitat types within the Project Buffer have the same value to wildlife as described for other Project features, and would not be altered or converted to other habitat types. Construction and maintenance activities associated with fence building would have a negligible impact on these habitat types because the footprint of the fence posts would be small and a large portion of the Project Buffer is already fenced. However, the potential creation and maintenance of a fuelbreak would require vegetation clearing that, if maintained around the entire perimeter of the Project Buffer, could result in a substantial adverse effect due to the loss of wildlife habitat. Therefore, the potential loss of wildlife habitat associated with construction and maintenance of the Project Buffer fuelbreak resulting from implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Deciduous Orchard, Dryland Grain and Seed Crops, Irrigated Row and Field Crops, Pasture, and Rice

The above-listed agricultural habitat types within the Project Buffer have the same value to wildlife as described for other Project features, but would not be maintained as agricultural lands after Project construction is complete. These agricultural lands would be converted to natural wildlife habitat, likely to annual grassland habitat. Although some wildlife species would benefit from this conversion, other wildlife species may be adversely affected. Therefore, the loss of 211.4 acres of agricultural habitat types

that would be converted to natural habitat types within the Project Buffer as a result of implementation of Alternative A would be a **potentially significant impact**, when compared to the Existing Conditions/ No Project/No Action Condition.

Urban/Disturbed

The urban/disturbed habitat within the Project Buffer consists of roads and structures. Construction activities within the Project Buffer would include the demolition of individual existing structures that may provide roosting habitat for bats. After demolition activities cease, the urban/disturbed habitat would be converted to natural wildlife habitat, likely to annual grassland habitat. This habitat conversion may benefit several wildlife species. Impacts to urban/disturbed habitat within the Project Buffer resulting from implementation of Alternative A would be a **less-than-significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Activities associated with fence construction and maintenance could result in the temporary disturbance of special-status wildlife species. Demolition of existing structures during construction has the potential to result in the loss of roosting habitat for special-status bats. The creation of a fuelbreak would result in the loss of habitat that may be used by special-status wildlife species, and maintenance of the fuelbreak could disturb those species. Therefore, construction and maintenance activities that would occur within the Project Buffer would have a **potentially significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition (**Impact Wild-2a**).

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The potential construction of barbed wire fencing around the perimeter of the Project Buffer in the few areas where fencing does not already occur would not be expected to interfere with wildlife movement. Fencing already occurs around most, if not all, of the property lines, and the fence design would allow wildlife to go under, through, or over the fencing. Periodic fence maintenance would not be expected to interfere with wildlife movement. The construction and maintenance of a fuelbreak would eliminate vegetative cover within the footprint of the fuelbreak, but would not be expected to substantially interfere with wildlife movement. Therefore, the construction and maintenance of fencing and the fuelbreak within the Project Buffer associated with implementation of Alternative A would have a **less-than-significant impact** on wildlife movement, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-4: Indirect Effects on Common Wildlife from Human Disturbance

Construction and maintenance activities associated with fencing and the fuelbreak are anticipated to be limited and minor. Common wildlife species are anticipated to use adjacent areas during construction of the Project, and most species would be expected to re-inhabit the area after construction is complete and operation begins. Therefore, human disturbance associated with Project Buffer activities would have a **less-than-significant impact** on terrestrial wildlife, when compared to the Existing Conditions/ No Project/No Action Condition.

Impact Wild-5: Conflict with the Provisions of an Adopted HCP, NCCP, or Other Approved Local or Regional HCP, or Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Refer to the **Impact Wild-5** discussion for Sites Reservoir Inundation Area and Sites Reservoir Dams. There would be **no impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Summary of Alternative A Impacts to Wildlife Habitats

Construction, operation, and maintenance of Alternative A would result in the permanent loss of 13,572.6 acres, and the temporary disturbance of an additional 5,357.9 acres of wildlife habitat (Table 14-19).

Table 14-19
Acres of Wildlife Habitat Subject to Alternative A Construction Impacts[a]

Habitat Type	Acreage	
	Permanent Loss[b]	Temporary Disturbance[c]
Annual grassland	12,151.8	2,091.4
Barren	0.2	21.4
Blue oak woodland	501.4	644.5
Canal	9.1	14.1
Chamise-redshank chaparral	0.6	1.9
Deciduous orchard	15.4	175.1
Dryland grain and seed crops	333.2	214.5
Eucalyptus	0	46.2
Fresh emergent wetland[d]	0.5	18.5
Irrigated row and field crops	155.6	225.7
Lacustrine	20.8	2,264.0
Mixed chaparral	0.8	1.8
Pasture	72.7	241.2
Rice	122.9	1,383.6
Riverine	1.6	0
Urban/disturbed	88.1	46.9
Valley foothill riparian	94.5	4.7
Valley oak woodland	3.4	0
TOTAL	**13,572.6**	**5,357.9**

[a]Calculated acreage does not include acres associated with the Project Buffer because the location and extent of disturbance is not yet specified.

[b]Total permanent wildlife habitat loss acreage includes the defined footprints of Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Sites Electrical Switchyard, Field Office Maintenance Yard, Holthouse Reservoir Complex, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and the Delevan Pipeline Intake/Discharge Facilities. Total permanent loss acreage also includes the estimated permanent loss from construction of facilities within the footprint of the Recreation Areas, within the construction disturbance area for the Road Relocations, and from construction of the overhead power line tower/pole footings associated with the Sites/Delevan Overhead Power Line.

[c]Total temporary disturbance acreage includes the footprint of the Recreation Areas (minus the acreage of estimated permanent loss) and the footprint of the existing Funks Reservoir, as well as the defined construction disturbance areas for the Road Relocations and South Bridge (minus the acreage of estimated permanent loss), Delevan Pipeline, TRR Pipeline, Holthouse to Tehama-Colusa Canal Pipeline, TRR to Funks Creek Pipeline, Sites/Delevan Overhead Power Line, and GCID Main Canal Facilities Modifications. Total temporary disturbance acreage also includes the estimated construction disturbance areas (outside of the facility footprints) for Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Tunnel from Sites Pumping Generating Plant to Sites Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard,

Holthouse Reservoir Complex, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, and Delevan Pipeline Intake/Discharge Facilities.

[d]Fresh Emergent Wetland includes alkaline wetlands.

14.3.5 Impacts Associated with Alternative B

14.3.5.1 Extended Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A for the Extended Study Area.

14.3.5.2 Secondary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B operations on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) would be the same as described for Alternative A for the Trinity River, Klamath River, Spring Creek, Clear Creek, Feather River, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and for the Sacramento River as it pertains to the construction, operation, and maintenance impacts associated with installing two pumps at the Red Bluff Pumping Plant.

For the remaining facilities, the indirect impacts to wildlife and wildlife habitat from human disturbance (**Impact Wild-4**) and conflicts with conservation plans (**Impact Wild-5**) would also be the same as described for Alternative A.

Operational differences for Alternative B, when compared to Alternative A for Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, the Sacramento River, Sutter Bypass, and Yolo Bypass, are discussed below.

Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake

Operational modeling results for Alternative B, when compared to the Existing Conditions/No Project/ No Action Condition, are similar to those described for Alternative A.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

With implementation of Alternative B, the water surface elevations in these reservoirs would be similar when compared to the Existing Conditions/No Project/No Action Condition. Therefore, the operational changes at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake associated with implementation of Alternative B would have **no impact** on wildlife habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Refer to the **Impact Wild-1** discussion. That discussion is also applicable to special-status wildlife species.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-1** discussion. That discussion is also applicable to interference with wildlife movement.

Sacramento River

Operational modeling indicates that Sacramento River flows associated with implementation of Alternative B would experience changes similar to those described for Alternative A. However, Alternative B would divert up to 3,900 cfs during winter flows (rather than the 5,900 cfs diversion that would occur with Alternative A during winter flows). The reduced rate of diversion would consequently require a longer duration of diversion, lasting from February through May.

Modeling performed using SRH-1DV and SacEFT indicates that the coverage of the valley foothill riparian vegetation alliance along the Sacramento River would increase or remain similar with implementation of Alternative B, when compared to the Existing Conditions/No Project/No Action Condition. The only exception is that SacEFT indicates a slight increase in the number of years with post-initiation scour risk for Fremont Cottonwood seedlings with implementation of Alternative B, when compared to the Existing Conditions/No Project/No Action Condition. For bank swallows, SacEFT modeling indicates negligible effects that would result from peak flow during nesting season and a slight decrease in habitat potential and suitability with implementation of Alternative B, when compared to the Existing Conditions and the Existing Conditions/No Project/No Action Condition. The decrease in habitat potential and suitability resulting from implementation of Alternative B would be slightly greater than the decrease resulting from implementation of Alternative A.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Despite the change in the rate and duration of diversion, operational modeling for Alternative B, including modeling that is specific to riparian habitat, indicates that minimal effects would occur to riparian habitat resulting from the described changes in the flow regime. Therefore, riparian habitat downstream of the intakes would not be expected to be adversely affected. Differences in the flow regime of the Sacramento River that would result from implementation of Alternative B would have a **less-than-significant impact** on riparian habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Despite the change in the rate and duration of diversion, operational modeling for Alternative B, including modeling that is specific to riparian habitat, indicates that minimal effects would occur to riparian habitat resulting from the described changes in the flow regime. Therefore, riparian habitat downstream of the intakes would not be expected to be adversely affected, nor would the special-status birds or mammals associated with riparian habitat. SacEFT modeling specific to the bank swallow also indicates that there would be minimal effects to this species. Therefore, differences in the flow regime of the Sacramento River that would result from implementation of Alternative B would have a **less-than-significant impact** on special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Sutter Bypass

Operational modeling indicates that Sacramento River flows associated with implementation of Alternative B would experience changes similar to those described for Alternative A. However, Alternative B would divert up to 3,900 cfs during winter flows (rather than the 5,900 cfs diversion that would occur with Alternative A during winter flows). The reduced rate of diversion would require a longer duration of diversion.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Alternative B, when compared to Alternative A, would reduce the volume of floodwaters entering the Sutter Bypass from the Sacramento River. This reduction in the volume of water entering the Sutter Bypass would have the same effects on riparian and wetland habitats as described for Alternative A. Therefore, the changes in the flow regime of the Sutter Bypass associated with implementation of Alternative B that would result in reduced floodwaters entering the bypass would have a **less-than-significant impact** on riparian and wetland habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The reduction in the frequency and volume of water entering the Sutter Bypass under Alternative B would have the same effects on wildlife species as described for Alternative A. Therefore, the changes in the flow regime of the Sutter Bypass associated with implementation of Alternative B that would result in reduced floodwaters entering the bypass would have a **less-than-significant impact** to special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild Impact-3** discussion for Alternative A. The relatively minor changes in the flow regime of the Sutter Bypass with implementation of Alternative B would have a **less-than-significant impact** on wildlife nursery sites, when compared to the Existing Conditions/No Project/No Action Condition.

Yolo Bypass

Operational modeling for Alternative B indicates that that there would be a reduction in the flows entering into the Yolo Bypass.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The relatively minor reduction in flows entering the Yolo Bypass associated with implementation of Alternative B would have the same effects on riparian and wetland habitats as described for Alternative A. Therefore, the changes in the flow regime of the Yolo Bypass associated with implementation of Alternative B would have a **less-than-significant impact** on riparian and wetland habitat, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The reduction in the volume of water entering the Yolo Bypass associated with implementation of Alternative B would have the same effects on riparian and wetland habitats and as described for Alternative A. Therefore, the changes in the flow regime of the Yolo Bypass associated with implementation of Alternative B that would result in reduced floodwaters entering the bypass would have a **less-than-significant impact** on special-status wildlife species in the Yolo Bypass, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild Impact-3** discussion for Alternative A. The relatively minor changes in the flow regime of the Yolo Bypass with implementation of Alternative B would have a **less-than-significant impact** on wildlife nursery sites, when compared to the Existing Conditions/No Project/No Action Condition.

14.3.5.3 Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in both Alternatives A and B (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operations and maintenance activities regardless of alternative, and would

therefore result in the same construction, operation, and maintenance impacts to terrestrial biological resources. Therefore, unless explicitly discussed below, impacts for all Project facilities are anticipated to be the same as previously discussed for Alternative A.

Although the footprint of the Recreation Areas would be the same for Alternatives A and B, the associated electrical distribution line alignment would differ as a result of the change in location of Golden Gate Dam. With implementation of Alternative B, 2.9 fewer acres of annual grassland would be affected by the Recreation Area Electrical Distribution Line construction disturbance area. However, these differences in the size of the facility footprint, alignment, or construction disturbance area would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) as described for Alternative A.

In addition, the road relocations associated with Alternative B differ from those for Alternative A, mostly due to changes to the saddle dam access roads. An additional 2.5 acres of wildlife habitats would be affected by Alternative B roads. However, these differences in the size of the facility footprint, alignment, or construction disturbance area would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) as described for Alternative A.

The boundary of the Project Buffer would be the same for Alternatives A and B, but because the footprints of some of the Project facilities that are included in the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, these differences in the size of the area included in the Project Buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) as described for Alternative A.

For the remaining facilities, the effects of human disturbance on wildlife (**Impact Wild-4**) and conflicts with habitat plans (**Impact Wild-5**) would also be the same as described for Alternative A. However, for Alternative B, the footprint and/or construction disturbance area of Sites Reservoir and Dams, the Sites/Delevan Overhead Power Line, and the Delevan Discharge Facilities differ from Alternative A. These changes would affect different acreages of wildlife habitat. The differences between these facilities and their impacts on terrestrial biological resources are described below.

Sites Reservoir Inundation Area and Sites Reservoir Dams

Alternative B includes the construction of a 1.8-MAF Sites Reservoir, which requires the construction of Sites Dam, Golden Gate Dam, and nine saddle dams. For Alternative B, Sites Dam would have a larger footprint and Golden Gate Dam shifts location, when compared to Alternative A. Construction-related ground-disturbing activities and vegetation removal, and the subsequent filling of the reservoir, would result in the direct and permanent loss of the same wildlife habitats as described in Alternative A, but more acreage would be lost with the construction and filling of the larger reservoir (Table 14-20).

Table 14-20
Permanent Wildlife Habitat Loss Due to the Construction and Filling of the 1.8-MAF Sites Reservoir and Associated Dams: Alternative B Compared to Alternative A

Habitat	Permanent Loss (Acres) Alternative A	Permanent Loss (Acres) Alternative B	Additional Loss Associated with Alternative B when Compared to Alternative A
Annual grassland	11,654.6	13,196.9	1,542.3
Blue oak woodland	353.5	739.7	386.2
Dryland grain and seed crops	206.9	206.9	0
Lacustrine	20.2	21.8	1.6
Pasture	61.0	61.0	0
Urban/disturbed	76.1	78.8	2.7
Valley foothill riparian	81.5	97.5	16.0
Valley oak woodland	3.4	3.5	0.1
TOTAL	**12,457.2**	**14,406.1**	**1,948.9**

The construction disturbance area for the 1.8-MAF Sites Reservoir would be the same as described for the 1.3-MAF Sites Reservoir. The construction disturbance area could disturb as much as 1,000 acres of land, with the majority of disturbed habitat consisting of annual grassland habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

Construction of the Alternative B reservoir and dams would result in the additional permanent loss of nearly 1,950 acres of wildlife habitat, when compared to Alternative A. The two habitat types most affected by the increased acreage would be annual grassland and blue oak woodland. The permanent loss and temporary disturbance of wildlife habitat resulting from the construction activities and filling of the reservoir associated with implementation of Alternative B would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The impacts of Alternative B on special-status wildlife species would be the same as described for Alternative A, with the exception of the impact on bald eagles. Construction of the larger Alternative B Golden Gate Dam would result in the direct take of an established bald eagle nest and nest tree because the tree is located within the proposed footprint of the dam. The disturbance or removal of this nest tree during the nesting season could result in the direct mortality of eggs or young, and the permanent loss of this nest tree would be a **potentially significant impact** on bald eagles, when compared to the Existing Conditions/No Project/No Action Condition. In addition, the potential impacts on migratory birds would be greater because of the larger Project footprint.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

Refer to the **Impact Wild-2** discussion. That discussion is also applicable to interference with wildlife movement.

Sites/Delevan Overhead Power Line

The design of the Sites/Delevan Overhead Power Line associated with Alternative B differs from that of Alternative A. Because there would be no pumping/generating plant associated with the Delevan Pipeline Discharge Facilities, there would be no overhead power line aligned from the Sacramento River to the existing PG&E or Western Area Power Administration (WAPA) transmission line. There would, however, still be an overhead power line aligned approximately 3 miles from the Sites Electrical Switchyard to the existing PG&E or WAPA transmission line. The construction disturbance area of the Sites/Delevan Overhead Power Line for Alternative B would result in the temporary disturbance of wildlife habitats, but at a much smaller scale than described for Alternative A (Table 14-21).

Table 14-21
Temporary Disturbance of Wildlife Habitat Due to the Construction of the Sites/Delevan Overhead Power Line: Alternative B Compared to Alternative A

Habitat	Temporary Disturbance (Acres) for the Entire Length of the Sites/Delevan Overhead Power Line for Alternative A	Temporary Disturbance (Acres) for the Section of the Alternative A Sites/Delevan Overhead Power Line outside of the Construction Disturbance area of the Delevan Pipeline	Temporary Disturbance (Acres) for the Entire Length of the Sites/Delevan Overhead Power Line for Alternative B
Annual grassland	69.5	69.5	54.6
Barren*	0.5	0.5	0
Canal	1.5	1.2	0.6
Dryland grain and seed crops	25.6	1.5	0
Deciduous orchard	0.4	0	0
Eucalyptus	0.3	0	0
Fresh emergent wetland	2.1	0	0
Irrigated row and field crops	9.4	0	0
Lacustrine	1.0	0	0
Pasture	24.5	0	0
Rice	143.0	0	0
Urban/disturbed	1.1	0	0
Valley foothill riparian	1.1	1.1	1.1
TOTAL	**280.0**	**73.8**	**56.3**

*Barren habitat includes fallowed agricultural fields.

The footings of the overhead power line towers/poles would result in the permanent loss of wildlife habitat. Based on a worst-case scenario, the total permanent habitat loss associated with the footings

would be approximately 1.0 acre of annual grassland habitat, which is less than the 5.0-acre loss associated with Alternative A.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The reduced length of the Alternative B Sites/Delevan Overhead Power Line would result in the temporary disturbance of approximately 17 fewer acres of wildlife habitat than Alternative A, and would result in the permanent disturbance of approximately two fewer acres. The habitat type most affected by this decreased acreage would be annual grassland. Despite the reduction in the number of acres affected, the total permanent loss and temporary disturbance of annual grassland and valley foothill riparian habitat resulting from construction of the Alternative B Sites/Delevan Overhead Power Line would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

The impacts of Alternative B on special-status wildlife species would be the same as described for Alternative A.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

In contrast to Alternative A, the shortened Alternative B Sites/Delevan Overhead Power Line would not extend to the Sacramento River and would not be located adjacent to the Delevan NWR. In addition, the shortened Sites/Delevan Overhead Power Line would reduce the potential for avian collision, when compared to Alternative A. However, the remaining risk of collision and the potential disruption of a migratory corridor associated with the Alternative B Sites/Delevan Overhead Power Line would have a **potentially significant impact** on terrestrial wildlife, when compared to the Existing Conditions/ No Project/No Action Condition.

Delevan Pipeline Discharge Facility

For Alternative B, the Delevan Pipeline would be operated as a release-only pipeline. The associated Delevan Pipeline Discharge Facilities would, therefore, not include a fish screen or any of the facilities needed for pumping and generating operations that were described for Alternative A. The ground-disturbing activities associated with the construction of the Delevan Pipeline Discharge Facilities would result in the direct and permanent loss of wildlife habitats (Table 14-22), but habitat loss would occur at a smaller scale than described for the intake/discharge facilities for Alternative A.

Table 14-22
Direct and Permanent Wildlife Habitat Loss Due to the Construction of the Delevan Pipeline Discharge Facility: Alternative B Compared to the Alternative A Delevan Pipeline Intake/Discharge Facilities

Habitat	Permanent Loss (Acres) by Alternative A	Permanent Loss (Acres) by Alternative B
Canal	0.6	0.1
Deciduous orchard	11.1	3.9
Riverine	1.6	0.1
Urban/disturbed	4.2	2.0
Valley foothill riparian	1.6	1.6
TOTAL	**19.1**	**7.7**

Additional acreage of temporary disturbance would occur as a result of a construction disturbance area for these facilities. The construction disturbance area for the Delevan Pipeline would be located adjacent to these facilities and could potentially be used as a staging area. Disturbed areas would be restored to their original habitat type after construction is complete. The wildlife habitat that would be affected by this construction disturbance area would be deciduous orchard habitat.

Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS

The smaller proposed Delevan Pipeline Discharge Facilities would result in the permanent loss of approximately 12 fewer acres of wildlife habitat than Alternative A. The habitat type most affected would be deciduous orchard adjacent to the Sacramento River. Despite the reduction in the number of acres affected, the total permanent loss of wildlife habitat resulting from construction of the Alternative B discharge facility would be a **potentially significant impact**, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

Construction of the proposed Delevan Pipeline Discharge Facilities would result in the loss of approximately 140 linear feet (0.03 mile) of river bank, as compared to the loss of 660 linear feet (0.1 mile) associated with the Alternative A intake/discharge facilities. Despite the reduced Alternative B impact on the river bank, the number of acres of valley foothill riparian habitat that would be lost would be the same as described for Alternative A. This loss of river bank and riparian habitat would reduce the connectivity of the riparian corridor at this location, which could reduce the value of the habitat to the ringtail and western yellow-billed cuckoo. Despite the reduced number of acres of deciduous orchard habitat loss associated with Alternative B, the loss of this habitat, combined with the loss of riparian habitat, could adversely affect the western yellow-billed cuckoo. Despite the reduced size of the footprint of the Delevan Pipeline Discharge Facilities, the shift in its location would potentially result in the take of a second elderberry shrub that is located adjacent to the footprint of the Delevan Pipeline Discharge Facilities and could adversely affect the valley elderberry longhorn beetle. Therefore, the Alternative B

discharge facility would have a **potentially significant impact** on these special-status wildlife species, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The valley foothill riparian habitat that exists along the banks of the Sacramento River provides a travel corridor for numerous terrestrial wildlife species, including the fully-protected ringtail. Gaps in the connectivity of this corridor create higher risks of predation for wildlife that have to travel through these areas. Therefore, the removal of 140 linear feet of valley foothill riparian habitat along the Sacramento River associated with construction of the proposed Delevan Pipeline Discharge Facilities resulting from implementation of Alternative B would have a **potentially significant impact** on terrestrial wildlife, when compared to the Existing Conditions/No Project/No Action Condition.

Summary of Alternative B Impacts to Wildlife Habitats

Construction, operation, and maintenance of Alternative B would result in the permanent loss of 15,508.3 acres, and the temporary disturbance of an additional 5,341.4 acres, of wildlife habitat (Table 14-23).

Table 14-23
Acres of Wildlife Habitat[a] Subject to Alternative B Construction Impacts

Habitat Type	Acreage	
	Permanent Loss[b]	Temporary Disturbance[c]
Annual grassland	13,694.4	2,079.4
Barren	0.2	20.9
Blue oak woodland	887.5	644.3
Canal	8.6	13.5
Chamise-redshank chaparral	0.6	1.9
Deciduous orchard	8.2	174.0
Dryland grain and seed crops	331.2	213.0
Eucalyptus	0	46.2
Fresh emergent wetland	0.5	18.5
Irrigated row and field crops	155.6	225.7
Lacustrine	22.4	226.4
Mixed chaparral	0.8	1.8
Pasture	72.7	241.2
Rice	121.2	1,383.6
Riverine	0.1	0
Urban/disturbed	88.6	46.9
Valley foothill riparian	110.2	4.1
Valley oak woodland	3.5	0
TOTAL	**15,508.3**	**5,341.4**

[a]Calculated acreage does not include acres associated with the Project Buffer because the location and extent of disturbance is not yet specified.

[b]Total permanent habitat loss acreage includes the footprint of Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Sites Electrical Switchyard, Field Office Maintenance Yard, Holthouse Reservoir Complex, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and the Delevan Pipeline Discharge Facilities. Total permanent loss acreage also includes the estimated permanent loss from construction within the footprint of the Recreation Areas, within the construction disturbance area for the Road Relocations, and from construction of the overhead power line tower/pole footings associated with the Sites/Delevan Overhead Power Line.

[c]Total temporary disturbance acreage includes the footprint of the Recreation Areas (minus the acreage of estimated permanent loss) and the footprint of the existing Funks Reservoir, as well as the defined construction disturbance areas for the Road Relocations (minus the acreage of estimated permanent loss), Delevan Pipeline, TRR Pipeline, Holthouse to Tehama-Colusa Canal Pipeline, TRR to Funks Creek Pipeline, Sites/Delevan Overhead Power Line, and GCID Main Canal Facilities Modifications. Total temporary disturbance acreage also includes the estimated construction disturbance areas (outside of the footprints) for Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Tunnel from Sites Pumping Generating Plant to Sites Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard, Holthouse Reservoir Complex, GCID Main Canal Modifications, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, and Delevan Pipeline Discharge Facilities.

14.3.6 Impacts Associated with Alternative C

14.3.6.1 Extended Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A for the Extended Study Area. These conclusions also apply to Alternative C_1, which is identical to Alternative C but assumes no or delayed hydropower generation facility development and operation.

14.3.6.2 Secondary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C operations on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) would be the same as described for Alternative A for the Trinity River, Klamath River, Spring Creek, Clear Creek, Feather River, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and for the Sacramento River as it pertains to the construction, operation, and maintenance impacts associated with installing two pumps at the Red Bluff Pumping Plant.

Because Alternative C includes the three Project intake/discharge locations that were described for Alternative A, the operational impacts associated with Alternative C, as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A for Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, Sacramento River, Sutter Bypass, and Yolo Bypass.

The impacts associated with Alternative C_1 would be the same as those described for Alternative C.

14.3.6.3 Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in both Alternatives A and C (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operations and maintenance activities regardless of alternative, and would therefore result in the same construction, operation, and maintenance impacts to terrestrial resources. Therefore, unless explicitly discussed below, impacts for all Project facilities are anticipated to be the same as previously discussed for Alternative A.

The Alternative C design for the Sites Reservoir Inundation Area and Dams, Electrical Distribution Lines associated with the Recreation Areas, and Road Relocations and South Bridge would be the same as described for Alternative B. These facilities would require the same construction, operation, and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to terrestrial biological resources as described for Alternative B.

The boundary of the Project Buffer is the same for Alternatives A, B, and C, but because the footprints of some of the Project facilities that are included in the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, these differences in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A.

Summary of Alternative C Impacts to Wildlife Habitats

Construction, operation, and maintenance of Alternative C would result in the permanent loss of 15,536.72 acres, and the temporary disturbance of an additional 5,329.4 acres, of wildlife habitat (Table 14-24).

Table 14-24
Acres of Wildlife Habitat[a] Subject to Alternative C Construction Impacts

Habitat Type	Acreage	
	Permanent Loss[b]	Temporary Disturbance[c]
Annual grassland	13,694.7	2,091.5
Barren	0.2	21.4
Blue oak woodland	887.5	6443.
Canal	9.1	14.1
Chamise-redshank chaparral	0.6	2.1
Deciduous orchard	15.4	175.1
Dryland grain and seed crops	333.2	214.5
Eucalyptus	0	46.2
Fresh emergent wetland	0.5	18.5
Irrigated row and field crops	155.6	225.7
Lacustrine	22.4	226.6
Mixed chaparral	0.8	1.8
Pasture	72.7	241.2
Rice	122.9	1,383.6

Habitat Type	Acreage	
	Permanent Loss[b]	Temporary Disturbance[c]
Riverine	1.6	0
Urban/disturbed	90.8	46.9
Valley foothill riparian	110.2	4.1
Valley oak woodland	3.5	0
TOTAL	**15,521.7**	**5,357.6**

[a]Calculated acreage does not include acres associated with the Project Buffer because the location and extent of disturbance is not yet specified.

[b]Total permanent habitat loss acreage includes the footprint of Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Sites Electrical Switchyard, Field Office Maintenance Yard, Holthouse Reservoir Complex, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and the Delevan Pipeline Intake/Discharge Facilities. Total permanent loss acreage also includes the estimated permanent loss from construction within the footprint of the Recreation Areas, within the construction disturbance area for the Road Relocations, and from construction of the overhead power line tower/pole footings associated with the Sites/Delevan Overhead Power Line.

[c]Total temporary disturbance acreage includes the footprint of the Recreation Areas (minus the acreage of estimated permanent loss) and the footprint of the existing Funks Reservoir, as well as the defined construction disturbance areas for the Road Relocations (minus the acreage of estimated permanent loss), Delevan Pipeline, TRR Pipeline, Holthouse to Tehama-Colusa Canal Pipeline, TRR to Funks Creek Pipeline, Sites/Delevan Overhead Power Line, and GCID Main Canal Facilities Modifications. Total temporary disturbance acreage also includes the estimated construction disturbance areas for Sites Reservoir and Dams, Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, Tunnel from Sites Pumping Generating Plant to Sites Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard, Holthouse Reservoir Complex, GCID Main Canal Connection to the TRR, TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, and Delevan Pipeline Intake/Discharge Facilities.

14.3.7 Impacts Associated with Alternative D

14.3.7.1 Extended Study Area – Alternative D

Construction, Operation, and Maintenance Impacts

The types of impacts and impact determinations associated with Alternative D as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**) or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A for the Extended Study Area.

14.3.7.2 Secondary Study Area – Alternative D

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative D operations on wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**) would be the same as described for Alternative A for the Trinity River, Klamath River, Spring Creek, Clear Creek, Feather River, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and for the Sacramento River as it pertains to the construction, operation, and maintenance impacts associated with installing two pumps at the Red Bluff Pumping Plant.

An analysis of riparian vegetation along the Sacramento River using the SRH-1DV model was not conducted for Alternative D. However, given the similarities of the flow regime under Alternative D and the flow regimes under Alternatives A and C, it is reasonable to conclude that the effects of Alternative D would not be substantially different from the effects associated with those alternatives. The SRH-1DV

modeling of trends in riparian vegetation development for the Existing Conditions/No Project/No Action Condition, and Alternatives A through C (Appendix 8A Sedimentation and River Hydraulics Modeling) resulted in the conclusion that the coverage of all of the four main vegetation types (i.e., mixed forest, cottonwood, Gooding's willow, and narrow leaf willow) would increase over the 82-year analysis period. A similar conclusion of increased vegetation coverage would also be expected under Alternative D. Therefore, the types of impacts and impact determinations associated with Alternative D, as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**) or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A.

Because Alternative D includes the three Project intake/discharge locations that were described for Alternative A, the operational impacts associated with Alternative D, as they relate to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**), or conflicts with habitat plans (**Impact Wild-5**), would be the same as described for Alternative A for Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, Sutter Bypass, and Yolo Bypass.

14.3.7.3 Primary Study Area – Alternative D

Construction, Operation, and Maintenance Impacts

The vast majority of the Project facilities for Alternative D are the same as those that are included in Alternatives B and C (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). Construction, operation, and maintenance of Alternative D would be expected to result in similar impacts to terrestrial biological resources or wildlife habitats, with exception to the Delevan Overhead Power Line and Substation. Therefore, unless explicitly discussed below, Alternative D impacts related to wildlife habitat (**Impact Wild-1**), special-status wildlife species (**Impact Wild-2**), and wildlife movement (**Impact Wild-3**), as well as the potential impacts from human disturbance (**Impact Wild-4**) or conflicts with habitat plans (**Impact Wild-5**) are anticipated to be the same as those described for Alternatives B and C. The following are Project facilities and impacts associated with Alternative D:

- The road segments providing access to Lurline Headwaters Recreation Area for the other alternatives would not be required under Alternative D. Alternative D includes an additional 5.2 miles of roadway from Huffmaster Road to Leesville Road. The Alternative D design of the Sites Reservoir Inundation Area and Dams, and South Bridge is the same as that under Alternatives B and C and would require the same construction methods and operation and maintenance activities, regardless of the alternative. The relatively slight differences in roads are not expected to change the potential impacts related to terrestrial biological resources or associated wildlife habitats from those described for the other alternatives. Slight acreage variations could occur to the annual grassland habitat.

- Alternative D would include the development of only two recreation areas (Stone Corral Creek Recreation Area and Peninsula Hills Recreation Area) instead of up to five recreation areas that could be developed for each of the other alternatives. This alternative would also include a boat ramp on the western side of the reservoir where the existing Sites Lodoga Road would be inundated. Only two recreation areas under Alternative D is not expected to substantially change the potential impacts to terrestrial biological resources or associated wildlife habitats compared to those described for the other alternatives.

- Under Alternative D, the TRR would be slightly smaller (approximately 80 acres smaller for Alternative D), thereby decreasing the potential impacts to the rice habitat as compared to the other alternatives.
- For Alternative D, the Delevan Pipeline alignment would be approximately 50 to 150 feet south of the alignment for Alternatives A, B, and C. The Alternative D alignment takes advantage of existing easements to reduce impacts on agricultural operations within the pipeline corridor. The shift in alignment is not expected to change the potential impacts related to terrestrial biological resources or associated wildlife habitats from those anticipated for the other alternatives.
- Alternative D includes a north-south alignment of the Delevan Overhead Power Line, rather than the east-west alignment between the TRR and the Delevan Pipeline Intake/Discharge Facilities. Alternative D includes a proposed electrical substation west of Colusa in addition to the substation near the Holthouse Reservoir. The north-south alignment would be approximately 1 mile longer; however, it would be in or near an existing transportation and utility corridor for SR 45. The installation of the power line and substation would require similar construction methods and operation and maintenance activities as identified for the other alternatives, other than the potential incorporation of existing power lines currently along SR 45 into joint facilities for Alternative D. Potential impacts associated with the Delevan Overhead Power Line to vegetation types are shown in Table 14-25. The primary areas of disturbance associated with the Delevan Overhead Power Line would be limited to the placement of the tower/pole footings (estimated to be a total of approximately 5.0 acres). The Delevan Overhead Power Line would span the majority of the 12-mile length, thus avoiding impacts to most terrestrial biological resources or wildlife habitats. Impacts to terrestrial biological resources or associated wildlife habitats would be less under Alternative D than those described for Alternatives A, B, and C.
- The boundary of the Project Buffer would be the same for all alternatives, but because the footprints of some of the Project facilities included in the Project Buffer would differ among the alternatives, the acreage of land within the Project Buffer would also differ. However, these differences in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities. Alternative D would therefore, have the same impact on terrestrial biological resources and associated wildlife habitats as described for the other alternatives.

Table 14-25
Acres of Wildlife Habitat Subject to Direct Permanent Loss from the Construction and Operational Impacts from the Delevan Overhead Power Line and Substation: Alternative D

Vegetation Type	Acreage*	
	Permanent Loss	Temporary Disturbance
Deciduous orchard	1.6	112
Irrigated row and filed crops	0.8	60
Urban/disturbed	0.4	29
TOTAL	3	201

*Estimated acreage based on Farmland Mapping and Monitoring Program (2014) and 2017 aerial/field review.

14.4 Mitigation Measures

Mitigation measures are provided below and summarized in Table 14-26 for the impacts that have been identified as potentially significant. Environmental commitments are included in all Project alternatives and are discussed in Chapter 3 Description of the Sites Reservoir Project Alternatives.

Table 14-26
Summary of Mitigation Measures for
NODOS Project Impacts to Terrestrial Biological Resources

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Wild-1: A Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS	All Primary Study Area Project Facilities (construction)	Potentially Significant	Mitigation Measure Wild-1a: Confirm Species/Habitat Presence Through Appropriately Timed Surveys Per Protocols Identified in Coordination with USFWS and CDFW	Less than significant
	All Primary Study Area Project Facilities (construction)	Potentially Significant	Mitigation Measure Wild-1b: Identify and Implement a Combination of Habitat Protection, Enhancement, Restoration, or Conservation Easement Measures, in Consultation with USFWS, CDFW, and USACE	
Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS				
Impact Wild-2a: Nesting Birds and Roosting Bats	All Primary Study Area Project Facilities (construction)	Potentially Significant	Mitigation Measure Wild-2a: Prepare and Implement a Bird and Bat Conservation Strategy	Less than significant
Impact Wild-2b: Bald Eagle	Sites Reservoir and Dams (construction operation)	Potentially Significant	Mitigation Measure Wild-2b: Obtain Permit for Bald Eagle Nest Tree Removal, Remove Nest Tree Outside of Breeding Season, and Create Suitable Habitat	Less than significant
Impact Wild-2c: Bank Swallow	Delevan/TRR Pipelines (construction)	Potentially Significant	Mitigation Measure Wild-2c: Implement Protective Actions to Prevent Bank Swallows from Nesting in the Cut Banks of Project Construction Trenches	Less than significant
Impact Wild-2d: Giant Garter Snake	Delevan Pipeline, GCID Main Canal Facilities Modifications (construction)	Potentially Significant	Mitigation Measure Wild-2d: Conduct Preconstruction Surveys for Giant Garter Snakes and Implement Protective Actions. Conduct Project Construction Activity between May 1 and October 1 in Giant Garter Snake Habitat. Compensate for Temporary Disturbance of Habitat According to USFWS Guidelines	Less than significant

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Wild-2e: Golden Eagle	Sites Reservoir and Dams (construction), Recreation Areas (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure Wild-2e: Implement Avoidance and Minimization Measures at Historical or Active Golden Eagle Nest Sites. Conduct Satellite Telemetry Studies Pre- and Post-Construction to Determine Territory Size. Prepare a Golden Eagle Protection and Monitoring Plan/Conservation Plan as Applicable. Mitigate for Loss of Annual Grassland Foraging Habitat	Significant and Unavoidable
Impact Wild-2f: Ringtail	Delevan Pipeline Intake/Discharge Facilities (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure Wild-2f: Implement Protective Actions to Minimize Impacts to the Ringtail, and Restore Connectivity of the Riparian Corridor	Less than significant
Impact Wild-2g: Valley Elderberry Longhorn Beetle	Sites Reservoir and Dams (construction), Road Relocations (construction, operation), Delevan Pipeline Intake/Discharge Facilities (construction)	Potentially Significant	Mitigation Measure Wild-2g: Implement Protective Actions to Avoid or Minimize Impacts to Elderberry Plants. Where Avoidance Is not Possible, Transplant, or Replace Plants, According to USFWS Guidelines	Less than significant
Impact Wild-2h: Western Burrowing Owl	Sites Reservoir and Dams (construction), Road Relocations (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure Wild-2h: Conduct Preconstruction Surveys for Western Burrowing Owls. If Owls Are Found, Implement Protective Actions	Less than significant
Impact Wild-2i: Western Pond Turtle	Sites Reservoir and Dams (construction, operation), Holthouse Reservoir Complex (construction), Delevan/TRR Pipelines (construction)	Potentially Significant	Mitigation Measure Wild 2i: Conduct Preconstruction Surveys and Provide a Biological Monitor during Project Construction for the Western Pond Turtle. If Found, Turtles Shall Be Captured and Relocated by a Qualified Biologist	Less than significant
Impact Wild-2j: Yellow-billed Cuckoo	Sites/Delevan Overhead Power Line and Pipeline Intake/Discharge Facilities (construction)	Potentially Significant	Mitigation Measure Wild-2j: Conduct Preconstruction Surveys for the Western Yellow-billed Cuckoo and Schedule Construction Activities to Avoid Impacts to Nest Sites	Less than significant

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Wild-3: Substantial Interference with the Movement of Any Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites	Sites Reservoir and Dams (construction and operation), Recreation Areas (Construction, Operation and Maintenance), Road Relocations (construction, operation, and maintenance), Delevan Pipeline (construction)	Potentially Significant	Mitigation Measure Wild-3a: During Project Construction, Backfill Trenches within 72 hours of Pipeline Installation and Provide an Escape Ramp for Trapped Wildlife	Less than significant
	Sites/Delevan Overhead Power Line (construction and operation)		Mitigation Measure Wild-3b: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices for Avian Protection on Power Lines	
	Delevan Pipeline Intake/Discharge Facilities (construction)		Mitigation Measure Wild-3c: Restore Riparian Habitat Connectivity	

Notes:
LOS = Level of Significance
USACE = U.S. Army Corps of Engineers

14.4.1 General Mitigation Measures

Mitigation Measure Wild-1a: Confirm Species/Habitat Presence Through Appropriately Timed Surveys Per Protocols Identified in Coordination with USFWS and CDFW

Appropriately timed preconstruction surveys shall be required to confirm presence of species previously either observed or thought to potentially occur based on previous project investigations. All construction facility temporary and permanent area footprints will be identified, and appropriately timed surveys shall be conducted per appropriate protocols for all species as necessary in coordination with USFWS and CDFW. Upon completion of all necessary surveys, mitigation and/or environmental commitments identified below will be implemented to reduce potential construction and operations impacts as appropriate and required.

Mitigation Measure Wild-1b: Identify and Implement a combination Habitat Protection, Enhancement, Restoration, and Conservation Easement Measures in Consultation with USFWS, CDFW, and USACE

The acreage of permanent habitat loss associated with the construction and operation of any Project facility shall be determined and documented as part of preconstruction surveys by a qualified biologist. Habitat for sensitive species shall be protected to the extent possible (including construction buffers and exclusion areas) where possible. For unavoidable Project footprint impacts, suitable habitat shall be identified in coordination and consultation with USFWS, CDFW, and the USACE and appropriate actions/agreements developed ranging from on-site restoration, enhancement, acquisition of conservation easements, land purchase, or mitigation bank credit acquisition. Compensation of such habitat lands shall

occur per all appropriate protocols (including replacement ratios) for each such species. Mitigation Measure Wild-1b will comply the compensatory mitigation conditions set forth in the Eagle Take Permit Title 50 FCR Part 22, Subpart C, §22.25 & §22.26.

14.4.2 Species Specific Mitigation Measures

The following mitigation measures would be implemented to minimize temporary and permanent impacts to Candidate, Sensitive, or Special Status Species (special status species) associated with the implementation of the Project. Minimization of impacts including related to construction avoidance periods, and specific actions, as well as habitat restoration and compensatory mitigation associated with each species would include the following based on coordination and consultation with the USACE, CDFW, and USFWS:

Mitigation Measure Wild-2a Prepare and Implement a Bird and Bat Conservation Strategy.

Preconstruction nesting bird and bat surveys will be conducted and appropriate avoidance measures identified for special status nesting birds and bats. A Bird and Bat Conservation Strategy will be developed which shall include:

- Nest and overall survey protocols describing the survey methodologies
- A management plan describing the methods to be used to minimize impacts to nesting birds and bats during Project construction and operation
- A monitoring component of the plan detailing the information to be collected with sufficient details to enable CDFW and USFWS to monitor the applicant's compliance with Fish and Game Code Sections 3503, 3503.5, 3511, and 3513
- All measures the applicant will implement to preclude special status birds and bats from utilizing Project-related construction equipment, facilities, or materials for nesting

Nesting Birds

For work activities occurring between February 15 and August 31, preconstruction nesting bird surveys and ongoing nesting surveys will be conducted by a qualified biologist within 14 days of construction, covering a radius of ½ mile for Swainson's hawk. The survey area shall include a survey buffer of 500 feet, 250 feet for non-listed raptors, and 100 feet for non-listed passerines at all work locations. If nesting birds are found, the biologist will evaluate whether existing screening buffers (such as buildings, trees, intervening topography) or work exclusion buffers (Table 14-27) or nest monitoring is needed.

- To meet the CDFW recommendations for protection of SWHA nest sites for construction activities, surveys shall be conducted in a 0.5-mile radius around all Project activities to identify potential SWHA nesting locations.
- If construction occurs during the nesting season (March 1 – September 15 annually), preconstruction surveys should be conducted by a qualified biologist within 14 days prior to construction to detect the presence of nesting birds within or adjacent to the Project locations. If construction occurs during the non-breeding season for nesting birds (September 1 through February 14), preconstruction surveys are not required. The survey area should include a survey buffer of 500 feet.

- Surveys specifically for nesting Swainson's hawk should be conducted within 0.5 mile radius of designated disturbance areas following TAC 2000 guidelines.
- If active nests (including Swainson's hawk) are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the qualified biologist or in consultation with CDFW and USFWS for certain species) will be established and nest monitoring for all active nest will be required. General species buffers are provided below.
- Consultation with CDFW will be required for construction within 0.5 mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawk occurs during Project construction.
- Onsite monitoring could be included as part of CDFW's conditions and mitigation measures for construction within 0.5 mile of nesting Swainson's hawk (CDFG, 1994).

Table 14-27
Avoidance Distances and Restrictions for Nesting Species

Species	Buffer	Seasonal Restrictions
Swainson's hawk*	0.5 mile from an active nest in non-urban area.	No construction activities in buffer area should be conducted between March 1 and September 15 or until the young have fledged unless appropriate measures have been taken to ensure no adverse impacts on Swainson's hawk in coordination with CDFW.
Red-tailed hawk*	200 feet during nesting season.	(Feb 1 – Aug 31)
Nests of sensitive raptors*	To be determined in consultation with the qualified biologist.	(Feb 1 – Aug 31)
Killdeer*	To be determined in consultation with the qualified biologist.	Any time active nests are present.
Nests of birds protected by the MBTA*	To be determined in consultation with the qualified biologist.	Any time active nests are present.

*The exclusion zone would be circular in shape with the radius measured outward from the center of the species', burrow entrances, or nest.

Bats

To determine presence bats that Project activities may affect, surveys shall be conducted within the Project area. The survey protocols will include a detailed description of methodologies utilized by CDFW-approved biologists to search for bat roosts and describe behaviors that indicate bat use. The protocols should include but are not limited to the size of Project area being surveyed, method of search, and behavior that indicates bat activity.

Prior to any structure demolition, structures shall be inspected by a qualified biologist to determine if bats are present, and if present, to determine if the structure is being used as a day, night, or maternity roost. If a roost is present, appropriate bat exclusion measures shall be implemented at least 5 to 7 days prior to structure demolition outside of the maternity season, which can range from mid-April through August 31, and outside of the winter months (generally November to mid-March) when bats could be hibernating or a period identified in coordination with CDFW and USFWS. Bat exclusion measures will include one-way devices such as polypropylene netting, plastic sheeting, or tube-type excluders that would be placed at all active entry points as determined appropriate by a qualified biologist.

Mitigation Measure Wild-2b: Obtain Permit for Bald Eagle Nest Tree Removal, Remove Nest Tree Outside of Breeding Season, and Create Suitable Habitat

If an active bald eagle nest is found to be present prior to Project construction, an Eagle Take Permit to remove or relocate the nest shall be obtained from USFWS. Removal of bald eagle nest trees shall be scheduled outside of the breeding season, which ranges from January through July, to avoid direct impacts. Following inundation, releases downstream of Golden Gate Dam would restore flows to Funks Creek to maintain fisheries and bald eagle foraging habitat.

If construction occurs during the bald eagle nesting season, surveys will be conducted within a 0.5-mile radius around the construction area. If nesting bald eagles are detected, a 0.5-mile buffer will be established around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers will be maintained until a qualified biologist has determined that young have fledged or the nest has failed.

Construction activities shall be modified to ensure that nesting bald eagles are protected. To avoid or minimize possible impacts to nesting bald eagles, some or all of the following measures shall be implemented:

- A bird deterrent program shall be implemented near historical bald eagle nest sites to discourage eagles from returning to those sites.
- Construction near active nest sites shall start outside the active nesting season or as determined appropriate in coordination with the USFWS and CDFW. The nesting period for bald eagles is from January through July.
- If groundbreaking activities begin during the nesting period, a qualified biologist shall perform a preconstruction survey 14 to 30 days before the start of each new construction phase to search for bald eagle nest sites in appropriate habitat within 0.5 mile of proposed activities. If active nests are not identified, no further action is required.
- If active nests are identified, a minimum 0.5 mile buffer zone (or sufficient distance identified in in coordination with the USFWS and CDFW) around active bald eagle nests shall be established. Buffer zones shall remain until young have fledged or the nest is confirmed to have failed by a qualified biologist. For activities conducted with agency approval within this buffer zone, a qualified biologist shall monitor construction activities and the eagle nest(s) to monitor eagle reactions to activities. If activities are deemed to have a negative effect on nesting eagles, the biologist shall immediately inform the construction manager that work should be halted, and CDFW and USFWS will be consulted.
- For bald eagles that begin nesting within the buffer zone after start of construction, the same avoidance and minimization measures as described for active eagle nests found before start of construction (0.5 mile buffer or other as determined appropriate in coordination with the USFWS and CDFW) shall be implemented. A smaller buffer of 0.25 to 0.5 mile may be used if there is a visual barrier, such as a hill or dense trees, between the construction activity and the nest.

- After construction is complete, it is possible that bald eagles will nest within the constructed Recreation Areas. In this situation, the following avoidance and minimization measures shall be implemented:
  - After construction, bald eagle nesting sites shall be surveyed and monitored within and adjacent to the Recreation Areas to ensure that recreational activities do not disrupt bald eagle nesting activities. Surveys shall be performed at the beginning of, and continue through, the nesting season. Consistent with avoidance guidelines, recreational access and other disruptive activities shall be suspended within 0.5 mile of active bald eagle nests until the young eagles have fledged or a qualified biologist has determined that the nest has failed.

Mitigation Measure Wild-2c: Implement Protective Actions to Prevent Bank Swallows from Nesting in the Cut Banks of Project Construction Trenches

Given construction of the Delevan Pipeline would begin in May due to giant garter snake restrictions, bank swallows may still be present and seeking nesting opportunities as their breeding/fledging season generally ranges from March through July. Protective and preventative actions shall be taken to prevent bank swallows from attempting to nest within the cut banks of the pipeline trenches. Actions shall include the placement of a mesh net on all cut banks during the bank swallow nesting season within areas of open trench, and implementation of **Mitigation Measure Wild-1d** to ensure that trenches are backfilled within 72 hours of pipeline installation. Trenches shall be inspected each day by the biologist or biological monitor prior to initiating construction and if bank swallows are found to be present a qualified biologist shall determine if nests are active (eggs or young are present) and take appropriate actions to ensure nesting swallows are not harmed. Appropriate actions, prior to nesting, could include removal of nest starts or other measures to discourage continued nesting attempts. If an active swallow nest (eggs or young birds) is found in the trench walls, construction activities shall cease in that area until the young have fledged and left the nest.

Mitigation Measure Wild-2d: Conduct Preconstruction Surveys for Giant Garter Snakes and Implement Protective Actions. Conduct Project Construction Activity Between May 1 and October 1 in Giant Garter Snake Habitat. Compensate for Temporary Disturbance of Habitat According to USFWS Guidelines

Protective actions shall be taken to avoid or minimize impacts to the giant garter snake associated with the construction of the Delevan Pipeline and associated facilities within giant garter snake habitat. Protective actions and mitigation measures shall comply with the USFWS's Programmatic Biological Opinion (USFWS, 1997), or USFWS mitigation guidelines current at the time of the surveys. These actions would include the following:

- A Sacramento Office USFWS- approved biologist would perform preconstruction surveys and oversee removal of the existing structure and installation of any needed best management practices or exclusion fencing.
- Preconstruction surveys shall be conducted within 24 hours prior to the start of construction or any ground disturbing activities in giant garter snake habitat. The biologist will provide the Service with a field report form documenting the monitoring efforts within 24-hours of commencement of construction activities. The survey of the Project area would be repeated if a lapse in construction activity of 2 weeks or greater has occurred.

- Construction activities within 200 feet from the banks of giant garter snake aquatic habitat will be avoided whenever feasible or be conducted between May 1 and October 1. This is the active period for GGS, and direct mortality is lessened because snakes are expected to actively move and avoid danger. Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Exclusion fencing shall be placed around construction areas within giant garter snake habitat to ensure that snakes do not enter the area. Exclusion fencing shall also be used around any agricultural irrigation ditches within 200 feet of the disturbance area or other distance agreed to in coordination with USFWS and CDFW to allow for safe construction.
- If a snake is encountered during construction, the monitoring biologist will have activities cease until the snake leaves the area on its own or it has been determined that the snake would not be harmed. Snake occurrences would be reported immediately to the USFWS-approved biologist who would determine if additional protective measures are needed. No snakes shall be harassed, harmed, or killed; and they shall be allowed to leave the construction area on their own volition. If a possible GGS is observed retreating into an underground burrow or is otherwise stationary within the Project area, construction activities will not begin or will cease immediately in the reach where the snake is present; the monitoring biologist shall be notified immediately; and appropriate actions would be taken to minimize potential for harm of the snake.
- If a snake is encountered during construction activities, the monitoring biologist shall have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. Giant garter snakes encountered during construction activities shall be allowed to move away from construction activities on their own. Capture and relocation of trapped or injured individuals can only be attempted by personnel or individuals with current USFWS Recovery and Interstate Commerce 10(a)(1)(A) permit or a section 10(a)1(b) incidental take permit.
- Construction activity within giant garter snake habitat shall be conducted between May 1 and October 1. If work outside of this time period is necessary, USFWS's Sacramento Fish and Wildlife Office shall be contacted to determine if additional protection measures are necessary.
- Clearing shall be confined to the defined construction disturbance area during the GGS active season May 1 through October 1.
- Rice fields shall be fallowed prior to the start of construction, and any dewatered habitat shall remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- A trained biological monitor shall be onsite during construction activities to inspect around the work equipment and within the trench and surrounding disturbance area each day before work begins.
- After construction is complete, habitat shall be restored to pre-Project conditions.

Disturbance to fresh emergent wetland habitat could, and shall to the extent feasible, be avoided by reducing the use of the construction buffer in areas of this habitat type, or altering the footprint of the road. Mitigation for rice habitat would already be partially compensated for by implementation of the mitigation measures for loss of wildlife habitat types described above.

Permanent loss of GGS habitat will be compensated at a ratio and at a manner agreed upon in consultation with the USFWS. Compensation may include preservation and enhancement of existing populations,

restoration or creation of suitable habitat, or purchase of credits at a regulatory agency approved mitigation bank in a sufficient quantity to compensate for the effect. Credit purchases, land preservation or enhancement to minimize effects to giant garter snakes should occur geographically close to the impact area. If off-site compensation is chosen, it will include dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, and the details of these measures will be included in the mitigation plan and must occur with full endowments for management in perpetuity. The plan will include information on responsible parties for long-term management, holders of conservations easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable populations.

Mitigation Measure Wild-2e: Implement Avoidance and Minimization Measures at Historic or Active Golden Eagle Nest Sites. Conduct Satellite Telemetry Studies Pre- and Post-construction to Determine Territory Size. Prepare a Golden Eagle Protection and Monitoring Plan/Conservation Plan as Applicable. Mitigate for Loss of Annual Grassland Foraging Habitat

The construction and ultimate filling of Sites Reservoir would result in the loss of more than 11,600 acres (Alternative A) and almost 13,200 acres (Alternatives B, C, and D) of annual grassland that provides foraging habitat for golden eagles. To assess the impact of this loss of foraging habitat, the following measures shall be implemented prior to the start of Project construction in close coordination with USFWS and CDFW per current protocols:

- A Golden Eagle Protection and Monitoring Plan/Conservation Plan shall be prepared.
- Satellite telemetry studies shall be conducted for 3 to 5 years prior to the start of construction to establish the number of golden eagles and the size of their territories. These studies will include the project footprint and extend a minimum of 10 miles out from the project footprint.
- Surveys shall be conducted by USFWS-approved biologists.

Golden eagle nests were observed within the footprint of three of the five proposed Recreation Areas during field surveys. Previous surveys documented that the nest at the proposed Lurline Headwaters Recreation Area no longer exists, the nest at the proposed Peninsula Hills Recreation Area was still active, and the nest at the proposed Stone Corral Recreation Area was degraded, but was still active. An active golden eagle nest also was present in the vicinity of the Sites Dam footprint.

Construction activities shall be conducted to ensure that nesting golden eagles are protected. To avoid or minimize possible impacts to nesting golden eagles in other construction areas, some or all of the following measures shall be implemented:

- A bird deterrent program shall be implemented near historical golden eagle nest sites to discourage eagles from returning to those sites.
- Construction near active nest sites shall start outside the active nesting season. The nesting period for golden eagles is from mid-January to August 31.
- If groundbreaking activities begin during the nesting period, a qualified biologist shall perform a preconstruction survey 14 to 30 days before the start of each new construction phase to search for golden eagle nest sites in appropriate habitat within 0.5 mile of proposed activities. If active nests are not identified, no further action is required and construction may proceed.

- If active nests are identified, a minimum 0.5 mile buffer zone around active golden eagle nests shall be established. Buffer zones shall remain until young have fledged or the nest is confirmed to have failed by a qualified biologist. For activities conducted with agency approval within this buffer zone, a USFWS-approved biologist shall monitor construction activities and the eagle nest(s) to monitor eagle reactions to activities. If activities are deemed to have a negative effect on nesting eagles, the biologist shall immediately inform the construction manager that work should be halted, and CDFW and USFWS will be consulted.
- For golden eagles that begin nesting within the buffer zone after start of construction, the same avoidance and minimization measures as described for active eagle nests found before start of construction (0.5 mile buffer) shall be implemented. A smaller buffer of 0.25 to 0.5 mile may be used if there is a visual barrier, such as a hill or dense trees, between the construction activity and the nest.
- After construction is complete, it is possible that golden eagles will nest within the constructed Recreation Areas. In this situation, the following avoidance and minimization measures shall be implemented:
  - After construction, golden eagle nesting sites shall be surveyed and monitored within and adjacent to the Recreation Areas to ensure that recreational activities do not disrupt golden eagle nesting activities. Surveys shall be performed at the beginning of, and continue through, the nesting season. Consistent with avoidance guidelines, recreational access and other disruptive activities shall be suspended within 0.5 mile of active golden eagle nests until the young eagles have fledged or a USFWS-approved biologist has determined that the nest has failed.

After construction is complete, up to 10 years of telemetry studies (to be determined during consultation with USFWS) shall be conducted to determine the effect of habitat loss. The specific methods for mitigating the loss of the annual grassland habitat shall be determined in consultation with USFWS. CDFW, and USACE per **Mitigation Measure Wild-1b** listed above; mitigation may include the preservation of annual grassland habitat through conservation easement and/or land purchase located near the Primary Study Area that could provide foraging habitat for golden eagles, and/or could consist of restoring a historical foraging site that is no longer used as foraging habitat.

If it is determined that an eagle take permit is required, compensatory mitigation will be developed in compliance with the conditions set forth in the Eagle Take Permit Title 50 FCR Part 22, Subpart C, §22.25 & §22.26.

Mitigation Measure Wild-2f: Implement Protective Actions to Minimize Impacts to the Ringtail and Restore Connectivity of the Riparian Corridor

The CDFW fully-protected ringtail is associated with riparian and rocky habitats, and this species may occur within the Primary Study Area where Project construction will occur. A ringtail was observed within the riparian habitat that would be removed during construction of the Delevan Pipeline Intake/Discharge Facilities. To minimize potential direct impacts to ringtail, the following measures shall be implemented:

- Focused preconstruction surveys will be conducted within 200 feet of any ground disturbing activity in suitable habitat in the Project area to detect ringtail presence and potential dens including but not limited to nests in the hollows of trees, rock crevices or abandoned wooden structures.

- Occupied dens or other den structures will be flagged and ground-disturbing activities within 200 feet will be avoided.
- If occupied dens or are found in the Project area and avoidance is not possible, denning ringtails shall be safely removed under the direction of a qualified biologist with approval of CDFW. The qualified biologist shall facilitate the removal of denning ringtail and their young by delaying construction activity for a minimum 20 days during the early pup-rearing season (May 1 to 15 June 15) and a minimum of 5 days during the rest of the year (June 16 to April 30).
- If the qualified biologist documents ringtail voluntarily vacating the den site during this period, then construction may begin within 7 days following this observation. If the ringtails do not vacate the den voluntarily within the required period, then the qualified biologist will coordinate with CDFW to passively relocate ringtail as appropriate.
- All activities that involve the ringtail shall be documented and reported to the CDFW within 30 days of the activity.
- In areas of potentially suitable habitat for ringtail, riparian vegetation removal shall not occur during the early pup-rearing season (May 1 through June 15).

The removal of riparian habitat within the footprint of the facilities also could reduce connectivity of the riparian corridor. Restoration of riparian corridor connectivity shall occur through the implementation of **Mitigation Measure Wild 3c** to maintain connectivity and minimize impacts on ringtail. Restoration of riparian corridor connectivity shall include inclusion of other habitat enhancements, such as providing ringtail nesting cavities and planting food sources.

Mitigation Measure Wild-2g: Implement Protective Actions to Avoid or Minimize Impacts to Elderberry Plants. Where Avoidance is not Possible, Transplant or Replace Plants, According to USFWS Guidelines

A limited number of elderberry shrubs have been documented within the potential construction disturbance area for Sites Reservoir. Shrubs shall be avoided through establishment and maintenance of a 100-foot-wide or wider from the edge of the dripline and well-signed buffer where feasible. Elderberry shrubs located immediately adjacent to the footprint of the Delevan Pipeline Intake/Discharge Facilities near an existing irrigation canal and access road immediately adjacent to the existing Maxwell Sites Road would be less than 100 feet from the proposed temporary construction area and would require consultation with USFWS related to encroachment on typical buffer distances.

Measures to protect elderberry core avoidance areas during construction will be instituted prior to construction and will include fencing and signs, as follows:

- Orange construction fencing will be placed 100-feet outward from the dripline of the shrub to be avoided.
- Signs will be erected and attached to the fencing a minimum of 50 feet apart, stating the following: “This area is habitat for the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.” The signs will be placed in clearly visible locations and will be readable from a distance of 20 feet (USFWS, 1999b).

- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant will be used within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

Elderberry shrubs within the footprint of Sites Reservoir, Sites Dam, and Golden Gate Dam, as well as the one shrub within the footprint of the Delevan Pipeline Intake/Discharge Facilities would be inventoried by an approved biologist and transplanted or replaced, depending on the likelihood of survival post-transplantation. Transplantation procedures shall comply with USFWS's 1999 Conservation Guidelines for the Elderberry Longhorn Beetle (USFWS, 1999b). If transplantation is not feasible, USFWS general guidelines would be followed for replacement of elderberry plants in designated mitigation areas through the implementation of **Mitigation Measure Wild-1b** identified above. Elderberry plants shall be replaced at a ratio outlined in Table 1 of the USFWS's 1999 Conservation Guidelines for the Elderberry Longhorn Beetle (USFWS, 1999b).

Mitigation Measure Wild-2h: Conduct Preconstruction Surveys for Western Burrowing Owls and If Owls are Found, Implement Protective Actions

Preconstruction surveys shall be conducted in annual grasslands or other suitable burrowing owl habitat within the footprint of Sites Reservoir and within the construction disturbance area for associated facilities, including pipelines, to determine if burrowing owls are present. These surveys shall be conducted within 30 days of ground-disturbing construction activities and prior to the start of the filling of reservoir. Surveys shall be conducted by a qualified biologist in compliance with the burrowing owl protocols identified in Appendix D of the CDFG Staff Report on Burrowing Owl Mitigation (CDFG, 2012) or the current guidelines in place at the time the surveys are conducted. If burrowing owl burrows are found, protective measures shall be developed through coordination with CDFW and shall be implemented.

The following protective measures shall include avoidance of occupied burrows during the nesting season, which is from February 1 through August 31, with the peak of the season occurring from April 15 through July 15 for areas where such avoidance is feasible and not within the footprint of Project facilities. Any unoccupied burrows located within the immediate construction area shall be excavated to completion using hand tools, and then filled to prevent reoccupation.

If destruction of occupied burrows is unavoidable, such as within the footprint of Sites Reservoir, burrow entrances may be altered, outside of the nesting season, to allow resident burrowing owls to exit but not re-enter the burrow. Burrowing owls may be excluded from burrows by installing one-way doors in burrow entrances. One-way doors would be left in place for at least 48 hours to ensure burrowing owls have left the burrow before the start of construction. After the 48-hour period, burrows will be scoped and/or excavated to completion using hand tools, and then filled to prevent reoccupation. Mitigation will include the creation of artificial burrows in adjacent suitable habitat as determined appropriate by a qualified biologist in consultation and coordination with CDFW and USFWS.

Loss of annual grassland habitat would be compensated for with through the implementation of **Mitigation Measure Wild-1b** identified above

Mitigation Measure Wild-2i: Conduct Preconstruction Surveys and Provide a Biological Monitor During Project Construction for the Western Pond Turtle. If Found, Turtles shall be Captured and Relocated by a Qualified Biologist

Before construction activities begin, a qualified biologist shall conduct western pond turtle surveys along creeks and other ponded areas within the footprint of Sites Reservoir, Sites Dam, and Holthouse Reservoir, as well as along the irrigation canals within the construction disturbance area of the Delevan Pipeline. Adjacent upland areas shall also be examined for evidence of nests or individual turtles. A Project biologist shall be responsible for conducting the survey and relocating any turtles found within footprints or construction disturbance areas. If a nest is observed, a biologist with appropriate permits and prior approval from CDFW shall move eggs to a suitable location or facility for incubation. However, some individuals may be undetected or enter sites after surveys are conducted, and could be subject to mortality. A biological monitor shall, therefore, be present during Project construction to minimize take.

Loss of western pond turtle habitat would be compensated for with through the implementation of **Mitigation Measure Wild-1b** identified above

Mitigation Measure Wild-2j: Conduct Preconstruction Surveys for the Western Yellow-billed Cuckoo and Schedule Construction Activities to Avoid Impacts to Nest Sites

- Preconstruction surveys for Western yellow-billed cuckoo shall be conducted by a qualified biologist in areas considered potential habitat for the species.
- If active nests are identified, a minimum 250 - 500 foot (depending on terrain) construction buffer shall be established around any nest sites unless a qualified CDFW or FWS approved biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds in consultation with the agencies. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.
- Loss of yellow-billed cuckoo habitat would be compensated through the implementation of **Mitigation Measure Wild-1b** identified above.

Mitigation Measure Wild-3a: During Project Construction, Backfill Trenches within 72 hours of Pipeline Installation and Provide an Escape Ramp for Trapped Wildlife

Pipeline trenches shall be backfilled within 72 hours of pipeline installation to prevent potential impacts to trapped wildlife to the extent practical. All trenches shall be inspected for wildlife each day prior to initiating construction and prior to being filled. At the end of each day, a ramp shall be placed at the end of each trench at an approximate 45-degree slope to allow trapped wildlife to escape. In addition to ramps, trenches shall be covered to the extent possible to prevent wildlife entry.

Mitigation Measure Wild-3b: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices for Avian Protection on Power Lines

The Delevan Overhead Power Line, poles, and associated equipment shall be properly fitted with wildlife protective devices to isolate and insulate structures to prevent injury or mortality to wildlife, especially avian species. Protective measures shall follow the guidelines provided in Suggested Practices for Avian

Protection on Power Lines (APLIC, 2006), or the current guidelines in place at the time the surveys are conducted, and shall include insulating hardware or conductors against simultaneous contact, using poles that minimize impacts to birds, and increasing the visibility of conductors or wires to prevent or minimize bird collisions.

Mitigation Measure Wild-3c: Restore Riparian Habitat Connectivity

The removal of riparian habitat within the footprint of the facilities also could reduce connectivity of the riparian corridor. Restoration of riparian habitat shall occur through the implementation of **Mitigation Measure Wild-1b** identified above to minimize impacts on ringtail as well as maintain connectivity. Restoration of riparian corridor connectivity shall include inclusion of other habitat enhancements, such as providing ringtail nesting cavities and planting food sources.

14.4.3 Significance of Impacts with Implementation of Mitigation Measures

Implementation of **Mitigation Measures Wild-1a, Wild-1b, Wild-1c, Wild-1d, Wild-2a, Wild-2b, Wild-2c, Wild -2d, Wild-2f, Wild-2g, Wild-2h, Wild-2i, and Wild-2j** would reduce the level of significance of Project impacts to **less than significant**.

Implementation of **Mitigation Measure Wild-2e** would minimize impacts to golden eagle, but loss of local foraging habitat would result in Project impacts remaining **potentially significant and unavoidable**.

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