2.19 Animal Species

2.19.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), and CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.20. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations relevant to wildlife include the following.

- NEPA
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following.

- CEQA
- CFGC Sections 1600–1603
- CFGC Sections 4150 and 4152

2.19.1.1 California Fish and Game Code Sections 3503 and 3503.5 (Protection of Birds and Raptors)

Section 3503 of the CFGC prohibits killing of birds and destruction of bird nests. Section 3503.5 prohibits killing of raptor species and destruction of raptor nests. Typical violations include destruction of active bird and raptor nests as a result of tree removal, and failure of nesting attempts (loss of eggs or young) as a result of disturbance of nesting pairs caused by nearby human activity. The proposed project has the potential to adversely affect birds and raptors protected under Sections 3503 and 3503.5 of the CFGC.

2.19.1.2 California Fish and Game Code Sections 3511, 3513, 4700, 5050, and 5515 (Fully Protected Species)

CFGC Sections 3511, 3513, 4700, 5050 and 5515 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515) and strictly prohibit take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Community Conservation Plan has been adopted. Specifically, Section 3513 prohibits any take or possession of birds designated by the

MBTA as migratory nongame birds except as allowed by federal rules and regulations pursuant to the MBTA. One fully protected bird species, white-tailed kite (*Elanus leucurus*), has the potential to nest in the BSA and be affected by the proposed project.

2.19.2 Affected Environment

This section is based on the *Natural Environment Study Report* (ICF International 2014) prepared for the project. The report is available on the project website at http://8065interchange.org/.

Surveys for terrestrial wildlife species in the BSA included a habitat-based assessment on May 15, 2012, and on July 23, 2014. Fisheries resources were evaluated on July 28 and August 4, 2014 by assessing in-stream conditions as well as shaded riverine aquatic (SRA) cover. On September 16, 2014, a site visit was conducted with Dylan Van Dyne, fish biologist and NMFS liaison for Caltrans, to discuss potential fish concerns related to the project. Non-listed wildlife and fish species that could be affected by the proposed project are discussed below.

2.19.2.1 Wildlife Species

The BSA provides habitat for an assemblage of wildlife species typical of valley grassland, oak woodland, and riparian forest communities. Numerous mammal species or evidence of use (i.e., scat, burrows) were observed in or near the BSA during the 2012 and 2014 field surveys. Species included black-tailed deer (*Odocoileus hemionus columbianus*), black-tailed hare (*Lepus californicus*), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), western gray squirrel (*Sciurus griseus*), Botta's pocket gopher (*Thomomys bottae*), and raccoon (*Procyon lotor*). Numerous western fence lizards (*Sceloporus occidentalis*) were observed throughout the BSA. Wetland and stream habitats in the BSA also provide habitat for common amphibians and reptiles such as western toad (*Anaxyrus boreas*), Pacific tree frog (*Pseudacris regilla*), and western terrestrial garter snake (*Thamnophis elegans*). Common bird species observed throughout the BSA included northern mockingbird (*Mimus polyglottos*), red-winged blackbird (*Agelaius phoeniceus*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), mourning dove (*Zenaida macroura*), western scrub jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), American robin (*Turdus migratorius*), spotted towhee (*Pipilo maculatus*), acorn woodpecker (*Melanerpes formicivorus*), downy woodpecker (*Picoides pubescens*), Pacific-slope flycatcher (*Empidonax difficilis*), wild turkey (*Meleagris gallopavo*), American kestrel (*Falco sparverius*), red-shouldered hawk (*Buteo lineatus*), and turkey vulture (*Cathartes aura*).

Based on searches of the California Natural Diversity Database (CNDDB), the CNPS rare plant inventory, and USFWS lists of threatened endangered species for the project region, 20 special-status wildlife species were determined to have the potential to occur in the project region (Table 2.19-1). Of these 20 species, seven species would not be affected by the project because the BSA lacks suitable habitat or is outside the species' known range (Table 2.19-1). Four of the 20 species are listed under FESA or CESA and are discussed in Section 2.20. Suitable habitat is present in the BSA for the remaining nine non-listed special-status wildlife described below.

Table 2.19-1. Special-Status Wildlife and Fish Known or with Potential to Occur in the Project Region, or That May Be Affected by the Proposed Project

Common Name *Scientific Name*	Legal Status[a] (Federal/State/Other)	General Habitat Description	Habitat Present/Absent[b]	Rationale
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–	Found in Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County; common in vernal pools; also found in sandstone rock outcrop pools.	Present	Suitable vernal pool habitat is present within the BSA between Taylor Road and the railroad corridor west of the existing East Roseville Viaduct. Vernal pools within the north and south SR 65 off-ramp loops at Galleria Boulevard also provide suitable habitat for the species. *Likely to adversely affect.*
Vernal pool tadpole shrimp *Lepidurus* packardi	E/–	Found from Shasta County south to Merced County; occurs in vernal pools and ephemeral stock ponds.	Present	Suitable vernal pool habitat is present within the BSA. Based on the absence of documented populations within Placer County, vernal pool tadpole shrimp are not expected to occur in the BSA. *Not likely to adversely affect*.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–	Streamside habitats below 3,000 feet throughout the Central Valley; occurs in riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Present	One elderberry shrub is present below the existing East Roseville Viaduct north of Taylor Road. Three shrubs are present along the south bank of Miners Ravine east of I-80 and south of Eureka Road. One additional shrub is present along China Garden Road in the east end of the BSA; however, this shrub was recently burned in a fire. *Likely to adversely affect.*

Common Name *Scientific Name*	Legal Status[a] (Federal/State/Other)	General Habitat Description	Habitat Present/Absent[b]	Rationale
Amphibians				
California red-legged frog *Rana aurora draytonii*	T/SSC	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehema County to Fresno County; occurs in permanent and semipermanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation; may estivate in rodent burrows or cracks during dry periods.	Present	Suitable perennial aquatic habitat is present within the BSA. However, the species has not been previously documented within valley habitat in western Placer County. The closest California Natural Diversity Database occurrences are more than 35 miles northeast of the BSA within the nearby foothills (California Natural Diversity Database 2014). This species is not expected to be present within the BSA. *No effect.*
Western spadefoot *Spea hammondii*	–/SSC	Seasonal wetlands such as vernal pools and stock ponds in annual grasslands and oak woodlands within the Sierra Nevada foothills, Central Valley, and Coast Ranges.	Present	Suitable aquatic (vernal pools) and upland habitat is located between Taylor Road and the railroad corridor west of the existing East Roseville Viaduct. Vernal pools also are present in the SR 65 off-ramp loops at Galleria Boulevard; however, these pools are surrounded by developed areas that would not provide sufficient upland habitat to support western spadefoot. *Likely to adversely affect.*
Reptiles				
Giant garter snake *Thamnophis couchi gigas*	T/T/–	Sloughs, canals, low-gradient streams, and freshwater marsh habitats with a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Absent	Urban streams within the BSA do not provide suitable habitat for giant garter snake. The closest known occurrence is approximately 13 miles to the west, within an agricultural ditch in rice field habitat. *No effect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Pacific pond turtle *Actinemys marmorata*	–/SSC	Occurs throughout California west of the Sierra-Cascade crest; found from sea level to 6,000 feet; does not occur in desert regions except for along the Mojave River and its tributaries; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Present	Suitable aquatic and upland habitat is present within and along Antelope Creek, Miners Ravine, and Secret Ravine within the BSA. *Likely to adversely affect.*
Birds				
Bank swallow *Riparia riparia*	–/T	Occurs along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County. Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam, along streams, coastal bluffs, and sand/gravel pits.	Absent	No suitable river or stream eroded bank habitat is present in BSA. *No effect.*
Burrowing owl *Athene cunicularia hypugaea*	–/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast; level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	Present	Annual grassland along SR 65 in the northwest portion of the BSA provides potential breeding and wintering habitat. The closest document occurrence is 5 miles northwest of the BSA at a culvert under North Foothill Boulevard surrounded by open grassland habitat (ICF International 2014). Active nests will be avoided. *Not likely to adversely affect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
California black rail *Laterallus jamaicensis coturniculus*	–/T, FP	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties; tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Recently discovered northern Sierra Nevada foothill population occupies shallow, densely vegetated freshwater wetlands.	Absent	No suitable freshwater marsh habitat is present within the BSA. *No effect.*
Northern harrier *Circus cyaneus*	–/SSC	Occurs in grasslands, meadows, marshes, and seasonal and agricultural wetlands throughout lowland California.	Present	Emergent wetland and tall annual grasslands along SR 65 roadway provide potential nesting habitat for northern harrier. Active nests will be avoided. *Not likely to adversely affect.*
Osprey *Pandion haliaetus*	–/SSC	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations.	Absent	No suitable nesting or foraging habitat is present within the BSA. Possible migrant through the BSA. *No effect.*
Purple martin *Progne subis*	–/SSC	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats; also nests in vertical drainage holes under elevated freeways and highway.	Present	Purple martins have been documented to nest in the drain holes within the SR 65 overcrossing at Taylor Road in the BSA. Only one pair have been documented in any given nest year. Project construction could indirectly disturb active nesting, but suitable nesting habitat would not be permanently affected. *Not likely to adversely affect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Swainson's hawk *Buteo swainsoni*	–/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County; nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	Present	Oak woodland and riparian forest in the BSA provide suitable nesting habitat for the species. The closest known nest sites are approximately 4 miles to the west along Kaseberg and Pleasant Grove Creeks (CNDDB 2014). Annual grassland within open areas adjacent to SR 65 support suitable foraging areas for hawks. Active Swainson's hawk nests will be avoided. *Not likely to adversely affect.*
Tricolored blackbird *Agelaius tricolor*	–/E*	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties; nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	Present	Emergent wetland and riparian shrub wetland along Antelope Creek in the BSA provide suitable nesting habitat for the species. The closest known nesting colony is on Orchard Creek approximately 5 miles northwest of the BSA (ICF International 2014). Active nests would be avoided. *Not likely to adversely affect.*
White-tailed kite *Elanus leucurus*	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border; low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Oak woodland and riparian forest in the BSA provide suitable nesting habitat for the species. The closest known nest site is approximately 2.5 miles to the west along Pleasant Grove Creek (CNDDB 2014). Annual grassland within open areas adjacent to SR 65 support suitable foraging areas. Active nests will be avoided. *Not likely to adversely affect.*

Common Name *Scientific Name*	Legal Status[a] (Federal/State/Other)	General Habitat Description	Habitat Present/Absent[b]	Rationale
Mammals				
Pallid bat *Antrozous pallidus*	–/SSC	Occurs throughout California primarily at lower and mid-level elevations in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Daytime roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges.	Present	Bridges and woodland habitats in the BSA provide suitable roosting areas for this species. Active roosts will be avoided. *Not likely to adversely affect.*
Silver-haired bat *Lasionycteris noctivagans*	–/SSC	Typically roosts in tree cavities, crevices and under loose bark; may also use leaf litter, buildings, mines, and caves; breeds in coastal and montane coniferous forests, valley foothill and montane riparian habitats; may occur in any habitat during migration.	Present	Bridges and woodland habitats in the BSA provide suitable roosting areas. Active roosts will be avoided. *Not likely to adversely affect.*
Townsend's big-eared bat *Corynorhinus* townsendii *townsendii*	–/P	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after one onsite visit.	Absent	No suitable roosting habitat is present in the BSA. *No effect.*
Western red bat *Lasiurus blossevillii*	–/SSC	Found throughout much of California at lower elevations; found primarily in riparian and wooded habitats; occurs at least seasonally in urban areas; day roosts in trees within the foliage; found in fruit orchards and sycamore riparian habitats in the Central Valley.	Present	Oak woodland and riparian forest habitat within the BSA provides suitable roost sites. Active roosts will be avoided. *Not likely to adversely affect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Fish				
Central Valley steelhead *Oncorhynchus mykiss*	T/–	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18 degrees (°) Celsius (C); habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear year-round for 1–4 years before emigrating to the ocean (Moyle 2002).	Present	Antelope Creek, Miners Ravine, and Secret Ravine provide suitable migration, spawning, and rearing habitat for Central Valley steelhead; Miners Ravine and Secret Ravine are designated critical habitat for the species. *Not likely to adversely affect.*
Central Valley fall-/late fall–run Chinook salmon *Oncorhynchus tshawytscha*	SC/SSC	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear for several months and emigrate to the ocean before summer (Moyle 2002).	Present	Antelope Creek, Miners Ravine, and Secret Ravine provide suitable migration, spawning, and rearing habitat for Central Valley fall-run Chinook salmon and are considered EFH for Chinook salmon. *Not likely to adversely affect.*
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	E/E	Mainstem Sacramento River below Keswick Dam (Moyle 2002); occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools (Moyle 2002); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Absent	The BSA is not located within the current distribution of this run. The BSA is not included within designated critical habitat for this run. *No effect.*
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T/T	Upper Sacramento River, Feather River, and Yuba River and several perennial tributaries of the Sacramento River (Battle, Butte, Clear, Deer, and Mill Creeks); has the same general habitat requirements as winter-run Chinook salmon; coldwater pools are needed for holding adults (Moyle 2002); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Absent	The BSA is not located within the current distribution of this run. The BSA is not included within designated critical habitat for this run. *No effect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Delta smelt *Hypomesus transpacificus*	T/E	Found primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay; occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	Absent	The BSA is located on an inland freshwater stream at an elevation of 160 feet above mean sea level. The BSA is not included within designated critical habitat for this species. *No effect.*
Lahontan cutthroat trout *Mylopharodon conocephalus*	T/-	Tributary streams in the San Joaquin drainage; large tributary streams in the Sacramento River and the main stem; resides in low to mid-elevation streams and prefer clear, deep pools and runs with slow velocities; also occurs in reservoirs.	Absent	The species occurs only in Great Basin streams on the east side of the Sierra Nevada crest. The BSA is not included within designated critical habitat for this species. *No effect.*

[a] Status explanations:

Federal

E = Listed as endangered under the federal Endangered Species Act.

E* = Notice of Findings to grant emergency status of *endangered* published by the California Fish and Game Commission on December 3, 2014. Effective dates for emergency listing are December 29, 2014 to June 30, 2015, subject to extension by Commission.

T = Listed as threatened under the federal Endangered Species Act.

D = Delisted from the federal Endangered Species Act.

– = No listing.

State

E = Listed as endangered under the California Endangered Species Act.

T = Listed as threatened under the California Endangered Species Act.

P = Proposed for listing as threatened or endangered under the California Endangered Species Act.

FP = Fully protected under the California Fish and Game Code.

SSC = Species of special concern in California.

– = No listing.

[b] Definitions:

Absent - no habitat present and no further work needed.
Habitat Present - habitat is, or may be present. The species may be present.
Present - the species is known to be present.

Western Spadefoot

The western spadefoot is designated as a state species of special concern. Western spadefoot range in length from 1.5 to 2.5 inches. They are dusky green or gray above and often have four irregular light-colored stripes on their back. The iris of the eye is usually a pale gold. The abdomen is whitish without any markings. Western spadefoots have a wedge-shaped, glossy black "spade" on each hind foot, used for digging. In California, western spadefoots historically ranged throughout the Central Valley and Coast Ranges and the coastal lowlands from San Francisco Bay southward to Mexico. The species has experienced severe population declines in the Sacramento Valley and a reduced density of populations in the eastern San Joaquin Valley.

Western spadefoots typically inhabit lowland habitats such as washes, floodplains of rivers, alluvial fans, playas, and alkali flats. This species also may be found in the foothills and mountain regions. Western spadefoots prefer areas of open vegetation and short grasses where the soil is sandy or gravelly. They are found in the valley and foothill grasslands, open chaparral, and pine-oak woodlands. Western spadefoots are primarily terrestrial, and require upland habitats for feeding and for burrowing during their long dry-season dormancy. They require wetlands for reproduction and have been observed in a variety of permanent and temporary wetlands, including rivers, creeks, pools in intermittent streams, vernal pools, and temporary rain pools. Larval development can be completed in 3 to 11 weeks but has been known to take up to 79 days from hatching to metamorphosis. Vernal pools and other temporary wetlands may be optimal for breeding due to the absence or reduced abundance of predators.

Within the BSA, emergent wetlands along SR 65, an intermittent drainage under the East Roseville Viaduct, and a large vernal pool southwest of the East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c) provide potential breeding habitat for western spadefoot. Annual grassland in the vicinity of these aquatic resources provides upland habitat for adult spadefoots. Spadefoots are not expected to be present in disturbed/graded areas immediately adjacent to SR 65. The closest CNDDB occurrence for western spadefoot is located within the BSA and is a 1994 record from an emergent wetland located between the railroad tracks and Taylor Road, south of the East Roseville Viaduct.

Pacific Pond Turtle

Pacific pond turtle (western pond turtle or northwestern pond turtle) is a California species of special concern. Pacific pond turtle occurs throughout much of California except for east of the Sierra-Cascade crest and desert regions (with the exception of the Mojave River and its tributaries). Aquatic habitats used by Pacific pond turtles include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas. Pacific pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. Pacific pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter. Turtles have been observed overwintering several hundred meters from aquatic habitat. In the southern portion of the range and along the central coast, Pacific pond turtles are active year-round. In the remainder of their range, these turtles typically become active in March and return to overwintering sites by October or November.

Antelope Creek, Miners Ravine, and Secret Ravine within the BSA represent suitable aquatic habitat for Pacific pond turtle. Annual grassland, oak woodland, and riparian forest habitat along these streams provide suitable upland nesting and overwinter habitat for pond turtles. No Pacific pond turtles were observed within the BSA during the 2012 and 2014 wildlife surveys.

Burrowing Owl

Western burrowing owl is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Burrowing owl is a ground-nesting raptor that typically uses the burrows of other species, such as ground squirrels, for nesting, protection, and shelter. Burrowing owls are a year-round resident in a variety of grasslands, as well as in scrublands with a low density of trees and shrubs and low-growing vegetation. Burrowing owls that nest in the Central Valley may winter elsewhere. The primary habitat requirement of the burrowing owl is burrows appropriate for nesting. Burrowing owls usually nest in abandoned burrows, although they have been known to construct their own burrows in softer soils. In urban and agricultural areas, burrowing owls often use artificial burrows, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement, particularly pipes. This owl breeds from March through August and is most active while hunting during dawn and dusk.

Annual grassland in the BSA along SR 65 and the East Roseville Viaduct represents marginal wintering and breeding habitat for burrowing owls; however, owls are not expected to occur directly underneath the viaduct. This habitat is located adjacent to a high-density residential area that is heavily used by people, cats, and dogs. Annual grassland mapped along I-80 in the BSA occurs in small patches and is not expected to support burrowing owls. Overall, the potential for burrowing owls to be present within the BSA is low. No burrowing owls were observed within the BSA during 2012 and 2014 wildlife surveys.

White-Tailed Kite

White-tailed kite is a state species of special concern and is designated as fully protected under CFGC Section 3511. White-tailed kites occur in coastal and valley lowlands in California. They generally inhabit low-elevation grassland, savannah, oak woodland, wetlands, agricultural, and riparian habitats. Some large shrubs or trees are required for nesting and for communal roosting sites. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands. White-tailed kites make nests of loosely piled sticks and twigs, lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February through October and peaks between May and August. They forage in undisturbed, open grassland, meadows, farmland, and emergent wetlands.

Riparian forest and oak woodlands in the BSA along Antelope Creek, Miners Ravine, and Secret Ravine provide suitable nesting habitat for white-tailed kite. The closest documented white-tailed kite nest site is located approximately 2.5 miles west of the BSA along Pleasant Grove Creek. Annual grassland in the BSA is patchy and provides marginal foraging habitat for white-tailed kites. White-tailed kites also would not be expected to forage under the existing East Roseville Viaduct. No white-tailed kites were observed in the BSA during the 2012 and 2014 wildlife surveys; however, kites were observed north of the BSA foraging in open grassland habitat along SR 65.

Northern Harrier

Northern harrier is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Northern harrier is a year-round resident throughout the Central Valley and often is associated with open grassland habitats and agricultural fields. Nests are found on the ground in tall, dense herbaceous vegetation. Northern harrier nests from April to September, with peak activity in June and July. The breeding population has been reduced, particularly along the southern coast, because of the destruction of wetland habitat, native grassland, and moist meadows and from burning and plowing of nesting areas during early stages of breeding.

Annual grassland and emergent wetland in the northwestern portion of the BSA provide potential nesting substrate for northern harriers. Northern harriers were not observed during 2012 and 2014 wildlife surveys conducted within the BSA.

Purple Martin

Purple martin is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Purple martin can be found throughout nearly the entire United States east of the Rocky Mountains. The once widespread Central Valley nesting population is now restricted to a bridge-nesting population within the Sacramento region. Since 2004, this population has declined from 173 pairs to 70 pairs in 2009, a 60-percent decrease. The Sacramento area martin population includes one Placer County breeding pair first documented in 2007. The purple martin is an early spring migrant from its wintering grounds in South America. Generally, purple martins inhabit open areas with an open water source nearby. Martins adapt well in and around people but are out-competed by starlings and sparrows in urban areas. Purple martins are colonial cavity nesters in abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. Once established at a nest location, martins usually come back to the same site every year.

The only known nesting occurrence for purple martins in Placer County is from the East Roseville Viaduct within the BSA. Only one breeding pair has been previously documented—in a weep hole on the underside of the existing structure in 2007, in 2008, and then again in 2012. No purple martins were observed nesting in the East Roseville Viaduct during breeding surveys conducted in 2013 and 2014.

Based on 2014 wildlife surveys, all of the structures in the BSA support nesting swallows and black phoebe along ledges and in weep holes.

Other Migratory Birds

Other non-special-status birds protected under the MBTA could nest in trees, shrubs, grasses, or structures within the BSA. Cliff swallow and black phoebe were observed nesting on existing bridge structures during field surveys.

Pallid Bat

Pallid bat is found throughout most of California at low to middle elevations (6,000 feet). Pallid bats are found in a variety of habitats, including desert, brushy terrain, coniferous forest, and non-coniferous woodlands. Daytime roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are commonly under bridges but also are in caves and mines.

Hibernation may occur during late November through March. Pallid bats breed from late October through February, and one or two young are born in May or June. Existing bridge structures in the BSA provide potential roosting habitat for pallid bat.

Silver-Haired Bat

Silver-haired bats occur primarily in the northern portion of California and at higher elevations in the southern and coastal mountain ranges but may occur anywhere in California during their spring and fall migrations. They are associated with coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Silver-haired bats roost in trees almost exclusively in summer, and maternity roosts typically are located in woodpecker hollows or in gaps under bark. Maternal colonies range from several to about 75 individuals. Suitable habitat for silver-haired bat is present within riparian and oak woodlands in the BSA.

Western Red Bat

Western red bats occur throughout much of California at lower elevations. It is found primarily in riparian and wooded habitats but also occurs seasonally in urban areas. Western red bats roost in the foliage of trees that are often on the edge of habitats adjacent to streams, fields, or urban areas. This species breeds in August and September, and young are born in May through July. Suitable habitat for western red bat is present within riparian and oak woodlands in the BSA.

2.19.2.2 Fish Species

Antelope Creek, Miners Ravine, and Secret Ravine in the BSA fall within the Sacramento-San Joaquin Province (Central Valley Subprovince), one of six aquatic zoogeographic provinces in California, as defined by Moyle (2002). The Sacramento-San Joaquin Province is drained by the Sacramento and San Joaquin Rivers. Generally, four native fish assemblages can be recognized in Central Valley streams: rainbow trout assemblage, California roach assemblage, pikeminnow-hardhead-sucker assemblage, and deep-bodied fish assemblage. Based on its geographic location, the BSA lies in the zone characterized by the deep-bodied fish assemblage.

Fish species that could occur in this zone include Sacramento sucker (*Catostomus occidentalis*), California roach (*Lavinia symmetricus*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), speckled dace (*Rhinichthys osculus*), riffle sculpin (*Cottus gulosus*), steelhead and resident rainbow trout (*Oncorhynchus mykiss*), and Chinook salmon (*O. tshawytscha*). Non-native sunfish (*Lepomis* spp.), blackbass (*Micropterus* spp.), and Western mosquitofish (*Gambusia affinis*) also may occur in this zone.

Historical information of fish species occurrence includes CDFW accounts documented in CDFW memoranda from the mid-1960s. According to these accounts, anglers in the mid-1960s commonly caught rainbow trout, sunfish, and brown bullhead catfish (*Ameiurus nebulosus*), while other species documented to occur in the Dry Creek drainage included lamprey, Sacramento pikeminnow, goldfish, Sacramento sucker, hitch, mosquitofish, Chinook salmon, and steelhead.

Presently, about 20 fish species, including freshwater and anadromous (sea-going) species, are found in Antelope Creek, Miners Ravine, and Secret Ravine; more than half of these species are introduced (Table 2.19-2).

Table 2.19-2. Fish Species Known or with Potential to Occur in the Biological Study Area

Common Name–Origin	Scientific Name
Native	
Steelhead	*Oncorhynchus mykiss*
Chinook salmon (fall-run)	*Oncorhynchus tshawytscha*
Pacific lamprey	*Lampetra tridentata*
Sacramento sucker	*Catostomus occidentalis*
Sacramento pikeminnow	*Ptychocheilus grandis*
Hitch	*Lavina exilicauda*
Non-Native	
Golden shiner	*Notemigonus crysoleucas*
Common carp	*Cyprinus carpio*
Goldfish	*Carassius auratus*
Fathead minnow	*Pimephales promelas*
Black bullhead	*Ameiurus melas*
Brown bullhead	*Ameiurus nebulosus*
Green sunfish	*Lepomis cyanellus*
Redear sunfish	*Lepomis microlophus*
Bluegill	*Lepomis macrochirus*
Largemouth bass	*Micropterus salmoides*
Smallmouth bass	*Micropterus dolomieu*
Spotted bass	*Micropterus punctulatus*
Western mosquitofish	*Gambusia affinis*

Sources: Placer County (2003), Titus (pers. comm.).

Based on a review of existing information, six special-status fish species initially were identified as having the potential to occur in the project region. Of the six special-status fish species listed in Table 2.19-1, four do not occur in the BSA because the area lacks suitable habitat for the species or is outside the species' known range. The remaining special-status fish species—Central Valley steelhead and Central Valley fall-/late fall–run Chinook salmon—occur in the BSA and could be affected by construction activities. In addition, two of the streams in the BSA—Miners Ravine and Secret Ravine—are designated as critical habitat for steelhead; Antelope Creek, Miners Ravine, and Secret Ravine are considered essential fish habitat (EFH) for Pacific salmon (i.e., Chinook salmon). Central Valley steelhead is federally listed as threatened and is discussed in Section 2.20, "Threatened and Endangered Species." Central Valley fall-/late fall–run Chinook salmon is discussed below. Because salmonids have relatively narrow habitat requirements related to adult migration, spawning, egg incubation, and fry and juvenile rearing relative to other native and non-native fish species, it is assumed that the following impact assessment also applies to non-salmonid species. It is further assumed that the

proposed avoidance, minimization, and mitigation measures also would be protective of, and mitigate for potential impacts on, non-salmonid fish species.

Central Valley Fall-/Late Fall–Run Chinook Salmon

The Central Valley fall- and late fall–run Chinook evolutionarily significant unit (ESU) includes all naturally spawned populations of fall- and late fall–run Chinook salmon in the Sacramento and San Joaquin River basins and their tributaries east of Carquinez Strait (64 FR 50394). On September 16, 1999, after reviewing the best available scientific and commercial information, NMFS determined that listing Central Valley fall- and late fall–run Chinook salmon was not warranted. On April 15, 2004, the Central Valley fall- and late fall–run Chinook salmon ESU was identified by NMFS as a Species of Concern (69 FR 19975).

The Central Valley fall- and late fall–run Chinook salmon ESU is not listed under CESA. However, Central Valley late fall–run Chinook salmon were classified as a Class 2 Species of Special Concern by the California Department of Fish and Game (CDFG) (now CDFW) in 1995. *Class 2 Species of Special Concern* are species with low, scattered, or highly localized populations that require active management to prevent them from becoming Class 1 species (i.e., species that conform to the state definitions of threatened or endangered species).

The species has experienced substantial declines in distribution and abundance in the Central Valley relative to historical conditions. Factors that have contributed to the population decline of naturally-produced fall/late fall–run Chinook salmon in the Central Valley include loss and degradation of spawning and rearing habitat (including loss of SRA cover habitat), alteration of streamflows, overharvest, entrainment into water diversions, blockage of migration routes, exposure to toxins, and, possibly, loss of genetic viability from interbreeding with hatchery stocks.

The following discussion focuses on fall-run Chinook salmon only because late fall–run Chinook salmon do not occur in Antelope Creek, Miners Ravine, or Secret Ravine (they spawn in the upper Sacramento River where the water remains sufficiently cold and deep in summer to support rearing of juveniles). Adult fall-run Chinook salmon enter the Sacramento River from June through December, with a peak in September and October. Within the Dry Creek drainage, migration is dependent upon adequate flows and suitable water temperatures, which usually occur following storms in October or November. Adults spawn within a few days or weeks of reaching their spawning grounds. Chinook salmon deposit their eggs in redds (i.e., gravel nests) located in riffles, runs, and pool tails. Chinook salmon require relatively clean, cool (less than 56 ^{o}F) well-oxygenated water to spawn successfully. Eggs generally hatch in 6–9 weeks, and yolk-sac larvae remain in the gravel for several more weeks. Newly emerged fry remain in shallow, lower velocity edgewaters. Shortly after emergence from the redds, most fry disperse downstream toward the Delta and into the San Francisco Bay estuary. Within Dry Creek and its tributaries, juvenile Chinook salmon tend to migrate from February through June, and migration of smolt peaks from March to May.

Since 1997, the Dry Creek Conservancy has been documenting the occurrence of adult Chinook salmon and redds in western Placer County streams, including Antelope Creek, Miners Ravine, and Secret Ravine, through limited spawning surveys. In fall 2013, 2 adult Chinook salmon carcasses were observed in lower Antelope Creek, and 15 live adults, 8 carcasses, and 5 redds

were observed in Secret Ravine in stream segments extending from the confluence with Miners Ravine to Rocklin Road; no adult Chinook salmon or redds were observed in Miners Ravine.

Shaded Riverine Aquatic Cover

SRA cover habitat mapping surveys of Antelope Creek, Miners Ravine, and Secret Ravine were conducted on July 28 and August 4, 2014, by ICF biologists. SRA cover is the unique, near-shore aquatic cover that occurs at the interface between a stream or river and adjacent riparian habitat and is an essential component of salmonid habitat. Key features of this aquatic cover include the following.

- An adjacent bank composed of natural, often eroding substrate that supports overhanging riparian vegetation and vegetation that may protrude into the water.
- A stream channel with variable amounts of woody material and detritus and variable water velocity and depth.

SRA cover is composed of two components: overhead cover and instream cover. Overhead cover consists of overhanging riparian vegetation that provides important stream shading and contributes leaf litter and insects to the stream. Instream cover consists of submerged woody material (exposed roots, branches, and trunks), aquatic plants, substrate (gravel, cobble, and boulders), and undercut banks. Figures 2.16-4a–h show the location of SRA cover habitat (overhead and instream cover) that occurs within the BSA on Antelope Creek, Miners Ravine, and Secret Ravine.

A total of 899 linear feet (lf) of pre-project SRA cover vegetation (overhead cover) is located in the BSA on Antelope Creek, a total of 1,517 lf is located in the BSA on Miners Ravine, and a total of 3,694 lf is located in the BSA on Secret Ravine (Table 2.19-3). The existing overhead cover provides from 22 to 73 percent stream shade for the individual creek reaches in the BSA (Table 2.19-3). With respect to undercut banks (instream cover), a total of 168 lf of pre-project undercut banks is located in the BSA on Miners Ravine, while a total of 16 lf is located in the BSA on Secret Ravine; no undercut banks occur in the BSA on Antelope Creek (Table 2.19-3). A total of 815 lf of stream bank in the BSA is covered in riprap, although a majority of it is vegetated (Figures 2.16-4a–h). Whether vegetated or unvegetated, the riprap in the BSA precludes undercut banks from forming where it occurs.

2.19.3 Environmental Consequences

2.19.3.1 Build Alternatives

Each of the build alternatives would result in permanent and temporary impacts on habitat for non-listed special-status animals. Impacts are discussed below by species.

Table 2.19-3. Existing SRA Cover (Overhead Vegetation and Undercut Banks) in the Biological Study Area

Creek/Reach	Existing Stream Features		Existing Overhead Vegetation		Existing Undercut Bank (lf)
	Bank Length[a] (lf)	Stream Area (sf)	Bank Length[a] (lf)	Area (sf) (% shade)[b]	
Antelope Creek (Figure 2.16-4h)	1,767	17,018	899	5,404 (32%)	0
Miners Ravine (Figure 2.16-4a)	2,554	32,939	1,517	14,316 (43%)	168
Secret Ravine					
Reach 1 (Figure 2.16-4b)	194	767	58	169 (22%)	0
Reach 2 (Figure 2.16-4c)	147	182	80	97 (53%)	0
Reach 3 (Figure 2.16-4d)	1,709	13,846	1,286	10,097 (73%)	16
Reach 4 (Figure 2.16-4e)	1,602	15,221	834	7,136 (47%)	0
Reach 5 (Figures 2.16-4f and 2.16-4g)	2,328	17,964	1,436	9,819 (55%)	0
Secret Ravine subtotal	*5,980*	*47,980*	*3,694*	*27,318 (57%)*	*16*
Total[c]	**10,301**	**97,938**	**6,110**	**47,039 (48%)**	**184**

[a] Includes left and right banks.

[b] % shade calculated as area (sf) of existing overhead vegetation/stream area (sf) x 100.

[c] Overall project total.

Western Spadefoot

Construction activities such as excavation, grading, and stockpiling of soil could fill, remove, or otherwise alter suitable habitat for western spadefoot, or could result in their injury or mortality. Western spadefoots spend much of their life underground and therefore are not easily detectable. Western spadefoots could be unearthed or crushed during earthmoving activities. They could also become entrapped in open trenches or other project facilities. Improvements to northbound and southbound SR 65 and widening of the East Roseville Viaduct (including falsework and column construction) would result in permanent and temporary impacts on breeding habitat (emergent wetlands and intermittent streams) and temporary impacts on upland habitat (annual grassland) for spadefoots.

Table 2.19-4 summarizes the impacts on western spadefoot by build alternative.

Table 2.19-4. Impacts on Western Spadefoot by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Aquatic breeding habitat	0.308	0.119	0.308	0.119	0.313	0.119
Upland habitat	3.901	0.085	3.901	0.085	3.901	0.085

Note: For purposes of calculating aquatic and upland impacts, aquatic breeding habitat for western spadefoot includes emergent wetland and intermittent stream, and upland habitat consists of annual grassland.

The permanent loss of a small amount (0.204 acre) of aquatic and upland habitat is not expected to adversely affect the local western spadefoot population. However, because the population of

spadefoots in the project region is expected to be relatively small due to the limited amount of suitable habitat in the vicinity of the project, loss of even a small number of individuals during construction could result in an adverse effect to the population.

Pacific Pond Turtle

Roadway improvements (including construction of piers, falsework, and temporary crossings) within Antelope Creek, Miners Ravine, and Secret Ravine would result in permanent loss and temporary disturbance of perennial streams that provide potential aquatic habitat for Pacific pond turtle. In-water work within and near perennial stream habitat could cause entrapment of pond turtles, resulting in their injury or mortality. Additionally, pond turtles and nests containing hatchlings or eggs could be crushed and killed during the movement of construction equipment in upland habitats (i.e., annual grassland, oak woodland, and riparian forest)—typically within 1,300 feet of aquatic sites. Because pond turtles are considered rare by CDFW, loss of individual turtles or nests containing eggs or young could result in an adverse effect to the local population.

Table 2.19-5 summarizes the impacts on Pacific pond turtle by build alternative.

Table 2.19-5. Impacts on Pacific Pond Turtle by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Aquatic habitat	0.056	0.034	0.000	0.004	0.000	0.007
Upland habitat	8.166	5.070	8.643	5.383	8.636	5.522

Note: For purposes of calculating impacts on Pacific pond turtle, aquatic habitat includes perennial stream and upland habitat consists of annual grassland, oak woodland, and riparian forest within 1,300 feet of perennial streams.

Burrowing Owl

Construction activities within annual grassland habitat in the BSA along SR 65 and the East Roseville Viaduct that occur during the nesting season (generally February 1 to August 31) or wintering season (September 1 through January 31) of burrowing owl could directly affect this species, if owls are present. Additionally, construction-generated noise has the potential to indirectly affect burrowing owls nesting near construction activities. Disturbance of burrows with active nests and indirect construction disturbance (i.e., noise, increased human presence) during the breeding season may result in nest abandonment and subsequent loss of eggs or young. Disturbance or loss of burrowing owls would be considered an adverse effect and would violate the MBTA and the CFGC.

Table 2.19-6 summarizes the impacts on burrowing owl by build alternative.

Table 2.19-6. Impacts on Burrowing Owl by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting and foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on burrowing owl, nesting and foraging habitat consists of annual grassland along SR 65 and the East Roseville Viaduct (excluding areas beneath the existing viaduct).

White-Tailed Kite

Construction activities associated with roadway improvements within or near oak woodland and riparian forest habitats could disturb an active white-tailed kite nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of an active white-tailed kite nest would violate the MBTA and CFGC Sections 3503.5 and 3511, and would be considered an adverse effect on the white-tailed kite.

Table 2.19-7 summarizes the impacts on white-tailed kite by build alternative.

Table 2.19-7. Impacts on White-Tailed Kite by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting habitat	2.866	4.985	2.343	5.298	2.336	5.437
Foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on white-tailed kite, nesting habitat consists of oak woodland and riparian forest and foraging habitat consists of annual grassland (excluding areas beneath the existing viaduct).

Northern Harrier

Construction activities associated with roadway improvements in annual grassland and emergent wetland habitat could disturb an active northern harrier nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a northern harrier nest would violate the MBTA and CFGC Section 3503.5, and would be considered an adverse effect on northern harrier.

Table 2.19-8 summarizes the impacts on northern harrier by build alternative.

Table 2.19-8. Impacts on Northern Harrier by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	***Permanent (acres)***	***Temporary (acres)***	***Permanent (acres)***	***Temporary (acres)***	***Permanent (acres)***
Nesting and foraging habitat	2.593	0.201	2.593	0.201	2.593	0.201

Note: For purposes of calculating impacts on northern harrier, nesting and foraging habitat consists of annual grassland and emergent wetland (excluding areas beneath the existing viaduct).

Purple Martin

Construction activities associated with roadway improvements would remove or modify several existing structures, which could disturb an active purple martin or other bridge-nesting migratory bird nest. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a purple martin nest would violate the MBTA and CFGC Section 3503.5. Because the population of purple martin in Placer County is expected to be very small (only one breeding pair has been previously documented), loss of adults or young would be considered adverse an adverse effect on purple martin.

Construction of the new overpass and bridge structures would replace nesting substrate lost due to structure removal. Therefore, no net loss of artificial nesting habitat would result from the proposed project.

Table 2.19-9 lists the existing structures within the BSA and summarizes the impacts on purple martin and other structure-nesting migratory birds by build alternative.

Table 2.19-9. Impacts on Purple Martin and Other Bridge-Nesting Birds by Build Alternative

Habitat	Alternative 1	Alternative 2	Alternative 3
East Roseville Viaduct	Nesting habitat would be affected	Nesting habitat would be affected	Nesting habitat would be affected
Eureka Road off-ramp over Miners Ravine	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
Taylor Road overcrossing at I-80	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
I-80 overcrossing at Miners Ravine	Nesting habitat would not be affected	Nesting habitat would not be affected	Nesting habitat would not be affected
Eastbound I-80 to northbound SR 65 connector	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
Southbound SR 65 to eastbound I-80 connector	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed

Note: For purposes of assessing impacts on structure-nesting birds, suitable nesting habitat (concrete structures) were assumed to be affected if the structure would be modified and complete loss of nesting habitat assumed where structures would be removed.

Roosting Bats

The proposed project would result in the loss of mature trees, which provide potential roosting habitat for special-status bats (western red bat, silver-haired bat, and pallid bat) and other non-

special-status bats. Tree removal/trimming and noise or other construction activities could result in injury, mortality, or disturbance of roosting bats if they are present in cavities, crevices, furrowed bark, or foliage of trees within or adjacent to construction areas. Removal or modifications to existing highway and bridge structures within the BSA could affect structure-roosting bats such as pallid bat and other non-special status bats (i.e., Mexican free-tailed bat [*Tadarida brasiliensis*], little brown bat [*Myotis lucifugus*], and Yuma myotis [*Myotis yumanensis*]).

Mortality of tree-roosting or structure-roosting bats during the maternity season or hibernation period that results from tree removal/trimming or other disturbances has the potential to affect a large number of bats and could substantially reduce the local populations of these species. Therefore, the project could adversely affect roosting bats.

No impacts on the known bat colony at the I-80 bridge over Miners Ravine are expected because this structure would not be modified.

Table 2.19-10 summarizes the impacts on roosting bats by build alternative.

Table 2.19-10. Impacts on Roosting Bats by Build Alternative

Habitat	Alternative 1	Alternative 2	Alternative 3
East Roseville Viaduct	Potential roosting habitat would be affected	Potential roosting habitat would be affected	Potential roosting habitat would be affected
Eureka Road off-ramp over Miners Ravine	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
Taylor Road overcrossing at I-80	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
I-80 overcrossing at Miners Ravine	Roosting habitat would not be affected	Roosting habitat would not be affected	Roosting habitat would not be affected
Eastbound I-80 to northbound SR 65 connector	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
Southbound SR 65 to eastbound I-80 connector	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed

Note: For purposes of assessing impacts on structure-nesting bats, suitable nesting habitat (concrete structures) were assumed to be affected if the structure would be modified and complete loss of nesting habitat assumed where structures would be removed.

Central Valley Fall-/Late Fall–Run Chinook Salmon

Implementation of the proposed project could cause temporary and permanent adverse impacts on Central Valley fall-/late fall–run Chinook salmon and their habitat. Temporary impacts primarily are associated with construction activities, including impairment of water quality, disturbance or direct injury and mortality of fish, and temporary loss of habitat. Permanent impacts likely would continue to affect species over several generations, well after completion of the proposed project, and primarily are associated with permanent loss of vegetative cover and potentially undercut banks, reducing habitat complexity.

Temporary impacts include construction activities that could temporarily increase turbidity and suspended sediment in stream segments adjacent to and downstream of construction; temporarily

increase water temperature; result in accidental spills of toxic substances used at construction sites, including gasoline, lubricants, and other petroleum-based products; and result in noise, vibrations, artificial light and other physical disturbances caused by heavy equipment operation that can harass fish, disrupt or delay normal activities, and cause direct injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction equipment operating over or adjacent to the water body.

Permanent impacts could include loss of vegetative cover and undercut banks as a result of direct removal or loss associated with long-term reductions in plant health and vigor from permanent shading caused by new highway structures (e.g., bridges, viaducts, and other elevated roadways) and potential changes in hydrology and water quality in affected waterbodies associated with increases in impervious surfaces.

No impact pile driving or stream dewatering would be required as part of project construction; therefore, related impacts on fish and the need for rescuing and relocating fish from affected habitats will be avoided. In addition, the project uses design options, including an outrigger concept for columns and/or shifting of the bent spacing, at stream crossings to avoid placement of columns below the ordinary high water mark of Secret Ravine, thereby avoiding direct impacts on the channel portion of Secret Ravine. Construction impacts on the wetted channels also will be avoided by using temporary platforms that span the channels above the ordinary high water mark to support temporary falsework while the elevated structures are being constructed adjacent to or over the channels. In-water work would be limited to constructing the two bridge columns in Antelope Creek associated with widening of the East Roseville Viaduct; however, juvenile Chinook salmon would not be present in affected habitats during summer, when in-water construction activities would occur.

Project impacts that would result from all three build alternatives on Central Valley fall-/late fall–run Chinook salmon and their habitat include potential adverse effects related to disturbance and direct injury, increased turbidity and sedimentation, potential discharges of contaminants, temporary and permanent loss of SRA cover, and changes to channel morphology and hydraulics. These potential impacts are discussed below.

Disturbance and Direct Injury

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, or cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating in or adjacent to the water body. However, survival may be altered if disturbance causes fish to leave protective habitat (e.g., causing increased exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. In the absence of mitigation, injury or mortality may result from direct and indirect contact with humans and machinery and materials being placed in the stream.

Adult and juvenile Chinook salmon would be subject to potential harassment, injury, or mortality during work activities occurring in or near stream channels. Most adults and juveniles would be expected to move upstream or downstream of the immediate project area in response to disturbance. Displacement could reduce spawning success by causing adults to abandon redds or be delayed in reaching upstream spawning areas, and affect survival of young by increasing the exposure of juveniles to predators and possibly increasing competition with other juveniles, especially if suitable rearing habitat is limited or not readily available. Although juveniles are capable of actively moving away from disturbances, some juveniles may seek cover in active work areas, where they may be injured or killed by exposure to harmful levels of suspended sediment or other factors. Fry and small juveniles are at highest risk because of their tendency to hide in the substrate and reluctance to move away from protective nearshore habitat.

Short-term noise disturbance caused by construction vehicles and equipment, including drilling rigs and vibratory pile drivers, could occur during construction. The likely effects on adults, fry and juveniles would be avoidance of habitat adjacent to the construction area. Effects, however, are not expected to rise to a level that result in injury to or direct mortality of adults, fry or juveniles.

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over waterways, may alter behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats or may make fish more visible to predators, thereby leading to increased mortality of fish, particularly fry and juveniles, through increased predation.

Physical disturbance and injury are most likely to occur during in-water work. Project actions that involve in-water work include placing steel casings in the wetted channel of Antelope Creek to support construction activities associated with widening of the East Roseville Viaduct and installing rock slope protection to protect the foundations, piers, and adjacent banks from erosion. Under all three build alternatives, placement of these materials could result in temporary disturbance of, injury to, or mortality of fish that come in contact with equipment or construction materials during their installation. Injury to or mortality of fry and juveniles from direct contact with humans or machinery would not be expected to occur from these activities on Antelope Creek because in-water construction would be limited to the dry season when adult and juvenile Chinook salmon would not be present. No in-water construction or related activities would occur on Miners Ravine and Secret Ravine under any build alternative; therefore, direct physical disturbance and injury of fish in these streams will be avoided.

Erosion and Mobilization of Sediment

Vegetation clearing, earthwork, equipment operation, and highway and bridge construction activities associated with all three build alternatives would result in disturbance of soil and streambanks, potentially resulting in temporary increases in suspended sediments (turbidity) and sedimentation in Antelope Creek, Miners Ravine, and Secret Ravine. Additional potential sources of sediment that could cause increases in turbidity and sedimentation include unstabilized slopes, construction staging areas, and access roads; uncovered stockpiles; and improperly maintained (cleaned) construction equipment and surface roads used by equipment and vehicles exiting construction areas.

Elevated levels of suspended sediments have the potential to result in physiological, behavioral, and habitat effects. The severity of these effects depends on the sediment concentration, duration of exposure, and sensitivity of the affected life stage. Short-term increases in turbidity and suspended sediment may disrupt normal behavior patterns of fish, potentially affecting foraging, rearing, and migration. The level of disturbance also may cause juveniles to abandon protective habitat or reduce their ability to detect predators, potentially increasing their vulnerability to predators (e.g., piscivorous birds and fish). Previous studies have documented these effects. For example, juvenile salmonids have been observed to avoid streams that are chronically turbid or move laterally or downstream to avoid turbidity plumes. Bisson and Bilby (1982) reported that juvenile coho salmon avoid turbidities exceeding 70 nephelometric turbidity units (NTUs). Chronic exposure to high turbidity and suspended sediment may affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress. Sigler et al. (1984) found that prolonged exposure to turbidities between 25 and 50 NTUs resulted in reduced growth and increased emigration rates of juvenile coho salmon and steelhead compared to controls. Increased sediment delivery also can smother aquatic invertebrates (a fish food item), degrade forage and spawning habitat by covering or degrading the quality of gravel riffles, and reduce cover for juvenile fish by filling-in pools and the interstitial spaces of gravel, cobble, and boulder substrates.

Hazardous Materials and Contaminants

The proposed project could involve the storage, use, or discharge of toxic and other harmful substances near streams and other waterbodies (or in areas that drain to these waterbodies) that could result in contamination of these waterbodies and potentially affect fish and other aquatic organisms. Potential impacts range from avoidance of the project site to mortality, which could occur through exposure to lethal concentrations of contaminants or exposure to non-lethal levels that cause physiological stress and increased susceptibility to other sources of mortality (e.g., predation and disease). Project activities that could result in the accidental or unintentional runoff or discharge of toxic materials and other harmful substances to streams include the following.

- Potential accidental spill of petroleum products
- Operation of vehicles and equipment in or adjacent to stream channels or drainages
- Storage of pavement, petroleum products, concrete, and other construction materials
- Discharge of water from construction areas
- Potential accidental spill of drilling lubricants
- Disturbance and mobilization of contaminants with adsorbed[1] metals

The operation of heavy equipment, drilling rigs, cranes, and other construction equipment in or near the stream can result in accidental spills and leakage of fuel, lubricants, hydraulic fluids, and coolants. Asphalt, wet concrete, and other construction materials used on roads, bridges, and culverts may fall directly into streams or enter streams in surface water runoff. Other sources of contaminants include the discharges from vehicle and concrete washout facilities. In addition, resuspension of sediments with adsorbed metals during in-water construction potentially could

[1] *Adsorption* is the adhesion of atoms, ions, or molecules from a gas, liquid, or dissolved solid to a surface, in this case a sediment particle.

lead to localized degradation of water quality and food resources. Resuspended particulate material also could be transported to downstream locations as a result of transport by flow, thus leading to potential degradation of water quality and food resources beyond the immediate construction area.

The potential magnitude of biological effects resulting from these accidental, unintentional, or intentional actions depends on a number of factors, including the proximity to the stream; the type, amount, concentration, and solubility of the contaminant; and the timing and duration of the discharge or channel disturbance. Contaminants can affect survival and growth rates, as well as the reproductive success of fish and other aquatic organisms. The level of effect depends on species and life stage sensitivity, duration and frequency of exposure, condition or health of individuals (e.g., nutritional status), and physical or chemical properties of the water (e.g., flow volume, temperature, and dissolved oxygen).

Loss of Aquatic Habitat

As described in Section 2.17, "Wetlands and Other Waters," all three build alternatives for the proposed project would result in the temporary and permanent loss of aquatic habitat area and volume in Antelope Creek, including potential foraging and rearing habitat for fry and juvenile fish. Installation of the two columns in Antelope Creek for the widened East Roseville Viaduct would result in the temporary and permanent loss of aquatic habitat (substrate and water column) equal to the cumulative area (substrate) and volume (water column) of the temporary casings and the permanent in-water columns. However, no temporary or permanent loss of spawning habitat area is anticipated because this segment of lower Antelope Creek is not likely to support suitable spawning habitat for salmonids based on the sandy substrate conditions that occur there. In addition, no disturbance to or loss of aquatic habitat (temporary or permanent) in Miners Ravine and Secret Ravine is anticipated because no in-water construction activities would occur in these streams.

Installation of steel casings to isolate the work area from the water column during center drilling and column construction would result in the temporary loss of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the in-water casings. Assuming that a total of two steel casings with a maximum diameter of 10 feet each is used, the steel casings would result in a maximum temporary loss of approximately 160 square feet (0.0036 acre) of substrate habitat and approximately 315 cubic feet of water column habitat.

Construction of the new columns for the viaduct would result in a net permanent loss of approximately 80 square feet (0.0018 acre) of substrate habitat and approximately 158 cubic feet of water column habitat. Affected substrate habitat consists primarily of sands and fines; no spawning gravels would be affected.

The temporary and permanent impact on the substrate and water column from constructing the new bridge piers in Antelope Creek would cause negligible long-term effects on rearing and foraging habitat for fry and juvenile fish because the amount of the habitat that would be permanently affected by the columns is small relative to the total available habitat.

Loss of SRA Cover

Undercut banks and overhead cover provide fish with protection from predators. In addition, canopy cover (overhanging vegetation) maintains shade that is necessary to reduce thermal input and provides an energy input to the stream in the form of fallen leaves and insects (a food source for fish). Riparian vegetation is also important in controlling stream bank erosion, contributing to instream structural diversity, and maintaining undercut banks. Under all three build alternatives, construction activities associated with vegetation removal, site preparation including grading and excavation for constructing columns (piers) for bridges and overpasses, and installation of platforms to support temporary falsework for constructing elevated structures would result in the removal of or damage to existing streamside woody riparian vegetation, including vegetation that contributes to overhead and instream SRA cover. Without appropriate mitigation, removal of streamside vegetation is likely to adversely affect salmonids because SRA cover is an essential component of rearing habitat that may limit production and abundance of salmonid populations in Antelope Creek, Miners Ravine, and Secret Ravine. Salmonid populations are highly influenced by the amount of available cover, and the amount of existing SRA cover in the BSA is variable. Figures 2.16-4a–h show the location of SRA cover habitat (overhead and instream cover) that occurs within the BSA on Antelope Creek, Miners Ravine, and Secret Ravine

Table 2.19-11 summarizes the impacts on overhead SRA cover vegetation by build alternative.

Table 2.19-11. Impacts on Overhead SRA Cover Vegetation in the Biological Study Area by Build Alternative

Creek/Reach	Alternative 1		Alternative 2		Alternative 3	
	Temporary (lf)	Permanent (lf)	Temporary (lf)	Permanent (lf)	Temporary (lf)	Permanent (lf)
Antelope Creek (Figures 2.16-4h, 2.16-5h, and 2.16-6h)	46	409	46	409	46	409
Miners Ravine (Figures 2.16-4a, 2.16-5a, and 2.16-6a)	0	0	37	76	36	24
Secret Ravine						
Reach 1 (Figures 2.16-4b, 2.16-5b, and 2.16-6b)	0	0	0	0	0	0
Reach 2 (Figures 2.16-4c, 2.16-5c, and 2.16-6c)	0	0	0	0	0	0
Reach 3 (Figures 2.16-4d, 2.16-5d, and 2.16-6d)	154	221	142	153	142	153
Reach 4 (Figures 2.16-4e, 2.16-5e, and 2.16-6e)	0	0	0	0	0	0
Reach 5 (Figures 2.16-4f, 2.16-4g, 2.16-5f, 2.16-5g, 2.16-6f and 10g)	266	119	0	148	0	148
Secret Ravine subtotal	*420*	*340*	*142*	*301*	*142*	*301*
Total	**466**	**749**	**225**	**786**	**224**	**734**

Riparian vegetation also may be adversely affected indirectly through shading and rain shadow effects created by constructed bridges and overpasses. Because riparian vegetation requires both

sunlight and moisture for growth and survival, significant interception of sunlight and precipitation may affect vegetation survival. The extent to which new structures may result in light and rain shadow effects depends on the width and height of the new structure above the existing vegetation and the orientation of the structure relative to the sun's path. Structures that are relatively narrow or are sufficiently elevated are likely to cause minimal, if any, adverse effect on plant growth and survival. Conversely, structures that are wide and low are more likely to intercept light and precipitation and adversely affect plant growth and survival, including to the point of excluding vegetation completely. In addition, vegetation occurring directly underneath but near the south side of elevated structures are likely to receive direct sunlight as a result of the low angle of the sun for at least part of the day, while vegetation north of elevated structures are likely to be shaded topographically for part or all of the day. Two locations within the BSA illustrate these conditions. The first example occurs on Miners Ravine where the I-80 bridge, which is low and wide, heavily shades the creek and creates a substantial rain shadow to the point of excluding all riparian vegetation. The other example occurs at the East Roseville Viaduct crossing of Antelope Creek, where the two moderately narrow, elevated structures allow sufficient light and precipitation to support various amounts of woody riparian vegetation directly under the spans and within the topographic shade created by these spans.

Increase in Overwater Structure

All three build alternatives for the proposed project would result in additional shading on Antelope Creek, Miners Ravine, and Secret Ravine because, following construction, the new and widened structures would completely shade the streams, including stream segments where existing gaps in the over-water riparian canopy allow sunlight to reach the water surface. Although stream productivity can be negatively affected by too much shade, the small amount of additional shade that would be created by the new and widened structures is expected to negligibly affect the overall stream productivity and may provide some small benefit to stream temperatures because overall shade levels would increase slightly. Structure shading also would offset the temporal loss of stream shading that would occur as a result of removing over-water vegetation during construction. Revegetation of the affected banks and other onsite areas following construction will replace affected shade, and likely will increase overall stream shade above current levels. The increase in stream shading associated with the new and widened over-water structures on Antelope Creek, Miners Ravine, and Secret Ravine would result in negligible long-term effects on stream productivity because the amount of the habitat that would be permanently shaded by these structures is small relative to the total stream area.

In addition, increased shading created by new and widened structures may affect the migration of salmonids. Within the Sammamish River, in Washington State, migrating adult salmon hold in shaded areas beneath bridges. Juvenile salmonids also prefer shaded areas created by bridges. The proposed elevated structures would generally allow ambient light levels to penetrate into the water and therefore would not negatively affect fish or fish habitat through significant increased shading of the stream.

Increase in Impervious Surfaces

The proposed project would result in added impervious surfaces in the Antelope Creek, Miners Ravine, and Secret Ravine watersheds, and ultimately in the Dry Creek watershed. The added impervious area has the potential to increase peak flow and runoff volume in receiving waters from the loss of natural ground cover and reduced infiltration of water into soil. This change

could subsequently lead to accelerated stream bed and bank erosion, loss of stream structure, increased sediment transport and deposition (turbidity and sedimentation effects), and increased flooding. In response to the increases in flow magnitude and frequency, stream channels could incise or widen, which could result in adding additional fine sediments to the stream from the resultant increases in channel bed and stream bank erosion. These changes could lead to long-term alterations to stream flow, temperature, and geomorphology, with long-term or permanent consequences for fish and their habitat.

The increase in impervious surfaces also could result in increased water pollutants in local streams. Increased traffic loads in the corridor could result in increased deposition of particulates onto roadway surfaces that are then transported to receiving waters with road runoff. Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons (PAHs) are common pollutants in road runoff and some of these pollutants can accumulate in stream sediments with lethal and sublethal consequences for fish and other aquatic species, particularly during “first flush” rain events. PAHs are organic compounds—containing only carbon and hydrogen—that occur in motor vehicle exhaust, petroleum products, materials associated with asphalt, and various other municipal and industrial sources. PAHs are widely distributed in the environment and are important environmental pollutants because of their carcinogenicity and tendency to bioaccumulate. PAHs are readily absorbed by fish and other aquatic organisms and, depending on concentration, can lead to lethal and deleterious sublethal effects in these organisms. PAHs tend to adsorb to any particulate matter, including fine sediment; therefore, relative concentrations of PAHs in aquatic ecosystems are generally highest in sediments, followed by aquatic biota and the water column. There is evidence that urban runoff containing roadway sediment may be an important PAH input to aquatic habitats and that a significant contribution to the PAH content of roadway sediment comes from materials associated with asphalt.

The project proponent would substantially reduce or eliminate the potential for hydromodification (modification of existing receiving water body hydrographs by increasing the flow volumes and rates and peak durations from the loss of unpaved overland flow and native infiltration) impacts by incorporating into the project design temporary construction site BMPs, design pollution prevention and erosion control BMPs, and treatment BMPs to promote infiltration of storm water runoff, maximize treatment of storm water runoff, and reduce erosion by metering or detaining post-project runoff from the roadway.

2.19.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect non-listed special-status animals. However, the No Build Alternative could result in indirect impacts on water quality relative to existing conditions from increased traffic congestion.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential permanent and temporary impacts on western spadefoot, Pacific pond turtle, burrowing owl, white-tailed kite,

northern harrier, purple martin, and Central Valley fall-/late fall–run Chinook salmon and their habitat that would be caused by all three build alternatives.

Install Fencing and/or Flagging to Avoid and Protect Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Please refer to the discussion of this measure in Section 2.16.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measures will mitigate for loss of SRA cover for Central Valley fall-/late fall–run Chinook salmon caused by all three build alternatives.

Compensate for the Temporary and Permanent Loss of Non-Wetland Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.

Compensate for the Permanent Loss of Oak Woodland

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measures will avoid, minimize, or mitigate potential permanent and temporary impacts on western spadefoot, Pacific pond turtle, and Central Valley fall-/late fall–run Chinook salmon and their habitat that would be caused by all three build alternatives.

Protect Water Quality and Minimize Sedimentation Runoff in Wetlands and Other Waters

Please refer to the discussion of this measure in Section 2.17.

Compensate for Temporary and Permanent Impacts on Wetlands

Please refer to the discussion of this measure in Section 2.17.

Compensate for Placement of Permanent Fill into Waters of the United States/Waters of the State

Please refer to the discussion of this measure in Section 2.17.

Implementation of the following measure will avoid and minimize potential impacts on western spadefoot and Pacific pond turtle that would be caused by all three build alternatives.

Provide Escape Ramps for Wildlife and Inspect Pits and Trenches Daily

To prevent inadvertent entrapment of western spadefoot during construction in grassland habitat under the East Roseville Viaduct, the construction contractor will provide all excavated, steep-walled holes, or trenches more than 6 inches deep with one or more escape ramps constructed of earth fill or wooden planks; and the biological monitor or a designated crew member will inspect these ramps prior to being filled to ensure that no wildlife are present. In the event that holes or pits cannot be ramped, they will be properly covered at night to prevent access by wildlife. Coverings may consist of wooden boards, metal plates, or tarps held down by soil or rocks, with no openings between the cover and the ground. The biological monitor or a designated construction crew member will inspect covered and open trenches and pits each morning and evening during construction to look for spadefoot or other wildlife that may have become trapped. It should be noted that spadefoot can fall into a trench or pit through the excavated wall of the trench/pit; therefore, these areas must be inspected daily, even if covered.

Implementation of the following measure will avoid and minimize potential impacts on Pacific pond turtle that would be caused by all three build alternatives.

Conduct a Pre-Construction Survey for Pacific Pond Turtle and Exclude Turtles from Work Area

To avoid and minimize impacts on Pacific pond turtles, the project proponent will retain a qualified wildlife biologist to conduct two separate pre-construction surveys: 2 weeks before, and within 48 hours of, disturbance in aquatic and upland habitats. The survey objectives are to determine the presence or absence of pond turtles in the construction work area and, if necessary, to allow time for successful trapping and relocation.

If possible, the surveys will be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day from 8:00 a.m. to 12:00 p.m. during spring, summer, and late summer). Prior to conducting presence/absence surveys, the biologist will locate the microhabitats for turtle basking (logs, rocks, and brush thickets) and determine a location to quietly observe turtles.

Each aquatic survey will include a 15-minute wait time after arriving on site to allow startled turtles to return to open basking areas. The survey will consist of a minimum 15-minute observation time per area where turtles could be observed. A survey of adjacent upland habitat also will be conducted to look for adult turtles and active nests.

If turtles are observed during a survey and they cannot be avoided, they will be either hand-captured or trapped and relocated outside the construction area to appropriate aquatic habitat by a biologist with a valid Memorandum of Understanding (MOU) from CDFW, and as determined during coordination with CDFW. Handling of a species of special concern requires authorization from CDFW through an MOU specific to project activities and will be obtained at the time of construction, as necessary. If an active turtle nest is found, the biologist will coordinate with CDFW to determine the appropriate avoidance measures.

Implementation of the following measure will avoid and minimize potential impacts on burrowing owl that would be caused by all three build alternatives.

Conduct Pre-Construction Surveys for Burrowing Owl and Establish Exclusion Zones, if Necessary

A qualified biologist will conduct two separate pre-construction surveys for burrowing owl: no less than 14 days prior to, and within 48 hours of, initiating ground-disturbing activities within suitable habitat. The pre-construction survey area will encompass the designated work area (including permanent and temporary impact areas) and a 500-foot buffer around this area where access is permitted. To the maximum extent feasible (i.e., where the construction footprint can be modified), construction activities within 500 feet of active burrowing owl burrows will be avoided during the nesting season (February 1 to August 31).

If an active burrow is identified near a proposed work area and work cannot be conducted outside of the nesting season (February 1 to August 31), a qualified biologist will establish a no-activity zone that extends a minimum of 250 feet around the burrow. If burrowing owls are present at the site during the non-breeding season (September 1 through January 31), a qualified biologist will establish a no-activity zone that extends a minimum of 150 feet around the burrow.

If the designated no-activity zone for breeding or non-breeding burrowing owls cannot be established, a wildlife biologist experienced in burrowing owl behavior will evaluate site-specific conditions and, in coordination with CDFW, recommend a smaller buffer (if possible) that still minimizes the potential to disturb the owls (and is deemed to still allow reproductive success during the breeding season). The site-specific buffer will consider the type and extent of the proposed activity occurring near the occupied burrow, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity to background activities.

If burrowing owls are present within the direct disturbance area and cannot be avoided during the non-breeding season (generally September 1 through January 31), passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. Passive relocation also may be used during the breeding season (February 1 through August 30) if a qualified biologist, coordinating with CDFW, determines through site surveillance that the burrow is not occupied by burrowing owl adults, young, or eggs. Passive relocation will be accomplished by installing one-way doors (e.g., modified dryer vents or other CDFW-approved method). The one-way doors will be left in place for a minimum of 1 week and will be monitored daily to ensure that the owls have left the burrow. The burrow will be excavated using hand tools, and a section of flexible plastic pipe (at least 3 inches in diameter) will be inserted into the burrow tunnel to maintain an escape route for any animals that may be inside the burrow.

Implementation of the following measure will avoid and minimize potential impacts on nesting white-tailed kite, northern harrier, and other migratory birds that would be caused by all three build alternatives.

Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Nesting Migratory Birds and Raptors

Vegetation removal will be conducted during the non-breeding season for migratory birds and raptors (generally between September 1 and February 28), to the extent feasible.

If construction activities (including vegetation removal) cannot be confined to the non-breeding season, the project proponent will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys before the start of construction. The migratory bird and raptor nesting surveys will be conducted in conjunction with the surveys previously identified for burrowing owl (*Conduct Pre-Construction Surveys for Burrowing Owl and Establish Exclusion Zones, if Necessary*) and will include a minimum of two separate surveys to look for active migratory bird and raptor nests. Surveys will include a search of all trees, shrubs, wetlands, and grassland vegetation that provide suitable nesting habitat in the construction area. In addition, a 500-foot area around the construction area will be surveyed for nesting raptors and tricolored blackbird, and a 100-foot area around the construction area will be surveyed for other song birds. Surveys should occur during the height of the breeding season (March 1 to June 1), with one survey occurring within 14 days prior to construction and the second survey occurring within 48 hours prior to the start of construction or vegetation removal. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the nest until the end of the breeding season (August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW, and will depend on the level of construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Implementation of the following measure will avoid and minimize potential impacts on purple martin and other structure-nesting migratory birds that would be caused by all three build alternatives.

Remove or Modify Existing Structures during the Non-Breeding Season for Purple Martin and Other Structure-Nesting Migratory Birds or Implement Exclusion Measures to Deter Nesting

To avoid impacts on nesting purple martins, swallows, and other structure-nesting migratory birds that are protected under the MBTA and the CFGC, the construction contractor will remove or modify existing structures after the conclusion of the bird nesting period (February 15 through August 31). A qualified biologist will monitor any active nests near the end of the breeding season to determine when nesting has concluded. Removal or modification of structures after the nesting period has concluded is strongly preferred; however, if this is not possible, the project proponent will implement the following avoidance measures.

- Prior to the start of each phase of construction, the project proponent will hire a qualified wildlife biologist to inspect any aerial structure that would be removed or modified during the non-breeding season (September 1 through February 14). If nests are found and are determined to be inactive (abandoned), they may be removed.
- After inactive nests are removed and prior to construction that would occur between February 15 and August 31, the undersides of the portion of the structure to be removed or modified will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing weep holes that would be removed or modified also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and PVC/ABS caps). All weep holes connected to the same girder recess area would require installation of exclusion material. A qualified wildlife management specialist experienced with installation of bird exclusion materials will be hired by the project proponent to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 15 and will be monitored by a qualified biologist throughout the breeding season (typically several times a week). The exclusion material will be anchored so that swallows cannot attach their nests to the structures through gaps in the net.
- Exclusion devices will be installed consistent with bat exclusion measures described below (*Conduct Pre-Construction Surveys for Roosting Bats and Implement Protection Measures*) and in a manner that does not entrap day-roosting bats.
- As an alternative to installing exclusion materials on a structure, the project proponent may hire a qualified biologist or qualified wildlife management specialist to remove nests as the birds construct them and before any eggs are laid. Visits to the site would need to occur daily throughout the breeding season (February 15 through August 31) as swallows can complete a nest in a 24-hour period.
- If exclusion material is not installed on structures prior to February 15 or manual removal of nests is not conducted daily and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and all nest use has been completed.
- If appropriate steps are taken to prevent swallows from constructing new nests as described above, work can proceed at any time of the year.

Implementation of the following measures will avoid and minimize potential impacts on roosting bats that would be caused by all three build alternatives.

Conduct Pre-Construction Surveys for Roosting Bats and Implement Protection Measures

Baseline data are not available or are limited on how bats use the BSA, their individual numbers, and how they vary seasonally. Bat species with potential to occur in the BSA use a variety of roosting strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as overcrossings and bridges. Daily and seasonal variations in habitat use are also common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within and adjacent to the construction area for each

phase of construction. If surveys determine that bats are roosting in the construction area, the protective measures described below will be implemented.

Conduct Pre-Construction Surveys at Bridges and Other Structures

Before work begins on the bridge/structure, qualified biologists will conduct a daytime search for bat sign and evening emergence surveys to determine whether the bridge/structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use the naked eye, binoculars, and a high-powered spotlight to inspect expansion joints, weep holes, and other bridge features that could house bats. Bridge surfaces and the ground around the bridge/structure will be surveyed for bat sign, such as guano, staining, and prey remains.

Qualified biologists also will conduct evening emergence surveys that will consist of at least one biologist stationed every 100 feet on each side of the bridge/structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. Night-vision goggles and/or full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections.

Because the structures proposed for removal as part of the proposed project are very high off the ground or span other roadways, prolonged monitoring with full-spectrum bat detectors will not be conducted. Acoustic detectors may be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection.

If suitable roost structures would be removed, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or used for hibernation.

Conduct Pre-Construction Tree Surveys

Prior to tree removal or trimming, qualified biologists will examine trees to be removed or trimmed for suitable bat roosting habitat. High-value habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, and larger snags,) will be identified, and the area around these features will be searched for bats and bat sign (e.g., guano, culled insect parts, and staining). Riparian forest and stands of mature broadleaf trees should be considered potential habitat for solitary foliage-roosting bat species.

If a bat sign is detected, biologists will conduct evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights within the season that construction would be taking place. Methods should follow that described above for the bridge emergence surveys.

Additionally, if suitable tree roosting habitat is present, acoustic monitoring with a bat detector will be used to assist in determining the species present. A minimum of 3 nights of acoustic monitoring surveys will be conducted within the season that construction would be taking place.

If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and will submit a report with the results of the surveys to CDFW.

Identify Protective Measures for Bats Using Bridges/Structures and Trees

If it is determined that bats are using bridge/structures or trees within or adjacent to the construction area as roost sites, the project proponent (or their designated contractor) will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include, but are not limited to the following.

- If feasible, tree removal/trimming and removal or modification of structures containing an active roost will be avoided between April 15 and September 15 (the maternity period) to avoid impacts on reproductively active females and dependent young.
- If a non-maternity roost is located within a structure that would be removed or modified in a manner that would expose the roost, bats will be excluded from the bridge by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.
- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.
- If avoidance of non-maternity roost trees is not possible, tree removal or trimming will be monitored by a qualified biologist. Prior to removal/trimming, the tree will be gently shaken, and several minutes should pass before cutting down trees or trimming limbs to allow bats time to arouse and leave the tree. The tree then will be removed in pieces, rather than cutting down the entire tree. The biologists will search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW.

Implementation of the following measures will avoid and minimize potential impacts on Central Valley fall-/late fall–run Chinook salmon that would be caused by all three build alternatives.

Limit All In-Channel Construction Activities to the June 15 to October 15 Period

All in-channel construction will take place between June 15 and October 15, unless earlier or later dates for in-channel construction activities are approved by CDFW and NMFS. *In-channel construction* is defined as creek bank and channel bed construction below the ordinary high water mark, including excavation and grading activities. By requiring construction contractors to

adhere to these dates for in-channel construction, project effects on sensitive life stages of Chinook salmon and Central Valley steelhead will be minimized.

Prevent Temporary Lighting from Directly Radiating on Water Surfaces of Antelope Creek, Miners Ravine, and Secret Ravine during Nighttime Construction

The effects of lighting on fish will be minimized by the following actions.

- Avoiding construction activities at night, to the extent practicable.
- Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas.
- Shielding and focusing lights on work areas and away from water surfaces.

2.19.5 References Cited

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2.19.5.1 Personal Communications

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