

2.20 Threatened and Endangered Species

2.20.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the federal ESA (16 USC Section 1531 et seq.). See also 50 CFR 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of the ESA, federal agencies, such as the FHWA, are required to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. *Critical habitat* is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a No Effect finding. Section 3 of the ESA defines *take* as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, CESA (CFGC Section 2050 et seq.). CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. CFGC Section 2081 prohibits take of any species determined to be an endangered species or a threatened species. *Take* is defined in CFGC Section 86 as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by CDFW. For species listed under both ESA and CESA requiring a Biological Opinion under Section 7 of the ESA, CDFW also may authorize impacts on CESA species by issuing a Consistency Determination under CFGC Section 2080.1.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (1) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983; and (2) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.20.2 Affected Environment

This section is based on the *Natural Environment Study Report* (ICF International 2014) prepared for the project and the USFWS lists of threatened endangered species for the project

region (included in Appendix F). The *Natural Environment Study Report* is available on the project website at <http://8065interchange.org/>.

Three federally-listed species (valley elderberry longhorn beetle [VELB], vernal pool fairy shrimp, and Central valley steelhead) and two state-listed species (Swainson's hawk and tricolored blackbird) could occupy the BSA based on the presence of suitable habitat. Each of these species is discussed below.

Suitable habitat is present for vernal pool tadpole shrimp within the BSA; however, this species has not been documented in the vicinity of the proposed project even though extensive surveys have been conducted within vernal pool habitats throughout the Roseville, Rocklin, and southern Lincoln areas. Inter-agency consultation with NMFS and USFWS under Section 7 of the ESA is required for potential effects of the proposed project on Central Valley steelhead (including designated critical habitat) (NMFS), valley elderberry longhorn beetle (USFWS), and vernal pool fairy shrimp (USFWS).

Because the project's effects are well understood, to date, there has been no ESA consultation with USFWS for the proposed project. A BA was prepared and submitted by Caltrans to USFWS on April 24, 2015 in order to initiate ESA consultation and request a determination on the effects of the project on VELB and vernal pool fairy shrimp.

Caltrans has begun informal consultation with NMFS. An essential fish habitat (EFH) assessment was prepared for NMFS jointly with documentation to address potential effects on Pacific salmon fisheries (specifically, Chinook salmon). Caltrans submitted the documentation to NMFS on April 24, 2015 in order to initiate ESA consultation and request the agency's determination on the effects of the project.

2.20.2.1 Valley Elderberry Longhorn Beetle

The VELB is a federally listed threatened species. The range of the beetle extends throughout the Central Valley of California and associated foothills, from the 3,000-foot-high contour in the east foothills, through the valley floor to the watershed of the Central Valley in the west foothills. The beetle often is associated with various riparian plant species, such as Fremont's cottonwood, California sycamore, willow, and oak.

Elderberry shrubs are the host plant for VELB and are a common component of the remaining riparian forests and grasslands of the Central Valley and adjacent foothills. Elderberry shrubs are also common in upland habitats. Field surveys have found that adult VELB feed on elderberry foliage and perhaps flowers, and are present from March through early June. During this time, the adults mate. The females lay their eggs, either singly or in small clusters, in bark crevices or at the junction of stem and trunk or leaf petiole and stem. After hatching, a larva burrows into the stem of the elderberry, where it creates a feeding gallery within the pith of the stem. The larvae develop for 1 to 2 years within the pith and, before pupating, they chew through the inner bark and then return inside the stem plugging the hole with chewed bark (frass plug). The larvae then metamorphose into a pupae and chew through the frass plug to emerge as adult beetles. Adult beetles live for a few days to a few weeks. Studies of the spatial distribution of occupied shrubs suggest that the beetle is a poor disperser.

Five elderberry shrubs were identified in the BSA during a July 2014 elderberry shrub survey (Table 2.20-1). One shrub (Shrub 1) is located under the existing East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c). Three shrubs (Shrubs 2, 3 and 4) are located between Miners Ravine and an existing bike path south of Eureka Road (Figures 2.16-1a, 2.16-2a, 2.16-3a). The remaining shrub (Shrub 5) is located along China Garden Road at the northeast end of the proposed project (Figures 2.16-1d, 2.16-2d, and 2.16-3d). VELB has potential to occur in elderberry shrubs with stems sized 1 inch or greater in diameter at ground level.

Table 2.20-1. Summary of Stem Counts for Elderberry Shrubs in the Biological Study Area

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Comments
			1–3 Inches	3–5 Inches	>5 Inches	
1	Yes	No	10	0	1	Large trunk 20 inches diameter; canopy about 20 feet; many smaller stems less than 1 inch diameter; exit holes old.
2	No	Yes	0	0	1	Large trunk about 18 inches diameter; canopy about 12 feet; under alder tree next to bike path at top of creek bank.
3	No	Yes	2	1	2	Grouping of shrubs with canopy 40 feet by 20 feet; growing with willow on creek bank.
4	No	Yes	6	2	3	Canopy is 30 feet by 20 feet; east of a large cottonwood within blackberry thicket.
5	No	No	0	0	0	Shrub was burned in summer 2014 and no stems appear to be alive; however, shrub could grow back prior to construction.

2.20.2.2 Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp is a federally listed threatened species. The species is found from Shasta County in the north throughout the Central Valley, and west to the central Coast Ranges, at elevations of 30 to 4,000 feet. Additional populations have been reported from the Agate Desert region of Oregon near Medford; and disjunct populations occur in San Luis Obispo, Santa Barbara, and Riverside Counties. However, most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges.

Vernal pool fairy shrimp inhabit vernal pools that form in depressions, usually in grassland habitats. Pools must remain inundated long enough for the species to complete its life cycle. Vernal pool fairy shrimp has the shortest time to reach sexual maturity, with a minimum of 18 days. Vernal pool fairy shrimp also occur in other wetlands that provide habitat similar to vernal pools, such as alkaline rain pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stock ponds, vernal swales, and some seasonal wetlands. Occupied wetlands range in size from as small as several square feet to more than 10 acres. Vernal pool fairy shrimp and other fairy shrimp have been observed in artificial depressions and drainages where water ponds for a sufficient duration. Examples of such areas include roadside ditches and ruts left behind by off-road vehicles or heavy equipment. Soil compaction from construction activity can sometimes create an artificial hardpan, or restrictive layer, which allows water to pond and form suitable habitat for vernal pool fairy shrimp.

The proposed project is within the current range of vernal pool fairy shrimp. Based on the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*, the BSA lies within the Southeastern Sacramento Valley vernal pool region but is not within the Western Placer County core area or within designated critical habitat (70 FR 46924, August 11, 2005). Vernal pools within the BSA represent potential habitat for vernal pool fairy shrimp and are located within the northern and southern off-ramps from SR 65 to Galleria Boulevard/Stanford Ranch Road (Figures 2.16-1e, 2.16-2e, and 2.16-3e) and along the railroad right-of-way south of the SR 65 overpass (Figures 2.16-1c, 2.16-2c, and 2.16-3c).

Three previously documented occurrences for vernal pool fairy shrimp are within 1 mile of the BSA. These records are for natural and created vernal pools located southwest of SR 65 within the Highland Reserve South Open Space Areas.

2.20.2.3 Swainson's Hawk

Swainson's hawk is a state-listed threatened species. Swainson's hawks forage in grasslands, grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Vineyards, orchards, rice, and cotton crops are generally unsuitable for foraging because of the density of the vegetation. The majority of Swainson's hawks winter in South America, although some winter in the United States. Swainson's hawks arrive in California in early March to establish nesting territories and breed. They usually nest in large, mature trees. Most nest sites (87 percent) in the Central Valley are found in riparian habitats, primarily because trees are more available there. Swainson's hawks also nest in mature roadside trees and in isolated trees in agricultural fields or pastures. The breeding season is from March through August.

Within the BSA, potential nesting habitat for Swainson's hawk is associated with riparian forest and oak woodlands along Antelope Creek, Miners Ravine, and Secret Ravine. The closest documented Swainson's hawk nest sites are located approximately 4 miles west of the BSA along Pleasant Grove Creek and Kaseberg Creek, both within riparian habitat. Annual grassland in the BSA is patchy and provides marginal foraging habitat for Swainson's hawk. Swainson's hawks would not be expected to forage under the existing East Roseville Viaduct. No Swainson's hawks were observed in the BSA during the 2012 and 2014 wildlife surveys.

2.20.2.4 Tricolored Blackbird

Tricolored blackbird was emergency listed under CESA by the California Fish and Game Commission on December 3, 2014. The CDFW has 180 days to review an October 8, 2014 petition to list the tricolored blackbird filed by the Center for Biological Diversity and determine if formal listing is warranted. During the 180-day review period, which could be extended for an additional 180 days, the species will be fully protected under CESA. Tricolored blackbirds are also protected under the MBTA and CFGC Section 3503.5.

Tricolored blackbird is a highly colonial species that is largely endemic to California. Tricolored blackbird breeding colony sites require open, accessible water; a protected nesting substrate, including either flooded, thorny, or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony. Tricolored blackbird breeding colonies occur in freshwater marshes dominated by tules and cattails, in Himalayan blackberries

(*Rubus armeniacus*), and in silage and grain fields. The breeding season is from late February to early August. Tricolored blackbird foraging habitats in all seasons include annual grasslands, dry seasonal pools, agricultural fields (such as large tracts of alfalfa with continuous mowing schedules, and recently tilled fields), cattle feedlots, and dairies. Tricolored blackbirds also forage occasionally in riparian scrub habitats and along marsh borders. Weed-free row crops and intensively managed vineyards and orchards do not serve as regular foraging sites. Most tricolored blackbirds forage within 3 miles of their colony sites, but commute distances of up to 8 miles have been reported.

The emergent wetland and riparian forest/shrub wetland that occur along Antelope Creek within the BSA represents potential nesting habitat for tricolored blackbirds. The closest known nesting colony was documented in 2014 on Orchard Creek, approximately 5 miles northwest of the BSA. No tricolored blackbirds were observed in the BSA during the 2012 and 2014 wildlife surveys.

2.20.2.5 Central Valley Steelhead Distinct Population Segment

The Central Valley steelhead distinct population segment (DPS) was listed as threatened by the NMFS on March 19, 1998 (63 FR 13347). On January 5, 2006, NMFS issued a final listing determination reaffirming the threatened status of Central Valley steelhead (71 FR 834); at the same time, NMFS also adopted the term DPS, in place of Evolutionarily Significant Unit (ESU), to describe Central Valley steelhead and other population segments of this species. Central Valley steelhead include populations in the Sacramento River downstream of Keswick Reservoir and its large tributaries downstream of impassable dams, and the small, perennial tributaries of the Sacramento River; the San Joaquin River and its large tributaries downstream of the Merced River, inclusive; and the Sacramento-San Joaquin River Delta. NMFS issued the final rule designating critical habitat for Central Valley steelhead on September 2, 2005 (70 FR 52488). Central Valley steelhead are not listed under CESA but are designated as a California Species of Special Concern.

Steelhead, a sea-run rainbow trout, exhibit one of the most complex life histories of any salmonid (trout or salmon) species. Steelhead are capable of having an anadromous (sea-run) life history or a freshwater residency. Resident individuals are typically referred to as rainbow trout, and anadromous individuals are called steelhead. Currently, only winter (ocean-maturing) steelhead occur in the Central Valley drainages, although summer steelhead may have been present historically.

Historical records indicate that adult steelhead enter the Sacramento River in July, with peak in abundance in September and October, and continue migrating through February or March. Within Dry Creek and its tributaries, migration is dependent upon adequate flow and suitable water temperature that usually occurs following storms in October and November. Generally, spawning occurs from December through March or April. Adult steelhead spawn in relatively high-gradient reaches of tributary rivers and require streams with cool, clean, well oxygenated water and suitably sized spawning gravel that is generally free of fine sediments. Unlike Pacific salmon, some adult steelhead may survive to spawn more than one time, returning to the ocean between spawning migrations.

In the Central Valley, juvenile steelhead typically spend 1 to 3 years in fresh water before emigrating to the ocean. Juveniles require year-round flows, suitable water temperatures, adequate cover, and abundant food to support growth and survival to the smolt stage. Summer rearing habitat consisting of pools, cool, well oxygenated water, and sufficient cover often is cited as a major limiting factor for juvenile steelhead in California streams when one or more of these habitat conditions is absent. Juvenile Central Valley steelhead feed primarily on drifting aquatic organisms and terrestrial insects, and occasionally on active benthic invertebrates.

Various fisheries surveys conducted by CDFW indicate that steelhead are currently present in the Dry Creek watershed, but that spawning and rearing primarily occur upstream of the BSA. The occurrence of steelhead in the CDFW survey results are consistent with species' thermal tolerances and measured water temperatures for lower Miners Ravine and Secret Ravine. For example, CDFW recorded mean daily summer water temperatures in excess of the 77°F thermal maximum limit for steelhead in the lower reaches of Miners Ravine and Secret Ravine where no steelhead were detected. Similarly warm water temperatures also were measured by ICF biologists conducting SRA cover habitat mapping surveys in the BSA along Miners Ravine and Secret Ravine (Table 2.20-2).

Steelhead were once abundant in Central Valley drainages. However, population numbers have declined significantly in recent decades. Many of the same factors affecting the distribution and abundance of Chinook salmon have also affected Central Valley steelhead populations.

Table 2.20-2. Instantaneous Water Temperature Measurements on Antelope Creek, Miners Ravine, and Secret Ravine on Select Dates in July and August 2014

Creek	Location	Date/Time	Temperature (°F)
Antelope Creek	Immediately downstream of SR 65 viaduct	August 4, 2014/15:30	72.5
Miners Ravine	Eureka Road off-ramp	July 28, 2014/09:38	72
Secret Ravine	Behind Sutter Hospital	July 28, 2014/14:53	80
	Adjacent to I-80/Taylor Road off-ramp	August 4, 2014/10:00	71
	Adjacent to SR 65 interchange	August 12, 2014/13:20	76.5
		September 16, 2014/12:10	70.5

Based on their steelhead catch and water temperature data, CDFW concluded that lower Miners Ravine and Secret Ravine, including Dry Creek, need to be protected and improved for seasonal rearing and migration of steelhead. Based on the data presented above, it is unlikely that summer rearing of juvenile steelhead is supported in lower Miners Ravine and Secret Ravine within the BSA. The limited data for Antelope Creek makes it difficult to determine whether steelhead use this watershed. However, given the known occurrence of steelhead in the upper reaches of Miners Ravine and Secret Ravine, it is possible that steelhead also use the upper reaches of this watershed. Based on the generally poor habitat conditions observed in lower Antelope Creek, it is also unlikely that summer rearing of juvenile steelhead is supported within the BSA on Antelope Creek.

2.20.3 Environmental Consequences

2.20.3.1 Build Alternatives

Each of the build alternatives could directly or indirectly affect a threatened or endangered species. Impacts of each alternative are discussed below by species.

As discussed above under Section 2.20.2, “Affected Environment,” suitable habitat is present for vernal pool tadpole shrimp within the BSA; however, this species has not been documented in the vicinity of the proposed project based on extensive survey efforts by others. Therefore, the proposed project is not likely to adversely affect vernal pool tadpole shrimp.

Valley Elderberry Longhorn Beetle

Proposed project activities associated with roadway and bridge construction would result in the loss or disturbance of elderberry shrub(s) that could contain VELB larvae or adults.

Direct impacts on VELB include removal or transplantation of elderberry shrubs within 20 feet from the limits of disturbance. Indirect impacts could result from construction activities within 100 feet of elderberry shrubs and may include removal of associated riparian plants that provide protection to elderberry shrubs, dust accumulation or asphalt residue on shrubs from paving and bridge construction activities that could affect the ability of VELB to forage and deposit eggs, and application of water that attracts argentine ants that prey on VELB. Excavation and grading in the vicinity of an elderberry shrub also could damage the root system, resulting in subsequent death of the shrub.

Table 2.20-3 summarizes the direct and indirect impacts on VELB by build alternative.

Table 2.20-3. Impacts on VELB by Build Alternative

Impact	Alternative 1 # Shrubs (# Stems)	Alternative 2 # Shrubs (# Stems)	Alternative 3 # Shrubs (# Stems)
Elderberry shrubs directly affected	2 (10, 0, 1)	2 (10, 0, 1)	2 (10, 0, 1)
Elderberry shrubs indirectly affected	3 (8, 3, 6)	3 (8, 3, 6)	3 (8, 3, 6)

Note: Elderberry shrubs within the limits of disturbance (permanent and temporary impact area) and up to 20 feet from the limits of disturbance were considered directly affected. Elderberry shrubs greater than 20 feet but less than 100 feet from the limits of disturbance were considered indirectly affected. Total impacts on elderberry stems for each alternative are shown in parentheses as (1–3 inches, 3–5 inches, >5 inches).

Permanent loss of suitable and potentially occupied habitat for VELB is considered an adverse impact on the species because VELB larvae or adults could be killed during the removal of an elderberry shrub. Therefore, the proposed project is likely to adversely affect VELB.

Vernal Pool Fairy Shrimp

Based on the lack of survey data for the BSA and because several records for vernal pool fairy shrimp have been documented within 1 mile of the proposed project, it was determined that vernal pool fairy shrimp may occur in suitable habitat (vernal pools) within the BSA. For purposes of this impact analysis, vernal pools in the BSA that support suitable habitat characteristics are presumed to be occupied by vernal pool fairy shrimp. Interchange

improvements at Galleria Boulevard/Stanford Ranch Road and construction on the East Roseville Viaduct would result in direct and indirect impacts of potentially occupied vernal pools within the project footprint.

Direct impacts that result in direct modification (i.e., permanent or temporary fill or excavation) of vernal pools in the BSA could result in the subsequent loss of vernal pool fairy shrimp and their eggs. Additionally, vernal pools within 250 feet of project construction may be indirectly affected. Construction activities such as excavation, grading, paving, or stockpiling of soil could result in indirect effects on vernal pool fairy shrimp by altering the suitability of nearby habitat. Runoff of sediment, gasoline, oil, or other contaminants may result in degradation of water quality within suitable habitat. Changes in hydrology also may reduce the suitability of habitat by altering the hydroperiod of vernal pools and swales.

Three vernal pools are outside the limits of an existing access route that would be used during construction and more than 250 feet south of the East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c). These pools were not considered to be directly or indirectly affected by the proposed project because no ground disturbance is proposed during use of this access route. One large vernal pool is present south of the East Roseville Viaduct and within 250 feet of proposed construction on the viaduct; this pool could be indirectly affected.

Table 2.20-4 summarizes the impacts on vernal pool fairy shrimp habitat by build alternative.

Table 2.20-4. Impacts on Vernal Pool Fairy Shrimp by Build Alternative

Impact	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)
Vernal pools directly affected	0.043	0.043	0.043
Vernal pools indirectly affected	0.351	0.351	0.351

Note: Vernal pools partially or entirely within the limits of disturbance (permanent and temporary impact area) were considered directly affected. Vernal pools within 250 feet of the limits of disturbance were considered indirectly affected.

Permanent loss of suitable and potentially occupied habitat for vernal pool fairy shrimp is considered an adverse impact on the species because individual cysts or eggs could be destroyed. Therefore, the proposed project is likely to adversely affect vernal pool fairy shrimp.

Swainson's Hawk

Construction activities associated with roadway improvements within or near oak woodland and riparian forest habitats could disturb an active Swainson's hawk 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 Swainson's hawk nest would violate CESA, the MBTA, and CFGC Section 3503.5, and would be considered an adverse impact.

Roadway construction also could result in indirect impacts on Swainson's hawk through temporary and permanent loss of grassland that provides suitable foraging habitat. Because only a small amount of permanent foraging habitat loss would be associated with each of the build alternatives, the proposed project is not expected to substantially decrease the available foraging

habitat for locally nesting Swainson’s hawks and would not adversely affect foraging Swainson’s hawks.

Table 2.20-5 summarizes the impacts on Swainson’s hawk by build alternative.

Table 2.20-5. Impacts on Swainson’s Hawk 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 Swainson’s hawk, nesting habitat consists of oak woodland and riparian forest, and foraging habitat consists of annual grassland (excluding areas beneath the existing viaduct).

Tricolored Blackbird

Construction activities associated with roadway improvements within emergent wetland and riparian shrub wetland habitat could disturb an active tricolored blackbird nest, if present in or near the construction area, and would be considered an adverse effect. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a tricolored blackbird nest would violate CESA if the species is still emergency listed or is formally listed as threatened or endangered under CESA at the time of construction. Loss of tricolored blackbird eggs or young would also violate the MBTA and CFGC Section 3503.5.

Table 2.20-6 summarizes the impacts on tricolored blackbird by build alternative.

Table 2.20-6. Impacts on Tricolored Blackbird by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting habitat	0.375	0.120	0.375	0.120	0.375	0.120
Foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

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

Central Valley Steelhead

Project impacts on Central Valley steelhead 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 as discussed for Chinook salmon (Section 2.19.3.1). However, juvenile steelhead may be at higher risk of exposure to construction-related impacts than Chinook salmon because of their potential year-round occurrence (unlike juvenile Chinook salmon which emigrate to the ocean within a few months after emerging from the gravels, juvenile steelhead rear 1 or more years in freshwater before emigrating to the ocean).

Of greatest concern would be the potential exposure of juvenile steelhead to project effects during summer when environmental conditions (e.g., low flow, elevated water temperature, increased competition for food and space, and reduced availability of food resources) generally are more stressful for juvenile steelhead, compared to other times of the year. However, potential effects on Central Valley steelhead would be avoided and minimized by implementing the measures discussed to avoid and minimize project effects to Chinook salmon (Section 2.19.3.1). Therefore, the proposed project is not likely to adversely affect Central Valley steelhead.

Central Valley Steelhead Critical Habitat

Miners Ravine and Secret Ravine within the BSA are included in the designated critical habitat for Central Valley steelhead (70 FR 52627, September 2, 2005). The primary constituent elements of critical habitat in the BSA include freshwater spawning habitat and freshwater rearing habitat with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of steelhead. Critical habitat for Central Valley steelhead in the BSA includes the lateral extent of the channel up to the ordinary or mean high water elevation.

The project may affect, but is not likely to adversely affect Central Valley steelhead designated critical habitat. Impacts on critical habitat of Central Valley steelhead include temporary effects on the water column (water quality and shade impacts) and temporary and permanent loss of overhead SRA cover vegetation. These impacts would be the same as those discussed for Chinook salmon (Section 2.19.3.1).

Essential Fish Habitat

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect EFH. Important components of EFH are substrate; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity.

EFH for fall-run Chinook salmon could be affected by any of the proposed build alternatives. Impacts on Chinook salmon EFH would be similar to the impacts discussed for the species (Section 2.19.3.1).

The following environmental conditions could affect Chinook salmon EFH.

- Sedimentation and turbidity
- Hazardous materials and contaminants
- Temporary and permanent loss of SRA cover

Effects associated with sedimentation and turbidity, hazardous materials and contaminants, and SRA cover loss on Chinook salmon EFH would be temporary. Potential adverse effects of increased fine sediment and turbidity on EFH will be avoided or minimized through implementation of all applicable BMPs. The potential environmental effects of the project to EFH would be limited to temporary, localized, and minor increases in turbidity and suspended sediment.

The proposed project would adversely affect EFH; however, the effects would be temporary and small relative to the EFH available.

2.20.3.2 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 threatened and endangered species. However, the No Build Alternative could result in indirect impacts on water quality relative to existing conditions from increased traffic congestion.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential direct and indirect impacts on VELB, vernal pool fairy shrimp, Swainson's hawk, tricolored blackbird, and Central Valley steelhead 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 measure will mitigate potential direct and indirect impacts on Swainson's hawk and Central Valley steelhead and their habitat that would be caused by all three build alternatives.

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

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

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on vernal pool fairy shrimp, tricolored blackbird, and Central Valley steelhead 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.

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on VELB and their habitat that would be caused by all three build alternatives.

Establish a Minimum 20-Foot-Wide Buffer around the Elderberry Shrub

In conjunction with the measure to *Install Fencing and/or Flagging to Protect Sensitive Biological Resources* (see Section 2.16), the project proponent will ensure that a minimum 4-foot-tall, orange plastic mesh-type construction fence (Tensor Polygrid or orange sediment control fencing) will be installed at least 20 feet from the dripline of elderberry shrubs that are located within the project area. Where the existing bike path restricts placement of the exclusion fencing, the fencing will be placed at the edge of the existing pavement. This fencing is intended to prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist, with the goal of protecting habitat for VELB. The fencing will be strung tightly on posts set at a maximum interval of 10 feet. The fencing will be installed in a manner that prevents equipment from enlarging the work area beyond what is necessary to complete the work. The fencing will be checked and maintained weekly until all construction is completed. This buffer zone will be marked by a sign stating:

This is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

No construction activity, including grading, will be allowed until this condition is satisfied. The fencing and a note reflecting this condition will be shown on the construction plans and specifications.

Transplant Elderberry Shrubs That Cannot Be Avoided or Implement Dust Control Measures during Construction

Elderberry shrubs growing within 20 feet of proposed construction will require transplanting prior to any ground-disturbing activities. In the event that elderberry shrubs can be retained onsite but occur within 20 feet of proposed construction activities, dust control measures will be required to minimize direct and indirect effects on these shrubs. One of the following measures will be implemented for each elderberry shrub that occurs within 20 feet of proposed construction activities.

- All elderberry shrubs that occur within areas requiring vegetation removal will be transplanted to a USFWS-approved conservation area in accordance with the *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 1999). These elderberry shrubs will be transplanted when they are dormant (after they lose their leaves), in the period starting approximately in November and ending in the first 2 weeks of February. A qualified specialist familiar with elderberry shrub transplantation procedures

will supervise the transplanting. The location of the conservation area transplantation site will be approved by USFWS before removal of the shrubs.

OR

- If it is determined that elderberry shrubs can be avoided but that construction activities will occur within 20 feet of the shrubs, dust control measures (e.g., application of water to graded and disturbed areas that are unvegetated and covering of soil piles) will be implemented in the vicinity of the shrub. To further minimize effects associated with dust accumulation, the elderberry shrubs will be covered by a protective cloth (i.e., burlap) during all ground-disturbing activities occurring within 20 feet of the shrubs. The cloth will be removed daily and immediately after ground-disturbing activities are completed. In addition, temporary construction fencing will be placed around the dripline of the elderberry shrubs (consistent with the measure described earlier to *Establish a Minimum 20-Foot-Wide Buffer around the Elderberry Shrub*) before the start of construction activities to ensure that the shrub is not inadvertently removed.

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat

The project proponent will compensate for direct effects (including transplanting) on all elderberry stems measuring 1 inch or more at ground level (i.e., VELB habitat) that are located within 20 feet of construction activities. Compensation will include planting replacement elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio = new plantings to affected stems), depending on the diameter of the stem at ground level, the presence or absence of exit holes, and whether the shrub is located in riparian habitat (U.S. Fish and Wildlife Service 1999).

Mitigation credits for VELB can be purchased at a USFWS-approved mitigation bank, or an onsite or offsite conservation area can be established and a management plan can be developed in accordance with the *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 1999). The exact amount and location of compensatory mitigation will be based on consultation with USFWS.

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on vernal pool fairy shrimp and their habitat that would be caused by all three build alternatives.

Avoid and Minimize Potential Indirect Impacts on Vernal Pool Fairy Shrimp Habitat

The following avoidance and minimization efforts will be implemented prior to and during construction to protect vernal pool fairy shrimp habitat outside the project footprint.

- Ground disturbance within 250 feet of suitable vernal pool fairy shrimp habitat (i.e., vernal pools) will be avoided from the first day of the first significant rain (1 inch or greater) until June 1, or until suitable wetlands remain dry for 72 hours and no significant rain is forecast on the day of such ground disturbance.

- Consistent with the measure to *Install Fencing and/or Flagging to Protect Sensitive Biological Resources* (see Section 2.16), a qualified biologist will guide the installation of exclusion fencing prior to the start of ground-disturbing activities (including staging and grading). The exclusion fencing will be installed along the edge of the construction limits and in a manner that minimizes disturbance of adjacent wetlands. The exclusion fencing will consist of orange construction barrier and erosion control fencing or combination fencing, and will be installed by the project proponent or its construction contractor.
- No herbicide will be applied within 100 feet of aquatic habitat, except when applied to cut stumps or frilled stems, or injected into stems. No broadcast applications will be used.

Compensate for Direct and Indirect Impacts on Vernal Pool Fairy Shrimp Habitat

The project proponent will compensate for direct impacts on vernal pools at a 2:1 preservation and 1:1 restoration/creation, and will compensate at a 2:1 preservation for indirect impacts on vernal pools (within 250 feet of ground disturbance). The exact acreage and location of compensatory mitigation will be based on final revisions to the project design and consultation with USFWS in compliance with the ESA. Compensatory mitigation can be accomplished through one or a combination of the following options.

- Purchase the appropriate number and type of habitat credits at a USFWS-approved mitigation bank or conservation area.

OR

- Establish a conservation easement on a parcel(s) containing a sufficient amount of existing and restored vernal pool fairy shrimp habitat and adaptively manage the mitigation lands consistent with the most current information on vernal pool fairy shrimp habitat requirements.

Implementation of the following measures will avoid and minimize potential direct and indirect impacts on Swainson's hawk and tricolored blackbird that would be caused by all three build alternatives.

Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Swainson's Hawk

Tree removal will be conducted during the non-breeding season for Swainson's hawk (generally between September 1 and February 28), to the extent feasible.

If construction activities (including tree removal) cannot be confined to the non-breeding season, a qualified wildlife biologist with knowledge of Swainson's hawk to conduct nesting surveys will be retained before the start of construction.

Surveys will be conducted by a qualified biologist no more than 1 month prior to ground disturbance that is to occur during the nesting season (March 1 through August 31). Surveys will be conducted in accordance with the Swainson's Hawk Technical Advisory Committee's methodology (May 31, 2000) or according to updated methodologies issued by CDFW.

According to current guidelines, the biologist will use binoculars during the survey to inspect all large trees and then document whether Swainson’s hawk nests occur onsite. If surveys conclude that Swainson’s hawk nests occur, and are occupied, the project will adopt the following minimization measures.

- During the nesting season (March 1 through August 31), project activities within 1,000 feet of occupied nests or nests under construction will be prohibited to prevent nest abandonment. If site-specific conditions or the nature of the activity indicate that a smaller buffer could be used, the biologist and the project proponent will coordinate with CDFW to determine the appropriate buffer size.
- If young fledge prior to September 1, project activities can proceed normally. A qualified biologist will survey the nest to establish whether the young have fledged prior to September 1.
- Nest trees will not be removed, if feasible. If a nest tree (any tree that has an active nest in the year the impact is to occur) must be removed, tree removal will occur only between September 1 and February 28.

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

Please refer to the discussion of this measure in Section 2.19.

Implementation of the following measures will avoid and minimize potential direct and indirect impacts on Central Valley steelhead that would be caused by all three build alternatives.

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

Please refer to the discussion of this measure in Section 2.19.

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

Please refer to the discussion of this measure in Section 2.19.

2.20.5 References Cited

ICF International. 2014. *Natural Environment Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

