

4.4 BIOLOGICAL RESOURCES AND WETLANDS

4.4.1 INTRODUCTION AND METHODOLOGY

The affected environment in the SVRTC was assessed based on field surveys conducted on July 10 and 11, August 7, October 17, and December 3, 2002 and January 8, 2003 to characterize vegetation communities, jurisdictional waters including wetlands, wildlife corridors, and suitable habitat for “special status” species. Although surveys focused on the area of direct project impact, or the area that would be disturbed by construction of either the Baseline or BART alternative, or the MOS scenarios, vegetation communities and incidental sightings of species were recorded for a broader study area encompassing the SVRTC and its vicinity. The information presented in this section is drawn from the *Biological and Wetland Resources Technical Report* (BWRTR), (March 2004).

Prior to undertaking the field surveys, team biologists compiled a variety of natural resource information for the corridor by consulting documentary sources, including the California Natural Diversity Database (CNDDDB), the California Native Plant Society (CNPS), and National Wetland Inventory (NWI) maps, as well as environmental documents that have been prepared for other projects in the general SVRTC vicinity. In February 2002, the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA Fisheries), and California Department of Fish and Game (CDFG) were contacted to request their listings of rare, threatened, endangered, and candidate species that may occur in the project vicinity. These agency letters and responses, including species lists, are included in Appendix C. Following this preliminary work, field surveys were conducted to assess the suitability of habitat in the project vicinity or direct impact area for special status species that were identified in the listings.

In February 2004, updated listing information was obtained from the USFWS website and CNDDDB (2003) for the purpose of further analysis of the potential of special status species to occur in the SVRTC. This updated information is included in this chapter.

4.4.2 EXISTING CONDITIONS

4.4.2.1 Existing Setting

Vegetation and Wildlife Communities

Biological communities identified in the SVRTC include non-native annual grassland, ruderal/disturbed sites and agricultural fields, seasonal and freshwater emergent wetlands (marshes), and Central Coast cottonwood-sycamore riparian forest. Isolated habitat islands may provide refuge for wildlife, but these areas are degraded and most likely will continue to degrade regardless of the project. Biotic communities in the SVRTC are highly fragmented, which diminishes their ecological value. Historically, the SVRTC falls within the central California coast eco-region, coastal sage scrub community. Coyote bush (*Baccharis pilularis*) is the only shrub species remaining that is indicative of this community type. The only other native plant community in the SVRTC is the relatively rich Central Coast cottonwood-sycamore riparian forest of the Berryessa, Coyote, and Upper Penitencia Creek corridors.

A brief description of each biological community is provided in the following paragraphs. More detailed descriptions and mapping of these communities and their associated plant and wildlife assemblage is provided in the BWRTR. Except for ruderal/disturbed and seasonal and freshwater marsh, vegetation community descriptions and nomenclature are in accordance with *Preliminary Descriptions of Terrestrial Natural Communities of California* (Holland 1986). Plant taxonomy and nomenclature follows *The Jepson*

Manual (Hickman 1993). Scientific nomenclature and common names are according to various other sources, as identified in the BWRTR.

Non-Native Grassland

This community is typically found on fine-textured, usually clay soils, which may range from moist, possibly even waterlogged, during the rainy season to very dry during the dry season. It is primarily composed of non-native annual grasses although native, annual forbs (“wildflowers”) may also be present during years of favorable precipitation. Grasslands provide foraging and nesting habitat for a wide variety of wildlife species including raptors, seed eating birds, small mammals, amphibians, and reptiles. A complete listing of the plant and wildlife species supported by this community is included in the BWRTR.

The non-native grassland in the SVRTC is similar to non-native grassland communities found in the valleys and foothills throughout much of California. Within the SVRTC, non-native grassland was found in the vicinity of the busway connectors proposed to be constructed under the Baseline Alternative between I-680 and the planned BART Warm Springs Station, as well as between that station and I-880. In addition, non-native grassland was identified within four locations relevant to the BART Alternative: at the site of the proposed Locomotive Wye Fremont Option; in the vicinity of the proposed South Calaveras Future Station; at the Sno-boy site proposed for relocation of the rail-truck tank car transfer facility; and to the west and north of the proposed TPSS #5 site. Altogether, approximately 28.6 acres of non-native grassland with the potential to be affected were identified within the SVRTC.

Ruderal/Disturbed Including Urban Ornamental Landscape and Agriculture

A distinguishing characteristic of urban habitats is the mixture of native and exotic plant species. Exotic plant species may provide valuable habitat elements such as cover for nesting and roosting, as well as food sources such as nuts or berries. Native and introduced animal species that are tolerant of human activities often thrive in urban habitats. A complete listing of the plant and wildlife species supported by this community is included in the BWRTR.

The majority of the railroad corridor lies within ruderal/disturbed vegetation and most of the area that would be disturbed by SVRTC project facilities consists of ruderal/disturbed urban landscape. Agricultural areas include a portion of an abandoned walnut orchard and disked pasture.

Seasonal and Freshwater Emergent Wetlands

Seasonal wetlands, including the aquatic environments that occur on the floor of flood control channels, are often formed when ditches and depressions are excavated. Former marshland that has been partially filled with rock, soil, and debris often develops into seasonal wetlands. Wetland plant species that are either low-growing, tenacious perennials that tolerate disturbance or annuals that tolerate seasonal wetness often colonize seasonal wetlands. Freshwater emergent wetlands are typically dominated by plants that tolerate perennial wetness, including trees, shrubs, and herbs. Freshwater emergent wetlands are among the most productive wildlife habitats in California, and the wetland and riparian areas that exist in the SVRTC are typical of such areas elsewhere in the state. They provide food, cover, and water for various species of birds, mammals, reptiles, and amphibians. A complete listing of the plant and wildlife species supported by this community is included in the BWRTR.

Seasonal and freshwater emergent wetlands occur along the banks of Toroges Creek, Berryessa Creek, Wrigley Creek, Upper Penitencia Creek, Lower Silver Creek, and within the drainage ditches north of Montague Expressway. Patches of freshwater emergent wetlands occur within the streambeds of Coyote Creek, the Guadalupe River, and Los Gatos Creek. While seasonal and freshwater emergent wetlands are not present within the concrete-lined streams, such as Agua Caliente Creek, Agua Fria Creek, Scott Creek, and Calera Creek, the accumulation of silt is present, which makes possible the development of this vegetation community.

A total of 1.293 acres of wetlands were delineated within the vicinity of the SVRTC alternatives. This includes 1.165 acres of wetlands at Wrigley Creek, parallel to the railroad corridor on the west, and 0.128 acres in drainage ditches near Montague Expressway, also parallel to the railroad corridor. The total acreage of wetlands, including seasonal and freshwater emergent wetlands, is also discussed below under *Waters of the U.S. Including Wetlands*.

Central Coast Cottonwood-Sycamore Riparian Forest

This community is found on relatively fine-grained alluvial soils and clays located in the floodplains of sub-perennial streams along canyons and creeks of the central and south Coast Ranges. Central Coast cottonwood-sycamore riparian forest is a natural community of special concern (Holland 1986; CNDDDB 2003), which may provide a wide range of resources to wildlife such as movement and migration corridors, cover (nesting, resting, thermal, etc.), water, and a variety of foraging opportunities. A complete listing of the plant and wildlife species supported by this community is included in the BWRTR. A total of 2.6 acres of Central Coast cottonwood-sycamore riparian forest was identified in the immediate SVRTC project vicinity: along Berryessa Creek bordering Milpitas Boulevard, along Coyote and Upper Penitencia creeks (at the site of the Berryessa Station), as well as along the Guadalupe River and Los Gatos Creek.

Waters of the U.S. Including Wetlands

A total of 2.668 acres of potentially jurisdictional wetlands and other waters of the U.S. were delineated within the SVRTC in close proximity to the project alternatives. The U.S. Army Corps of Engineers (ACOE) has final authority over the identification of wetlands and other waters of the U.S., including their jurisdiction, determination of area affected by the project, and type of permits required. The *Wetlands Delineation Report* was transmitted to the ACOE on September 4, 2003 with a request for jurisdictional determination. ACOE's confirming jurisdictional delineation was received February 2004.

A Routine On-site Delineation of jurisdictional wetlands and other waters of the U.S. was conducted in the SVRTC on March 27, July 10 and 11, August 7, and October 17, 2002. Jurisdictional waters occur at the creeks and drainage ways listed in Table 4.4-1. The creeks are shown on Figures 4.18-1 through 4.18-6 in Section 4.18, *Water Resources, Water Quality, and Floodplains*. A map depicting *Water Resources, Water Quality, and Floodplains* including wetlands, is provided in the BWRTR.

As part of a prefield investigation, NWI maps, USFWS maps, and Natural Resources Conservation Service (NRCS) soils maps were studied to characterize wetlands and other waters of the U.S. in the SVRTC. The wetlands USFWS identified as being adjacent to the existing railroad ROW in the SVRTC include palustrine emergent, excavated, seasonally flooded wetlands at Calera Creek, Berryessa Creek, and Wrigley Creek and a palustrine forested, temporarily flooded wetland at Upper Penitencia Creek. Other waters of the U.S. at Lower Silver Creek are mapped by USFWS as riverine system, intermittent streambed, excavated, with a seasonally flooded water regime.

Table 4.4-1: Wetlands and Waters of the U.S. in the Silicon Valley Rapid Transit Corridor		
Creeks, Siphons and Drainage Ditches Identified	Characterization	Acres
Agua Caliente Creek – Water of the U.S.	Concrete-lined trapezoidal channel managed by Alameda County Flood Control and Water Conservation District (ACFCWCD) crossing under UPRR mainline in the NUMMI Railyard at Warm Springs.	0.002
Agua Fria Creek – Water of the U.S.	Concrete-lined open box channel managed by ACFCWCD crossing the UPRR mainline between Mission Boulevard and East Warren Avenue	0.037
Toroges Creek (Line C) – Water of the U.S.	Concrete-lined and earthen trapezoidal channel where it crosses the UPRR mainline; managed by ACFCWCD.	0.033
Toroges Creek (Line B – 1) – Water of the U.S.	Earthen trapezoidal culvert intersecting railroad corridor just south of proposed Locomotive Wye Fremont Option; aboveground where it crosses the railroad corridor on the west and underground from that point east; managed by ACFCWCD.	0.000
Scott Creek (Line B) – Water of the U.S.	Earthen trapezoidal culvert managed by ACFCWCD crossing railroad corridor approximately 2150 feet north of Kato Road.	0.000
Scott Creek (Line A) – Water of the U.S.	Concrete-lined open box channel culvert crossing under railroad corridor approximately 950 feet north of Alameda–Santa Clara County line. Under the ROW, creek widens into an earthen vegetated ditch. Managed by ACFCWCD.	0.074
Calera Creek – Water of the U.S.	Concrete-lined box channel that terminates in an underground sump on west side of railroad corridor. Managed by the SCVWD.	0.030
Berryessa Creek – Water of the U.S.	Concrete box culvert paralleling railroad corridor on west from Calera Creek, crossing under ROW north of UPRR Milpitas Yard and continuing parallel to railroad corridor on east and at Montague Expressway. Managed by SCVWD.	0.113
Wrigley Creek – Water of the U.S. where it crosses under railroad corridor; wetland areas parallel railroad corridor on west.	Earthen bottom channel crossing under railroad corridor north of UPRR Milpitas Yard between the Calaveras Boulevard and Abel Street overcrossings. Managed by City of Milpitas.	1.239 ^[1]
Unnamed Ditches near Montague Expressway – Wetlands	Drainage ditches paralleling railroad corridor managed by City of Milpitas.	0.128
Lower Penitencia Creek – Siphon	Inverted siphon where Lower Penitencia Creek crosses the railroad corridor, discharging into a drainage ditch maintained by SCVWD.	0.000
Upper Penitencia Creek – Water of the U.S.	Well-defined bed and bank and well-developed riparian woodland fringe where it borders Berryessa Road crossing the railroad corridor.	0.275
Coyote Creek – Water of the U.S.	Natural perennial stream managed by SCVWD with rich riparian woodland where it parallels proposed BART alignment at site of proposed staging and laydown area near Mabury Road.	0.719
Lower Silver Creek – Water of the U.S.	Excavated perennial stream managed by SCVWD and programmed for enlargement and habitat restoration.	0.018
Total		2.668 ^[2]
Notes:		
^[1] Water of the U.S. at this location equals 0.074 acre; wetlands equals 1.165 acres.		
^[2] Construction of future, re-located railroad bridges likely will add nominally to this total (estimated to be less than 0.1 acre of U.S. waters) as a result of temporary construction-phase disturbance and permanent losses due to the extension of pier walls and other support structures.		

Coyote Creek, the Guadalupe River, and Los Gatos Creek are inventoried by USFWS as palustrine forested, temporarily flooded wetlands. These streams were not studied intensively for the SVRTC project because facilities proposed under the Baseline Alternative are far north of the streams and facilities proposed under the BART Alternative would be constructed in a deep underground tunnel that would avoid the potential for impacts (see Section 4.4.3.2). Coyote Creek was delineated for the staging and laydown portions of the BART Alternative; this acreage is provided in Table 4.4-1.

Special Status Species

Special status plant and wildlife species are species that have been afforded special recognition and protection by federal, state, or local resource conservation agencies and organizations. These species are generally considered rare, threatened, or endangered due to declining or limited populations and include the following:

- Wildlife and plant species that are listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR Part 17.11 for wildlife, 50 CFR Part 17.12 for plants; various notices in the Federal Register for proposed species);
- Species that are listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (California Administrative Code, Title 14, Section 670.5);
- Wildlife species identified by the CDFG as species of special concern (wildlife species that do not have state or federal threatened or endangered status but may still be threatened with extinction) (Jennings and Hayes 1994; Ramsen 1978; Williams 1986);
- Wildlife species that are designated as fully protected under the California Fish and Game Code Sections 3511 (Birds), 4700 (Mammals), 5515 (fishes), and 5050 (Reptiles and Amphibians);
- Plants considered by the CNPS to be rare, threatened, or endangered in California and elsewhere (CNPS 2002); and
- Plant and animal species that meet the definition of rare or endangered under CEQA.

Letters were sent to USFWS, NOAA Fisheries, and CDFG on February 4, 2002, requesting their listings of rare, threatened, endangered, and candidate species in the SVRTC project vicinity. The USFWS responded on February 12, while NOAA Fisheries responded on February 20, and CDFG responded on March 26; copies of these agencies' responses are provided in Appendix C, which also includes the USFWS listing of special status species for the Niles, Calaveras Reservoir, Milpitas, San Jose East, San Jose West, and Cupertino U.S. Geological Survey (USGS) quadrangle maps that make up the SVRTC.

A search of the computerized CNDDDB (July 2002) was conducted for the San Jose West, San Jose East, Milpitas, Calaveras Reservoir, Niles, and Cupertino USGS quadrangles that make up the SVRTC. The following other databases were also searched:¹

- State and Federally Listed Endangered and Threatened Animals of California (April 2002, July 2003);
- Special Vascular Plants, Bryophytes, and Lichens List (July 2002); and
- State and Federally Listed Endangered, Threatened and Rare Plants of California (July 2002).

¹ Results of the database searches are included in the *BWRTR*.

Following these database searches, an extensive review of literature and environmental documentation prepared for other projects in the SVRTC vicinity was conducted. Field surveys were then undertaken to assess the suitability of habitat in the SVRTC for special status species identified in the USFWS listing. For each of the plant and animal species that appeared on these listings, the BWRTR provides information on the species' federal, state, or other agency status, range, habitat requirements, and bloom periods of plants. The BWRTR also reports whether suitable habitat exists in the SVRTC, whether the species is likely to be present, and whether impacts to habitat areas are expected to occur under any of the SVRTC alternatives or their design options. This section reports findings only for those species for which there is suitable habitat in the immediate vicinity with potential for effect under either the Baseline or the BART alternative.

Special status species found to be present or have suitable habitat in the SVRTC area include several fish, amphibians, reptiles, birds, mammals, and plants as listed in Table 4.4-2 and described below.

Steelhead and Chinook salmon are special-status fish species that occur in the study area. The Central California Coast steelhead evolutionarily significant unit (ESU) has been listed as threatened under the ESA (62 FR 159, August 18, 1997). Critical habitat for steelhead was initially designated but has since been rescinded pending further review. NOAA Fisheries considers the Chinook salmon in the study area to be part of the Central Valley fall and late-fall run Chinook salmon ESU. NOAA Fisheries has determined that the Central Valley fall and late-fall run Chinook salmon ESU does not warrant listing, but the ESU is considered a candidate species (64 FR 50394, September 16, 1999). In addition, study area streams are considered essential fish habitat for Chinook salmon, a commercial species. The Magnuson-Stevens Fishery Conservation and Management Act defines "essential fish habitat" as waters and substrate necessary for fish to spawn, breed, feed, and grow to maturity. (See Section 4.4.2.2 for a discussion of the Magnuson-Stevens Fishery Conservation and Management Act.)

Central California Coast Steelhead

Adult Central California Coast steelhead (*Oncorhynchus mykiss*) enter rivers from October (in larger basins) and late November (in smaller basins) and continue through June. Adult spawning begins in November (in larger basins) and December (in smaller basins) and can continue through April, with a peak in February and March. Adult steelhead are capable of spawning more than once, unlike Chinook salmon (*Oncorhynchus tshawytscha*), which die after spawning. Steelhead spawn by constructing redds (nests) in gravel ranging in size from ¼-inch to 4-inches in diameter. Eggs incubate for 3–4 weeks, and fry emerge from the gravel 2–3 weeks later (Moyle 2002). Egg and larvae incubation rates are inversely related to water temperature (i.e., egg incubation is quickest at warmer water temperatures). Recently emerged steelhead fry live in quiet waters close to shore and gradually move to deeper habitats as they grow. Juvenile steelhead spend up to 3 years rearing in freshwater. Optimal conditions for juvenile steelhead rearing include cool, clear, fast-flowing permanent streams and rivers where there is an abundance of riffles (for food production), ample cover (e.g., undercut banks and overhanging riparian vegetation), and an adequate food supply (i.e., invertebrates). Most juvenile steelhead typically migrate to the ocean as streamflow declines and water temperature increases in April, May, and June. Before they migrate, juvenile steelhead undergo physiological changes (smoltification) to prepare them for ocean life. Steelhead live in the ocean generally from 1–3 years before returning to fresh water to spawn.

Despite degraded habitat conditions, Coyote Creek and Upper Penitencia Creek support a small viable steelhead fishery (Busby et al. 1996; Leidy 2000) and the Guadalupe River has the potential to support steelhead as well. The extent to which steelhead spawn and rear in Coyote Creek is not known. Steelhead are reported to be present in Upper Penitencia Creek at the site of the Parking Structure

Table 4.4-2: Special Status Species with Potential to be Present or With Suitable Habitat in the SVRTC

Species	Status		Habitat Association	Habitat in Project Vicinity	
	Federal	State		Present	Affected by Project
Central California Coast Steelhead <i>Oncorhynchus mykiss</i>	FT ESU	--	Central coastal basins from the Russian River, south to Soquel Creek, including San Francisco and San Pablo Bay basins but excluding the Sacramento-San Joaquin River basins. It is assumed that the riparian habitat integrity will be maintained and that tunneling would not affect streambeds.	Suitable habitat present in project vicinity.	May affect.
Central Valley late fall-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FC ESU	CSC	Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel (Moyle 2002). Breeding runs occur in the Sacramento River and its tributaries, river reaches and estuarine areas of the Sacramento-San Joaquin Delta are utilized. It is assumed that riparian habitat integrity will be maintained and that tunneling would not adversely affect streambeds.	Suitable habitat present in project vicinity.	May affect.
California red-legged frog <i>Rana aurora draytonii</i>	T	CSC	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. Occupies permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation.	Suitable habitat present in Coyote Creek and Upper Penitencia Creek	May affect
Southwestern pond turtle <i>Clemmys marmorata pallida</i>	FSC	CSC	Occurs along the central coast of California east to the Sierra Nevada and along the southern California coast inland to the Mojave and Sonora Deserts; range overlaps with that of the northwestern pond turtle throughout the Delta and in the Central Valley. Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with emergent vegetation.	Suitable habitat present in Coyote Creek and Upper Penitencia Creek	May affect
Western burrowing owl <i>Athene cucularia hypugea</i>	FSC	CSC	Open, dry annual or perennial grasslands, deserts, and scrublands with low-growing vegetation. Subterranean nester, dependent on burrowing mammals, most notably, the California ground squirrel (Haug <i>et al.</i> 1993; Trullio 2000).	Suitable (sub-optimal) habitat present in project vicinity.	May affect.
Cooper's hawk <i>Accipiter cooperii</i>	--	CSC	Nests in a wide variety of habitat types, from riparian woodlands and foothill pine-oak woodlands through mixed conifer forests	Suitable nesting habitat present in project vicinity	May affect
White-tailed kite <i>Elanus leucurus</i>	FSC	FP	Nests in low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Suitable nesting habitat present in project vicinity	May affect
Loggerhead shrike <i>Lanius ludovicianus</i>	FSC	CSC	Resident in Bay Area; open areas with sparse shrubs, trees, and other perches (Yosef 1996).	Suitable habitat present in project vicinity.	Project would not affect.
Yuma myotis <i>Myotis yumanensis</i>	FSC	--	Common throughout California except in the Mojave and Colorado Desert regions. Roosts in buildings, caves, trees, and under bridges.	Suitable roosting habitat present in project vicinity	May affect
Long-legged myotis <i>Myotis volans</i>	FSC	--	Occurs along the Coast Range from Oregon to Mexico as well as in the Sierra Nevada in riparian and forested habitats. Roosts in buildings, under tree bark, in snags, and in caves.	Suitable roosting habitat present in project vicinity	May affect

continued

Table 4.4-2: Special Status Species with Potential to be Present or With Suitable Habitat in the SVRTC

Species	Status		Habitat Association	Habitat in Project Vicinity			
	Federal	State		Present	Affected by Project		
Pacific long-eared myotis <i>Myotis evotis</i>	FSC	--	Occurs in brush, woodland, and forested habitats along the entire coast of California as well as the Sierra Nevada. Roosts in buildings, crevices, and in snags and under tree bark.	Suitable roosting habitat present in project vicinity	May affect		
Western big-eared bat <i>Plecotus townsendii</i>	FSC	CSC	Found throughout California. Roosts in caves, buildings, under bridges, or other man-made structures.	Suitable roosting habitat present in project vicinity	May affect		
Congdon's tarplant [Pappose spikeweed] <i>Hemizonia (Centromadia) parryi ssp. congdonii</i>	FSC	--	Valley and foothill grasslands. Blooms June to November, sea level to 230 m.	Suitable habitat present; population observed in project area.	May affect.		
Alkali milkvetch ^[1] <i>Astragalus tener var. tener</i>	FSC	--	Playas, valley, and foothill grasslands with alkaline adobe clay soils, alkaline vernal pools. Blooms March to June, up to 60 m. Alkali milkvetch was included in historic collections from Warm Springs area, but these records are over 100 years old. CNPS reported that alkali milkvetch occurs in Alameda, Merced, Napa, Solano, and Yolo counties (2001) and only in Merced, Solano, and Yolo counties (2002). It is assumed that the species has been extirpated locally due to agricultural conversion and urban development.	Alkaline adobe clay soils and grassland present, but no vernal pools, mesic grasslands, or related soils present, and project is outside of plants' known range.	Unlikely to affect but pre-construction surveys recommended.		
Diamond-petaled California poppy ^[1] <i>Eschscholzia rhombipetala</i>	FSC	--	Alkaline valley and foothill grasslands including non-native grasslands. Known from small topographic depressions in alkaline heavy clay soil of the Carrizo Plain. Recently identified in the Livermore Valley (CalFlora 2002). Blooms March to April, up to 975 m.	Alkaline clay soils present but plant not known in county and habitat is extremely disturbed by plowing/disking and herbicides; thus, plant is unlikely to be present.	Unlikely to affect but pre-construction surveys recommended.		
<p>Note:</p> <p>^[1] CNPS List 1B</p> <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> FT = Federally-listed Threatened FE = Federally-listed Endangered ESU = Ecologically Significant Unit FC = Candidate for listing under the ESA </td> <td style="width: 50%;"> FSC = Federal Species of Concern SE = State-listed Endangered ST = State-listed Threatened CSC = California Species of Special Concern FP = Fully protected species </td> </tr> </table> <p>Source: Parsons Corporation, BWRTR, December 2003 (revised 2004).</p>						FT = Federally-listed Threatened FE = Federally-listed Endangered ESU = Ecologically Significant Unit FC = Candidate for listing under the ESA	FSC = Federal Species of Concern SE = State-listed Endangered ST = State-listed Threatened CSC = California Species of Special Concern FP = Fully protected species
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Southwest and Northeast options of the Berryessa Station proposed under the BART Alternative. Steelhead spawning was documented in Los Gatos Creek and one adult steelhead was observed on Alamitos Creek, a tributary to the Guadalupe River, in early 2003. Flows and habitat conditions (e.g., water temperature) are believed to be insufficient in all other project corridor drainages to support self-sustaining steelhead populations.

Fall/Late Fall-Run Chinook Salmon

Adult fall/late fall-run Chinook salmon migrate into rivers from July through December and spawn from early October through late December. Spawning typically peaks in October and November. Eggs incubate from October through March, and juveniles rear and smolts emigrate from January through June. Chinook salmon spawning is the same as that described above for steelhead, except that Chinook salmon can spawn in gravels up to 6-inches in diameter. Unlike steelhead, Chinook salmon typically emigrate to the ocean within a few months following emergence from the gravel. Because all juvenile Chinook salmon leave freshwater within the first several months following emergence from the gravel, Chinook salmon can spawn and rear in streams that become too warm for salmonids in summer.

As is the case for steelhead, Chinook salmon are reported to be present in Upper Penitencia Creek at the site of the Parking Structure Southwest and Northeast options of the Berryessa Station proposed under the BART Alternative. Chinook salmon are also reported to be present in Lower Silver Creek (potentially affected by the Railroad/28th Street Option for the Alum Rock Station), and are known to spawn and rear in portions of Coyote Creek.² Flows and habitat conditions are insufficient in all other project corridor drainages to support self-sustaining Chinook salmon populations.

Fall-run Chinook salmon have occurred in the Guadalupe River in the last decade. The current Chinook salmon population may be strays from wild or hatchery populations from the Sacramento-San Joaquin River system (SCVWD 1994). Currently, Chinook salmon migrate up the Guadalupe River and to a lesser extent, Los Gatos and Alamitos creeks, to spawn. The majority of Chinook salmon appear to spawn in and around the downtown San Jose area (Jones & Stokes 1998).

Fishery conservation and restoration efforts in general have included construction of a 3,500-foot box culvert bypass in downtown San Jose and a fish ladder at the Alamitos drop structure upstream of Blossom Hill Road that once precluded upstream fish movement.

California Red-legged Frog

The California red-legged frog (*Rana aurora draytonii*) is federally listed as threatened and is listed as a species of special concern by CDFG. This species was once common in the Coast Range from Redding south to Baja California and in the northern Sierra Nevada. Its current range is much reduced with most of the remaining populations occurring in the Coastal Range from Marin County south to Ventura County, as well as scattered populations occurring in the Sierra Nevada (Jennings and Hayes 1994).

California red-legged frogs prefer permanent and semi-permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. California red-legged frogs estivate in rodent burrows or earthen cracks during dry periods. Breeding occurs early in the year, from November

² Per personal communication with Dave Johnston of CDFG on February 4, 2003.

through April, with males appearing at the breeding sites 2 to 4 weeks before the females. Egg masses are attached to emergent vegetation, and the eggs hatch in 6 to 14 days. The larvae metamorphose between July and September (USFWS 2002).

Continued recent declines are attributed to ongoing loss of wetland and stream habitat (especially from dam construction and water management activities) and the introduction of non-native predators and competitors, including bullfrog (*Rana catesbeiana*), crayfish (*Procambarus clarki*), and fish (Jennings and Hayes 1994).

The project area is not located within an area designated as critical habitat for the California red-legged frog. However, the riparian and aquatic habitat in Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Lower Silver Creek may provide suitable habitat for California red-legged frog, and some of the smaller streams may function as dispersal corridors for this species when they contain water. H.T. Harvey and Associates (1997) concluded that while the California red-legged frog is not believed to inhabit urbanized areas of San Jose, known occurrences of red-legged frogs in Alum Rock Park indicate that they may potentially be transported downstream and reach the project area. Four individuals were observed in July 2000 in Upper Penitencia Creek in Alum Rock Park approximately 4.5 miles east of where the project crosses Upper Penitencia Creek (CNDDDB 2003).

Southwestern Pond Turtle

The southwestern pond turtle (*Clemmys marmorata pallida*) is designated as a species of special concern by both USFWS and CDFG. Southwestern pond turtles are found in quiet waters of lowland and foothill ponds, streams, marshes, and reservoirs located in the Coastal Range, throughout the Central Valley, and the foothills of the Sierra Nevada from the Bay Area south. They utilize mats of submergent vegetation, rocks, and downed logs close to water as basking locations. They also require suitable nesting habitat in which to build nests and lay their eggs. Nesting habitat is generally near water sources, though some turtles may travel long distances from a permanent or nearly permanent water source to lay their eggs in grassland or scrub habitat (Jennings and Hayes 1994). Habitat for this species is present in the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Lower Silver Creek and some of the smaller streams may function as dispersal corridors for this species when they contain water. In September 2001, two adults were observed in Coyote Creek approximately 5.0 miles south of where the BART Alternative crosses Coyote Creek (CNDDDB 2003).

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) inhabits open upland habitats with well-drained, level to gently sloping areas characterized by sparse vegetation, including bare and over-grazed soils (Haug et al. 1993; Trulio 2000; Dechant et al. 2001). Key factors in sustaining burrowing owl populations include the following characteristics: short, sparse vegetation, abundant prey resources, and availability of burrows as nest and roost sites (Dechant et al. 2001). The burrowing owl is listed by both USFWS and CDFG as a species of special concern and is protected under both the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code.

It is estimated that 167 nesting pairs (about 1.8 percent of the total California population) occur in the San Francisco Bay Area, which represents a decline of 50 percent since the mid-1980s. The majority of nesting and wintering populations occur in the Imperial Valley (71 percent) and Central Valley (24 percent) (Santa Cruz Predatory Bird Research Group 2002). Population declines in the Bay Area appear to have abated in recent years (DeSante et al. 1997).

Historically, resident and wintering burrowing owls were common in central and southern California deserts, grasslands, and other open, upland habitats (Small 1994). Urbanization and agricultural conversion have eliminated large tracts of burrowing owl habitat and fragmented the remainder (Haug et al. 1993; Schulz 1997; Dechant 2001); however, burrowing owls exhibit a high level of tolerance to human disturbance and will nest or roost in urban and metropolitan areas (Haug et al. 1993). Considerable effort has gone into burrowing owl conservation in California, including relocation of breeding individuals that occur on sites under threat of construction or other development in the Santa Clara Valley (Delevoryas 1997; Schulz 1997). Birds generally exhibit a high degree of site tenacity and this can be problematic when relocated owls return to sites from which they were removed (Feeny 1997).

Three burrowing owls were observed on December 3, 2002 and/or January 8, 2003 in ruderal/disturbed (fallow agricultural) habitat at the Sno-boy site proposed for relocating the rail-truck tank car transfer facility under the BART Alternative. The burrow complex used at this location did not show evidence of long-term residency. Therefore, these individuals may have been transient or wintering birds. Additionally, suitable habitat for wintering or breeding birds may be present in the vicinity of the busway connectors to be constructed under the Baseline Alternative between I-680 and the planned BART Warm Springs Station, as well as between this station and I-880, and at four additional sites proposed for construction of facilities under the BART Alternative: at the site of the proposed Locomotive Wye Fremont Option; in the vicinity of the proposed South Calaveras Future Station; at the Sno-boy site proposed for relocation of the rail-truck tank car transfer facility; and to the west and north of the proposed TPSS #5 site. The habitat in these areas is degraded and fragmented by agricultural conversion and urban development. Altogether, approximately 28.6 acres of burrowing owl habitat occurs within the SVRTC at these various locations.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is listed as a species of special concern by CDFG and is protected under the MBTA. Cooper's hawks generally nest in riparian and evergreen forests. The species is tolerant to habitat fragmentation and human disturbance and will nest in suburban and urban areas (Rosenfield and Bieledeldt 1993). Cooper's hawks prey on small to medium sized birds, such as jays (*Cyanocitta aphleocoma*), American robins (*Turdus migratorius*), European starlings (*Sturnus vulgaris*), and northern flicker (*Colaptes auratus*). Mammalian prey include gray squirrels (*Sciurus carolinensis*), California ground squirrels (*Ammospermophilus californicus*) deer mice (*Peromyscus maniculatus*), and bats. Potential nesting habitat in the project area occurs in the riparian corridors along the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Berryessa Creek.

White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is a federal species of concern, listed as a fully protected species by CDFG, and is protected under the MBTA. White-tailed kites nest in riparian forest and oak woodland habitats and forage in a variety of open habitats such as grasslands and marshes (Dunk 1995). White-tailed kites feed primarily on small mammals including voles (*Microtus sp.*), pocket mice (*Perognathus sp.*) and harvest mice (*Reithrodontomys sp.*). Potential nesting habitats in the project area are located in the riparian corridors along the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Berryessa Creek. Foraging areas located within the project area include riparian areas and non-native grasslands.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a predatory songbird that is resident in the project area. It is a species of special concern for both USFWS and CDFG and is protected under the MBTA. Loggerhead shrikes prefer open habitat characterized by forbs and grasses interspersed with low shrubs, widely spaced trees, and bare ground (Yosef 1996). Prairies, grasslands, pastures, fencerows or shelterbelts, mowed road ROW, abandoned railroad ROW, cemeteries, golf courses, open woodlands, farmsteads, and old orchards are examples of the types of habitats where loggerhead shrikes most commonly occur. Scattered shrubs or trees, particularly dense, thorny species, are typically used for nesting and hunting perches (Yosef 1996; Dechant et al. 2001). As opportunistic predators, loggerhead shrikes feed on a wide variety of prey including insects, small mammals and birds, reptiles, amphibians, and occasionally carrion. Loggerhead shrikes are adaptable to urban environments as long as preferred habitat characteristics and abundant prey supplies are present. Loggerhead shrikes were routinely observed at a number of locations within the SVRTC during the field surveys.

Bat Species

A variety of bat species, such as Yuma myotis (*Myotis yumanensis*), long-legged myotis (*Myotis volans*), Pacific long-eared myotis (*Myotis evotis*), and western big-eared bat (*Plecotus townsendii*), may occur in the project area. The underside of bridges and buildings located throughout the project area and riparian areas of the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Berryessa Creek offer potential roosting and nursery habitat for bats, as well as foraging habitat. Many bat species that can occur in the project area are federal and state species of concern.

Congdon's Tarplant

Congdon's tarplant (*Hemizonia [Centromadia] parryi ssp. Congdonii*) blooms June through November and is regarded as a member of a group of plants termed spikeweeds and tarplants. Congdon's tarplant has been recently placed in a new genus. It is a prickly composite that blooms yellow-headed ray and disk florets June through November. Congdon's tarplant is often confused with the yellow-headed, weedy, prickly sow thistle (*Sonchus asper*), stinkweed (*Dittricia graveolens*), and bristly ox-tongue (*Picris echioides*), which often grow together. The most distinctive feature of Congdon's tarplant is the bracts that subtend the flowering heads. These bracts or modified leaves, known as phyllaries, greatly exceed the yellow rays in length, and form a prickly crown around each flowering head.

A single population of 12 flowering individuals of Congdon's tarplant was observed during the field surveys in Milpitas, along the east side of the UPRR switching yard, 0.2 miles south of Calaveras Boulevard, in the general vicinity of the South Calaveras Future Station proposed under the BART Alternative. Plants were found in unplowed soils between an unused railroad spur and Wrigley Creek in non-native grasslands. Additionally, a population of Congdon's tarplant has been documented (CNDDDB 2002) in a vacant lot less than one-half mile to the west of the Sno-boy site proposed for a replacement rail-truck tank car transfer facility under the BART Alternative; however, no plants were observed in this location during the field surveys. Non-native grassland that may contain Congdon's tarplant is also located in the vicinity of the Locomotive Wye Fremont Option proposed under the BART Alternative, on the east side of the proposed BART alignment at Warm Springs, and in the vicinity of the busway connectors proposed to be constructed under the Baseline Alternative between I-680 and the planned BART Warm Springs Station as well as between that station and I-880.

Alkali Milkvetch

A tiny, annual member of the pea family, alkali milkvetch (*Astragalus tener* var. *tener*) is a relative of locoweeds. It has pinnately compound leaves, small green legume fruits, and blooms pinkish flowers March through June. The species favors alkali playas, vernal pools, and moist grasslands in heavy clay soils. In 2001, the CNPS indicated that this species occurred in Alameda, Merced, Napa, Solano, and Yolo counties; however, in 2002, the CNPS reported the species as occurring only in Merced, Solano, and Yolo counties. Based on this description of its range and its association with vernal pools and mesic grasslands – factors not present within the SVRTC project vicinity – it is unlikely that alkali milkvetch is present within the SVRTC.

Diamond-Petaled California Poppy

The diamond-petaled California poppy (*Eschscholzia rhombipetala*) blooms small, diamond-shaped yellow-petaled flowers March through April. The diamond-petaled California poppy is the cousin of *Eschscholzia lemmonii*, a relative of the large, orange-flowered California poppy (*Eschscholzia californica*), the California state flower. The diamond-petaled California poppy is known from small topographic depressions in alkaline heavy clay soils of the Carrizo Plain (CNPS 2001). Recently, it was identified in the Livermore Valley (CalFlora 2002). Because this plant is not known to exist in Alameda nor Santa Clara counties and because the habitat is extremely disturbed by plowing/disking and herbicide applications, best professional judgment concludes that diamond-petaled California poppy is unlikely to be present within the SVRTC project vicinity.

Non-Special Status Species

Non-Special Status Raptors

Red-tailed hawks, red-shouldered hawks, great-horned owls, and several other raptor species are not currently listed under federal ESA or California ESA, and are not considered to be special status species by CDFG or USFWS. However, the occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 (active bird nests) and 3503.5 (active raptor nests). These raptors have the potential to nest in riparian forests of the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Berryessa Creek. Foraging areas located within the project area include riparian areas and non-native grasslands.

Swallows

Cliff swallows (*Petrochelidon pyrrhonota*), tree swallows (*Tachycineta bicolor*) and barn swallows (*Hirundo rustica*) are examples of swallows that may nest in the study area. Cliff swallows and barn swallows are colonial nesters and build mud nests on the undersides of artificial structures such as bridges. Tree swallows prefer to nest in riparian and other woodland habitats with trees and snags that contain cavities for nesting. Swallow nesting occurs from April to August, and southward migration occurs in September and October (Zeiner et al. 1990). Potential nesting habitat for nesting swallows occurs on the undersides of bridge structures located throughout the project area and in riparian habitat located along the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Berryessa Creek. These swallow species have no special status under the federal ESA or California ESA. However, the occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 (active bird nests and eggs) and Section 3513 (nesting birds).

4.4.2.2 Regulatory Setting

Federal Laws and Regulations

Federal Endangered Species Act

The ESA of 1973 protects fish and wildlife species that have been identified by USFWS and/or NOAA Fisheries as threatened or endangered, and their habitats. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future. USFWS and NOAA Fisheries administer the ESA. In general, NOAA Fisheries is responsible for protection of ESA-listed marine species and anadromous fishes while other listed species are under USFWS jurisdiction. The following sections summarize provisions of the ESA (Sections 9 and 7) that are relevant to the SVRTC project.

ESA Prohibitions (Section 9)

ESA Section 9 prohibits the “take” of any fish or wildlife species listed under the ESA as endangered. Take of a threatened species is also prohibited under Section 9 unless otherwise authorized by federal regulations. Take, as defined by the ESA, means “to harass, harm, pursue, hunt, shoot, wound, trap, kill, capture, or collect, or to attempt to engage in any such conduct.” Harm is defined as “any act that kills or injures the species, including significant habitat modification.” In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction.

ESA Authorization Process for Federal Actions (Section 7)

ESA Section 7 provides a means for authorizing take of threatened and endangered species by federal agencies. It applies to actions that are conducted, permitted, or funded by a federal agency. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead agency) must consult with USFWS or NOAA Fisheries, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a Biological Assessment (BA) evaluating the nature and severity of the expected effect. If the BA concludes that the project “may affect, but is not likely to adversely affect” the species and/or designated critical habitat, then the USFWS or NOAA Fisheries must determine whether or not they concur with that conclusion. If so, then they may issue a Letter of Concurrence (LOC) and specify conditions underlying their concurrence, thereby concluding informal consultation. If, however, the USFWS or NOAA Fisheries do not concur and determine instead that the project “is likely to adversely affect” the species under review, then formal consultation is necessary and USFWS or NOAA Fisheries issues a Biological Opinion (BO), with a determination that the proposed action either:

- may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or
- will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS or NOAA Fisheries may stipulate discretionary “reasonable and prudent” conservation measures. If the project would not jeopardize a listed species, USFWS or NOAA Fisheries issues an *incidental take statement* to authorize the proposed activity.

Migratory Bird Treaty Act

The MBTA (16 USC 703, 50 CFR Part 21, 50 CFR Part 10) enacts the provisions of treaties between the U.S., Great Britain, Mexico, Japan, and the former Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. Most actions that result in taking or in permanent or temporary possession of a protected species constitute violation of the MBTA. Examples of permitted actions that do not violate the MBTA include: the possession of a hunting license to pursue specific game birds; legitimate research activities; display in zoological gardens; bird-banding; and other similar activities (Faanes et al. 1992). USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture’s Wildlife Services Officer makes recommendations on related animal protection issues.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with NOAA Fisheries on all actions or proposed actions (permitted, funded, or undertaken by the federal agency) that may adversely affect fish habitats. Under the provisions of the Act, Congress mandated the identification of habitats essential to managed species (e.g., commercial species) and measures to conserve and enhance these habitats. The Act requires cooperation among NOAA Fisheries, Regional Fishery Management Councils, fishing participants, and federal and state agencies to protect, conserve, and enhance “essential fish habitat,” defined as those waters and substrate necessary to fish for spawning, breeding, feeding, and growth to maturity.

Federal Clean Water Act

The CWA is the primary law protecting the quality of the nation’s surface waters, including lakes, rivers, and wetlands. As such, it empowers USEPA to set national water quality standards and effluent limitations and establishes permit review mechanisms to enforce them, operating on the principle that all discharges into the nation’s waters are unlawful unless specifically authorized by a permit. Key provisions of the CWA are described in detail in Section 4.18.3.1, *Water Resources, Water Quality, and Floodplains/Federal Clean Water Act*.

Most of the CWA’s provisions are at least indirectly relevant to the management and protection of biological resources because of the link between water quality and ecosystem health. The portions of the CWA that are most directly relevant to biological resources management are contained in Section 404, which regulates the discharge of dredged and fill materials into waters of the United States including the following:

- All areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned; and
- Seasonal and perennial wetlands, including coastal wetlands.

Wetlands are defined for regulatory purposes as areas “inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR Part 328.3, 40 CFR Part 230.3).

Section 404 requires project proponents to obtain a permit from ACOE for all discharges of dredged or fill material into waters of the U.S., including oceans, bays, rivers, streams, lakes, ponds, and wetlands, before proceeding with a proposed activity. ACOE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. Nationwide Permits (NWP) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met in order for the NWP to apply to a particular project. Waters of the U.S. in the project corridor are under the jurisdiction of ACOE, San Francisco District.

Compliance with Section 404 requires compliance with several other environmental laws and regulations, including NEPA, the ESA, and the National Historic Preservation Act (NHPA) (see Section 4.6, *Cultural Resources*). In addition, ACOE cannot issue or verify any permit until a water quality certification, or waiver of certification, has been issued pursuant to Section 401. Section 404 permits may be issued only if there is no practicable alternative to the proposed discharge that would have less impact to the aquatic ecosystem and has no other significant adverse environmental consequences.

Executive Order 11990 - Protection of Wetlands

Executive orders are laws issued by the President of the United States that pertain to all federal agencies. Executive Order 11990 (issued in 1977) is an overall wetland policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state and local projects. It requires federal agencies to follow procedures for avoidance, mitigation, and preservation, with public input, before proposing new construction in wetlands. When federal lands are proposed for lease or sale to nonfederal parties, Executive Order 11990 requires that the lease or conveyance contain restrictions to protect and enhance the wetlands on the property. The restrictions of this executive order apply to wetlands on military installations proposed for closure. In this capacity, Executive Order 11990 can affect the sale of federal lands with wetlands. Compliance with Section 404 permit requirements may constitute compliance with the requirements of Executive Order 11990.

Executive Order 13112 - Invasive Species

Executive Order 13112 (February 3, 1999) directs all federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. The order further directs federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species.

As part of the proposed action, USFWS and ACOE would issue permits and therefore would be responsible for ensuring that the proposed action complies with Executive Order 13112 and does not contribute to the spread of invasive species.

State Laws and Regulations

California Endangered Species Act

The CESA protects wildlife and plants listed as threatened and endangered under the Act by the California Fish and Game Commission. It is administered by CDFG. The CESA prohibits all persons from taking species that are state-listed as threatened or endangered except under certain circumstances; the CESA definition of *take* is any action or attempt to “hunt, pursue, catch, capture, or kill.”

Section 2081 of the Act provides a means by which agencies or individuals may obtain authorization for incidental take of state-listed species, except for certain species designated as “fully protected” under the California Fish and Game Code. Take must be incidental to, and not the purpose of, an otherwise lawful activity. Requirements for a Section 2081 permit are similar to those used in the ESA Section 7 process. They include identification of impacts on listed species; development of mitigation measures that minimize and fully mitigate impacts; development of a monitoring plan; and assurance of funding to implement mitigation and monitoring.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA) of 1997 prohibits importation of rare and endangered plants into California; take of rare and endangered plants; and sale of rare and endangered plants (the “threatened” category replaced the “rare” when the CESA was enacted in 1984). CESA prohibits take of listed plants except as otherwise authorized by the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA.

Removal of plants for performance of a public service by a public agency or a publicly or privately owned public utility is exempt from CNPPA. Accordingly, some BART activities may be considered exempt from the CNPPA. However, evaluation of potential impacts on state-listed plant species is required pursuant to CEQA Guidelines, Section 15380(c)(1).

California Fish and Game Code

Protections for Individual Species

The California Fish and Game Code provides protection from take for a variety of species, defining *take* as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

Certain species are considered *fully protected*, meaning that the regulations explicitly prohibit all take of individuals of these species, except for take required for scientific research, which may be authorized by CDFG in some situations. Sections 3511, 4700, 5515, and 5050 of the Fish and Game Code lists fully protected birds, mammals, fishes, and amphibians and reptiles, respectively.

The regulations provide less stringent protection for other species, prohibiting most take but permitting CDFG to issue regulations authorizing take under some circumstances. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3513 and 3503.5, birds of prey under Section 3503.5, migratory non-game birds under Section 3800, and other specified birds under Section 3505.

Lake or Streambed Alteration Agreements (Section 1600 to 1616.)

The Fish and Game Code regulates activities that interfere with the natural flow of, or substantially alter the channel, bed, or bank of a lake, river, or stream. Lakebed and streambed alteration activities are covered under Section 1602 for public and private entities. Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements administered under Section 1600 to 1616.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, in part, implements the federal CWA to provide a mechanism for protecting the quality of the state's waters through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). Section 4.18.3.4, *Water Resources, Water Quality, and Floodplains/Porter-Cologne Water Quality Control Act* describes the provisions of the Porter-Cologne Act.

The SWRCB and San Francisco Bay RWQCB have taken the position that the Porter-Cologne Act and basin plans developed pursuant to the Act provide independent authority to regulate discharge of fill material to wetlands outside the jurisdiction of ACOE. This applies specifically to isolated wetlands considered non-jurisdictional based on the *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* decision (121 S.Ct. 675, 2001), which limited ACOE's jurisdiction over isolated wetlands. The SWRCB and RWQCB also regulate activities on creek banks that are above the ordinary high water mark. For example, clear span bridges with abutments above the ordinary high water mark would not need a Section 401 permit, but may require issuance of waste discharge requirements from RWQCB. In addition, SWRCB recently adopted General Waste Discharge Requirements for activities that occur in waters of the state that are outside of ACOE jurisdictional waters. Coverage under these requirements can be obtained by filing a Notice of Intent (NOI) with RWQCB.

Agency Consultations

Prior to conducting the field surveys, on March 13, 2002, team biologists and VTA representatives met with CDFG staff to discuss the project and identify natural resource environmental concerns. Subsequent in-the-field coordination meetings were held on March 27, 2002 with ACOE staff and on May 22, 2002 with RWQCB staff. Brief tours of the major waterways in the corridor were conducted for each agency prior to the formal fieldwork. In February 2002, USFWS, NOAA Fisheries, and CDFG were contacted to request their listings of rare, threatened, endangered and candidate species that may occur in the project vicinity. Copies of the USFWS, NOAA Fisheries, and CDFG replies to this request are included in Appendix C. Notes of agency meetings and personal contacts are included in the BWRTR.

The draft BWRTR and this EIS/EIR have been distributed to USFWS, NOAA Fisheries, ACOE, RWQCB, and CDFG for review.

Consultation with USFWS, NOAA Fisheries, and CDFG is being carried out in accordance with the terms and requirements of federal and state laws and their enabling regulations to address potential impacts to steelhead, Chinook salmon, California red-legged frogs, southwestern pond turtles, western burrowing owls, Loggerhead shrikes, white-tailed kites, Cooper's hawks, non-special status raptors, swallows, bats, and Congdon's tarplant. USFWS, NOAA Fisheries, and CDFG are expected to review the BWRTR and this

environmental document and stipulate minimization and compensatory measures to fully address these impacts.

It is anticipated that either a Letter of Concurrence (LOC) that the project may effect but is not likely to adversely affect special status species or a Biological Opinion including an Incidental Take Statement with Conservation Measures and other terms and conditions will be issued by the federal resource agencies. Issuance of the LOC or Incidental Take Statement will conclude consultation requirements under the ESA. Subsequent to this issuance, CDFG will be requested to issue its determination that the conclusions, conservation measures, and other terms and conditions are consistent with the provisions and requirements of the CESA. Receipt of CDFG's consistency determination will conclude consultations under CESA. It is anticipated that the agencies will issue the LOC or BO prior to circulation of the Final EIS/EIR.

BART Alternative impacts to wetlands and other waters of the U.S. would exceed 0.5 acres if the South Calaveras Future Station is included as an element of the preferred alternative requiring an individual Section 404 permit.

4.4.3 IMPACT ASSESSMENT AND MITIGATION MEASURES

4.4.3.1 Impacts to Vegetation Communities

Ruderal/disturbed vegetation predominates throughout the SVRTC and would likely be affected by the Baseline and BART alternatives under various design options. This is not a substantial effect, as this habitat type does not support special status plants or animals.

Impacts to vegetation communities under the Baseline and BART alternatives, as well as to special status species, is summarized in Table 4.4-3. General locations of special status species habitats in the SVRTC corridor are shown in Figure 4.4-1.

No-Action Alternative

Projects planned under the No-Action Alternative would undergo separate environmental review to define impacts to vegetation communities. (See Section 3.2.1.2 for a list of future projects under the No-Action Alternative.)

Baseline Alternative

Up to 13 acres of non-native grassland affording habitat for burrowing owl (a state species of special concern) and possibly containing Congdon's tarplant (a federal species of concern) would be disturbed by construction of the busway connectors from I-680 to the planned Warm Springs BART Station and bus transfer facility, as well as from this facility to I-880. There is also potential for effects on loggerhead shrike foraging habitat or use of nesting sites from loss of non-native grassland in the SVRTC, but this effect is not considered substantially adverse, given that loggerhead shrikes are adapted to urban environments and have other foraging and nesting opportunities throughout the SVRTC.

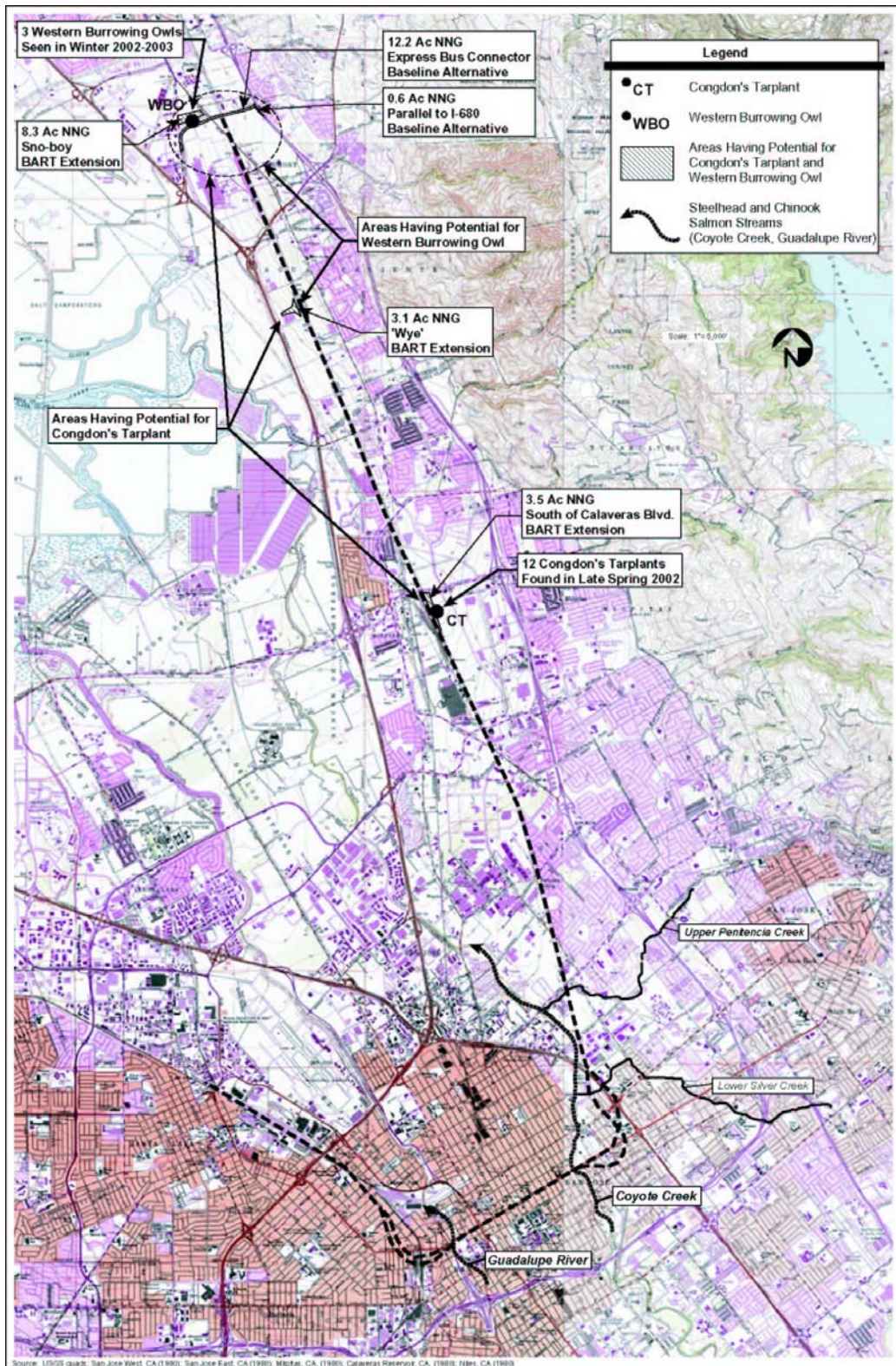
Vegetation Community (and Species Potentially Affected) or Jurisdictional Area ^[1]	Baseline Alternative	BART Alternative
Non-native Grassland Congdon's tarplant Western burrowing owl Loggerhead shrike	Up to 13 acres, total Up to 13 acres Up to 13 acres Up to 13 acres	Up to 15.6 acres, total 14.9 acres 15.6 acres 14.9 acres
Seasonal and Freshwater Emergent Wetlands (Marsh) Without South Calaveras Future Station With South Calaveras Future Station	-	0.128 acres 1.243 acres
Central Coast Cottonwood-Sycamore Riparian Forest (riparian corridor)	-	2.6 acres ^[2]
<p>Note:</p> <p>^[1] Ruderal/disturbed areas predominate throughout the SVRTC and, apart from developed areas and the vegetation communities listed in the table above, constitutes the remainder of the corridor's habitat. However, although likely to be affected to some extent by either build alternative under various design options, the acreage is not quantified because this habitat type typically reestablishes itself on its own.</p> <p>^[2] Impacts at the Berryessa Station location, included in this total, may differ depending on the alternative chosen for the Upper Penitencia Creek Flood Control Project.</p> <p>Source: Parsons Corporation, 2003.</p>		

BART Alternative

Non-native grassland would be affected by construction of the replacement rail-truck tank car transfer facility at the Sno-boy site (8.3 acres), by the construction of the Locomotive Wye Fremont Option (3.1 acres), by construction of the South Calaveras Future Station (3.5 acres); and to the west and north of the proposed TPSS #5 site (0.7 acres). This would be an adverse impact if the affected non-native grasslands were, during planned pre-construction surveys, found to support burrowing owl or Congdon's tarplant, in which case, mitigation will be proposed for this impact. There is also potential for effects on loggerhead shrike foraging or use of nesting sites from loss of non-native grassland in the SVRTC, but this effect is not considered to be substantially adverse, given that loggerhead shrikes are adapted to urban environments and appear to have ample foraging and nesting opportunities throughout the SVRTC.

The construction of the Berryessa Station may also affect California red-legged frogs, southwestern pond turtles, nesting white-tailed kites, nesting cooper's hawks, nesting non-special status raptors, nesting swallows, and roosting bats.

Impacts to up to 2.6 acres of Central Coast cottonwood-sycamore riparian forest along Berryessa, Upper Penitencia, and Coyote creeks could occur during construction of the Montague/Capitol and Berryessa stations. At the Berryessa Station location, the SCVWD is considering alternatives for the Upper Penitencia Creek Flood Control Project. Depending on the alternative chosen, impacts to the riparian



Source: Parsons Corporation, 2003.

Figure 4.4-1: Special Status Species Locations and Potential Locations

forest due to the BART Alternative may differ, as the design of the two projects must be coordinated by VTA and SCVWD. Impacts would be reduced or avoided by techniques to avoid encroachments into riparian areas (see Section 4.4.3.5) and by provision of an additional riparian corridor buffer along the banks of all three creeks. Impacts to seasonal/freshwater emergent wetland are discussed in Section 4.4.3.2.

Deferring the Berryessa Station, parking, and supporting facilities for MOS-1E would not result in substantially less impact to vegetative communities when compared to the BART Alternative, as the area is for the most part already developed with industrial uses, parking, and the San Jose Flea Market.

4.4.3.2 Impacts to Wetlands and Other Waters of the U.S.

Estimation of impacts to wetlands and other waters of the U.S. from the Baseline and BART alternatives is based upon wetlands delineation and summarized in Table 4.4-4.

Table 4.4-4: Impacts to Jurisdictional Wetlands and Waters of the U.S.		
Jurisdictional Area/Location	Baseline Alternative	BART Alternative & MOS Alternatives
Wetlands		
Relocation of Wrigley Creek for South Calaveras Future Station (permanent fill)	None	1.115 acres
Permanent fill in unnamed wetlands in vicinity of Locomotive Wye Milpitas Option and TPSS #4	None	0.128 acres
Total Wetlands Impacts	None	1.243 acres
Other Waters of the U.S.		
At Agua Caliente Creek (permanent fill from culvert extension or bridge construction)	None	0.002 acres
- Rail ROW Option	None	0.008 acres
- With East of Rail ROW Option	None	0.033 acres
At Toroges Creek (permanent fill from culvert extension or bridge construction)	None	0.009 acres
At Scott Creek (permanent fill from culvert extension or bridge construction)	None	0.044 acres
Total Impacts to Other Waters of the U.S. ^[1]		
- With Rail ROW Option		0.050 acres
- With East of Rail Row Option		
Note: ^[1] Construction of future re-located railroad bridges at Calera, Berryessa, and Wrigley Creeks likely will add nominally to this total (estimated to be less than 0.1 acre of U.S. water) as a result of temporary construction-phase disturbance and permanent losses due to the extension of pier walls and other support structures. Source: Parsons Corporation and Earth Tech, Inc., 2003.		

No Action Alternative

Projects planned under the No-Action Alternative would undergo separate environmental review to define impacts to wetlands and other waters of the U.S.

Baseline Alternative

The Baseline Alternative would not affect wetlands or other waters of the U.S.

BART Alternative

Table 4.4-4 summarizes the BART Alternative's impacts to wetlands and other waters of the U.S., listing the affected jurisdictional areas in geographic order from north to south. The impacts to wetlands and waters of the U.S. resulting from the MOS scenarios are the same as for the full-build BART Alternative.

Approximately 1.115 acres of seasonal and freshwater emergent wetlands of Wrigley Creek would be affected by construction of the South Calaveras Future Station. As shown in Figures B-2, B-4, and B-6, Wrigley Creek severely constrains the use of the property to the east of the station. With all three design options, the creek would need to be relocated approximately 120 feet to the west and would be maintained in an open earthen channel with a planting regime and performance measures established in consultation with ACOE to ensure no net loss of wetlands. Approximately 0.05 acres of delineated wetlands just south of the South Calaveras Future Station would be avoided.

Approximately 0.128 acres of wetlands in drainage ditches bordering the railroad corridor north of the Montague Expressway would be affected by construction of the Locomotive Wye Milpitas Option and by TPSS #4.

Approximately 0.008 acres of waters of the U.S. would be affected by the extension of the existing culvert or construction of a bridge crossing Agua Caliente Creek under the East of Rail ROW Option for the alignment south of Warm Springs. This impact would be reduced to 0.002 acres under the Rail ROW Option. Approximately 0.033 acres of waters of the U.S. would be affected by the extension of the existing culvert carrying Toroges Creek under the railroad corridor. Approximately 0.009 acre of waters of the U.S. would be affected by the extension of the culvert carrying Scott Creek through the railroad corridor. There would be no effect to the southern bank of the creek from placement of TPSS #2.

4.4.3.3 Impacts to Special Status Species

No-Action Alternative

Projects planned under the No-Action Alternative would undergo separate environmental review to define impacts to special status species.

Baseline Alternative

Suitable habitat for Congdon's tarplant, a federal plant species of concern, and burrowing owl, a federal and state wildlife species of special concern, would be affected by construction of the I-680 to planned

Warm Springs BART Station as well as Warm Springs to I-880 busway connectors. This habitat is also potentially suitable for alkali milkvetch and diamond-petaled California poppy – both federal plant species of concern. However, based on reviews of species-occurrence databases and species-specific literature, these plants have a low potential to occur in the SVRTC.

Special status raptors such as white-tailed kites and Cooper's hawks as well as non-special status raptors such as red-tailed hawks, red-shouldered hawks, and great-horned owls, and other raptors have the potential to nest in areas located within the SVRTC associated with the Baseline Alternative. The nests of these raptors are protected by California Department of Fish and Game codes and the MBTA. Construction-related activities near active nests during the nesting season, generally from February through August, could cause nest abandonment resulting in egg failure or hatchling death. Construction of the Baseline Alternative will result in disturbance of up to 13 acres of non-native grassland found in the immediate vicinity of the SVRTC. No mitigation is required if construction activities occur during the non-breeding season (generally September through January). However, if construction activities occur during the breeding season, then impacts could occur.

Construction activities have the potential to disturb nesting swallows at bridge crossings located within the SVRTC. The swallow species that have the potential to occur within the SVRTC are not listed as special status species, but their occupied nests and eggs are protected by California Fish and Game code and the MBTA.

There is potential for special status bat species to roost and forage at bridge crossings and in buildings located within the SVRTC. Construction activities at or near roosting sites could result in abandonment of the roosting site from noise and human presence.

BART Alternative

The BART Alternative may affect Pacific salmonid fisheries of the Guadalupe River of the Santa Clara Valley, Central Valley, northern coast (San Francisco Bay northward), and southern coast (San Francisco Bay southward). These fisheries share elements of the San Francisco Bay, but the Delta and estuary are the primary domain of the Central Valley fishery. Habitat for Central Valley fall/late fall-run Chinook salmon, a federal candidate species and state species of special concern, and steelhead, a federally listed threatened species, may be affected by construction of the Parking Structure Southwest and Northeast Options at the Berryessa Station and by construction of the Railroad/28th Street Option of the Alum Rock Station.

The construction of the Berryessa Station may also affect California red-legged frogs, southwestern pond turtles, nesting white-tailed kites, nesting cooper's hawks, nesting non-special status raptors, nesting swallows, and roosting bats.

The Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Lower Silver Creek provide potential aquatic habitat for the federally threatened California red-legged frog. Construction activities associated with implementation of the BART Alternative would result in temporary impacts to 0.018 acre of aquatic habitat in Lower Silver Creek and could potentially affect aquatic habitat in Guadalupe River, Coyote Creek, and Upper Penitencia Creek. Construction activities could also potentially affect upland aestivation habitat along these waterways. Disturbance of this habitat may affect individual California red-legged frogs that may inhabit or could inhabit the area.

The southwestern pond turtle is a state species of special concern that could occur in the aquatic and riparian habitats of the Guadalupe River, Coyote Creek, Upper Penitencia Creek, and Lower Silver Creek. Construction activities associated with the BART Alternative in or near the waterways would result in temporary disturbance to southwestern pond turtles.

Special status raptors such as white-tailed kites and Cooper's hawks as well as non-special status raptors such as red-tailed hawks, red-shouldered hawks, and great-horned owls, and other raptors have the potential to nest in riparian areas located within the SVRTC. The nests of these raptors are protected by California Department of Fish and Game codes and the MBTA. Construction-related activities near active nests during the nesting season, generally from February through August, could cause nest abandonment resulting in egg failure or hatchling death. Construction of the BART Alternative would result in the temporary disturbance to 2.6 acres of riparian forest and up to 15.6 acres of non-native grassland found in the immediate vicinity of the SVRTC.

Construction activities have the potential to disturb nesting swallows at bridge crossings and riparian forests located within the SVRTC. The swallow species that have the potential to occur within the SVRTC are not listed as special status species, but their occupied nests and eggs are protected by California Fish and Game code and the MBTA.

There is potential for special status bat species to roost and forage at bridge crossings, in buildings, and in adjacent riparian forests located within the SVRTC. Construction activities at or near roosting sites could result in abandonment of the roosting site from noise and human presence.

Impacts to Upper Penitencia and Coyote Creeks would not be deferred under MOS-1E if the Berryessa Station, parking, and support facilities were not built in the first phase of this MOS scenario. However, design requirements (see below) will address the impact to fisheries through incorporation of a 150-foot setback from these creeks.

Suitable habitat for Congdon's tarplant, a federal plant species of concern, would be affected near Wrigley Creek by construction of the BART South Calaveras Future Station, and may be affected by construction of the replacement rail-truck tank car transfer facility at the Sno-boy site and by construction of the Locomotive Wye Fremont Option. Mitigation to protect the tarplant is proposed (see Section 4.4.3.5), but it should be noted that because the area is already highly degraded and the habitat fragmented, loss of individual plants to BART Alternative construction is not expected to contribute to the decline of core plant populations.

Habitat for burrowing owl, a federal and state species of special concern, may be affected by construction of the replacement rail-truck tank car transfer facility at the Sno-boy site, the proposed South Calaveras Future Station, the Locomotive Wye Fremont Option, and the TPSS #5 site.

4.4.3.4 Design Requirements and Best Management Practices

Baseline and BART Alternatives

Efforts have been taken where practicable in designing the Baseline and BART alternatives, as well as the MOS scenarios, to reduce or avoid impacts to sensitive habitat areas. The following measures will reduce or avoid impacts:

- To the maximum extent practicable throughout the project area, construction activities and facilities, including pilings and bridge footings, will be placed outside of aquatic/riparian habitat to avoid impacts to riparian habitat and steelhead and Chinook salmon fisheries. In addition, the plans include a 150-foot setback from Upper Penitencia and Coyote creeks at the Berryessa Station.
- Tunneling under Lower Silver Creek (under the Alum Rock Station U.S./101 Diagonal Option), Coyote Creek, Guadalupe River, and Los Gatos Creek would avoid impacts to aquatic/riparian habitat and fisheries.
- The project design will be consistent with VTA's Fish Friendly Channel Design Guidelines that address high water velocities, jumps to channelized inlets or outlets, shallow water depths, and need for resting pools, as well as other design parameters.

Section 4.19.5.2, *Construction/Design Requirements and Best Management Practices for Biological Resources and Wetlands Impacts*, identifies best management practices to prevent encroachments into and impacts upon sensitive resource areas during construction. It is anticipated that best management practices will be stipulated as conditions of the ACOE Section 404 permit and CDFG Streambed Alteration Agreement. The 401 Water Quality Certification may stipulate waste discharge requirements.

4.4.3.5 Mitigation Measures

Mitigation measures will focus on avoidance and minimization of impacts to the maximum extent practicable. Resources affected temporarily as a result of construction-phase impacts, will be restored to pre-disturbance conditions. For unavoidable impacts to biological resources, wetlands and waters of the U.S., opportunities will be sought to compensate for impacts on-site and in kind. Where on-site opportunities will need to be more than restorative, or are forestalled by either project design or site characteristics, compensatory mitigation will be carried out at a site, or sites, deemed satisfactory by permitting agencies. In consultation with those agencies, pre-construction surveys will be used to assess the extent and nature of compensatory mitigation that may be necessary, based on both the extent of the impact and the quality of the resources being affected.

No-Action Alternative

Projects planned under the No-Action Alternative would undergo separate environmental review to define impacts to vegetation communities, wetlands and other waters of the U.S., and special status species and to determine appropriate mitigation measures.

Baseline Alternative

The section below discusses mitigation for potential impacts to special status and non-special status species that may occur with the implementation of the Baseline Alternative. Construction-related impacts refer to the effects of activities such as site preparation, construction staging, and the installation of trackways and structures. The objective of mitigation measures is to minimize affects to plants and wildlife and their habitat. Mitigation measures typically imposed by regulatory agencies for the types of impacts identified for the Baseline Alternative, include the following:

- Avoidance of areas occupied by Congdon's tarplant or other special status species plants to the maximum extent practicable; and

- Avoidance of areas occupied by burrowing owls or other special status species to the maximum extent practicable.

Breeding season disturbance of nesting raptors would be minimized and avoided through implementation of the following mitigation measures:

- Pre-construction surveys for nesting raptors will be conducted by a qualified biologist to ensure that no raptor nests will be disturbed by construction activities. During these surveys, the biologist would inspect all trees and suitable grassland habitat within 250 feet of the SVRTC. If no nesting raptors are observed in the area surveyed, no further mitigation is required.
- If an active raptor nest is found close enough to the construction area to be disturbed, the biologist, in consultation with CDFG and USFWS, would determine the extent of a construction-free buffer zone (typically 250 feet) to be established around the nest. VTA will require that no grading or other construction activities be allowed within this buffer during the nesting seasons or until the young have fledged, except as approved by USFWS or CDFG.

Implementation of the following mitigation measure would minimize affects to nesting swallows:

- If construction activities are scheduled to occur during the nesting season of swallows and other migratory birds (generally March through August), a pre-construction survey for nesting activity will be conducted prior to commencement of construction. If active nests are identified in close proximity to construction work, a biological monitor will monitor the nests when work begins. If the biological monitor, in consultation with the California Department of Fish and Game (CDFG), determines that construction activities are disturbing adults incubating eggs or young in the nest, then a no work zone buffer will be established by the biological monitor around the nest until the young have fledged and the nest is no longer active. If a biological monitor, in consultation with CDFG, determines that construction activities occurring in proximity to active cliff swallow nests are not disturbing adults or chicks in the nest, then construction activities can continue. Nests that have been determined to be inactive (with no eggs or young) can be removed with CDFG approval.

Implementation of the following mitigation measure would minimize disturbance to roosting bats:

- A qualified biologist will conduct pre-construction surveys in suitable habitat determine the presence of roosting bats. If it is determined that bats are roosting beneath a bridge, in a building, or in adjacent riparian habitat, then appropriate modifications to construction time and method will be implemented in accordance with CDFG approval. Modifications may include timing construction activities to avoid breeding periods, establishment of buffers, or biological monitoring. In some cases bats may be actively encouraged to avoid roosting in the area affected prior to the onset of construction activities.

Construction phase mitigation measures for biological resources are also discussed in Section 4.19.5.3, *Construction/Mitigation Measures for Biological Resources and Wetlands Impacts*.

BART Alternative

The section below discusses mitigation for potential impacts to special status and non-special status species that may occur with the implementation of the BART Alternative. Construction-related impacts refer to the effects of activities such as site preparation, construction staging, and the installation of

trackways and structures. The objective of mitigation measures is to minimize affects to plants and wildlife and their habitat. Mitigation measures typically imposed by regulatory agencies for the types of impacts identified for the BART Alternative, as well as the MOS scenarios, include the following:

- Where riparian vegetation will be affected unavoidably, habitat quality will be assessed and confirmed with regulatory agencies. The size of the area and the quality of the resources that will be affected will be used in concert with the conceptual mitigation plan to develop the details of the compensatory mitigation to be carried out. The site-specific mitigation plan will assure replacement, or enhancement, of habitat values, such as the density of the overstory vegetation, reintroduction of native species, and development of complex vegetation structure, to the maximum extent practicable;
- The creation, restoration, and/or enhancement of wetland areas will be at ratios to be determined in consultation with ACOE (typically consists of ratios of 1:1 to 3:1 depending on the quality of the habitat) to ensure no net loss of wetlands, or the purchase of wetland creation/enhancement credits will be at an approved mitigation bank;
- Installation of falsework and stream diversions in the course of bridge construction will be consistent with VTA's Fish-Friendly Channel Design Guidelines to minimize impacts to migrating anadromous fish and other in-stream species. These Guidelines address concerns related to a number of issues including; high water velocities, jumps to channelized inlets or outlets, water depths, and resting pools;
- Areas occupied by Congdon's tarplant or other special status species plants will be avoided to the maximum extent practicable; and
- Areas occupied by burrowing owls or other special status species will be avoided to the maximum extent practicable.

Implementation of water quality control measures, compensation for disturbed riparian forest and loss of aquatic habitat, and implementation of other mitigation measures would minimize effects to California red-legged frogs and their habitat.

The following recommendations by CDFG will be followed to address water quality impacts to California red-legged frogs:

- No equipment will be operated in the live stream channel.
- When work in a flowing stream is unavoidable, any stream flow will be diverted around the work area by a barrier, temporary culvert, or a new channel capable of permitting upstream and downstream fish movement.
- Construction of the barrier or the new channel normally will begin in the downstream area and continue upstream, and the flow will be diverted only when construction of the diversion is completed.
- Appropriate erosion control measures will be installed to prevent debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material from being washed into waterways by rainfall or runoff.

The following mitigation measures will be followed to compensate for disturbed riparian forest and loss of aquatic habitat:

- Implementation of the BART Alternative will result in the temporary disturbance of 2.6 acres of riparian forest. VTA will mitigate effects on the riparian habitat located within the SVRTC at a ratio determined by CDFG.
- A detailed riparian restoration plan will be prepared. This plan will provide for the replacement of lost acreage as well as values and functions of riparian habitat, including shaded riverine aquatic cover vegetation, and locations of restoration opportunities, with a technical approach to create high-quality riparian and shaded riverine aquatic cover habitat.

The following additional mitigation measures will be followed to reduce impacts to California red-legged frogs:

- A qualified biologist will conduct pre-construction surveys for California red-legged frog within the project area no earlier than 2 days before ground-disturbing activities. The survey area will include 300 feet upstream and downstream from the study area.
- No activities will occur in suitable California red-legged frog habitat after October 15 or the onset of the rainy season, whichever occurs first, until May 1 except for during periods greater than 72 hours without precipitation. Activities can only resume after the 72-hour period or after May 1 following a site inspection by a qualified biologist, in consultation with USFWS. The rainy season is defined as a frontal system that results in depositing 0.25 inches or more of precipitation in one event.
- Vehicles to and from the project site will be confined to existing roadways and defined access routes to minimize disturbance of California red-legged frog habitat.
- If a California red-legged frog is encountered during excavations, or any project activities, activities will cease until the frog is removed and relocated by a USFWS-permitted biologist. Any incidental take will be reported to the USFWS immediately by telephone.
- If suitable California red-legged frog habitat is disturbed or removed, VTA will restore the suitable habitat back to its original value by covering bare areas with mulch and re-vegetating all cleared areas with plant species that are currently found in the project area or as negotiated with USFWS.
- Any permanent loss of aquatic habitat in the Guadalupe River, Coyote Creek, Upper Penitencia Creek, or Lower Silver Creek will be compensated through protection or enhancement of degraded aquatic and riparian habitat either at an on-site or an off-site location. The location and total amount of the compensation habitat will be determined in consultation with USFWS.

The following mitigation measure will be followed to reduce impacts to southwestern pond turtles:

- A qualified biologist will conduct a pre-construction survey for southwestern pond turtles in all suitable aquatic habitat. The survey area will include 300 feet upstream and downstream from the study area. This survey will be conducted no more than 24 hours prior to the onset of in-water construction activities. If individual pond turtles are located, they will be captured by a qualified biologist and relocated to the nearest suitable habitat upstream or downstream of the study area. If individuals are relocated, then the contractor will install barrier fencing along each side of the work area to prevent individual turtles from re-entering the work area. In the event barrier fencing is installed, the qualified biologist will conduct relocation surveys for three consecutive days to ensure that all animals are removed from the disturbance area.

The following mitigation measure will be followed to reduce impacts associated with disturbance of nesting special status and non-special status raptors during construction:

- No mitigation is required if construction activities occur during the non-breeding season of nesting raptors (generally September through January). However, if construction activities occur during the breeding season, disturbance of nesting raptors would be minimized and avoided through implementation of the following mitigation measures.
- Pre-construction surveys for nesting raptors will be conducted by a qualified biologist to ensure that no raptor nests will be disturbed by construction activities. During these surveys, the biologist would inspect all trees and suitable grassland habitat within 250 feet of the SVRTC. If no nesting raptors are observed in the area surveyed, no further mitigation is required.
- If an active raptor nest is found close enough to the construction area to be disturbed, the biologist, in consultation with CDFG and USFWS, would determine the extent of a construction-free buffer zone (typically 250 feet) to be established around the nest. VTA will require that no grading or other construction activities be allowed within this buffer during the nesting seasons or until the young have fledged, except as approved by USFWS or CDFG.

Construction activities have the potential to disturb nesting swallows at bridge crossings and riparian forests located within the SVRTC. The swallow species that have the potential to occur within the SVRTC are not listed as special status species, but their occupied nests and eggs are protected by California Fish and Game code and the MBTA. Implementation of the following mitigation measures would minimize affects to nesting swallows.

- If construction activities are scheduled to occur during the nesting season of swallows and other migratory birds (generally March through August), a pre-construction survey for nesting activity will be conducted prior to commencement of construction. If active nests are identified in close proximity to construction work, a biological monitor will monitor the nests when work begins. If the biological monitor, in consultation with the California Department of Fish and Game (CDFG), determines that construction activities are disturbing adults incubating eggs or young in the nest, then a no work zone buffer will be established by the biological monitor around the nest until the young have fledged and the nest is no longer active. If a biological monitor, in consultation with CDFG, determines that construction activities occurring in proximity to active cliff swallow nests are not disturbing adults or chicks in the nest, then the construction activities can continue. Nests that have been determined to be inactive (with no eggs or young) can be removed with CDFG approval.

Implementation of the following mitigation measure would minimize disturbance to roosting bats.

- A qualified biologist will conduct pre-construction surveys in suitable habitat determine the presence of roosting bats. If it is determined that bats are roosting beneath a bridge, in a building, or in adjacent riparian habitat, then appropriate modifications to construction time and method will be implemented in accordance with CDFG approval. Modifications may include timing construction activities to avoid breeding periods, establishment of buffers, or biological monitoring. In some cases bats may be actively encouraged to avoid roosting in the area affected prior to the onset of construction activities.

Construction phase mitigation measures for biological resources are also discussed in Section 4.19.5.3, *Construction/Mitigation Measures for Biological Resources and Wetlands Impacts*.