3.7 Biological and Aquatic Resources

3.7.1 Introduction

This section describes biological and aquatic resources in the resource study areas (RSA), describes the sources and methods used to characterize these resources, evaluates the potential for construction and operations of the San Francisco to San Jose Project Section (Project Section, or project) to affect these resources, and proposes mitigation measures to reduce those impacts. Important biological and aquatic resources considerations in the San Francisco Bay Area (Bay Area)—one of the most densely populated areas in California—include land cover types, special-status species, non-special-status wildlife species, special-status plant communities, aquatic resources, protected trees, wildlife corridors, and habitat conservation plans (HCP). No conservation areas are located in the RSA.

The *San Francisco to San Jose Project Section Biological and Aquatic Resources Technical Report* (San Francisco to San Jose Biological and Aquatic Resources Technical Report) (California High-Speed Rail Authority [Authority] 2020a), *San Francisco to San Jose Project Section Aquatic Resources Delineation Report* (San Francisco to San Jose Aquatic Resources Delineation Report) (Authority 2020b), and *San Jose to Merced Project Section Biological and Aquatic Resources Technical Report* (San Jose to Merced Biological and Aquatic Resources Technical Report) (Authority 2020c) provide additional technical details on biological and aquatic resources and serve as sources for this analysis.[1] The following technical appendices in Volume 2 provide supporting information pertaining to biological and aquatic resources:

- Appendix 2-D, Applicable Design Standards, provides the list of design standards for the project alternatives that have bearing on biological and aquatic resources.
- Appendix 2-E, Project Impact Avoidance and Minimization Features, provides the list of all impact avoidance and minimization features (IAMF) incorporated into this project.
- Appendix 2-I, Regional and Local Plans and Policies, provides a list by resource of all applicable regional or local plans and policies.
- Appendix 3.1-B, San Francisco Bay Conservation and Development Commission Bay Plan Consistency Analysis, provides an analysis of the project's consistency with San Francisco Bay Plan (Bay Plan) policies.
- Appendix 3.7-A, Special-Status Species Potentially Affected, provides a list of special-status species with the potential to be affected and the rationale for their inclusion or dismissal.
- Appendix 3.7-B, Scientific Nomenclature, provides a list of the common and scientific names of all species mentioned in the text.

In addition to the analysis presented in this section and the relevant appendices, three other sections in this Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) provide analyses of topics that can also be relevant to biological and aquatic resources:

- Section 3.8, Hydrology and Water Resources, discusses existing surface water hydrology, water quality, groundwater, and floodplains, and identifies potential impacts on these resources for both project alternatives.
- Section 3.17, Regional Growth, includes a discussion of growth-inducing impacts.
- Section 3.18, Cumulative Impacts, describes the cumulative impacts of this and other past, present, and reasonably foreseeable future projects.

[1] Technical reports for the San Francisco to San Jose Project Section evaluate the portions of the HSR alignment between 4th and King Street Station in San Francisco and Scott Boulevard in Santa Clara, while technical reports for the adjacent San Jose to Merced Project Section evaluate the portions of the HSR alignment south of Scott Boulevard to the Project Section terminus at West Alma Avenue south of the San Jose Diridon Station.

3.7.1.1 Definition of Terminology

Land Cover Types

For the purposes of this analysis, a *land cover type* is the dominant character of the land surface discernible from aerial photographs, as determined by vegetation, water, or human uses. Land cover types are the most widely used units in analyzing ecosystem function, habitat diversity, natural communities, aquatic resources, and species habitat, and provide the foundation for analyzing impacts on biological resources (e.g., special-status plant communities, habitat for species, aquatic resources). More information on land cover mapping and interpretation is provided in Section 3.7.6, Methods for Evaluating Impacts.

Several terms related to land cover types and vegetation are used in this analysis. The primary reference for describing vegetation in California is the *Manual of California Vegetation* (Sawyer et al. 2009; California Native Plant Society [CNPS] 2018), a prominent scientific publication distributed by CNPS in collaboration with the California Department of Fish and Wildlife (CDFW) that has been adopted as the standard for vegetation classification and description by state and federal agencies. Definitions of *Manual of California Vegetation* terms used or referenced in this report are:

- **Alliance**—A classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover.
- **Association**—A vegetation classification unit defined by a diagnostic species, a characteristic range of species composition, physiognomy, and distinctive habitat conditions.
- **Community**—A group of organisms living together and linked together by their impacts on one another and their responses to the environment they share.
- **Habitat**—The biological and environmental conditions associated with a vegetation type, including “the resources and conditions present in an area that enable occupancy—including survival and reproduction—by a given organism” (Hall et al. 1997).
- **Natural community**—See *plant community*.
- **Plant community**—A group of plant species living together and linked together by their impacts on one another and their responses to the environment they share (CNPS 2018). Synonymous with *natural community* for the purposes of this analysis.
- **Vegetation type**—A classification unit of vegetation at any level in the National Vegetation Classification hierarchy (e.g., alliance, association), or a unit used when vegetation has not been classified formally to a specific level. A vegetation type is typically defined on the basis of shared floristic or physiognomic characteristics. It is comparable to a taxon in plant classification.

Special-Status Species

For the purposes of this analysis, *special-status species* are defined as follows:

- Plants or wildlife listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (16 United States Code [U.S.C.] § 1531 et seq.).
- Plants or wildlife listed or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA) (California Fish and Game Code [Cal. Fish and Game Code] §§ 2050–2085).
- Plants listed as rare under the California Native Plant Protection Act (NPPA) (Cal. Fish and Game Code §§ 1900–1913).

- Plants assigned to California Rare Plant Ranks (CRPR) 1B, 2B, and 3 (CNPS 2018):
  - 1B—Plants rare, threatened, or endangered in California and elsewhere.
  - 2B—Plants rare, threatened, or endangered in California but more common elsewhere.
  - 3—Plants about which more information is needed.
- Wildlife species, subspecies, or distinct populations designated as California species of special concern by the CDFW.
- Wildlife designated as fully protected species (Cal. Fish and Game Code §§ 3511 [birds], 4700 [mammals], 5515 [fish], and 5050 [reptiles and amphibians]).
- Plants or wildlife determined to meet the definitions of rare or endangered under Sections 15380 and 15125 of the California Environmental Quality Act (CEQA) Guidelines.

Although not defined as special-status species per se, *critical habitat* and *essential fish habitat* (EFH) are also addressed in this section because they refer to geographic areas or features that the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) have designated as important for the conservation of federally listed species or federally managed fisheries, respectively. The following subsections further describe these designations.

Critical Habitat

Critical habitat is a specific, formally designated geographic area(s) that contains *physical or biological features* essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species.

Physical or biological features (PBF) refer to those physical and biological features that are essential to a listed species' conservation within an area formally designated as critical habitat for that species (50 Code of Federal Regulations [C.F.R.] § 424.12).

Primary constituent elements (PCE) was a term introduced in the critical habitat designation regulations (50 C.F.R. § 424.12) to describe aspects of PBFs that are referenced in the statutory definition of critical habitat. In 2016, USFWS removed the PCE term and returned to the statutory term PBFs (81 *Federal Register* [Fed. Reg.] 7214). The shift in terminology, however, does not change the approach used in conducting a destruction or adverse modification analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or both. Although the critical habitat designations as published for the species assessed herein identified PCEs, this report uses the term PBF in place of the term PCE, consistent with the 2016 revised regulation.

Essential Fish Habitat

EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." For the purposes of interpreting the definition of EFH, *waters* include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; *substrate* includes sediment, hard bottom, structures underlying the waters, and associated biological communities; *necessary* means habitat required to support a sustainable fishery and a healthy ecosystem; and *spawning, breeding, feeding, or growth to maturity* covers a species' full life cycle. The following characteristics of EFH must be adequate for spawning, rearing, and migration:

- Substrate composition
- Water quality
- Water quantity, depth, and velocity
- Channel gradient and stability
- Food
- Cover and habitat complexity
- Space
- Access and passage
- Habitat connectivity

The Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act) requires all federal agencies to consult with NMFS on all actions or proposed actions permitted, funded, or undertaken by the federal agency that may adversely affect EFH. *Adversely affect* means any effect that reduces the quality or quantity of EFH. Adverse effects may include direct (e.g., contamination, physical disruption), indirect (e.g., loss of prey), site-specific, or habitat-wide effects, including individual, cumulative, or synergistic consequences of actions (Pacific Fishery Management Council [PFMC] 2014).

Non-Special-Status Wildlife

For the purposes of this analysis, *non-special-status wildlife* is an umbrella term for wildlife species or species groups that do not meet the definition of a special-status species as defined earlier in this section, but that may still be affected by construction and operation of the project, including native birds protected under the Migratory Bird Treaty Act (MBTA) and Cal. Fish and Game Code Section 3503, as well as species groups of regional or international conservation concern (e.g., waterfowl and shorebirds, roosting bats).

Special-Status Plant Communities

Special-status plant communities are plant communities that are of limited distribution statewide or within a county or region, and that are often vulnerable to the environmental impacts of projects (California Department of Fish and Game [CDFG] 2009). CDFW maintains a list of *California Sensitive Natural Communities* (CDFW 2018a). This list is based on the *Manual of California Vegetation* (Sawyer et al. 2009) and assigns global and state rarity rankings based on NatureServe's Heritage Program methodology (Master et al. 2012). Communities with State ranks of S1–S3 are considered "highly imperiled," and impacts on these communities are typically considered significant by CDFW. State ranks S1–S3 are defined as follows:

- S1: Fewer than 6 viable occurrences or up to 1,280 acres statewide
- S2: 6 to 20 viable occurrences or 1,280 to 6,400 acres statewide
- S3: 21 to 100 viable occurrences or 6,400 to 32,000 acres statewide

The rarity ranking is sometimes modified by an additional threat ranking:

- 0.1: Very threatened
- 0.2: Threatened
- 0.3: No current threat known

Aquatic Resources

Aquatic resources are wetlands and nonwetland waters that are considered jurisdictional under the federal Clean Water Act (CWA) (collectively called waters of the U.S.) and waters of the state regulated under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), including riparian vegetation subject to notification under Cal. Fish and Game Code Section 1600 et seq. for the protection of fish and wildlife species. The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) regulate waters of the U.S., the State Water Resources Control Board (SWRCB) regulates waters of the state, and CDFW regulates lakes, streambeds and banks (often including adjacent riparian vegetation) that support fish and wildlife species. Confirmation of these resources as jurisdictional by USACE or regulated by SWRCB or CDFW would be obtained through the process to obtain regulatory authorizations. The definitions of the regulatory categories for aquatic resources are presented in this section.

Clean Water Act Section 404 (Waters of the U.S., including Wetlands)

The federal CWA (33 U.S.C. § 1251 et seq.) defines *waters of the U.S.* as follows:

> *(1) all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes,*

> *wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S.; (5) tributaries to the foregoing types of waters; and (6) wetlands adjacent to the foregoing waters (33 C.F.R. § 328.3(a)).*

Wetlands are a sub-classification of waters of the U.S. The term *nonwetland waters* is used to describe waters of the U.S. exclusive of wetlands.

According to the *Corps of Engineers Wetlands Delineation Manual* (USACE Delineation Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE Arid West Supplement) (USACE 2008), three criteria must be satisfied to classify an area as a wetland. These criteria are: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology). The project crosses areas under the jurisdiction of the USACE San Francisco District.

Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)/General Bridge Act of 1946 (33 U.S.C. § 525 et seq.)

The Rivers and Harbor Act (RHA) of 1899 and the General Bridge Act of 1946 regulates navigable waters, which are defined as the ocean and other waterbodies (e.g., streams, rivers, lakes) subject to the ebb and flow of the tide and are utilized currently, potentially, or historically in their natural condition or by reasonable improvements, as means to transport interstate or foreign commerce. Section 10 of the RHA requires a permit from USACE if the construction of any structure affects the course, location, or condition of a navigable water body. The regulation applies to any modification of navigable water (e.g., dredge, fill, excavation) and any structure regardless of size.

Porter-Cologne Water Quality Control Act (Waters of the State)

Waters of the state are broadly defined by the Porter-Cologne Act (California Water Code § 13050(e)) to mean any surface water or groundwater, including saline waters, within the boundaries of the state. Under this definition, isolated wetlands that may not be subject to regulations under federal law are considered waters of the state and regulated accordingly. The Authority has requested a preliminary jurisdictional determination (PJD) from USACE under Section 404 of the CWA for all aquatic resources, regardless of their potential to qualify as jurisdictional under the CWA. The request for a PJD means that the jurisdictional determination by USACE of waters of the U.S. mapped in the RSA is not being sought by the Authority. Therefore, under a PJD, all of the aquatic resources mapped in the RSA would be considered waters of the U.S. Because the mapped extent of such areas includes potential isolated waters, there would be no aquatic resources that would quality only as waters of the state.

California Fish and Game Code Section 1600 et seq.

Pursuant to Cal. Fish and Game Code Section 1600 et seq., CDFW regulates activities of an applicant's project that would substantially alter the flow, bed, channel, or bank of streams or lakes, unless certain conditions outlined by CDFW are met by the applicant. Under Cal. Fish and Game Code Section 1602, CDFW takes jurisdiction over rivers, streams, and lakes because of their value as habitat for fish and wildlife resources. The state's jurisdiction generally includes the streambed/lakebed to tops of bank. Although not specifically defined in Cal. Fish and Game Code Section 1602, jurisdiction in some instances may include adjacent riparian vegetation. A riparian area consists of the transitional habitat between terrestrial and aquatic ecosystems, specifically the vegetated areas between a riverine feature and the outer drip line of the adjacent vegetation. In practice, CDFW has extended its authority to the top of a bank of a stream, the bank of a lake, or outer edge of the riparian vegetation, whichever is wider. The term *stream* is commonly understood as a watercourse having a source and terminus, banks and channel, through which waters flow, at least periodically. A *streambed* under Section 1602 includes the channel of a

watercourse, which is generally defined to include the depression between the banks worn by the regular and usual flow of the water.

Protected Trees

Protected trees are trees that have special significance and are afforded protection by, and specifically identified in, county and city ordinances, codes, or general plans. Cities and counties traversed by the project that may have tree protection regulations are the City and County of San Francisco; the Counties of San Mateo and Santa Clara; and the Cities or Towns of Brisbane, San Bruno, Millbrae, Burlingame, San Mateo, Belmont, Redwood City, San Carlos, Atherton, Menlo Park, Palo Alto, Mountain View, Sunnyvale, and Santa Clara. Volume 2, Appendix 2-I addresses the types of trees and specific physical characteristics required to meet the local tree definitions.

Wildlife Corridors

For the purposes of this analysis, *wildlife corridors* refers to areas that have been identified in statewide or regional reports (California Department of Transportation [Caltrans] and CDFG 2010; Penrod et al. 2013) or identified by the wildlife agencies (USFWS or CDFW) as important for the preservation of connectivity for federally or state-listed species. The term *connectivity* in this document refers to "the extent to which a species or population can move among landscape elements in a mosaic of habitat types" (Hilty et al. 2006: page 90).

Conservation Areas

Conservation areas are land parcels that are protected or managed specifically or that have been designated for the conservation of biological or aquatic resources. This report considers three types of conservation areas—conservation easements, public lands established and managed for the purpose of conserving biological or aquatic resources (e.g., refuges and ecological reserves), and conservation and mitigation banks—although only public lands overlap with the project footprint.

Conservation Easements

A *conservation easement* is a binding, legal agreement between a landowner and a land trust or government agency that limits uses of the land to protect its conservation values and achieve specific conservation objectives. A conservation easement allows landowners to continue to own and use their land. However, certain actions are prohibited, and the landowner agrees to conserve or restore habitat, open space, scenic, or other ecological resource values on the land covered by the easement.

Public Lands

Public lands are owned and typically maintained by the government: cities, counties, states, and the federal government. Public lands in the RSA consist entirely of parks.

Conservation and Mitigation Banks

Conservation and *mitigation banks* are permanently protected lands that contain natural resource values. These lands are conserved and permanently managed for special-status species, wetlands or waters, or other natural resources. Conservation and mitigation banks function to offset impacts on natural resources that occurred elsewhere; for this reason, these banks are sometimes referred to as off-site mitigation. In exchange for permanently protecting the land and managing it for natural resources, the natural resource regulatory agencies (USFWS, USACE, NMFS, or CDFW) approve a specified number of natural resource (habitat, species, or resource) credits that bank owners may sell.

Habitat Conservation Plans

HCPs are planning documents required as part of an application for an incidental take permit under Section 10 of the FESA; for the purposes of this analysis, an HCP is also defined in Appendix G to the CEQA Guidelines, as other approved local, regional, or state conservation plans. As defined in this document, HCPs also include natural community conservation plans (NCCP) prepared under California's Natural Community Conservation Planning Act (NCCPA), which identify measures necessary to conserve and manage natural biological diversity within the

planning area while allowing consistent and appropriate economic development, growth, and other human uses.

BCDC Jurisdictional Areas

This subtopic refers to areas under San Francisco Bay Conservation and Development Commission (BCDC) jurisdiction pursuant to the McAteer-Petris Act. Specifically, it addresses biological and aquatic resources within BCDC's "Bay" and "shoreline band" jurisdiction. The "Bay" is defined as "all areas that are subject to tidal action from the south end of the bay to the Golden Gate...and to the Sacramento River line..., including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; tidelands...; and submerged lands…" (California Government Code [Cal. Gov. Code] § 66610). "Shoreline band" jurisdiction consists of "all territory located between the shoreline of San Francisco Bay and a line 100 feet landward of and parallel with that line" (Cal. Gov. Code § 66610(b)). Within the shoreline band, BCDC may designate certain areas for priority uses.

3.7.2 Laws, Regulations, and Orders

This section presents federal and state laws, regulations, and orders applicable to biological and aquatic resources that could be affected by the project. The Authority would implement the overall high-speed rail (HSR) project, including the project, in compliance with all federal and state regulations. Volume 2, Appendix 2-I provides regional and local laws, regulations, and orders considered in preparing this analysis.

3.7.2.1 Federal

Federal Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.)

The FESA and subsequent amendments provide guidance for conserving federally listed species and their habitat. The following sections of the FESA are relevant to the project:

- Section 7 requires federal agencies to consult with USFWS or NMFS, as appropriate, so that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered fish, wildlife, or plant species or result in the destruction or adverse modification of designated critical habitat for any such species. As part of the consultation, USFWS and NMFS will issue a biological opinion and an incidental take statement for wildlife species to exempt the Section 9 take prohibition.
- Section 9 and its implementing regulations prohibit the take of any fish or wildlife species listed under the FESA as endangered or threatened, unless otherwise authorized by federal regulations. The term *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Take also includes the substantial modification of a listed species' habitat that results in death or injury to individuals of the species. Section 9 prohibits specified activities with respect to endangered plants.

Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.)

The amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act (Public Law [PL] 104-297), requires that all federal agencies consult with NMFS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect EFH for commercially managed marine and anadromous fish species.

Clean Water Act (33 U.S.C. § 1251 et seq.)

The federal CWA serves as the primary federal law protecting the quality of the nation's surface waters, including wetlands. This section discusses sections of the CWA applicable to the project.

- Under Section 401, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into waters of the U.S. unless a state where the discharge would originate issues a Section 401 water quality certification verifying compliance with existing water quality requirements or waives the certification requirement. Project sponsors must obtain CWA Section 401 Water Quality Certification from SWRCB.

- Under Section 402, all point-source discharges, including construction-related stormwater discharges to surface waters, are regulated through the National Pollutant Discharge Elimination System (NPDES) program. The State of California has assumed the Section 402 permitting program from the U.S. Environmental Protection Agency (USEPA). Project sponsors must obtain an NPDES permit from SWRCB.
- Under Section 404, USACE and USEPA regulate the discharge of dredged and fill materials into the waters of the U.S. Project sponsors must obtain a CWA Section 404 permit from USACE for discharges of dredged or fill materials into waters of the U.S. (wetlands and other waters).

Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)/General Bridge Act of 1946 (33 U.S.C. § 525 et seq.)

The RHA is a primary federal law regulating activities that may affect navigation on the nation's waterways, including the following provisions:

- Section 9 of the RHA and Section 9 of the General Bridge Act require a permit for the construction of bridges and causeways over certain navigable waters of the U.S. to prevent adverse impacts on marine traffic. *Navigable waters* are defined as those waterbodies subject to the ebb and flow of the tide and that are utilized currently, potentially, or historically in their natural condition or by reasonable improvements, as means to transport interstate or foreign commerce. Section 9 bridge permits are only required for waters that are currently or potentially navigable for commerce; general recreational boating is typically not sufficient to establish jurisdiction. Section 9 bridge permits are issued by the U.S. Coast Guard.
- Section 10 of the RHA requires authorization from USACE for the construction of any structure in or over any navigable waters of the U.S., excavating from or depositing material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters.
- Section 14 of the RHA requires permission for the use, including modifications or alterations, of any flood control facility work built by the U.S. to prevent impairing the usefulness of the federal facility. The permission for occupation or use is to be granted by "appropriate real estate instrument in accordance with existing real estate regulations." For USACE facilities, the Section 408 approval, known as Section 408 permit, is required.

U.S. Fish and Wildlife Coordination Act (16 U.S.C. §§ 661–666c)

The U.S. Fish and Wildlife Coordination Act applies to any federal project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with USFWS and the appropriate state wildlife agency.

Migratory Bird Treaty Act (16 U.S.C. §§ 703–712)

The MBTA of 1918 prohibits the take of the nest, eggs, birds, or any parts thereof (listed at 50 C.F.R. § 10.13 as modified by 75 Fed. Reg. 9281). The MBTA defines migratory birds broadly; all birds native to North America are considered migratory birds under the MBTA. The Migratory Bird Treaty Reform Act (16 U.S.C. § 703 et seq.; PL 108–447) amends the MBTA of 1918 to exclude nonnative birds or birds that have been introduced by humans to the U.S. or its territories from protection under the MBTA. The statute defines a native migratory bird as a species present in the U.S. and its territories as a result of natural biological or ecological processes.

3.7.2.2 State

California Endangered Species Act (Cal. Fish and Game Code, §§ 2050–2085)

The CESA prohibits the take of any fish, wildlife, or plant species listed as endangered or threatened, or designated as candidates for listing, under CESA. *Take* under CESA means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. It does not include

"the taking of habitat alone or the impacts of the taking".[2] Like the FESA process, CESA contains a procedure for CDFW to issue a Section 2081 incidental take permit authorizing the take of listed and candidate species incidental to an otherwise lawful activity, subject to specified conditions, including that the impacts of the take are minimized and fully mitigated.

California Fish and Game Code

Fully Protected Species (Cal. Fish and Game Code, §§ 3511, 4700, 5050, and 5515)

The Cal. Fish and Game Code designates 37 fully protected species and prohibits the take or possession at any time of such species with certain limited exceptions. Fully protected species are described in Cal. Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). These protections state that "…no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird], [mammal], [reptile or amphibian], [fish]."

Bird Protections (Cal. Fish and Game Code, §§ 3503, 3503.5, and 3513)

Cal. Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by code or any regulation made pursuant thereto. Section 3503.5 prohibits the take, possession, or destruction of any nests, eggs, or birds in the orders Falconiformes (New World vultures, hawks, eagles, ospreys, and falcons, among others) or Strigiformes (owls). Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA.

Lake and Streambed Alteration (Cal. Fish and Game Code, § 1600 et seq.)

Section 1600 et seq. of the Cal. Fish and Game Code requires notifying CDFW prior to any project activity that might (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If after this notification CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a lake or streambed alteration agreement would need to be obtained.

California Native Plant Protection Act (Cal. Fish and Game Code, §§ 1900–1913)

The NPPA requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. The NPPA gives CDFW the power to designate native plants as "endangered" or "rare" and prohibits the take of such plants, with certain exceptions.

Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13000 et seq.)

The Porter-Cologne Act is the principal law governing water quality regulation in California by establishing a program to protect water quality and the beneficial uses of water. The Act applies to surface waters, groundwater, and both point and nonpoint sources of pollution and provides for implementation of the federal CWA by SWRCB, including issuance of NPDES permits and CWA Section 401 water quality certifications. SWRCB also issues waste discharge requirements for discharges to waters of the state that could affect water quality, including fill of wetlands that is not otherwise authorized by Section 404 of the federal CWA. Application for waste discharge requirements requires filing a report of waste discharge.

McAteer-Petris Act (Cal. Gov. Code § 66600 et seq.)

The McAteer-Petris Act vests the BCDC with the authority to plan and regulate activities and development in and around the San Francisco Bay, consistent with policies adopted in the Bay Plan. BCDC regulates the filling and dredging of the San Francisco Bay and any substantial change in use of any water or land within the area of BCDC's jurisdiction through the permitting process described in the Act. The Act affords BCDC jurisdiction over five areas in and around the

[2] *Environmental Council of Sacramento v. City of Sacramento*, 142 Cal. App. 4th 2018 (2006).

San Francisco Bay: (1) “Bay” jurisdiction, (2) “shoreline” jurisdiction, (3) “saltponds” jurisdiction, (4) “managed wetlands” jurisdiction, and (5) “certain waterways” jurisdiction. Only two of these BCDC jurisdictional areas are relevant for the project: the Bay and shoreline jurisdictions.

The project includes areas within BCDC jurisdiction at Mission Creek and Islais Creek in San Francisco; Visitacion Creek, and Brisbane Lagoon (including Guadalupe Valley Creek outlet) in Brisbane; Oyster Bay and Colma Creek in South San Francisco; and El Zanjon Creek in San Bruno.

The agency’s decision to grant or deny a permit for the project is guided by the Act’s provisions and the standards set out in the Bay Plan. BCDC is authorized to regulate fill or dredge in the San Francisco Bay and development of the “shoreline band,” which consists of the area within 100 feet of the shoreline. The McAteer-Petris Act creates broad circumstances under which a permit is required by providing that any person wishing to place fill, extract materials, or make any substantial change in the use of water, land, or structures within areas subject to BCDC’s jurisdiction obtain a permit. The term *fill* is defined broadly to include not only earth and other materials, but pilings, structures placed on pilings, and floating structures. BCDC is authorized to issue a permit for fill if the applicant demonstrates that the issuance of the permit would be consistent with the provisions of Section 66605 of the Act and with the policies established for the Bay Plan or if BCDC determines that the activity to be permitted is necessary for the health, safety or welfare of the public in the entire Bay Area. Pursuant to Section 66605 of the McAteer-Petris Act, BCDC is authorized to issue a permit if the proposed fill: (1) is for a water-oriented use; (2) provides public benefits that outweigh the adverse impacts from the loss of open water areas; (3) there is no alternative upland location available for the proposed action; (4) the fill would be the minimum amount necessary to achieve the purpose of the proposed action; (5) the nature, location, and extent of fill minimizes harmful effects on the Bay; (6) the fill is constructed in accordance with sound safety standards. Volume 2, Appendix 3.1-B sets out the Bay Plan policies pertinent to the project and an assessment regarding the consistency of the project with those policies.

The McAteer-Petris Act also provides that a permit must be obtained from BCDC prior to undertaking construction activities within the shoreline band jurisdiction. In addition, for permitting purposes, the Act allows for areas within the shoreline band to be designated by BCDC for priority uses. Within such areas, the proposed use must be consistent with the uses specified for the designated area. To obtain a permit for development within the shoreline band, the proposed project must provide for maximum feasible public access to the Bay and the shoreline.

The Bay Plan include policies related to biological and aquatic resources. Volume 2, Appendix 3.1-B identifies a list of Bay Plan policies pertinent to the project, including policies related to biological and aquatic resources, and whether the project would be consistent with these policies.

Coastal Zone Management Act (16 U.S.C. §§ 1451 et seq.) (San Francisco Bay)

In addition to its responsibilities under the McAteer-Petris Act, BCDC issues federal consistency determinations under Section 307 of the Coastal Zone Management Act (CZMA) of 1972. The objective of the CZMA is to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zone.” *Coastal zone* means “the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the lands therein and thereunder including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands and beaches.” The CZMA is administered by the California Coastal Commission in most areas in California, with the exception of the Bay Area, where it is administered by BCDC. The consistency provisions of Section 307 of the CZMA require that federal actions, including federal development projects, that affect any land or water use or natural resources within the coastal zone, be consistent with the enforceable policies of BCDC’s federally approved coastal management program. Similarly, any nonfederal action that requires either a federal permit or license (e.g., CWA Section 404 permit from USACE) or is supported by federal financial assistance that affects the coastal zone must be consistent with such policies.

BCDC uses its federally approved Management Program for the San Francisco Bay Segment of the California Coastal Zone (Management Program) to exercise its federal consistency authority under the CZMA. BCDC's Management Program defines the BCDC segment of the California coastal zone as being coextensive with BCDC jurisdiction under state law, incorporates the McAteer-Petris Act, the Suisun Marsh Preservation Act, certain other state laws, and various BCDC plans. The Management Program also provides that BCDC will generally follow its procedures for processing a permit application when it reviews a consistency determination for a federal project or activity, or a consistency certification for a nonfederal project subject to consistency review.

3.7.2.3 Regional and Local

Regional and local plans relevant to biological and aquatic resources include city and county general plans, county ordinances, and local tree removal ordinances. Policies and regulations include guidelines that minimize disturbance of vegetation, encourage habitat protection, and support conservation. Volume 2, Appendix 2-I lists all regional and local policies that are applicable to the project.

3.7.3 Consistency with Plans and Laws

As indicated in Section 3.1.5.3, Consistency with Plans and Laws, the CEQA and Council on Environmental Quality (CEQ) regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. Accordingly, this Draft EIR/EIS describes the inconsistency of the project alternatives with federal, state, regional, and local plans and laws to provide planning context.

Several federal and state laws and implementing regulations, listed in Section 3.7.2.1, Federal, and Section 3.7.2.2, State, protect biological and aquatic resources. A summary of the federal and state requirements considered in this analysis follows:

- Federal and state acts and laws that protect wetlands and other waters. Applicable acts and laws include the federal CWA, the RHA, the state Porter-Cologne Act, and the McAteer-Petris Act.
- Federal and state acts and laws that provide comprehensive requirements for protection and management of special-status species and their habitats and communities. Applicable acts and laws include the FESA, the Magnuson-Stevens Fishery Conservation and Management Act, the U.S. Fish and Wildlife Coordination Act, the MBTA, Cal. Fish and Game Code (including CESA, Fully Protected Species, Bird Protections, Lake and Streambed Alteration, and the NPPA).

The Authority, as the lead agency proposing to build and operate the HSR system, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state regulatory authorizations prior to initiating construction on the selected alternative. Therefore, there would be no inconsistencies between the project alternatives and these federal and state laws and regulations.

The Authority is not required to comply with local biological and aquatic resource regulations and plans; however, it has endeavored to design and build the HSR project so that it is consistent with biological and aquatic resource regulations and plans. Avoidance, minimization, and mitigation would be implemented to reduce and compensate for impacts on biological and aquatic resources including implementing biological resources management plans (BRMP), specific construction protocols, and protection of habitat and species. The Authority reviewed a total of 39 relevant plans and ordinances with 151 goals, strategies, or policies, and determined that the project alternatives were consistent with all regional and local plans and policies.

3.7.4 Consultation with Regulatory Agencies for Federal Endangered Species Act Compliance

The goal of the FESA is to conserve threatened and endangered species (federally listed species) and the ecosystems on which they depend (16 U.S.C. § 1531 et seq.). Section 7 of the FESA, *Interagency Cooperation*, establishes the process by which federal action agencies, their

designees (e.g., state transportation agencies), and USFWS and NMFS consult to ensure that proposed actions are not likely to jeopardize the continued existence of species listed or proposed for listing as threatened or endangered or result in the destruction or adverse modification of critical habitat. Both agencies share responsibility for implementing the FESA, with USFWS managing most terrestrial and freshwater species and NMFS managing marine and anadromous species (e.g., Pacific salmonids).

The implementing procedures of the FESA are outlined in 50 C.F.R. Part 402. Section 7 consultation is required for discretionary federal agency actions taken directly, through one of its own proposed projects or indirectly, through partial or complete funding for a nonfederal project or through issuing a permit for a nonfederal project. Section 7(a)(2) states:

> *Each federal action agency shall, in consultation with and with the assistance of the Secretary [of the Interior], insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an 'agency action') is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph, each agency shall use the best scientific and commercial data available.*

In addition, Magnuson-Stevens Act Section 305(b)(2) requires federal agencies to consult with NMFS regarding actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, and which may affect and are likely to adversely affect EFH (50 C.F.R. § 600.920). The Magnuson-Stevens Act requires cooperation among NMFS, fishery management councils, fishing participants, federal and state agencies, and others in achieving EFH protection, conservation, and enhancement.

3.7.4.1 Consultation History with the U.S. Fish and Wildlife Service: Wildlife

The Authority has begun informal consultation with USFWS, but has not yet submitted a biological assessment (BA) and initiated formal Section 7 consultation. Submittal of the BA and a request to initiate formal Section 7 consultation is expected to occur in 2020.[3] The Authority will consult on all federally listed species with habitat in the project footprint, as identified in Section 3.7.12, Preliminary Federal Endangered Species Act Findings.

3.7.4.2 Consultation History with the National Marine Fisheries Service: Fish

The Authority has begun informal consultation with NMFS, but has not yet submitted a BA and initiated formal Section 7 consultation. Submittal of the BA and a request to initiate formal Section 7 consultation is expected to occur in 2020. There is habitat for two federally listed fish species, central California Coast (CCC) steelhead and green sturgeon (southern distinct population segment [DPS]), in the project footprint that will require consultation with NMFS, as identified in Section 3.7.12.

The Magnuson-Stevens Act Section 305(b)(2) requires federal agencies to consult with NMFS regarding actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, and which may affect and are likely to adversely affect EFH (50 C.F.R. § 600.920). The Authority has not yet initiated Section 305(b)(2) consultation with NMFS, however this is anticipated to occur in 2020.

[3] Pursuant to 23 U.S.C. Section 327, under the NEPA Assignment Memorandum of Understanding between the Federal Railroad Administration (FRA) and the State of California, effective July 23, 2019, the Authority has been assigned FRA's FESA Section 7 (16 U.S.C. § 1536) responsibilities with respect to the Project Section and other projects described in subpart 3.3 of the Memorandum of Understanding.

3.7.5 Consultation with the San Francisco Bay Conservation and Development Commission for the McAteer-Petris Act

There are seven locations where the project footprint overlaps with BCDC's jurisdiction (Figure 2-48 and 2-50):

- Mission Creek in San Francisco (milepost [MP] 0.6)
- Islais Creek in San Francisco (MP 2.25)
- Visitacion Creek in Brisbane (MP 6.0)
- Brisbane Lagoon (including Guadalupe Valley Creek outlet) (MP 6.5)
- Oyster Point Channel in South San Francisco (MP 8.0 and 8.25)
- Colma Creek crossing in South San Francisco (MP 9.6)
- El Zanjon Creek (MP 11.6)

Compliance with the McAteer-Petris Act requires obtaining a permit for work in the Bay and within 100 feet of the Bay shoreline. The project would likely require a major permit from BCDC because proposed activities at the listed locations would be more extensive than a minor repair or improvement. The Authority has held several meetings with BCDC via phone or in-person meetings on the following dates:

- November 6, 2018
- May 20, 2019
- August 30, 2019
- September 12, 2019
- December 11, 2019
- March 24, 2020
- December 11, 2019
- March 24, 2020

3.7.6 Methods for Evaluating Impacts

The evaluation of impacts on biological and aquatic resources is a requirement of the National Environmental Policy Act (NEPA) and CEQA. The following section defines the RSA and describes the methodology for obtaining information on biological and aquatic resources potentially affected by the project, as well as the methods for conducting the impact analysis. As summarized in Section 3.7.1, Introduction, three other resource sections in this Draft EIR/EIS also provide additional information related to biological and aquatic resources.

3.7.6.1 Definition of Resource Study Area

As described in Section 3.1, Introduction, RSAs are the geographic boundaries within which the environmental investigations specific to each resource topic were conducted. The RSA for impacts on biological and aquatic resources encompasses the project footprint for each of the project alternatives plus an additional distance from the project footprint where construction and operations could affect biological and aquatic resources. Specific RSA boundaries vary by different biological and aquatic resources, as shown in Table 3.7-1 and illustrated on Figure 3.7-1. The project footprint is the area that would be physically affected by construction and operations of the project (including temporary disturbance) and the location of permanent HSR facilities and activities. The project footprint includes the limits of ground disturbance, plus all access roads and areas required for operating, storing, and refueling construction equipment.

Table 3.7-1 Definition of Biological and Aquatic Resource Study Areas[1]

Type	Area of Impact	General Description
Habitat Study Area		
Core Habitat Study Area		
Direct impacts	Project footprint (includes permanent and temporary impacts)	Area in which potential direct and indirect impacts on special-status wildlife species and their habitat were evaluated. Ground-based site assessments or surveys were conducted in this area, if accessible.
Indirect impacts	Project footprint plus 250-foot buffer outside project footprint.	
Auxiliary Habitat Study Area		
Indirect impacts	250- to 1,000-foot buffer outside core habitat study area	Area in which indirect impacts on special-status wildlife species and their habitat were evaluated. Habitat assessed through extrapolation of field observations made in the core habitat study area, aerial photograph interpretation, or windshield surveys.
Supplemental Habitat Study Area		
Indirect impacts	Extends up to 10 miles outward from the project footprint, depending on target species	Identifies species-specific habitat based on aerial photograph interpretation and documented occurrences of the species. The supplemental habitat study area includes lands within 3.1 miles of the project footprint for impacts on California tiger salamander (CDFG and USFWS 2003), and includes the 1-mile buffer required by the USFWS (2005) in formal site assessments for California red-legged frog. No other species-specific study areas were identified.
Aquatic Resource Study Area		
Direct impacts	Project footprint	Area in which potential direct and indirect impacts on aquatic resources were evaluated. Ground-based site assessments or delineations were conducted in this area, if accessible. This area is equivalent to the core habitat study area evaluated for direct and indirect impacts on special-status wildlife.
Indirect impacts	Project footprint plus 250-foot buffer outside project footprint	
Special-Status Plant Study Area		
Direct impacts	Project footprint	Evaluate direct and indirect impacts on upland sensitive plant resources (including special-status plants, special-status plant communities, and protected trees).
Indirect impacts	Project footprint plus 100-foot buffer outside project footprint	
Wildlife Movement Study Area		
Direct and indirect impacts	20-mile buffer outside project footprint	Determined based on agency regulations and guidance, literature, and best professional judgment, and in consultation with appropriate regulatory agencies.

CDFG = California Department of Fish and Game
USFWS = U.S. Fish and Wildlife Service
[1] Study areas were selected considering the resources (species and other biological resources) potentially affected, impact mechanisms, agency guidelines, and professional judgement.

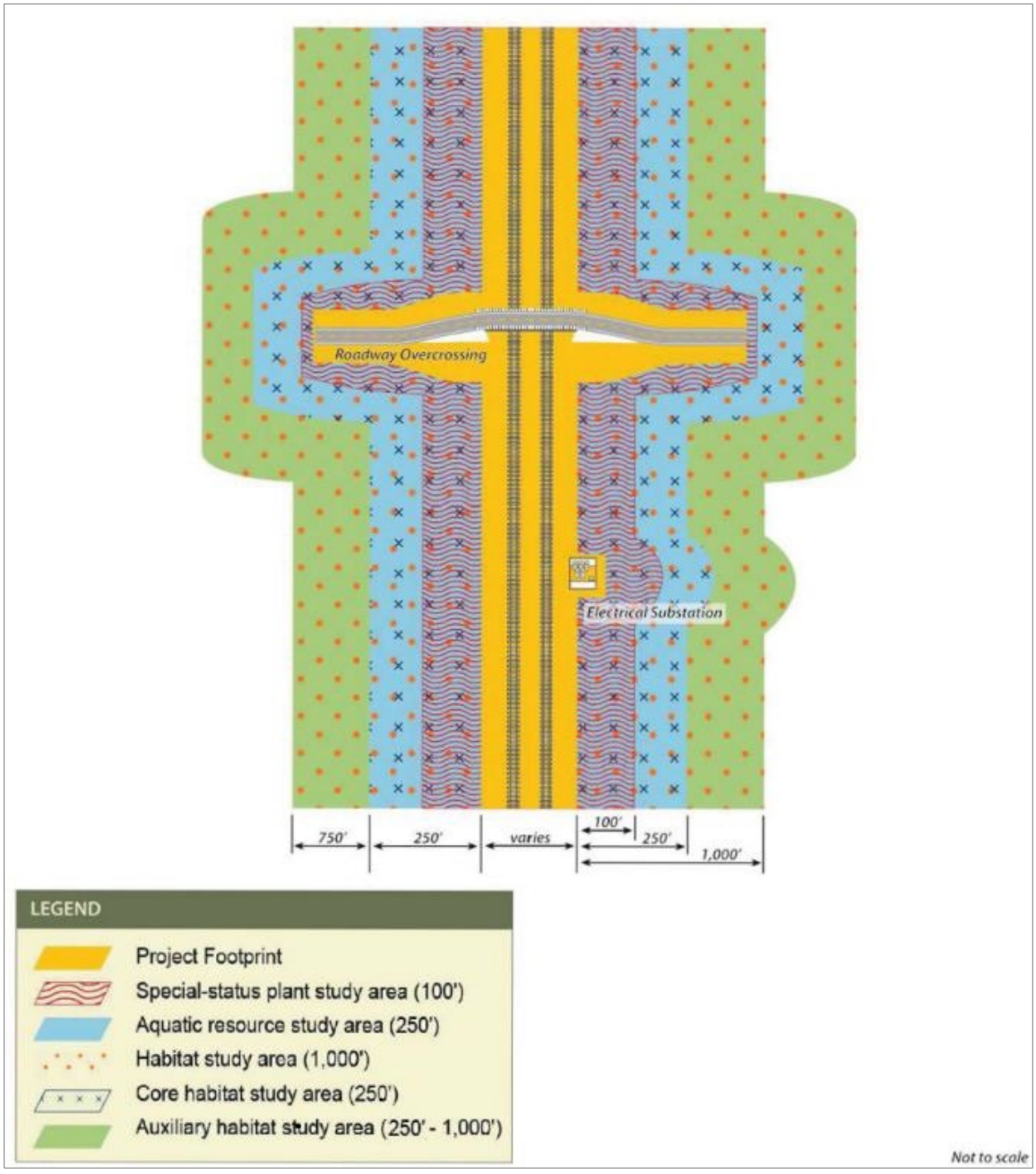

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Figure 3.7-1 Schematic of Biological and Aquatic Resource Study Areas

3.7.6.2 Impact Avoidance and Minimization Features

IAMFs are project features that are considered to be part of the project and are included as applicable in each of the alternatives for purposes of the environmental impact analysis. Volume 2, Appendix 2-E provides the full text of the IAMFs that are applicable to the project. The following IAMFs are applicable to the biological and aquatic resources analysis:

- BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors
- BIO-IAMF#2: Facilitate Agency Access
- BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
- BIO-IAMF#4: Conduct Operation and Maintenance Period WEAP Training
- BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan
- BIO-IAMF#6: Establish Monofilament Restrictions
- BIO-IAMF#7: Prevent Entrapment in Construction Materials and Excavations
- BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes
- BIO-IAMF#9: Dispose of Construction Spoils and Waste
- BIO-IAMF#10: Clean Construction Equipment
- BIO-IAMF#11: Maintain Construction Sites
- BIO-IAMF#12: Design the Project to be Bird Safe
- AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment
- AQ-IAMF#5: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment
- NV-IAMF#1: Noise and Vibration

This environmental impact analysis considers these IAMFs as part of the project design. In Section 3.7.8, Environmental Consequences, each impact narrative describes how these project features are applicable and, where appropriate, effective at avoiding or minimizing potential impacts to less than significant under CEQA.

3.7.6.3 Pre-Field Investigation and Consultation

This section describes the methodology for obtaining information on biological and aquatic resources in the project vicinity. All information was obtained through reviews of public datasets (e.g., the California Natural Diversity Database [CNDDB]) and previous environmental documentation of the Project Section and Peninsula Corridor Electrification Project (PCEP) (Peninsula Corridor Joint Powers Board [PCJPB] 2015a, 2015b, 2015c, 2015d). Methods for obtaining information on biological and aquatic resources in the San Jose Diridon Station Approach Subsection are provided in the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c).

Vegetation and Land Cover Mapping

Prior to field surveys, biologists created preliminary maps of plant communities and land cover types in the core habitat study area by reviewing National Agriculture Imagery Program 2014 imagery using ArcGIS 10.3 software. A mapping scale of 1 inch = 200 feet (1:2,400) was used. A minimum mapping unit of 1.0 acre was used for wetland complexes, and a minimum mapping unit of 0.25 acre was used for stand-alone wetlands. A minimum mapping unit of 10 acres was used for all other land cover types, with smaller units used when discrete boundary and types could be discerned. Natural and constructed watercourses were mapped as line features and attributed with their approximate average width. Features wider than 40 feet were mapped as polygons.

Terrestrial vegetation communities and land cover types were identified using the *Manual of California Vegetation* (Sawyer et al. 2009) or the California Wildlife Habitat Relationships Habitat Classification Scheme (CDFG 1988). Aquatic plant communities and land cover types were classified in accordance with USFWS' *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

Special-Status Species

Biologists consulted the following sources to identify special-status plant and wildlife species that could potentially be affected by the project:

- **USFWS species list**—Biologists obtained an informal list of federal candidate, proposed, threatened, and endangered plant and wildlife species and critical habitat potentially occurring in the habitat study area from the USFWS Environmental Conservation Online System's Information for Planning and Conservation website (Appendix B of the San Francisco to San Jose Biological and Aquatic Resources Technical Report [Authority 2020a]).
- **NMFS species list**—Biologists obtained an informal list of federal candidate, proposed, threatened, and endangered fish species potentially occurring in the habitat study area from the NMFS West Coast Region's online California Species List tool (Appendix B of the San Francisco to San Jose Biological and Aquatic Resources Technical Report [Authority 2020a]).
- **CNDDB**—Biologists queried the CNDDB geographic information system (GIS) dataset for occurrences of special-status plant and wildlife species within 10 miles of the track centerlines for the project alternatives (Appendix B of the San Francisco to San Jose Biological and Aquatic Resources Technical Report [Authority 2020a]).
- **CNPS Online Inventory of Rare and Endangered Plants of California (CNPS Online Inventory)**—To identify additional special-status plants not captured by the official USFWS species list or CNDDB, botanists queried the CNPS Online Inventory for the following U.S. Geological Survey (USGS) 7.5-minute quadrangles intersected by the Project Section: San Francisco North, San Francisco South, Montara Mountain, San Mateo, Palo Alto, Mountain View, and Woodside (Appendix B of the San Francisco to San Jose Biological and Aquatic Resources Technical Report [Authority 2020a]). The CNPS Online Inventory is a credible and widely recognized resource used by conservationists, consultants, planners, researchers, and resource managers to obtain information about California's rare plants.
- **Environmental documents and technical reports:**
  - *Peninsula Corridor Electrification Project Environmental Impact Report* (PCEP EIR) (PCJPB 2015d)
  - *San Bruno Mountain Habitat Conservation Plan: Year 2017–18 Activities Report for Federally Listed Species* (San Mateo County Parks Department 2018)
  - *Historical Distribution and Current Status of Steelhead/Rainbow Trout (*Oncorhynchus mykiss*) in Streams of the San Francisco Estuary, California* (Leidy et al. 2005)
  - *California Ridgway's Rail Surveys for the San Francisco Estuary Invasive Spartina Project 2017* (California State Coastal Conservancy 2018)
  - *Santa Clara Valley Habitat Plan* (SCVHP) (County of Santa Clara et al. 2012)

Several special-status plant species identified by the CNDDB or CNPS Online Inventory queries are limited to a few known sites outside the special-status plant study area. Botanists eliminated these species from further consideration.

Non-Special-Status Wildlife

Project biologists collected background information on non-special-status wildlife resources potentially occurring in the habitat study area from several sources. Most information on native wildlife species likely to occur in the habitat study area is based on the collective knowledge of

project biologists and conservation planners who have been working in central California for 15 to 30 years and on standard wildlife references (Stebbins 2003; Reid 2006). Additional information on breeding birds was obtained from eBird (Sullivan et al. 2009).

Special-Status Plant Communities

Biologists identified special-status plant communities potentially occurring in the special-status plant study area by reviewing the CNDDB (Appendix B of the San Francisco to San Jose Biological and Aquatic Resources Technical Report [Authority 2020a]; Appendix A of the San Jose to Merced Biological and Aquatic Resources Technical Report [Authority 2020c]) for occurrences within 10 miles of the project alternatives' centerlines. Biologists also reviewed the CDFW Sensitive Natural Communities List (CDFW 2018a) to identify additional special-status plant communities that could occur, based on the preliminary vegetation and land cover mapping effort described under Vegetation and Land Cover Mapping.

Aquatic Resources

Preliminary information on aquatic resources in the aquatic RSA was obtained from unpublished fieldwork for the Project Section conducted in 2010 and 2015 for the PCEP EIR (PCJPB 2015d). Section 3.7.6.5, Delineation of Aquatic Resources, summarizes fieldwork for those efforts.

Protected Trees

To identify the requirements for protected trees, biologists reviewed county and city ordinances and codes. No project-specific tree inventories have been conducted in the special-status plant study area to date, but many trees identified by HortScience (PCJPB 2014) during its 2013 tree inventory and assessment for the Caltrain PCEP are likely still present. Appendix F of the PCEP EIR includes HortScience's report as well as a final impact analysis prepared by ICF International, which estimated the removal of 995 protected trees and pruning of 3,186 protected trees (PCJPB 2015d). For the purposes of this document, it is assumed that all these trees have already been affected by the Caltrain PCEP.

Wildlife Corridors

Biologists identified known wildlife corridors by reviewing maps in the *California Essential Habitat Connectivity Project* report (Essential Habitat Connectivity Report) (Caltrans and CDFG 2010) and *Critical Linkages: Bay Area and Beyond* (Bay Area Critical Linkages Report) (Penrod et al. 2013) reports. The statewide Essential Habitat Connectivity Report (Caltrans and CDFG 2010) depicts large, relatively natural habitat blocks that support native biodiversity (termed *natural landscape blocks*) and areas essential for ecological connectivity between them (termed *essential connectivity areas*). The regional Bay Area Critical Linkages Report (Penrod et al. 2013) uses slightly different but complementary terminology: a corridor is a "swath of land that is best expected to serve movement needs of an individual species," a *preliminary linkage* is "the union of all single species corridors," and *linkage design* refers to the map of a given area in the report after it has been modified to serve all focal species, meet the minimum width for corridor dwellers and passage species, include key riparian corridors, and meet other conservation goals. For the purposes of this document, any of these areas mapped by Spencer et al. (Caltrans and CDFG 2010) or Penrod et al. (2013) are considered a "wildlife corridor." Biologists also reviewed the sources listed under Special-Status Species for mentions of habitat features important for wildlife movement.

Conservation Areas

To identify conservation areas (e.g., conservation easements, public lands, ecological reserves, and conservation and mitigation banks) two primary sources were used:

- **California Protected Areas Database (CPAD)**—Database containing GIS data about lands that are owned in fee title and protected for open-space purposes (i.e., national parks, national forests, wildlife refuges, land trust preserves, Bureau of Land Management land, state parks, county parks, neighborhood parks, and other open spaces).

- **California Conservation Easement Database**—Database containing GIS data about lands protected under conservation easements. It is a parallel dataset to CPAD.

Habitat Conservation Plans

Biologists reviewed the regional HCP summary report for USFWS Region 8 (Nevada and California) (USFWS 2018) and the *Summary of Natural Community Conservation Plans* (CDFW 2017) to identify HCP or NCCP planning areas that overlap with the project footprint.

BCDC Jurisdictional Areas

To identify BCDC jurisdictional areas within the project footprint, the Authority obtained publicly available elevation models (USGS 2014) of the aquatic RSA (i.e., project footprint plus 250-foot buffer) to extract the mean high tide line. The Authority then digitized the shoreline band using a 100-foot buffer from the mean high tide line or 5 feet above mean sea level in areas containing tidal marsh; the associated open water and tidal marsh habitat was identified as BCDC's Bay (tidal) jurisdiction. In combination, the shoreline band and Bay represent BCDC jurisdictional areas within the aquatic RSA.

3.7.6.4 Field Surveys and Species Habitat Modeling

This section describes field surveys and desktop analyses conducted to date for the project. At the time of preparation of this report, permission to enter had been granted for some properties, but access to most properties had not been granted. Consequently, most biological resource information is based on desktop analyses or unpublished field surveys conducted in 2009 and 2010. However, because the project footprint is almost entirely within the existing Caltrain right-of-way, most of the project footprint does not contain habitat for special-status species. Many of the areas where permission to enter was not granted did not need to be surveyed because they had no potential to support special-status species and could be accurately assessed based on the desktop review. Access was granted to the West Brisbane light maintenance facility (LMF) site in November 2018 and January 2020 to verify and update (if necessary) the wetlands mapped during previous field surveys (see Section 3.7.6.5). Access to this area was also granted in September 2019 to assess aquatic resources using the California Rapid Assessment Method.

No presence-absence surveys for special-status plants or wildlife have been conducted. Therefore, these species are assumed potentially present in areas modeled as habitat. The San Jose to Merced Biological and Aquatic Resources Technical Report presents information on the desktop analysis conducted for the San Jose Diridon Station Approach Subsection (Authority 2020c).

Reconnaissance Field Surveys

Reconnaissance field surveys, also termed *habitat assessments*, were conducted concurrently with the aquatic resource delineation fieldwork to gather information on existing vegetation communities and land cover types within the habitat study area and assess their potential to support special-status species. The San Francisco to San Jose Biological and Aquatic Resources Technical Report provides dates and weather conditions for each of the survey efforts (Authority 2020a).

Botanical Surveys

The Authority has conducted no botanical surveys in the special-status plant study area.

Wildlife Surveys

The Authority has conducted no presence-absence surveys for special-status wildlife species in the habitat study area.

Special-Status Species Habitat Modeling

The Authority prepared GIS-based species habitat models for the project. These models bring together information about environmental attributes, species life history, and environmental requirements to create a spatially explicit representation of areas that are potentially suitable as habitat. The models are created and displayed using GIS software (ArcGIS 10.3). Once in GIS, the habitat models can be intersected with the project footprint and resource layers to determine impacts and assess mitigation opportunities of species. Species habitat models were developed to:

- Assess impacts
- Analyze project alternatives
- Develop IAMFs
- Determine mitigation requirements
- Prioritize mitigation opportunities

Habitat Terminology

Habitat—The environmental conditions that support occupancy of a given organism in a specified area (Hall et al. 1997).

In scientific and lay publications, habitat is defined in many different ways and for many different purposes. For the purposes of this Draft EIR/EIS, *habitat* is defined as the specific places where the physical and biological conditions are assumed present that are required to support occupancy by individuals or populations of a given species. Habitat may be occupied (i.e., species present or recently documented as present) or unoccupied.

The term *habitat* implies suitability because any areas with habitat for a given species are therefore *suitable* for that species. The use of this term in this Draft EIR/EIS does not imply presence or absence of a given species, only that the environmental conditions known to support that species are known (through direct observation or expert opinion) or presumed (through habitat modeling) to be present in a specified area. *Occupied habitat* is used only when species occurrence has been verified in a specified area.

The models—and the maps generated from them—provide important support for compliance with CEQA, NEPA, Section 7 of the FESA, and Section 2081(b) of the CESA. Moreover, they inform compensatory mitigation planning associated with permitting under the FESA, CESA, Sections 404 and 401 of the CWA, and Cal. Fish and Game Code Section 1600.

Biologists used basic *rule-based models* to assess impacts from construction and operations of the project between 4th and King Street Station in San Francisco and Scott Boulevard in Santa Clara. Rule-based models are created using an intersection of habitat parameters in GIS. Typically, this is done using Boolean "and/or" relationships to formulate the habitat distribution. For example, a species would be predicted to occur in an area that has the land cover type *and* the soil type *and* the correct elevation range where the species is known to occur. Biologists selected the rules for basic habitat models based on the scientific literature, listing and recovery documents published by resource agencies, first-hand species knowledge, conversations with species experts, and prior experience. The rules incorporate biologists' best interpretation of species biology and life history requirements into model parameters. Accordingly, the final models are considered a source of best available information for evaluating impacts.

Species models for the San Jose to Merced Project Section were applied to the San Jose Diridon Station Approach Subsection. The San Jose to Merced Project Section contains many more land cover types than the San Francisco to San Jose Project Section, which is entirely urban, and therefore contains a broader range of habitat conditions in which species could occur. To address this, many of the species models developed for the San Jose to Merced Project Section are *specific* rule-based models that use land cover and range data as well as additional parameters such as geology, soil, and hydrological data to identify potentially suitable habitat. Additional information on methodology is provided in Section 4.4.4, Special-Status Species Habitat Modeling, of the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c).

Some of the impact discussions presented in this analysis group species based on a habitat type that they have in common (e.g., special-status plants; least Bell's vireo, yellow warbler, and tricolored blackbird in riparian habitat), and where significant impacts occur, similarity of compensatory mitigation (i.e., habitat preservation). In these cases, the impact acreages presented in the discussion reflect the *aggregate* areal extent of all species taken together—in

other words, the exterior perimeter of the overlapping boundaries of their mapped habitat, so that land where modeled habitat for more than one species is present is only counted once.

3.7.6.5 Delineation of Aquatic Resources

Between 2009 and 2010 biologists conducted fieldwork to support a Preliminary Jurisdictional Waters and Wetland Delineation for the San Francisco to San Jose Project Section. Fieldwork was conducted on the following dates:

- **October 26–28, November 2–4 and November 9–10, 2009**—Biologists evaluated wetland characteristics (vegetation, hydrology, soils) at nine sampling points within the aquatic RSA using the methods described in the USACE Delineation Manual (Environmental Laboratory 1987) and the USACE Arid West Supplement (USACE 2008).
- **February 8 and 18, 2010**—Biologists collected wetland delineation data for potential LMF sites.
- **August 26 and September 16, 2009**—Biologists evaluated stream crossings. Methods for determining nonwetland waters of the U.S. at stream crossings were based on indicators for the ordinary high water mark (OHWM) following criteria outlined in USACE *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark* (USACE 2005). When documenting the OHWM width in a stream segment that was generally uniform, biologists walked the channel and mapped OHWM indicators using global positioning system (GPS) units at all potential jurisdictional features that were physically accessible. Due to the highly engineered and maintained nature of nonwetland features, biologists primarily identified the OHWM on the basis of hydrologic indicators such as watermarks (staining) and sediment deposition at the toe of the slope. In addition, biologists evaluated all drainage features in accordance with the contemporary Rapanos guidance and classified them as traditional navigable waters, relatively permanent waters, ephemeral drainages, roadside ditches, or isolated waters, as appropriate. Drainage features were then determined to be jurisdictional or nonjurisdictional following USACE requirements for PJDs.

On June 26, 2013, biologists conducted a wetland assessment of proposed new permanent facility locations for the Caltrain PCEP. Biologists also reviewed aerial photographs of potential staging areas within the Caltrain right-of-way (Brisbane, San Bruno, Millbrae, Burlingame, San Mateo, and Palo Alto) to identify potential wetlands and nonwetland waters of the U.S.

In December 2014, delineators conducted a field investigation of right-of-way and electrical safety zone areas provided by Caltrain for PCEP to support application for a PJD from USACE. These areas were collectively referred to as the *delineation study area*. Wetlands were delineated using the methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coasts Region* (WMVC Supplement) (USACE 2010), and the wetland plant indicator status list (Lichvar et al. 2012, 2014, 2016). On January 13, 2015, the initial delineation map book for the Caltrain wetland delineation was created and in January 2016 the map was revised following review by USACE.

In November 2018, delineators conducted a field investigation to assess the Brisbane wetlands at the proposed LMF sites, which constitute most of the wetland impacts in the RSA. The intent of the investigation was to verify the accuracy of the land cover data and confirm that site conditions had not changed since the previous field investigations. Delineators used the WMVC Supplement (USACE 2010) to maintain consistency with the most recent field investigation. The delineators assessed the extent and distribution of the mapped wetlands and performed a wetland delineation to identify the wetland-upland boundary. Four data points were recorded on the Wetland Determination Data Forms and representative photographs were taken of the physical landscape and sampling locations.

In January 2020, USACE reviewed the Aquatic Resources Delineation Report for the project and requested a verification (i.e., site visit) of the mapped features in the vicinity of the Brisbane LMF sites. The verification took place on January 30, 2020, in both the East and West Brisbane LMF

sites. USACE determined that the mapped extent of two wetlands lying between Industrial Way and the Caltrain tracks should be expanded, and a third wetland in this same area should be changed from the Freshwater Emergent Wetland type to the Constructed Watercourse type. Additionally, USACE requested use of *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* data forms (September 2008) rather than the WMVC Supplement data forms (USACE 2010). Following these updates and submittal of the revised Aquatic Resources Delineation Report, USACE issued the PJD on April 14, 2020. The PJD states that the extent and location of wetlands, other waters of the United States, and navigable waters of the United States within the boundary of the site as identified on the aquatic resource delineation maps (certified on April 9, 2020), may be subject to Section 404 of the CWA and Section 10 of the RHA (USACE 2020).

Aquatic resources in the San Jose Diridon Station Approach Subsection were delineated during environmental investigations for the San Jose to Merced Project Section (Authority 2020c, 2020d). The mapping conducted for that effort was accomplished largely through the interpretation of high-resolution aerial imagery and review of existing maps. The aerial images reviewed covered a range of dates (approximately 1998 to 2019), but use of recent imagery was emphasized to support interpretation of typical site conditions. Soil survey maps and supporting information were used to identify the soils' geomorphic setting, hydric status, and drainage characteristics.

The emphasis on mapping using aerial imagery and other sources constrained the precision of the mapping of aquatic resources. Some areas identified as potential waters of the U.S. may not meet the technical criteria. Conversely, some areas identified as terrestrial land cover types may indeed be waters of the U.S., although such areas are expected to be of relatively limited extent because the mapping of aquatic features was approached in a conservatively inclusive manner.

Wetland Delineation Methods

In 2010, where property access was granted, wetland boundaries were determined by using paired data points in wetland and adjacent upland areas. The characteristic vegetation at each data point was recorded, and soil pits were excavated using a tile spade at each point to assess the presence of wetland hydrology and hydric soil indicators at the points. For large complexes of features, or repeated features of the same type, paired points were recorded at representative features but not at each individual feature. Hydrology, soils, and vegetation information at the data points were recorded on Wetland Determination Data Forms from the Supplement (USACE 2010). In areas with problematic soils (see Section 3.7, Problematic Nature of Soils in the Aquatic Resource Study Area), delineators used the protocol for these conditions, which requires verification of hydrophytic vegetation and hydrology indicators and a description of the problematic soil situation along with a justification as to why it is believed to meet the hydric soil definition (USACE 2010). The boundaries of areas that were determined to meet all three federal wetland criteria were recorded as lines or polygons using a GPS unit, aerial imagery interpretation, or both. Wetland boundaries were extrapolated by following topographic contours, wetland vegetation boundaries, and clear hydrologic boundaries.

Nonwetland Waters Delineation Methods

Nonwetland waters in the aquatic RSA were delineated using the methods described in *A Field Guide to Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008), *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Lichvar and Mersel 2014), and USACE Regulatory Guidance Letter No. 05-05 (USACE 2005), where appropriate. These guidance materials provide an approach for identifying the lateral limits of jurisdictional nonwetland waters using stream geomorphology and vegetation response to the dominant stream discharge.

Aquatic Resources Delineation Methods (Cal. Fish and Game Code § 1600 et seq.)

Land cover types subject to Section 1600 et seq. in the aquatic RSA include constructed basin, constructed watercourse, natural watercourse, and mixed riparian. The first three land cover types are also nonwetland waters of the U.S. and were mapped according to nonwetland waters

delineation methods. Although these three aquatic resource types were delineated to the OHWM (i.e., the extent of Section 404 jurisdiction), not to the top of bank as required under Section 1600, the steep banks of the features and scale of mapping (1 inch=200 feet) does not readily allow differentiation between the limit of each jurisdictional extent on the map. The horizontal difference between the OHWM and the top of bank under these conditions is typically no more than a few feet, and as such, the width of the OHWM at the mapping scale encompasses the channel at or near the top of bank. Mixed riparian land cover that extends beyond the OHWM was delineated through a desktop review of aerial imagery and field verification, as described in Vegetation and Land Cover Mapping and Reconnaissance Field Surveys, respectively.

3.7.6.6 2013 Tree Inventory for Peninsula Corridor Electrification Project

HortScience conducted tree surveys throughout much of the special-status plant study area in summer 2013 for the Caltrain PCEP. In October 2013, HortScience supplemented the pedestrian surveys with a 2-day survey from the Caltrain right-of-way of areas of lesser tree canopy density using a maintenance vehicle (a Hi-Rail Truck, also called a Hy-Rail or road-rail vehicle). Using the survey data, aerial photography, and video photography, HortScience prepared a tree inventory (PCJPB 2014) and assessed the potential impacts of the PCEP on trees based on the need for vegetation clearance to provide for electrical safety in the electrical safety zone (PCJPB 2015d: Appendix F).

3.7.6.7 Methods for Impact Analysis

Overview of Impact Analysis

This section describes the sources and methods used to analyze potential project impacts on biological and aquatic resources. Sections 3.7.6.8, Method for Evaluating Impacts under NEPA, and 3.7.6.9, Method for Determining Significance under CEQA, describe the methodologies used to evaluate project impacts pursuant to NEPA and CEQA.

Potential impacts may be direct (i.e., caused by the activity and occur in the same time and place) or indirect (i.e., caused by the activity but removed in time, distance, or both, but still reasonably foreseeable). Direct impacts would occur within the project footprint during construction and could be temporary (e.g., habitat loss or disturbance due to construction staging would be restored to pre-project conditions following construction) or permanent (e.g., removal and conversion of existing habitat to HSR facilities due to construction). Direct impacts would also occur during operations and would be intermittent (i.e., not continuous but recurring during rail operations on an episodic or occasional basis throughout the life of the system). Indirect impacts could occur both within and adjacent to the project footprint.

Direct impacts on land cover, special-status species habitat, and other resources during construction that can be measured using GIS analysis are described quantitatively (i.e., the area affected by construction is expressed in acres). Indirect and direct intermittent impacts on biological and aquatic resources are described qualitatively because it is difficult to measure or predict species' or plant community response to future or far-removed environmental factors, especially at the scale of individual plants or animals. Indirect impacts were assessed based on biologists' understanding of the best available science for a given resource and proposed construction and operations activities.

Because BCDC jurisdictional areas are a spatial representation of a regulatory policy boundary, it *contains* many of the resources analyzed in this section (e.g., special-status species habitat, aquatic resources) but are not *separate* from such resources. In other words, the resources present in BCDC jurisdictional areas are the same as those defined in Section 3.7.1, but when evaluating impacts on BCDC jurisdictional areas the analysis is limited to where such resources overlap BCDC Bay or shoreline band jurisdiction. To provide clarity and full disclosure on the affected environment and impacts associated with BCDC jurisdictional area overlap, information has been assessed and presented separately in Sections 3.7.6, Affected Environment, and 3.7.7, Environmental Consequences, by jurisdictional area.

Construction Impacts

Direct impacts from construction on special-status species habitat, non-special-status wildlife, special-status plant communities, and aquatic resources were quantified using GIS. Specifically, GIS analysts calculated area of impact by intersecting biological and aquatic resource feature layers (e.g., special-status species habitat models) with feature layers in the project design drawings (i.e., project activities). Land cover (including special-status plant communities) and aquatic resource feature layers were generated in the land cover mapping and aquatic resource delineation efforts described in Section 3.7.6.5. Feature layers for special-status species habitat are equivalent to the species habitat models developed specifically for the project. Prior to analysis, GIS analysts converted electronic project design files provided by project engineers to GIS geodatabases to facilitate intersects between design drawing and biological resource feature layers.

Operations Impacts

Direct intermittent impacts from operations and maintenance (O&M) activities on special-status species habitat, non-special-status wildlife, special-status plant communities, and aquatic resources were evaluated qualitatively because the exact location and extent of activities cannot be quantified and varies over time.

3.7.6.8 Method for Evaluating Impacts under NEPA

The CEQ NEPA regulations (40 C.F.R. Parts 1500–1508) provide the basis for evaluating project impacts (as described in Section 3.1.5.4, Methods for Evaluating Impacts). As described in Section 1508.27 of these regulations, the criteria of context and intensity are considered together when determining the severity of the change introduced by the project.

- **Context**—For the analysis of impacts on biological and aquatic resources, the *context* would be the existing resources within the RSA: the status of sensitive communities and species that occur or that could occur along the project corridor; and the regulatory setting pertaining to biological and aquatic resources.
- **Intensity**—For the analysis of impacts on biological and aquatic resources, the *intensity* or severity of an impact would reflect the magnitude of the change between the existing and projected conditions—specifically, the degree to which the construction and operations of the project could affect these resources.

3.7.6.9 Method for Determining Significance under CEQA

Based on the CEQA Guidelines, the project would have a significant impact on biological and aquatic resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, seasonal wetlands, canals, ditches, lacustrine habitats, retention and detention basins, and seasonal riverine) through direct removal, filling, hydrological interruption, indirect or cumulative effects, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, state, or federal HCP

Biological resources are regulated by numerous agencies at all levels of government, and there are numerous statutes and regulations that are intended to avoid or minimize impacts on biological resources. Where local governments have developed policies or ordinances for the protection of biological resources within their jurisdictions, a conflict with the policy or ordinance would generally indicate the potential for a significant impact. Similarly, a conflict with an adopted HCP, NCCP, or other approved local, regional, state, or federal HCP, would generally indicate the potential for a significant impact because NCCPs and HCPs are adopted specifically for the protection of biological resources. Conversely, where there is no conflict with a local policy or ordinance, or an NCCP or HCP, that would generally indicate that the project would not result in a significant impact related to the resources that are protected by the policy, ordinance, or plan.

Mandatory findings of significance in CEQA Guidelines Section 15065 require the lead agency to determine whether a project may have a significant effect on the environment where substantial evidence indicates that negative impacts may occur on biological resources. Under CEQA's mandatory findings of significance, the project would result in a significant impact if it would:

- Substantially reduce the habitat of a fish or wildlife species
- Cause a fish or wildlife population to drop below self-sustaining levels
- Threaten to eliminate a plant or animal community
- Substantially reduce the number or restrict the range of an endangered, rare, or threatened species

General indicators of significance, based on guidelines or criteria in NEPA or CEQA, and regulatory guidance from FRA include:

- Potential modification or destruction of habitat, movement corridors, or breeding, feeding, and sheltering areas for endangered, threatened, rare, or other special-status species
- Potential measurable degradation of protected habitats, sensitive vegetation communities, wetlands, or other habitat areas identified in plans, policies, or regulations
- Potential loss of a substantial number of any species that could affect the abundance or diversity of that species beyond the level of normal variability
- Potential indirect impacts, both temporary and permanent, from excessive noise that elicits a negative response and avoidance behavior

3.7.7 Affected Environment

3.7.7.1 Physical Conditions

This section describes the physical conditions in the RSA, including its topography, climate, hydrology, and soils. These characteristics are the context for the biological conditions and the biological resource descriptions that follow. The San Francisco to San Jose Biological and Aquatic Resources Technical Report (Authority 2020a) and the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c) provide additional details.

Topography

The project is west of the San Francisco Bay and traverses two major geophysical regions (distinct landscapes)—the San Francisco Peninsula and the Santa Clara Valley. Specifically, it occurs in the San Francisco Peninsula, Bay Flats, Leeward Hills, and Santa Clara Valley subsections of the Central California Coast ecological section (Miles and Goudey 1998; McNab et al. 2007; USGS 2016a).

The San Francisco Peninsula subsection, at the northern end of the peninsula, includes large areas of Quaternary marine and sand dune deposits, with recent alluvium and large areas of fill

next to San Francisco Bay. There are some small serpentine rock outcrops and bluffs. Nearly the entire area is urbanized (USGS 2016a).

The Bay Flats subsection includes the near-water flats around San Pablo Bay in the north and those around the southern end of the San Francisco Bay. Elevations are sea level to about 10 feet on Quaternary bay fill of silt and clay (USGS 2016a).

The Leeward Hills subsection consists of mountains and hills, characterized by steep and moderately steep side and narrow canyons inland from the wetter Santa Cruz Mountains subsection. Elevations range from 200 to about 3,700 feet. Common vegetation includes annual grassland, coast live oak, California bay, and a few areas of chaparral (USGS 2016a).

The Santa Clara Valley subsection consists of an alluvial plain in the Santa Clara Valley that extends from Hollister to San Francisco Bay and an alluvial plain along the southwestern side of San Francisco Bay. Elevations range from sea level up to approximately 250 feet on the alluvial plains and up to about 1,000 feet on the hills west of Hollister (Miles and Goudey 1998).

Elevations in the RSA range from approximately 1 foot below sea level at the northern end of the RSA to 74 feet above sea level near the southern end.

Climate

The Mediterranean climate typical of the region consists of cool, wet winters and hot, dry summers. Mean annual temperatures in the RSA range from a low of 47.5°F in December to a high of 71.3°F in July in Redwood City and from a low of 51.7°F in December to a high of 70.9°F in July in San Jose. The U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Climate Analysis for Wetlands Tables (USDA-NRCS 2018a) show a growing season (defined as a 50 percent probability of temperatures at or above 28°F) of 324 days in Redwood City. Average annual precipitation in Redwood City is 19.60 inches. Approximately 79 to 85 percent of the annual rainfall occurs from November to March (USDA-NRCS 2018a).

Watershed and Hydrology

The project is distributed almost evenly across two USGS hydrologic unit code (HUC)-8 watershed subbasins—the San Francisco Bay Watershed (HUC-8 118050003) in the north and the Coyote Watershed (HUC-8 18050003) in the south (USGS 2018). Dense urbanization has substantially altered the natural hydrology of both watersheds.

Most watercourses in these watersheds are perennial, flowing year-round except in times of drought. Outside the RSA, the mid- to upper reaches of tributary streams are intermittent or perennial in summer, depending on the characteristics of local aquifers. However, historically (i.e., before urbanization), most watercourses in the area were dry during the summer (The San Francisco Estuary Institute 2010). As patterns of water use and water importation have evolved, many watercourses have experienced increased summer flow (Santa Clara Basin Watershed Management Initiative 2000). Today, some watercourses are perennial in their lower reaches as a result of urban runoff or high groundwater, while others flow because of artesian wells, springs, and water releases. Reservoir operators and water managers release some flows in the summer to promote groundwater recharge, contributing to the perennial nature of streams in the project vicinity.

Surface runoff in the vicinity discharges into a network of underground and surface drainage pathways (including the combined sewer system in San Francisco). Generally, these pathways converge into larger underground storm drains, drainage culverts, streams, or creeks, which become progressively larger as the runoff moves downstream, eventually reaching a common discharge location, often near the San Francisco Bay.

Figure 3.7-2 illustrates watersheds and major hydrological features. A complete list of named watercourses in the habitat study area is included in the San Francisco to San Jose Biological and Aquatic Resources Technical Report (Authority 2020a), and for the San Jose Diridon Station Approach Subsection in the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c).

Source: USGS 2016b

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Figure 3.7-2 Watersheds and Major Hydrological Features

Soils

Six soil map units occur in the aquatic RSA (Table 3.7-2). Many of the soils on the San Francisco Peninsula and Santa Clara Valley have been leveled, drained, or protected from flooding for urban and commercial development. Figure 3.7-3 illustrates the extent of the general soil map units in the project vicinity.

Table 3.7-2 General Soil Map Units Intersected by the Alternatives in the Aquatic Resource Study Area

General Soil Map Unit (map symbol)	County of Occurrence	Landform
Tamba-Reyes-Novato (s658)	San Francisco	Tidal marshes
Urban land-Sirdrak (s979)	San Francisco	Dunes
Xerorthents-Urban land (s986)	San Francisco, San Mateo	Recent alluvial fans and floodplains
Candlestick-Buriburi-Barnabe (s982)	San Mateo	Uplands and mountain slopes
Xerorthents-Urban land-Accelerator (s984)	San Mateo	Recent alluvial fans and floodplains
Xerorthents-Urban land-Botella (2987)	San Mateo, Santa Clara	Recent alluvial fans and floodplains

Source: USDA-NRCS 2018b

Source: USDA-NRCS 2018b

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Figure 3.7-3 General Soil Map Units

3.7.7.2 Biological Conditions

This section describes the biological conditions of the RSAs. The topics addressed are land cover types, potentially occurring special-status species, non-special-status wildlife, special-status plant communities, aquatic resources, protected trees, wildlife corridors, conservation areas, HCPs, and BCDC jurisdictional areas. Volume 2, Appendix 3.7-A summarizes special-status species potentially affected by the project; Appendix 3.7-B presents the scientific nomenclature of all species mentioned in the text.

Although urban development dominates most of the project corridor, some special-status species may still have the potential to occur within the project footprint, and several areas that could support sensitive resources are near the Caltrain right-of-way. For example, the project corridor passes through the Brisbane wetlands, which contain wetland and salt marsh habitat that may be inhabited by special-status wildlife and plants. Trees and shrubs that provide suitable nesting substrate for bird species also occur within the project corridor. The greater part of the project corridor, however, is characterized by disturbed conditions with a low potential to support special-status species.

Land Cover Types

The project is within the California Floristic Province, traversing the San Francisco Bay Area subregion of the Central Western California region. The San Francisco Bay Area subregion is physiographically defined by features such as Mount Tamalpais, the Santa Cruz Mountains, and the northern Diablo Range, including Mount Diablo and Mount Hamilton. The southern boundary is somewhat arbitrary, following State Routes 156 and 152 from the Coast Ranges east of Castroville through Hollister and Pacheco Pass to the San Joaquin Valley subregion. The San Francisco Bay Area subregion encompasses a diversity of vegetation types, from very wet redwood forest to dry oak/pine woodland and chaparral. Table 3.7-3 shows the area of land cover associated with each of the project alternatives. Land cover maps for the habitat study area north of Scott Boulevard are provided in Appendix G of the San Francisco to San Jose Biological and Aquatic Resources Technical Report (Authority 2020a) and for the San Jose Diridon Station Approach Subsection in Appendix G of the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c). Both technical reports also describe the vegetation structure and composition of each land cover type in greater detail.

Table 3.7-3 Land Cover Types within the Project Footprint and Habitat Study Area (acres)

Land Cover Type	Alternative A			Alternative B[2]		
	Project Footprint	Core Habitat Study Area[1]	Auxiliary Habitat Study Area	Project Footprint	Core Habitat Study Area	Auxiliary Habitat Study Area
Tree-Dominated						
Oak Woodland	0.7	3.9	33.4	0.9	3.7	33.4
Mixed Riparian	2.4	5.7	34.7	3.7	11.4	32.4
Mixed Woodland	0.0	0.0	2.4	0.0	0.0	2.4
Subtotal	*3.1*	*9.6*	*70.5*	*4.6*	*15.1*	*68.2*
Shrub-Dominated						
Coyote Brush Scrub	11.7	10.0	44.1	7.2	17.3	60.1
Scrub/Shrub Wetland	0.7	0.4	1.1	0.2	0.3	0.7
Subtotal	*12.4*	*10.4*	*45.2*	*7.4*	*17.6*	*60.8*

Land Cover Type	Alternative A			Alternative B[2]		
	Project Footprint	Core Habitat Study Area[1]	Auxiliary Habitat Study Area	Project Footprint	Core Habitat Study Area	Auxiliary Habitat Study Area
Herbaceous-Dominated						
California Annual Grassland	92.6	55.3	168.6	38.5/39.4	74.2/74.5	196/194.8
Freshwater Emergent Wetland	3.7	3.0	38.0	9.5	6.1	29.4
Saline Emergent Wetland	1.7	9.2	8.4	1.7	9.2	7.8
Seasonal Wetland	0.0	0.4	21.4	0.0	3.7	18.2
Subtotal	*98.0*	*67.9*	*236.4*	*49.7/50.6*	*93.2/93.5*	*251.4/ 250.2*
Aquatic						
Constructed Basin	0.4	0.8	2.9	0.0	0.5	3.0
Constructed Watercourse	4.1	8.2	14.3	3.9	7.9	13.0
Natural Watercourse	2.1	3.6	15.4	2.4	8.5	11.8
Open Water	0.5	28.4	132.9	0.5	29.1	133.0
Subtotal	*7.1*	*41.0*	*165.5*	*6.8*	*46.0*	*160.8*
Developed						
Disturbed/Barren	70.7	40.4	54.1	34.7	21.7	55.6
Ornamental Woodland	8.3	26.8	59.5	9.4/17	32.8/33.1	51.4/47.7
Ruderal	26.6	54.9	84.7	89.6	40.6	53.4
Urban	755.1	2,962.3	8,543.8	895/915.8	3,038.3/ 3,088.7	8,618.2/ 8,682.6
Subtotal	*859.5*	*3,078.6*	*8,701.2*	*1,028.7/ 1,057.1*	*3,133.4/ 3,184.1*	*8,778.6/ 8,839.3*
Total	**980.1**	**3,207.5**	**9,218.8**	**1,097.2/ 1,126.5**	**3,305.3/ 3,356.3**	**9,319.8/ 9,379.3**

Sources: Authority 2020a, 2020c

[1] Acreage provided reflects the project footprint plus a 250-foot buffer.

[2] Where applicable, values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard). If only one value is presented, the affected acreage would be identical under both viaduct options.

Special-Status Species

This section addresses special-status plant and wildlife species that have a potential to be affected by the project. Information on the distribution, habitat requirements, threats, and occurrence of special-status species potentially affected by the project are listed in Volume 2, Appendix 3.7-A, and described in the San Francisco to San Jose Biological and Aquatic Resources Technical Report (Authority 2020a) and San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c). The tables in Appendix 3.7-A and Appendix B of the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c) also include listed and nonlisted species that were considered but determined unlikely to be

affected by the project because suitable habitat is not present. Table 3.7-4 identifies watercourses and open waters connected to San Francisco Bay that contain potential habitat[4] for special-status species.

Table 3.7-4 Biological Resource Summary for Watercourses or Open Waters in the Habitat Study Area

Name	Type[1]	Species Habitat	Riparian Vegetation	Wildlife Corridor
San Francisco to South San Francisco Subsection				
China Basin Water Channel (aka Mission Creek)[2]	Open Waters	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat)	NP	NP
Islais Creek[2]	Open Waters	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat)	NP	NP
Visitacion Creek	Constructed	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat), Alameda song sparrow, saltmarsh common yellowthroat, white-tailed kite	NP	NP
Brisbane Lagoon	Open Waters	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat)	NP	NP
Guadalupe Valley Creek	Natural	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat), Alameda song sparrow, saltmarsh common yellowthroat, white-tailed kite, western red bat, pallid bat, Townsend's big-eared bat	P	P
Oyster Point Channel[3]	Open Waters, Constructed	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat), pallid bat, Townsend's big-eared bat	NP	NP
Colma Creek	Constructed	Green sturgeon (designated critical habitat), central California coast steelhead (estuarine rearing habitat), pallid bat, Townsend's big-eared bat	NP	P
San Bruno to San Mateo Subsection				
El Zanjon Creek (aka Cupid Row Canal)	Constructed	California red-legged frog, San Francisco garter snake, western pond turtle	NP	NP
Highline Creek Tributary (aka South Lomita Canal)	Constructed	California red-legged frog, San Francisco garter snake, western pond turtle	NP	NP
Mills Creek	Natural	Central California coast steelhead (freshwater migration habitat), California red-legged frog, western pond turtle, white-tailed kite, western red bat	P	P

[4] Based on a spatial model that predicts where a species could occur using habitat requirements and locations of known occurrences.

Name	Type[1]	Species Habitat	Riparian Vegetation	Wildlife Corridor
Easton Creek	Constructed	California red-legged frog, pallid bat, Townsend's big-eared bat, western pond turtle, white-tailed kite, western red bat	P	P
Sanchez Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	NP
San Mateo Creek	Natural	Central California coast steelhead (freshwater migration habitat), California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western bat	P	P
San Mateo to Palo Alto Subsection				
Borel Creek	Natural	California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	P	P
Belmont Creek	Natural	California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	P	P
Pulgas Creek	Constructed	California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	NP	NP
Cordilleras Creek	Natural	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat, white-tailed kite, western red bat	P	P
San Francisquito Creek	Natural	Central California coast steelhead (freshwater migration habitat; designated critical habitat), California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	P	P
Matadero Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P
Barron Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P
Adobe Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P
Mountain View to Santa Clara Subsection				
Permanente Creek	Constructed	Central California coast steelhead (freshwater migration habitat), California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	P	NP
Stevens Creek	Natural	Central California coast steelhead (freshwater migration habitat; designated critical habitat), California red-legged frog, western pond turtle, white-tailed kite, pallid bat, Townsend's big-eared bat, western red bat	P	P
Sunnyvale East Channel	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P

Name	Type[1]	Species Habitat	Riparian Vegetation	Wildlife Corridor
Calabazas Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P
San Tomas Aquino Creek	Constructed	California red-legged frog, western pond turtle, pallid bat, Townsend's big-eared bat	NP	P
San Jose Diridon Station Approach Subsection				
Los Gatos Creek	Natural	Central California coast steelhead (freshwater migration habitat), Pacific lamprey, Central Valley fall-run Chinook salmon, California red-legged frog, western pond turtle, least Bell's vireo, yellow warbler, ringtail, San Francisco dusky-footed woodrat, pallid bat, Townsend's big-eared bat, western red bat, white-tailed kite	P	P
Guadalupe River	Natural	Central California coast steelhead (freshwater migration habitat), Pacific lamprey, Central Valley fall-run Chinook salmon, California red-legged frog, western pond turtle, least Bell's vireo, tricolored blackbird, yellow warbler, ringtail, San Francisco dusky-footed woodrat, pallid bat, Townsend's big-eared bat, western red bat, white-tailed kite	P	P

Source: Land cover generated using ESRI ArcGIS version 10.3 from data gathered during field surveys and aerial photo interpretation using NAIP aerial imagery dated 2010–2015
NP = Not Present
P = Present
[1] Some watercourses categorized as constructed are natural in part of the study area and concrete-lined in other parts (i.e., on one side of the tracks). Only portions of constructed watercourses that are natural were determined to support riparian vegetation.
[2] Open waters outside but within 1,000 feet of project footprint.
[3] At this location the project footprint consists of the permanent HSR/Caltrain right-of-way over an existing box culvert. The open waters of San Francisco Bay are to the east and a concrete-lined (i.e., constructed watercourse) flood control channel is to the west and southwest of this culvert.

Critical Habitat

Designated critical habitat for four federally listed species occurs within 0.5 mile of the project footprint, as shown in Table 3.7-5. Designated critical habitat for the Franciscan manzanita is located east of Caltrain's Tunnel 4 in the San Francisco to South San Francisco Subsection; designated critical habitat for the Bay checkerspot butterfly is located at San Bruno Mountain in South San Francisco; and designated critical habitat for CCC steelhead is located at San Francisquito Creek (San Mateo to Palo Alto Subsection) and Stevens Creek (Mountain View to Santa Clara Subsection). The southern distinct population segment of green sturgeon has designated critical habitat in China Basin Channel and Islais, Colma, and Mills Creeks in the San Francisco to South San Francisco Subsection; Highline Creek in the San Bruno to San Mateo Subsection; and Pulgas Creek in the San Mateo to Palo Alto Subsection. Additional information on critical habitat is provided in the San Francisco to San Jose Biological and Aquatic Resources Technical Report (Authority 2020a) and San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c).

Table 3.7-5 Critical Habitat within 0.5 Mile of the Project Footprint[1]

Species	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Franciscan manzanita	O	NP	NP	NP	NP
Bay checkerspot butterfly	P	NP	NP	NP	NP
Central California coast steelhead	NP	NP	P	P	NP
Green sturgeon	P	P	P	NP	NP

Sources: 78 Fed. Reg. 77289; 50 Fed. Reg. 50406; 70 Fed. Reg. 52488
[1] P = designated critical habitat present in or within 1,000 feet of project footprint; O = designated critical habitat present in vicinity (1,000 feet to 0.5 mile from project footprint); NP = no designated critical habitat within 0.5 mile of project footprint

Essential Fish Habitat

The habitat study area contains designated EFH for Pacific coast (Chinook and Coho) salmon, coastal pelagic [fish] species, and Pacific Coast groundfish species. Appendix A to the Pacific Salmon Fishery Management Plan (PFMC 2014) identifies two kinds of EFH for Chinook and coho salmon—marine and freshwater. The important elements of Chinook and coho salmon marine EFH are: (1) estuarine rearing, (2) ocean rearing, and (3) juvenile and adult migration. Important features of this estuarine and marine habitat are: (1) good water quality, (2) cool water temperatures, (3) abundant prey species and forage base (food), (4) connectivity with terrestrial ecosystems, and (5) adequate depth and habitat complexity including marine vegetation and algae in estuarine and nearshore habitats (PFMC 2014). Freshwater EFH for Chinook and coho salmon consists of four major components: (1) spawning and incubation, (2) juvenile rearing, (3) juvenile migration corridors, and (4) adult migration corridors and adult holding habitat.

Marine EFH for Chinook and coho in the San Francisco Bay hydrologic unit (HUC-8 18050004) extends from nearshore and tidal submerged environments out to the full extent of the Exclusive Economic Zone (i.e., 200 nautical miles from the California coast). Marine EFH in the habitat study area is limited to the six locations in the San Francisco to South San Francisco Subsection identified in Table 3.7-6.

Freshwater EFH for Chinook and coho salmon includes “all those streams, lakes, ponds, wetlands, tributaries, and other waterbodies currently viable and most of the habitat historically accessible to Chinook and coho salmon within Washington, Oregon, Idaho and California” (PFMC 2014: page A-21). Freshwater EFH in the habitat study includes all of the streams in the remaining subsections listed in Table 3.7-6 because they were historically accessible to Chinook salmon, coho salmon, or both. The 18 streams in the San Bruno to San Mateo, San Mateo to Palo Alto, and Mountain View to Santa Clara Subsections are located in the San Francisco Bay hydrologic unit (HUC-8 18050004). Los Gatos Creek and the Guadalupe River (San Jose Diridon Station Approach Subsection) are located in the Coyote Creek hydrologic unit (HUC-8 18050003).

Table 3.7-6 Designated Essential Fish Habitat in the Habitat Study Area[1]

Name	Pacific Coast Salmon	Pacific Coast Groundfish	Coastal Pelagic
San Francisco to South San Francisco Subsection			
China Basin Water Channel (aka Mission Creek)	P	P	P
Islais Creek	P	P	P
Visitacion Creek	P	NP	NP

Name	Pacific Coast Salmon	Pacific Coast Groundfish	Coastal Pelagic
Brisbane Lagoon/Guadalupe Valley Creek	P	NP	NP
Oyster Point Channel	P	P	P
Colma Creek	P	NP	NP
San Bruno to San Mateo Subsection			
El Zanjon Creek (aka Cupid Row Canal)	P	NP	NP
Highline Creek Tributary (aka South Lomita Canal)	P	NP	NP
Mills Creek	P	NP	NP
Easton Creek	P	NP	NP
Sanchez Creek	P	P	NP
San Mateo Creek	P	NP	NP
San Mateo to Palo Alto Subsection			
Borel Creek	P	NP	NP
Belmont Creek	P	NP	NP
Pulgas Creek	P	NP	NP
Cordilleras Creek	P	NP	NP
San Francisquito Creek	P	NP	NP
Matadero Creek	P	NP	NP
Barron Creek	P	NP	NP
Adobe Creek	P	NP	NP
Mountain View to Santa Clara Subsection			
Permanente Creek	P	NP	NP
Stevens Creek	P	NP	NP
Sunnyvale East Channel	P	NP	NP
Calabazas Creek	P	NP	NP
San Tomas Aquino Creek	P	NP	NP
San Jose Diridon Station Approach Subsection			
Los Gatos Creek	P	NP	NP
Guadalupe River	P	NP	NP

[1] P = designated essential fish habitat overlaps with project footprint; O = designated essential fish habitat present outside but within 1,000 feet of project footprint; NP = no designated essential habitat within 1,000 feet of project footprint

Chinook salmon are absent from all streams in the San Francisco Bay hydrologic unit but still occur in the Coyote Creek hydrologic unit. They were once extirpated from Coyote Creek but have spawned there since at least the mid-1980s. Most spawning has been observed in the lowermost reaches but adults have been observed as far upstream as Metcalf Dam at Anderson Reservoir. It is currently unknown if such spawning is successful but the Santa Clara Valley Water District (SCVWD) captured a few juveniles in both Coyote Creek and the Guadalupe River during a trapping effort in the late 1990s (Smith 2013).

Coho salmon are absent from all tributaries of San Francisco Bay and many streams south of the Bay. The extirpation of coho salmon in the Bay is likely associated with adverse effects from increased urbanization and other human developments in watersheds and associated fish habitat. Coho salmon were last documented from the San Francisco estuary in the early to mid-1980s (CDFW 2015a).

The fishery management plan for Pacific Coast—coastal pelagic species (CPS) includes five species: northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, and market squid. EFH for these coastal pelagic species is defined both by geographic boundaries and sea-surface temperature ranges (Pacific States Marine Fisheries Commission n.d.). Pelagic species live in the water column as opposed to living near the sea floor. They can generally be found anywhere from the surface to 1,000 meters deep. Pacific sardine and Pacific mackerel are actively managed—they are assessed annually for stock status and fishery management. The three other species (northern anchovy, jack mackerel, and market squid) are either managed at the state level or are captured in low numbers and are therefore monitored for potential elevation to active management in the future (PFMC 2019a).

The definition of EFH for CPS fish is based on a thermal range bordered by the geographic area where CPS occur at any life stage, where CPS have occurred historically during periods of similar environmental conditions, or where environmental conditions do not preclude colonization by CPS. The identification of EFH for CPS takes into account that the geographic range of CPS varies widely over time in response to the temperature of the upper mixed layer of the ocean. The east-west geographic boundary of EFH for CPS is defined to be all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to 200 nautical miles and above the thermocline where sea surface temperatures range between 10 degrees Celsius (°C) and 26°C. The southern boundary is the United States-Mexico maritime boundary. The northern boundary is more dynamic and is defined as the position of the 10°C isotherm, which varies seasonally and annually (PFMC 2019b).

The Pacific Coast groundfish fishery management plan (PFMC 2012) manages 90-plus species over a large and ecologically diverse area. Groundfish species are comprised of flatfish, rockfish, roundfish (e.g., lingcod, Pacific cod, cabezon), and elasmobranchs (i.e., sharks and skates). The overall extent of groundfish EFH is identified as all waters and substrate within the following areas:

- Depths less than or equal to 3,500 meters to mean higher high water level or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 parts per thousand during the period of average annual low flow
- Seamounts in depths greater than 3,500 meters
- Areas designated as habitat areas of particular concern not already identified by the above criteria. The habitat area of particular concern in the habitat study area is estuarine.

Non-Special-Status Wildlife

This section provides a general summary of common or distinctive species assemblages known or expected to occur in the habitat study area that do not meet the definition of special-status species in Special-Status Species and could potentially be affected by project construction and operations. Volume 2, Appendix 3.7-B provides scientific names of all species.

Fish

Watercourses in the habitat study area support both introduced and native fish species. In San Francisco County, native fish species include coastal threespine stickleback, coastrange sculpin, Pacific lamprey, prickly sculpin, riffle sculpin, and starry flounder. Common introduced species include catfish species, carp, black and white crappie, yellowfin goby and sunfish species. In San Mateo and Santa Clara Counties, the same native and introduced species also occur, along with some additional native species such as Sacramento pikeminnow, Sacramento sucker, and

hardhead. Additional introduced species may include largemouth bass and smallmouth bass (University of California Davis 2019).

Amphibians and Reptiles

Most amphibian species likely to occur in the habitat study area breed in streams, ponds, or seasonal pools and either remain near aquatic habitat or move into adjacent uplands in the dry season. Sierran treefrog, arboreal salamander, and California slender salamander are fairly common in both developed and natural land cover types as long as seasonal pools or streams are available for breeding and ground cover (e.g., ornamental or native shrubs, dense ground cover or leaf litter) is present. Other species have narrower habitat requirements and only occur in natural land cover types (e.g., riparian and oak woodland/forest, scrub, chaparral, grassland), occasionally venturing onto rural residential lots within or adjacent to natural land cover. Species in this category include California newt, ensatina, and western toad.

Several reptile species adapted to a variety of land cover types are expected to occur in the habitat study area. Western fence lizard and common garter snake are common species in both developed and natural land cover types as long as hard surfaces for basking (e.g., fence posts, rocks, logs, sides of buildings) are present for the former and water is nearby for the latter. Other species have narrower habitat requirements and only occur in natural land cover types, occasionally venturing onto rural residential lots in or adjacent to natural land cover. Species in this category include southern alligator lizard, California kingsnake, gopher snake, striped racer, common sharp-tailed snake, and ring-necked snake.

Birds

The habitat study area provides nesting habitat for a variety of terrestrial bird species. Many tree- or shrub-nesting species, including Anna's hummingbird, downy woodpecker, California scrub-jay, oak titmouse, bushtit, and California towhee, are just as likely to nest in developed areas as in natural woodland or scrub. Others, such as American crow, northern mockingbird, and house finch, are more strongly associated with human development. Common tree-nesting raptors in the region include red-tailed hawk, red-shouldered hawk, Cooper's hawk, and great horned owl, all of which are capable of nesting in urban, rural, and natural landscapes as long as suitable trees are present. Killdeer and western meadowlark are the most common ground-nesting species likely to be encountered in barren areas (e.g., open lots of soil or gravel, levees, roadsides, canal edges) and grassland, respectively. Species that nest in, on, or under human structures (e.g., bridges, highway overpasses, culverts, crevices in buildings) in the area include white-throated swift, black phoebe, cliff swallow, and barn swallow. Open-cup- and cavity-nesting species with strong affinities for oak woodland include Nuttall's woodpecker, white-breasted nuthatch, and spotted towhee. Stands of freshwater emergent wetland vegetation provide nesting habitat for marsh wren, song sparrow, and red-winged blackbird.

The San Francisco Bay Estuary is well known as a major migratory stopover and wintering site for many species of waterfowl and shorebirds (Takekawa et al. 2000). It is included in the Western Hemisphere Shorebird Reserve Network as a site of "hemispheric" importance (i.e., supports more than 900,000 shorebirds annually) and provides wintering habitat for more than 50 percent of all diving ducks[5] in the Pacific Flyway (Takekawa et al. 2000). The open waters of San Francisco Bay and Brisbane Lagoon in the San Francisco to South San Francisco Subsection provide resting and foraging habitat for waterfowl such as greater scaup, bufflehead, and ruddy duck, and the shorelines provide roosting habitat for shorebirds such as western sandpiper, least sandpiper, and dunlin.

Mammals

A variety of terrestrial mammals occur in the habitat study area. Common burrowing or ground-dwelling rodents expected to occur in developed areas, woodland, scrub, and/or grassland include

[5] Duck species that dive to the bottom of shallow bays to feed on invertebrates and fish. Common species in San Francisco Bay include greater scaup, ruddy duck, bufflehead, and canvasback.

California ground squirrel, Botta's pocket gopher, western harvest mouse, house mouse, California deer mouse, and California vole. Small to large-sized generalist species adapted to both urban and natural areas include striped skunk, Virginia opossum, northern raccoon, coyote, red fox, gray fox, and mule deer.

Several common bat species occur and may roost in the habitat study area. Roost sites must have an appropriate temperature regime and offer protection from predators and weather. Roost sites fall into three general categories—crevices, cavities/caves, and foliage. In natural settings, cavity-roosting species roost in groups on open surfaces inside dark chambers, such as caves or large tree hollows; crevice-roosting species roost in a variety of narrow spaces (e.g., rock crevices, exfoliating tree bark, damaged wood in snags). While some species appear to prefer cavities or crevices for roosting, many species use a variety of roost sites. With the exception of a few foliage-roosting species, all North American bat species also roost in cave-like spaces or crevices in built structures such as bridges, tunnels, old mines, silos, towers, and tunnels (Caltrans 2004). Mexican free-tailed bat, big brown bat, and California myotis are common cavity- or crevice-roosting species in California that may roost under bridges or in large tree hollows, abandoned buildings, rock crevices, mine shafts, or other features in the habitat study area. Hoary bat is a highly migratory foliage-roosting species that may roost in wooded portions of the habitat study area during the spring, summer, and fall. Table 3.7-7 shows roosting preferences for these and other bat species potentially occurring in the habitat study area.

Table 3.7-7 Roosting Patterns for Bat Species Potentially Occurring in the Habitat Study Area[1]

Species	Status	Bridge	Cave/Mine	Building	Cliff/Rock Crevice	Tree Bark/Hollow	Tree Foliage
Big brown bat	None	1	2	1	2	1	–
California myotis	None	2	2	1	1	2	–
Hoary bat	None	–	–	–	–	–	1
Mexican free-tailed bat	None	–	1	2	1	1	3
Pallid bat	SSC	1	2	1	2	1	–
Townsend's big-eared bat	SSC	2	1	2	–	3	–
Western mastiff bat	SSC	–	–	3	1	–	–
Western red bat	SSC	–	–	–	–	–	1

Source: Caltrans 2004
SSC = California Department of Fish and Wildlife species of special concern
[1] 1 = use frequently; 2 = use sometimes; 3 = use rarely; – = not known to use

Special-Status Plant Communities

Special-status plant communities are named differently in the CNDDB than in the CDFW Sensitive Natural Community List (CDFW 2018a) because Holland's (1986) vegetation classification system was used when the CNDDB was first developed in the mid-1990s. The CDFW's Vegetation Classification and Mapping Program is currently focused on completing an updated statewide vegetation classification system. After this is completed, CDFW will review and update the existing Holland-based occurrences in the CNDDB based on the current classification system. Until that time, both Holland-based CNDDB natural community occurrences and the CDFW Sensitive Natural Community List should be considered during the environmental review process of CEQA and its equivalents.

The CNDDB (CDFW 2018b) identifies seven Holland-type special-status plant communities (Holland 1986) as occurring within 10 miles of the special-status plant study area:

- Northern maritime chaparral
- Coastal terrace prairie

- Valley needlegrass grassland
- Serpentine bunchgrass
- Northern coastal salt marsh
- Coastal brackish marsh
- Valley oak woodland

None of the CNDDB-identified community occurrences overlap with the special-status plant study area. To date, project land cover mapping has identified only one of these communities (northern coastal salt marsh) in the special-status plant study area at Brisbane Lagoon. None of the remaining communities has been observed or is expected to occur because of the project's urban setting; most vegetation within the special-status plant study area is composed of nonnative invasive weeds that thrive in disturbed environments.

Based on a review of the CDFW Sensitive Natural Community List (CDFW 2018a), biologists identified two special-status plant communities as occurring or potentially occurring in the special-status plant study area:

- Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance)
- Pickleweed mats (*Sarcocornia pacifica* Herbaceous Alliance)

Table 3.7-8 shows a cross-walk between the project's land cover types identified during the mapping described in Section 3.7.6.3, Pre-Field Investigation and Consultation, and associated special-status plant communities that are synonymous with or could potentially occur in these land cover types.

Table 3.7-8 Special-Status Plant Communities Occurring or Potentially Occurring in the Special-Status Plant Study Area

Project Land Cover Type	Sensitive Natural Community	Holland (1986) Community Type Listed in CNDDB
Mixed riparian Scrub/shrub wetland	Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance)	Central coast riparian scrub
Saline emergent wetland	Pickleweed mats (*Sarcocornia pacifica* Herbaceous Alliance)	Northern coastal salt marsh

Sources: CDFW 2018a, 2018b; Sawyer et al. 2009; Holland 1986
CDFW = California Department of Fish and Wildlife
CNDDB = California Natural Diversity Database
Special-status plant communities are named differently in the CNDDB than in the CDFW Sensitive Natural Community List (CDFW 2018a) because Holland's (1986) vegetation classification system was used when the CNDDB was first developed in the mid-1990s. The CDFW indicates that both Holland-based CNDDB natural community occurrences and the CDFW Sensitive Natural Community List should be considered during the California Environmental Quality Act review process.

Aquatic Resources

Detailed information regarding aquatic resources identified in the aquatic RSA for the four subsections between San Francisco and Santa Clara is presented in the San Francisco to San Jose Aquatic Resources Delineation Report (Authority 2020b), and for the San Jose Diridon Station Approach Subsection in the *San Jose to Merced Project Section Aquatic Resources Delineation Report* (Authority 2020d). Table 3.7-9 summarizes the information in the technical reports. Brief discussions of the aquatic resource types follow the table.

Table 3.7-9 Aquatic Resources by Subsection[1]

Resource	Jurisdictional Authority[1]	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Constructed basin	CFGC, CWA	P	NP	NP	NP	NP
Constructed watercourse	CFGC, CWA/RHA	P	P	P	P	P
Freshwater emergent wetland	CWA	P	P	NP	NP	NP
Mixed riparian	CFGC	P	P	P	P	P
Natural watercourse	CFGC, CWA/RHA	P	P	P	P	P
Open water	CWA/RHA	P	P	NP	NP	NP
Palustrine forested wetland	CFGC, CWA	NP	NP	NP	NP	P
Saline emergent wetland	CWA/RHA	P	NP	NP	NP	NP
Scrub/shrub wetland	CWA	P	NP	NP	NP	NP
Seasonal wetland	CWA	NP	P	NP	NP	P

Sources: Authority 2020b, 2020d
P = Present in aquatic resource study area, including areas outside but within 250 feet of the project footprint.
NP = Not Present in aquatic resource study area
[1] CFGC = Under Cal. Fish and Game Code Section 1600 et seq. jurisdiction. CWA = Under federal CWA Section 404 jurisdiction. RHA = Under federal Rivers and Harbors Act Section 10 jurisdiction.

Wetlands

Four wetland types were mapped in the aquatic RSA—freshwater emergent wetland, saline emergent wetland, scrub/shrub wetland, and seasonal wetland. The general classifications of the wetland types were identified using the *Manual of California Vegetation* (Sawyer et al. 2009). Detailed descriptions of these communities are presented in the San Francisco to San Jose Aquatic Resources Delineation Report (Authority 2020b).

Nonwetland Waters of the U.S.

Four nonwetland water types were mapped in the aquatic RSA—constructed basin, constructed watercourse, natural watercourse, and open water. Descriptions of these nonwetland water types are provided in the San Francisco to San Jose Aquatic Resources Delineation Report (Authority 2020b).

Navigable Waters

Oceans, streams, rivers, lakes, and other coastal waterways subject to the ebb and flow of the tide within the aquatic RSA are regulated by USACE under Section 10 of the RHA and are waters of the U.S. In the aquatic RSA, these include the following nine channels and creeks: China Basin Water Channel (aka. Mission Creek), Islais Creek, Visitacion Creek, Brisbane Lagoon/Guadalupe Valley Creek, Oyster Point Channel, Colma Creek, Leslie Creek and Borel Creek. The extent of these features regulated by USACE under Section 10 of the RHA is defined as the shoreward limit of the mean high water mark.

Streams, Lakes, and Rivers

Streams, lakes, and rivers identified within the aquatic RSA and potentially subject to notification under Cal. Fish and Game Code Section 1600 et seq. include natural watercourses, constructed basins, and constructed watercourses. Mixed riparian land cover adjacent to natural and

constructed watercourses may also be regulated. The extent of streams, lakes, and rivers (including adjacent riparian land cover) is similar to the extent of wetlands and other waters of the U.S. described in the preceding sections, with some differences primarily in the extent of riparian habitat types.

Protected Trees

Appendix F of the PCEP EIR (PCJPB 2015d) includes detailed information on the number, size, and health of protected trees in the special-status plant study area north of Scott Boulevard. Although many of the trees identified have likely been removed, several locations still support trees with historic significance:

- **Burlingame Eucalyptus Row**—The City of Burlingame has identified concern about the historic row of eucalyptus (the Jules Francard Grove) along the Caltrain right-of-way in the San Bruno to San Mateo Subsection. A separate row of eucalyptus (the Howard-Ralston Eucalyptus Tree Rows along El Camino Real) is listed in the National Register of Historic Places.
- **El Palo Alto**—A landmark redwood tree, also known as El Palo Alto, is identified by the City of Palo Alto as Heritage Tree #1 and is designated as California Historical Landmark No. 2. The tree trunk is approximately 26 feet from the Caltrain right-of-way, with tree branches and foliage within 5 feet of the right-of-way in the San Mateo to Palo Alto Subsection. The tree is estimated to be more than 110 feet high and more than 1,000 years old (City of Palo Alto 2010).

Trees protected under Chapter 13.32 of the City of San Jose's municipal code have not yet been inventoried in the special-status plant study area for the San Jose Diridon Station Approach Subsection. Protected trees may occur in woodland and urban land cover types in the project footprint, including larger riparian trees along Los Gatos Creek and the Guadalupe River.

Wildlife Corridors

Two natural landscape blocks (Caltrans and CDFG 2010) are present in the project vicinity, though neither overlaps the project footprint. Additionally, 18 watercourses that have not been identified as critical habitat linkages could support wildlife movement in the project vicinity between the Santa Cruz Mountains and San Francisco Bay (Table 3.7-4). The San Francisco to San Jose Biological and Aquatic Resources Technical Report discusses these corridors in greater detail (Authority 2020a). Los Gatos Creek and the Guadalupe River in the San Jose Diridon Station Approach Subsection could also support wildlife movement through downtown San Jose; these features are discussed in the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c).

Conservation Areas

The only potential conservation areas in the project footprint are public lands; there are no conservation easements or conservation and mitigation banks (Table 3.7-10). None of these public land parcels is a designated ecological reserve or refuge. El Palo Alto Park, bordered by San Francisquito Creek and its associated riparian vegetation to the north, contains a large coast redwood that gave Palo Alto its name (colloquially known as "The Tall Tree" [City of Palo Alto 2010]), but it and all the remaining public lands are used primarily for urban recreation and community facilities and do not support sensitive biological or aquatic resources.

Table 3.7-10 Public Lands within the Project Footprint

Public Land	Owner/Manager/Easement Holder
San Francisco to South San Francisco	
Palou and Phelps Park	City of San Francisco
Brisbane Community Park	City of Brisbane
San Bruno to San Mateo	

Public Land	Owner/Manager/Easement Holder
N/A	N/A
San Mateo to Palo Alto	
Trinta Park	City of San Mateo
Holbrook-Palmer Recreation Park	Town of Atherton
El Palo Alto Park	City of Palo Alto
El Camino Park	City of Palo Alto
Mountain View to Santa Clara	
Bracher Park	City of Santa Clara
San Jose Diridon Station Approach	
Guadalupe River Park and Gardens	City of San Jose

Sources: GreenInfo Network 2018a, 2018b; Authority 2020a, 2020c
N/A = not applicable

Habitat Conservation Plans

There are four HCPs with planning areas that overlap or occur within 1,000 feet of the project footprint:

- Pacific Gas and Electric Company (PG&E) Bay Area Operations & Maintenance Habitat Conservation Plan (PG&E Bay Area O&M HCP) (PG&E 2017)
- SCVHP (County of Santa Clara et al. 2012)
- Santa Clara Valley Greenprint (Santa Clara Valley Open Space Authority [SCVOSA] 2014)
- San Bruno Mountain Area Habitat Conservation Plan (San Bruno Mountain HCP) (County of San Mateo 1982)

This section briefly summarizes each of these plans.

The entire project footprint is within the boundary of the PG&E Bay Area O&M HCP (PG&E 2017). The geographic scope of the PG&E Bay Area O&M HCP is the nine California counties that surround San Francisco Bay: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco. The PG&E O&M HCP emphasizes avoidance and minimization and land protection. PG&E received incidental take authorization for activities affecting 18 wildlife and 13 plant species (i.e., covered species). Habitat for five of these species—Bay checkerspot butterfly, callippe silverspot butterfly, Mission blue butterfly, California red-legged frog, and San Francisco garter snake—is present within the project footprint.

Most of the project footprint for the San Jose Diridon Station Approach Subsection (i.e., south of Lafayette Street) overlaps with the SCVHP planning area. The SCVHP is a combined HCP/NCCP that is administered by the Santa Clara Valley Habitat Agency (SCVHA), a joint powers authority created and governed by the six local agencies that participate in the SCVHP: the Cities of Gilroy, Morgan Hill, and San Jose; the County of Santa Clara; the SCVWD; and the Santa Clara Valley Transportation Authority. The SCVHP emphasizes the protection, enhancement, and restoration of aquatic habitat for California tiger salamander, California red-legged frog, western pond turtle, and foothill yellow-legged frog in the foothills on either side of the Santa Clara Valley, and open lands on the valley floor and adjacent foothills that provide habitat for burrowing owl.

The San Jose Diridon Station Approach Subsection also falls within the planning area for the *Santa Clara Valley Greenprint*, developed by the SCVOSA (2014). Like the SCVHP, it emphasizes the protection, enhancement, and restoration of aquatic habitat for California tiger salamander, California red-legged frog, western pond turtle, and foothill yellow-legged frog in the

foothills on either side of the valley, and open lands on the valley floor and adjacent foothills that provide habitat for burrowing owl.

A small portion of the San Bruno Mountain HCP planning area occurs 300 to 500 feet west feet of the project footprint from MP 7.5 to 8.2 in the San Francisco to South San Francisco Subsection. This area is managed and monitored for the three butterfly species for which the HCP/NCCP was prepared (i.e., callippe silverspot, Mission blue butterfly, San Bruno elfin butterfly—all state- and federally listed as endangered).

BCDC Jurisdictional Areas

As mentioned in Section 3.7.5, Consultation with the San Francisco Bay Conservation and Development Commission for the McAteer-Petris Act, and depicted on Figures 2-48 and 2-50, the project footprint overlaps with BCDC jurisdiction at seven locations: Mission Creek, Islais Creek, Visitacion Creek, Brisbane Lagoon (including Guadalupe Valley Creek outlet), Oyster Point Channel, Colma Creek, and El Zanjon Creek (also known as Cupid Row Canal). Table 3.7-11 shows the land cover type(s) within BCDC Bay and shoreline band jurisdiction at each location and for all seven locations combined. Most BCDC jurisdiction overlap occurs at Brisbane Lagoon, which accounts for 64 percent (17.5 of 27.2 acres) of the total jurisdictional area under Alternative A and 83 percent (18.6 of 22.4 acres) under Alternative B. Urban is the dominant land cover type within BCDC jurisdiction under both alternatives (60 percent of total in Alternative A, 74 percent of total under Alternative B). California annual grassland comprises 23 percent (6.3 of 27.2 acres) of total land cover within BCDC jurisdiction under Alternative A but only 9 percent (2.0 of 22.4 acres) under Alternative B, largely due to the 4.7 acres of grassland within shoreline band jurisdiction next to Visitacion Creek, which does not overlap with the Alternative B footprint (Table 3.7-11).

Of the seven BCDC jurisdictional areas, Visitacion Creek and Brisbane Lagoon have the highest biological value because of the greater extent of natural land cover types that provide habitat for special-status species and non-special-status wildlife, could support special-status plant communities, and/or are designated aquatic resources under regulatory jurisdiction. The remaining BCDC jurisdictional areas are mostly composed of urban or ruderal land cover that provide little to no habitat value for special-status species. The San Francisco to San Jose Biological and Aquatic Resources Technical Report provides detailed descriptions of these land cover types and resources (Authority 2020a).

Table 3.7-11 Land Cover Types within BCDC Jurisdiction

Location	Land Cover Type	Alternative A			Alternative B		
		Bay	Shoreline Band	Total	Bay	Shoreline Band	Total
Mission Creek	Urban	0.0	0.2	0.2	0.0	0.2	0.2
Islais Creek	Urban	0.0	0.7	0.7	0.0	0.7	0.7
Visitacion Creek	Scrub/Shrub Wetland	0.0	0.1	0.1	0.0	0.0	0.0
	California Annual Grassland	0.1	4.7	4.8	0.0	0.0	0.0
	Freshwater Emergent Wetland	0.0	0.1	0.1	0.0	0.0	0.0
	Constructed Basin	0.0	0.1	0.1	0.0	0.0	0.0
	Constructed Watercourse	0.6	0.1	0.7	0.0	0.0	0.0
	Urban	0.0	0.2	0.2	0.0	0.0	0.0
	Subtotal	*0.7*	*5.3*	*6.0*	*0.0*	*0.0*	*0.0*
Brisbane Lagoon/Guadalupe Valley Creek	Mixed Riparian	0.0	0.1	0.1	0.0	0.1	0.1
	Coyote Brush Scrub	0.0	0.2	0.2	0.0	0.2	0.2
	California Annual Grassland	0.2	1.3	1.5	0.2	1.8	2.0
	Saline Emergent Wetland	1.7	0.0	1.7	1.7	0.0	1.7
	Natural Watercourse	0.0	0.0	0.0	0.1	0.0	0.1
	Open Water	0.5	0.0	0.5	0.5	0.0	0.5
	Ruderal	0.1	0.5	0.6	0.1	0.5	0.6
	Urban	0.9	12.1	13.0	0.9	12.5	13.4
	Subtotal	3.3	14.2	17.5	3.5	15.1	18.6
Oyster Point Channel	Urban	0.3	1.4	1.7	0.3	1.4	1.7
	Constructed Watercourse	0.1	0.0	0.1	0.1	0.0	0.1
	Subtotal	0.4	1.4	1.8	0.4	1.4	1.8

Location	Land Cover Type	Alternative A			Alternative B		
		Bay	Shoreline Band	Total	Bay	Shoreline Band	Total
Colma Creek	Urban	0.0	0.4	0.4	0.0	0.4	0.4
	Constructed Watercourse	0.1	0.0	0.1	0.1	0.0	0.1
	Subtotal	0.1	0.4	0.5	0.1	0.4	0.5
El Zanjon	Ruderal	0.0	0.3	0.3	0.0	0.3	0.3
	Urban	0.0	0.2	0.2	0.0	0.3	0.3
	Subtotal	0.0	0.5	0.5	0.0	0.5	0.5
All	Mixed Riparian	0.0	0.1	0.1	0.0	0.1	0.1
	Coyote Brush Scrub	0.0	0.2	0.2	0.0	0.2	0.2
	Scrub-Shrub Wetland	0.0	0.1	0.1	0.0	0.0	0.0
	California Annual Grassland	0.3	6.0	6.3	0.2	1.8	2.0
	Freshwater Emergent Wetland	0.0	0.1	0.1	0.0	0.0	0.0
	Saline Emergent Wetland	1.7	0.0	1.7	1.7	0.0	1.7
	Constructed Basin	0.0	0.1	0.1	0.0	0.0	0.0
	Constructed Watercourse	0.8	0.1	0.9	0.2	0.0	0.2
	Natural Watercourse	0.0	0.0	0.0	0.1	0.0	0.1
	Open Water	0.5	0.0	0.5	0.5	0.0	0.5
	Ruderal	0.1	0.8	0.9	0.1	0.8	0.9
	Urban	1.2	15.2	16.4	1.2	15.5	16.7
	Total	4.6	22.7	27.2	4.0	18.4	22.4

3.7.8 Environmental Consequences

3.7.8.1 Overview

This section discusses the potential impacts on biological and aquatic resources that could result from construction and operations of the project alternatives. The impacts are organized into the following categories:

- Special-status species (plants and wildlife)
- Non-special-status wildlife (common wildlife)
- Special-status plant communities
- Aquatic resources
- Protected trees
- Wildlife corridors
- Conservation areas (preserves, conservation easements, and mitigation banks)
- HCPs
- BCDC jurisdictional areas

Construction and operation of the project could result in temporary and permanent construction impacts as well as intermittent operations impacts on special-status species. Construction and operations impacts on special-status plant and wildlife species could include the direct removal of habitat, degradation of habitat, and mortality or removal of individuals. Temporary construction impacts on special-status species habitat could result from ground disturbance during project construction. Intermittent operations impacts on special-status species could result from maintenance of the HSR right-of-way.

Through similar mechanisms, the project could result in temporary and permanent construction impacts as well as intermittent operations impacts on non-special-status wildlife (i.e., common wildlife species), special-status plant communities, aquatic resources, protected trees, and wildlife corridors.

Indirect impacts (e.g., modification of hydrology, introduction of invasive nonnative species) were not quantified for this analysis. However, indirect impacts were assumed to roughly scale with the extent of direct impacts because for this linear project, alternatives with more resources in the project footprint (e.g., special-status species habitat, aquatic resources under regulatory jurisdiction) would also potentially abut more such resources adjacent to the footprint.

3.7.8.2 Special-Status Species

No Project Impacts

The population in the Bay Area is expected to grow from 3.4 million jobs and 7.2 million people in 2010 to 4.7 million jobs and a population of 9.5 million through 2040 (see Section 2.6.1.1, Projections Used in Planning). Development in the region to accommodate the population and employment increase would continue under the No Project Alternative. The analysis of potential impacts of the No Project Alternative considers the impacts of conditions forecasted by current land use and transportation plans in the vicinity of the project, including planned improvements to the highway, aviation, conventional passenger rail, freight rail, and port systems through the 2040 planning horizon. Without the HSR project, the forecasted population growth would increase pressure to expand highway and airport capacities. The Authority estimates that additional highway and airport projects (up to 4,300 highway lane miles, 115 airport gates, and 4 airport runways) would be needed to achieve equivalent capacity and relieve the increased pressure (Authority 2012). The No Project Alternative includes several planned transportation, housing, commercial, and other development projects by the year 2040. Section 3.18 provides a detailed list of foreseeable future development projects, which include shopping centers, large residential developments, and planned transportation projects defined in the various regional transportation plans for the three counties and discusses the cumulative impact.

Under the No Project Alternative, recent development trends are anticipated to continue, leading to impacts on special-status species. Special-status species and their habitat within and adjacent to the project footprint would continue to be subjected to existing stressors (e.g.,

predation by nonnative urban predators, noise and light associated with nearby residential and commercial land uses, train traffic) under the No Project Alternative. Existing O&M activities within the Caltrain right-of-way would continue to pose risks to individuals of special-status species where their habitat overlaps with the right-of-way. Ongoing vegetation management, flood control channel maintenance, and habitat improvement activities on the San Francisco International Airport (SFO) West-of-Bayshore property would continue to improve habitat for California red-legged frog and San Francisco garter snake but these activities also pose mortality risk for individuals. Future changes in land use or allowable density of development, as well as ground disturbance associated with future infrastructure improvements such as highway expansions to accommodate population growth, would have impacts on special-status species similar to those that have resulted from past development, such as habitat loss and degradation; potential mortality of individuals and populations of special-status plant and wildlife species; and possible extirpation events.

Project Impacts

Construction and operations of the project would result in permanent and temporary impacts on land cover potentially suitable as habitat for special-status plant and wildlife species, including state- and federally listed species. All aspects of construction and operations have the potential to cause impacts, either from direct removal of habitat or individuals, or from indirect impacts such as introduction of nonnative invasive species or changes in hydrology. Construction impacts on special-status plant species are presented first, followed by construction impacts on special-status wildlife species, then operations impacts on special-status plant species and special-status wildlife species. Table 3.7-12 shows the extent of impacts on special-status plants and wildlife habitat, respectively, by project alternative. Some species in this table and subsequent impact discussions are grouped together because they are expected to occur in the same land cover type(s) and would therefore be subject to the same impact mechanisms. While designated critical habitat for Franciscan manzanita and Bay checkerspot butterfly is identified in Table 3.7-5, the critical habitat is located outside the project footprint (within 0.5 mile for Franciscan manzanita and within 1,000 feet for Bay checkerspot butterfly). Therefore, the construction or operation of the project would not affect critical habitat for these species and they are not assessed further in this section.

Construction Impacts

Construction of the project alternatives would consist of track modifications; roadway modifications; station modifications; modifications to or construction of new structures; construction of the Brisbane LMF; construction of passing tracks (under Alternative B); and installation of communication radio towers, four-quadrant gates at at-grade crossings, and perimeter fencing along the right-of-way. Activities associated with building this infrastructure include establishing equipment and materials storage areas close to construction sites; demolition of existing structures to expand existing station areas; clearing and grubbing; handling, storing, hauling, excavating, and placing fill; possible pile driving; and construction of bridges, road modifications, and utility relocations. Chapter 2, Alternatives, describes construction activities.

Table 3.7-12 Impacts on Special-Status Species Habitat by Alternative (acres)

Species[1]	Alternative A			Alternative B[2]		
	Permanent	Temporary	Total	Permanent	Temporary	Total
Special-Status Plants						
Bent-flowered fiddleneck (1B.2)	57.4	36.7	94.1	33.8	10.0	43.8
Bristly sedge (2B.2)	1.8	1.9	3.7	9.1	0.4	9.5
California seablite (FE, 1B.1)	1.7	0.0	1.7	1.7	0.0	1.7
Coastal marsh milkvetch (1B.2)	1.7	0.0	1.7	1.7	0.0	1.7
Congdon's tarplant (1B.1)	57.1	35.5	92.6	30.7/31.4	8.0	38.7/39.4
Pappose tarplant (1B.2)	1.7	0.0	1.7	1.7	0.0	1.7
Saline clover (1B.2)	1.7	0.0	1.7	1.7	0.0	1.7
Point Reyes bird's-beak (1B.2)	1.7	0.0	1.7	1.7	0.0	1.7
Total special-status plant habitat (Nonoverlapping)[3]	64.3	46.0	**110.3**	46.7/47.3	11.2/11.4	**57.9/58.7**
Bay Checkerspot (FT), Callippe Silverspot (FE), and Mission Blue (FE) Butterflies						
Suitable Habitat	0.0	0.0	0.0	8.0	0.0	8.0
Special-Status Fish Species						
Steelhead—Central California Coast DPS (FT)	2.6	0.4	3.0	1.3	0.7	2.0
Green sturgeon—Southern DPS (FT)	1.6	0.3	1.9	1.0	0.2	1.2
Pacific lamprey (SSC)	2.1	0.3	2.4	0.9	2.1	3.0
Pacific Coast Salmon EFH	4.7	0.6	5.3	3.6	0.4	4.0
Pacific Coast Groundfish EFH	1.9	0.3	2.2	1.3	0.1	1.4

Species[1]	Alternative A			Alternative B[2]		
	Permanent	Temporary	Total	Permanent	Temporary	Total
California Red-Legged Frog and Western Pond Turtle						
California Red-Legged Frog (FT, SSC)						
Aquatic habitat	4.3	0.5	4.8	4.0	3.6	7.6
Refugia/foraging habitat	8.5	0.3	8.8	7.3	0.4	7.7
Total California Red-Legged Frog Habitat	12.8	0.8	**13.6**	11.3	4.0	**15.3**
Western Pond Turtle (SSC)						
Aquatic Habitat	3.4	0.3	3.7	2.5	2.0	4.5
Refugia/Foraging Habitat	25.9	16.0	41.9	29.8	39.4/38.6	69.2/68.4
Total Western Pond Turtle Habitat	29.3	16.3	**45.6**	32.3	41.4/40.6	**73.7/72.9**
San Francisco Garter Snake (FE,SE,FP)						
Aquatic habitat	0.3	0.1	0.4	0.3	0.1	0.4
Refugia/foraging habitat	6.0	0.1	6.1	6.0	0.1	6.1
Total San Francisco Garter Snake Habitat	6.3	0.2	**6.5**	6.3	0.2	**6.5**
Burrowing Owl (SSC)						
Potential nesting and foraging habitat	80.0	48.0	128.0	86.2/86.8	9.8/10.1	96.0/96.9
Alameda Song Sparrow and Saltmarsh Common Yellowthroat						
Alameda song sparrow (SSC)	1.7	0.0	1.7	1.7	0.0	1.7
Saltmarsh common yellowthroat (SSC)	2.4	2.4	4.8	9.6	0.4	10.0
Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird						
Least Bell's vireo (FE, SE) (recolonization breeding habitat)[4]	1.9	0.2	2.1	1.3	2.3	3.6
Yellow warbler (SSC)	0.7	0.1	0.8	1.2	1.4	2.6
Tricolored blackbird (ST)						
Potentially Suitable Colony Habitat	0.6	0.2	0.8	0.9	1.1	2.0

Species[1]	Alternative A			Alternative B[2]		
	Permanent	Temporary	Total	Permanent	Temporary	Total
Breeding Season Foraging - Natural	3.4	7.5	10.9	2.0/2.6	0.7/1.0	2.7/3.6
Total Tricolored Blackbird Habitat	4.0	7.7	11.7	2.9/3.5	1.8/2.1	4.7/5.6
White-Tailed Kite (FP)						
Nesting habitat	12.6	10.6	23.2	14.7/15.0	5.8/13.2	20.5/28.2
San Francisco Dusky-Footed Woodrat (SSC) and Ringtail (FP)						
Suitable habitat	0.7	0.1	0.8	1.2/1.5	1.5/8.9	2.7/10.4
Special-Status Bats						
Pallid bat (SSC)	1.5	0.0	1.5	1.0	0.3	1.3
Townsend's big-eared bat (SSC)	1.5	0.0	1.5	1.0	0.3	1.3
Western red bat (SSC)	9.3	1.7	11.0	10.4/10.7	3.6/10.9	14.0/21.6

Sources: Authority 2020a, 2020c
DPS = distinct population segment
[1] Status Codes
Federal
FE = Listed as endangered under the FESA
FT = Listed as threatened under the FESA
EFH = Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation Management Act
State
SE = Listed as endangered under the CESA
ST = Listed as threatened under the CESA
SSC = California Species of Special Concern
FP = Fully Protected Species under the California Fish and Game Code
California Rare Plant Ranks
LIST 1B = Rare, threatened, or endangered in California and elsewhere
0.1: Seriously endangered in California
0.2: Fairly endangered in California
LIST 2 = Rare, threatened, or endangered in California, but more common elsewhere
0.2: Fairly endangered in California
[2] Where applicable, values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard). If only one value is presented, the affected acreage would be identical under both viaduct options.
[3] Nonoverlapping habitat acreage reflects the aggregate areal extent of all species taken together—in other words, the exterior perimeter of the overlapping boundaries of mapped habitat, so that land where habitat has been mapped for more than one species is present, it is only counted once. E.g., saline emergent wetland is counted as habitat for four species: California seablite, coastal marsh milk-vetch, saline clover, and Point Reyes bird's-beak. Since the project would impact 1.7 acres of saline emergent wetland, it would also impact a total of 1.7 acres of habitat for these species, not 6.8 acres.
[4] Least Bell's vireos have not been confirmed as nesting in Santa Clara County but the USFWS considers well-developed riparian habitat as potentially suitable for future recolonization by the species.

Impact BIO#1: Permanent Conversion or Degradation of Habitat for Special-Status Plant Species

Construction activities in the San Francisco to South San Francisco and San Bruno to San Mateo Subsections would take place in habitat that could support special-status plant species, including California seablite (listed under FESA). Such activities could convert and disturb habitat and could result in the removal of special-status plant occurrences. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10, BCDC Jurisdictional Areas).

Prior to ground-disturbing activity, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5) including special-status plant habitat. Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid special-status species present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). Construction equipment would be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10). The Authority would develop and implement a best management practices (BMP) field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

Table 3.7-12 shows the areal extent of direct permanent and temporary impacts on habitat for special-status plant species. Alternative A would affect more habitat for bent-flowered fiddleneck and Congdon's tarplant because of the greater extent of California annual grassland and coyote brush scrub in the East Brisbane LMF footprint. Alternative B would affect more habitat for bristly sedge because of the greater extent of freshwater emergent wetland in the West Brisbane LMF footprint. Both alternatives would affect the same amount of habitat for the remaining species because of their identical footprints near saline emergent wetland at Brisbane Lagoon. The aggregate magnitude of direct impacts by project alternative would be 64.3 acres of permanent impacts and 46.0 acres of temporary impacts under Alternative A; 46.7 acres of permanent impacts and 11.2 acres of temporary impacts under Alternative B (Viaduct to I-880); and 47.3 acres of permanent impacts and 11.4 acres of temporary impacts under Alternative B (Viaduct to Scott Boulevard).

While pre-construction and construction actions to protect special-status species are part of the project, these actions would not prevent the conversion of habitat and temporary disturbance of other habitat in the project footprint. Ground disturbance associated with construction activities could result in the removal of special-status plant occurrences if any are present in the project footprint. Ground disturbance could indirectly affect special-status species habitat by creating new areas of bare soil that are easily colonized by nonnative invasive plants. Such plants could spread into adjacent natural areas and outcompete native plants, including special-status species.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status plant species, including California seablite. Alternative A would affect a greater amount of habitat in the East Brisbane LMF footprint, while Alternative B would affect a greater amount of habitat in the West Brisbane LMF footprint. While actions would be implemented before and during construction to reduce the potential for loss of habitat for special-status plants, the project would entail disturbance and conversion of special-status plant habitat through construction activities and permanent land use conversion, resulting in the loss of individuals and populations, potentially contributing to a decline in the overall viability of special-status species. Mitigation measures to address this impact are identified in Section 3.7.11, CEQA Significance Conclusions. Section 3.7.9, Mitigation Measures, describes the measures in detail.

Impact BIO#2: Permanent Conversion of Habitat for and Direct Mortality of Listed Butterfly Species

Construction of the West Brisbane LMF in Brisbane under Alternative B would take place in habitat for three federally listed butterfly species: Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly. Bay checkerspot is listed as threatened under the FESA, and callippe silverspot and Mission blue are listed as endangered under the FESA. Specifically, construction would require major earthwork at Icehouse Hill that would eliminate existing grassland habitat and host plants for these species and could result in the injury or mortality of individual butterfly adults or larvae, if present in affected habitat. There are no IAMFs that would minimize this impact.

Table 3.7-12 shows the areal extent of direct permanent impacts on modeled habitat for listed butterfly species. The project would not cause indirect impacts on habitat (e.g., degradation from increased cover of nonnative invasive plants) for either project alternative because no grassland habitat exists within the Alternative A project footprint and all habitat would be removed under Alternative B during the construction of the West Brisbane LMF.

Under Alternative A, the East Brisbane LMF would be built east of the existing Caltrain tracks and would not require any ground disturbance at Icehouse Hill. It would also not have any indirect impacts because both Icehouse Hill and the East Brisbane LMF footprint are already highly disturbed and it is unlikely that construction ground disturbance at the East Brisbane LMF site would substantially degrade existing habitat from its current condition. The intervening land between Icehouse Hill and the East Brisbane LMF footprint is also highly disturbed or developed (i.e., existing Caltrain tracks and petroleum storage facility).

In addition to permanently converting habitat to HSR infrastructure, under Alternative B, the project could result in direct injury or mortality of individual listed butterflies, if present in affected habitat. Excavation of Icehouse Hill could crush host plants supporting egg masses and larvae (from early June to mid-May) or adults feeding on nectar plants (from mid-May to mid-July).

CEQA Conclusion

There would be no impact under Alternative A because the East Brisbane LMF would be built east of the existing Caltrain tracks and would not require ground disturbance at Icehouse Hill. The impact under CEQA would be significant for Alternative B because construction activities would have a substantial adverse effect, through both direct mortality and habitat modification, on the Bay checkerspot, callippe silverspot, and Mission blue butterfly, all of which are federally listed under FESA. Alternative B would result in loss of habitat for listed butterfly species and could cause direct impacts on individuals (mortality) if any are present in affected habitat at the time of construction. Such impacts would reduce viability of the known populations of these species on San Bruno Mountain, which has been identified by the USFWS as vital to the recovery of all three species. Any habitat loss in this area would reduce opportunities for recovery of these already rare species. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#3: Permanent Conversion or Degradation of Habitat for and Direct Mortality of Central California Coast Steelhead, Pacific Lamprey, and Green Sturgeon, and Permanent Conversion or Degradation of Essential Fish Habitat

Construction of the project would take place within or adjacent to habitat for special-status fish species, critical habitat, and designated EFH. Visitacion Creek and Guadalupe Valley Creek are tidally influenced and connected to San Francisco Bay and therefore may provide estuarine rearing habitat for CCC steelhead and foraging habitat for green sturgeon. Construction of the East Brisbane LMF under Alternative A would result in the fill of a portion of Visitacion Creek to build the foundation of the LMF, resulting in the permanent conversion of fish habitat. Track modifications associated with LMF construction under both alternatives would require work in Guadalupe Valley Creek to accommodate widening of the existing bridge and a culvert extension. Six watercourses that cross the project footprint—Mills Creek, San Mateo Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and the Guadalupe River—provide

freshwater migration habitat for CCC steelhead and Pacific lamprey. Cordilleras Creek also provides freshwater migration habitat for Pacific lamprey. San Francisquito Creek and Stevens Creek are designated critical habitat for CCC steelhead (Table 3.7-5). Construction-period vegetation management at these locations may involve removal or trimming of riparian trees that provide stream shading, moderating water temperatures conducive for fish movement, and providing food sources (e.g., leaves and arboreal invertebrates that fall into the water), resulting in habitat degradation. At the Guadalupe River, in-water work (including pile driving) may be necessary to widen the existing Caltrain bridge under Alternative A and build a new bridge under Alternative B (both viaduct options). If bridge work is conducted when CCC steelhead and Pacific lamprey are in the work area, pile driving could generate underwater sound levels and vibration that result in direct impacts on individual fish ranging from physical injury, sometimes resulting in death, to lesser impacts such as behavioral modifications or increased susceptibility to predation. All of the above watercourses and Sanchez Creek are designated Pacific salmon EFH because they historically supported Chinook and coho salmon; Sanchez Creek is also designated Pacific Coast groundfish EFH. Because the above activities, as well as in-water work at Sanchez Creek to extend the existing box culvert (both alternatives), could adversely affect EFH for Pacific Coast salmon and Pacific Coast groundfish by altering the physical, chemical, or biological conditions of affected steams, consultation with NMFS would be required and effects would be described in the BA. This impact would also occur inside BCDC's Bay jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with habitat for special-status fish, designated EFH, or both, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

Table 3.7-12 shows the areal extent of habitat for special-status fish and designated EFH that could be affected by project construction of the two project alternatives. Alternative A would have higher permanent impacts on CCC steelhead and green sturgeon habitat and designated EFH in the San Francisco to South San Francisco Subsection because it would fill 0.6 acre of Visitacion Creek to build the foundation of the LMF. The amount of habitat for steelhead in the three project subsections between San Bruno and Santa Clara is identical between the two project alternatives because of their identical footprints at the Mills Creek, San Mateo Creek, San Francisquito Creek, and Stevens Creek stream crossings; riparian vegetation removal under both project alternatives could result in permanent impacts of up to 0.2 acre of steelhead at these locations, including 0.09 acre and 0.07 acre within designated critical habitat at San Francisquito Creek and Stevens Creek, respectively. Impacts on Pacific lamprey habitat in the three subsections between San Bruno and Santa Clara are identical to steelhead under Alternative A but slightly higher (0.3 acre) under Alternative B due to a larger TCE at Cordilleras Creek. Alternative A would have higher permanent impacts on steelhead habitat in the San Jose Diridon Station Approach Subsection than Alternative B (both viaduct options) because of the greater extent of HSR right-of-way at Los Gatos Creek and the Guadalupe River. Similarly, Alternative A would have higher permanent impacts on Pacific Coast salmon EFH and Pacific lamprey habitat than Alternative B because of the greater extent of HSR right-of-way at these streams. Overall however, the total impact on Pacific lamprey habitat would be slightly higher for Alternative B (both viaduct options) because of the greater extent of temporary construction easement (TCE) over Cordilleras Creek and the Guadalupe River. Potential impacts on individual special-status fish from in-water construction would only occur at Guadalupe Valley Creek and the Guadalupe River under both alternatives.

While pre-construction actions to protect special-status species habitat are part of the project, these actions may not prevent the loss or temporary degradation of habitat for special-status fish in the project footprint or injury or mortality to individual fish in Guadalupe Valley Creek or the Guadalupe River. Any riparian vegetation management activities would result in the degradation of aquatic habitat during construction and reduced value for some period of time after construction is completed and until riparian vegetation is restored.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could result in a substantial adverse effect, through both direct mortality and habitat modifications, on CCC steelhead, green sturgeon, and Pacific lamprey, and EFH for Pacific Coast salmon. While actions would be implemented before construction to educate workers about the potential presence of special-status species habitat, the project would still result in the permanent conversion of habitat, could still result in temporary habitat degradation by removing or trimming riparian trees that create suitable habitat (i.e., that moderate water temperature through shading) for migrating special-status fish, and cause injury or mortality of individual fish during in-water work in Guadalupe Valley Creek and the Guadalupe River. Degradation of riparian habitat could reduce long-term habitat suitability for special-status fish in the affected streams (i.e., Miller Creek, San Mateo Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, Guadalupe River) and injury or mortality of special-status fish in Guadalupe Valley Creek and the Guadalupe River could contribute to declines in these small populations. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#4: Permanent Conversion or Degradation of Habitat for and Direct Mortality of California Red-Legged Frog and Western Pond Turtle

Construction activities in all subsections except the San Francisco to South San Francisco Subsection would take place in or over habitat for the California red-legged frog, a species listed as threatened under the FESA and a CDFW species of special concern, and western pond turtle, a CDFW species of special concern. Such activities would convert or disturb a small amount of habitat, and such activities in the San Bruno to San Mateo Subsection (i.e., next to the SFO West-of-Bayshore property) and San Jose Diridon Station Approach Subsection (i.e., Guadalupe River) could result in the injury or mortality of individual red-legged frogs or pond turtles. Specifically, relocation of overhead contact system (OCS) poles associated with lateral track displacements next to the SFO West-of-Bayshore property and in-water work to widen the existing Guadalupe River bridge (Alternative A) or build a new bridge (Alternative B [both viaduct options]) may require ground disturbance in habitat for California red-legged frog and western pond turtle. This impact would also occur inside BCDC's shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with habitat for California red-legged frog and western pond turtle, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid red-legged frogs and western pond turtles potentially present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

During construction, several actions would be undertaken to protect red-legged frogs, western pond turtles, and other special-status wildlife. Erosion control materials that could entrap red-legged frogs and other terrestrial wildlife would be prohibited (BIO-IAMF#6) to prevent mortality

and harm associated with inadvertent entrapment. Covering trenches, pits, and other excavations when not in use and inspecting them regularly (BIO-IAMF#7) would prevent frogs, turtles, and other terrestrial wildlife from falling into these areas and being trapped there.

Table 3.7-12 shows the areal extent of direct permanent and temporary impacts on habitat for these species. The project is not expected to cause indirect impacts on habitat for these species (e.g., habitat degradation from increased cover of nonnative invasive plants) because existing habitat is already disturbed and subject to routine maintenance activities associated with the existing Caltrain tracks and flood control channels that cross the project footprint. Alternative B would have slightly higher impacts on California red-legged frog and western pond turtle habitat because of the larger footprint of the passing track at Borel, Belmont, and Cordilleras Creeks. The aggregate magnitude of impacts on California red-legged frog habitat by alternative would be, in descending order, 11.3 acres of permanent impacts and 4.0 acres of temporary impacts under Alternative B (both viaduct options), and 12.8 acres of permanent impacts and 0.8 acres of temporary impacts under Alternative A. The aggregate magnitude of impacts on western pond turtle habitat by alternative would be, in descending order, 32.3 acres of permanent impacts and 41.4 acres of temporary impacts under Alternative B (Viaduct to I-880), 32.3 acres of permanent impacts and 40.6 acres of temporary impacts under Alternative B (Viaduct to Scott Boulevard), and 29.3 acres of permanent impacts and 16.3 acres of temporary impacts under Alternative A.

While pre-construction and construction actions to protect special-status species are part of the project, these actions would not prevent the conversion of habitat and temporary disturbance of other habitat in the project footprint. Because frogs can be distributed throughout suitable habitats, their absence from construction areas cannot be guaranteed. Earthmoving, excavation, and vehicle operation during construction could crush, entomb, or physically disturb individual frogs. Ground disturbance, noise, and vibration associated with these activities could disrupt the activities of individual frogs and may impair normal life cycle behaviors. The use of chemicals and hazardous substances during construction (e.g., oils, gasoline) may cause mortality if individuals enter aquatic habitat that has been contaminated by spills or other vehicle and equipment leaks. While many protections would be implemented, the potential for physical harm and mortality of individuals would not be eliminated.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could result in a substantial adverse effect, through both direct mortality and habitat modification, on California red-legged frog and western pond turtle. While actions would be implemented before and during construction to educate workers about the presence of special-status species habitat and practices to reduce wildlife mortality, the project could result in loss and degradation of suitable habitat and mortality of individuals, potentially reducing the viability of the population of this special-status species. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#5: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Garter Snake

Construction activities next to the SFO West-of-Bayshore property in the San Bruno to San Mateo Subsection would take place in or adjacent to habitat for San Francisco garter snake, a species listed as endangered under the FESA and CESA and designated as fully protected under state law. Such activities would convert or disturb a small amount of habitat and could result in the injury or mortality of individual garter snakes. Specifically, relocation of OCS poles associated with lateral track displacements in this area may require ground disturbance in habitat for San Francisco garter snake. This impact would also occur inside BCDC's shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with habitat for San Francisco garter snake, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating

permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid San Francisco garter snakes potentially present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

During construction, several actions would be undertaken to protect San Francisco garter snakes and other special-status wildlife. Erosion control materials that could entrap garter snakes and other terrestrial wildlife would be prohibited (BIO-IAMF#6) to prevent mortality and harm associated with inadvertent entrapment. Covering trenches, pits, and other excavations when not in use and inspecting them regularly (BIO-IAMF#7) would prevent garter snakes and other terrestrial wildlife from falling into these areas and being trapped there.

Table 3.7-12 shows the areal extent of direct permanent and temporary impacts on modeled aquatic and refugia habitat for this species. The project is not expected to cause indirect impacts on habitat (e.g., habitat degradation from increased cover of nonnative invasive plants) because existing habitat is already disturbed and subject to routine maintenance activities associated with the existing Caltrain tracks and flood control channels that cross the project footprint and maintain habitat in a disturbed state. The project alternatives would have identical impacts on San Francisco garter snake habitat because the portions of the project that would intersect habitat for the species have the same footprint. Both project alternatives would result in permanent impacts on 6.3 acres and temporary impacts on 0.2 acre of habitat.

While pre-construction and construction actions to protect special-status species are part of the project, these actions would not prevent the conversion and temporary disturbance of habitat in the project footprint. Because San Francisco garter snakes use underground burrows and are therefore very difficult to detect, their absence from construction areas cannot be guaranteed. Earthmoving, excavation, and vehicle operation during construction could crush, entomb, or physically disturb individual snakes. Ground disturbance, noise, and vibration associated with these activities could disrupt the activities of individual snakes and may impair normal life cycle behaviors. The use of chemicals and hazardous substances during construction (e.g., oils, gasoline) may cause mortality if individuals enter aquatic habitat that has been contaminated by spills or other vehicle and equipment leaks. While many protections would be implemented, the potential for physical harm and mortality of individuals would not be eliminated.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because, in the absence of any measures, the project could result in a substantial adverse effect, through both direct mortality and habitat modification, on San Francisco garter snake. While actions would be implemented before and during construction to educate workers about the presence of special-status species habitat and practices to reduce wildlife mortality, the project could result in loss and degradation of suitable habitat and mortality of individuals, potentially reducing the viability of the population of this special-status species. Mitigation measures to address this impact and avoid take of this fully protected species are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#6: Permanent Conversion or Degradation of Habitat for and Direct Mortality or Disturbance of Burrowing Owl

Construction activities in the San Francisco to South San Francisco (i.e., Brisbane) and San Jose Diridon Station Approach Subsections (i.e., near Norman Y. Mineta San Jose International Airport [SJC]) would take place in suitable habitat for the burrowing owl, a CDFW species of special concern. Nesting is not expected in Brisbane due to the lack of recent or historical nesting occurrences and low habitat quality, but migrating or wintering individuals may occur from September to March in some years. Nesting, migrating, or wintering individuals may occur near SJC year-round. Construction activities would convert and temporarily disturb habitat and could

result in injury and mortality of individual owls and eggs, as well as nest abandonment. Ground disturbance and vehicle traffic could injure or kill burrowing owls by crushing occupied burrows or collapsing burrow entrances, trapping any owls inside. Although some burrowing owls in urban landscapes appear relatively tolerant of human disturbance (Poulin et al. 2011), it is difficult to predict how and at what distance a given nesting pair would react to noise and vibration. Consequently, it is possible that construction-generated noise and vibration near nest burrows could cause adult owls to abandon eggs or recently hatched young. Increased cover of invasive weeds could reduce habitat suitability for burrowing owls because they prefer areas with short, sparse vegetation (CDFG 2012). This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to ground-disturbing activity, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources, including special-status species habitat (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid special-status wildlife (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11). Construction equipment would be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10).

Table 3.7-12 shows the areal extent of habitat for burrowing owl in the project footprint. Alternative A would affect more habitat than Alternative B (both viaduct options) because of the larger footprint associated with the staging areas at Reed and Grant Streets in Santa Clara and Tamien Station in San Jose. The aggregate magnitude of impacts on burrowing owl habitat by alternative would be, in descending order, 128.0 acres (80.0 acres of permanent impacts and 48.0 acres of temporary impacts) under Alternative A, 96.9 acres (86.8 acres of permanent impacts and 10.1 acres of temporary impacts) under Alternative B (Viaduct to Scott Boulevard), and 96.0 acres (86.2 acres of permanent impacts and 9.8 acres of temporary impacts) under Alternative B (Viaduct to I-880).

While pre-construction and construction actions to minimize impacts on burrowing owl habitat are part of the project, these actions would not prevent the conversion and temporary disturbance of suitable habitat in the project footprint, nor would they eliminate the risk of injury, mortality, and disturbance of individual owls.

CEQA Conclusion

The impact under CEQA would be significant for both alternatives because the project could have a substantial adverse effect, through both direct mortality, disturbance of individuals and habitat modification, on burrowing owl. While actions would be implemented before and during construction to reduce the potential for direct harm to individuals and to minimize the loss of habitat, the project would result in loss of habitat for a population that has already experienced considerable decline in the South San Francisco Bay area, could result in the destruction of active nests, and could cause nest abandonment through noise- and vibration-related disturbance beyond the project footprint. The loss of even a few adults from the dwindling South Bay population would be a substantial impact because reductions in adult survival may contribute to long-term population declines for this species (Barclay et al. 2011). Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#7: Removal or Disturbance of Active Alameda Song Sparrow and Saltmarsh Common Yellowthroat Nests

Construction activities in the San Francisco to South San Francisco Subsection would take place in or adjacent to modeled nesting habitat for Alameda song sparrow and saltmarsh common yellowthroat, both of which are CDFW species of special concern. Specifically, track modifications and construction associated with the East Brisbane LMF (Alternative A) and West Brisbane LMF (Alternative B) would convert or temporarily disturb modeled nesting habitat (i.e., saline or freshwater emergent wetland) and could result in injury and mortality of individual birds and eggs, as well as nest abandonment. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with nesting habitat for Alameda song sparrow and saltmarsh common yellowthroat, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid song sparrow and common yellowthroat nesting habitat in and adjacent to the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11). Construction equipment would be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10).

Table 3.7-12 shows the areal extent of nesting habitat for these two species within the project footprint. Both alternatives would require relocating the Tunnel Avenue overpass and widening the bridge crossing Guadalupe Valley Creek at the north end of Brisbane Lagoon where nesting habitat for both species occurs. Construction of the West Brisbane LMF under Alternative B would affect more saltmarsh common yellowthroat habitat because of the greater extent of freshwater emergent wetlands west of Tunnel Avenue. Both alternatives would have 1.7 acres of permanent impacts and no temporary impacts on Alameda song sparrow habitat. The magnitude of permanent and temporary impacts on saltmarsh common yellowthroat habitat would be, in descending order, 9.6 acres and 0.4 acre under Alternative B, and 2.4 acres and 2.4 acres under Alternative A.

While pre-construction actions to protect special-status species are part of the project, these actions would not prevent the conversion and temporary disturbance of habitat in the project footprint, nor would they necessarily eliminate the risk of injury, mortality, and disturbance of individual birds. Ground disturbance (e.g., grubbing during site preparation) in modeled nesting habitat for these species could crush eggs or kill nestlings in active nests. Construction-generated noise and vibration near active nests could cause adults to abandon eggs or recently hatched young if they perceive such disturbances as a threat. Increased cover of tall invasive weeds with thick stems and dense growth (e.g., thistles, mustard, perennial pepperweed) in grassland or marsh would reduce the herbaceous ground cover preferred for nesting by these species.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could result in a substantial adverse effect, through direct mortality, disturbance of individuals and habitat modification, on Alameda song sparrow and saltmarsh common yellowthroat. While actions would be implemented before construction to educate workers about the presence of special-status species habitat, the project could result in injury and mortality of individual birds and eggs, as well as nest abandonment. These impacts could adversely affect the viability of local populations. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#8: Permanent Conversion and Degradation of Habitat for and Direct Mortality or Disturbance of Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird

Construction activities in the San Jose Diridon Station Approach Subsection would take place in riparian habitat for three special-status bird species: least Bell's vireo, yellow warbler, and tricolored blackbird. Least Bell's vireo is listed as endangered under the FESA and CESA, yellow warbler is a CDFW species of special concern, and tricolored blackbird is listed as threatened under CESA. Construction activities would convert and temporarily disturb riparian habitat for least Bell's vireo and yellow warbler along Los Gatos Creek, and for these species and tricolored blackbird along the Guadalupe River; activities could also result in injury or mortality of individual yellow warblers, tricolored blackbirds, and their eggs, as well as nest abandonment. Direct impacts on individual least Bell's vireos are not expected because this species is not known to currently nest in Santa Clara County (i.e., impacts are limited to potential breeding habitat that may be recolonized in the future). Ground disturbance and vegetation removal in riparian habitat would create areas of bare soil susceptible to colonization by nonnative invasive plant species such as giant reed, tamarisk, and perennial pepperweed. Dense stands of these species would further degrade riparian habitat by outcompeting willows and other native plants that provide foraging and nesting habitat for these and other native bird species.

Prior to construction in habitat for these species, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources, including special-status species habitat (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid special-status wildlife (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11). Construction equipment would be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10).

Table 3.7-12 shows the areal extent of habitat for these species in the project footprint. Alternative B would have a greater impact on least Bell's vireo and yellow warbler habitat than Alternative A because of the greater extent of mixed riparian land cover in the project footprint along Los Gatos Creek and the Guadalupe River. Alternative B would also affect slightly more potential colony habitat for tricolored blackbird than Alternative A for this reason but the total impact on tricolored blackbird habitat would be greater under Alternative A because of temporary impacts on foraging habitat associated with the staging areas at Reed and Grant Streets in Santa Clara and Tamien Station in San Jose.

While pre-construction and construction actions to protect special-status species are part of the project, these actions would not prevent the conversion and temporary disturbance of suitable habitat in the project footprint, nor would they eliminate the risk of injury, mortality, and disturbance of nesting birds. Ground-disturbing activities (e.g., grubbing and vegetation removal during site preparation) in yellow warbler and tricolored blackbird nesting habitat could crush eggs or kill nestlings in active nests if not found during pre-construction surveys. Construction-generated noise and vibration near active nests could cause nest abandonment. Cleaning of construction equipment may not entirely eliminate the spreading of invasive plants in the habitat study area.

CEQA Conclusion

The impact under CEQA would be significant for both alternatives because the project could have a substantial adverse effect, through both direct mortality and disturbance of individuals and habitat modification, on yellow warbler and tricolored blackbird, and through habitat modification

on least Bell's vireo. While actions would be implemented before and during construction to reduce the potential for direct harm to individuals and to minimize the loss of habitat, the project would result in loss and degradation of habitat for these species, could result in the destruction of active nests, and could cause nest abandonment through noise- and vibration-related disturbance beyond the project footprint. These impacts would reduce the viability of local yellow warbler and tricolored blackbird populations and contribute to declines of these species, and could also impede recovery of least Bell's vireo in historical portions of its range. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#9: Removal or Disturbance of Active White-Tailed Kite Nests

Construction activities in all subsections would take place in or adjacent to nesting habitat for white-tailed kite, a fully protected species. Removal or trimming of trees or shrubs in mixed riparian, ornamental woodland, and coyote brush scrub land cover types could result in injury and mortality of individual birds and eggs, and these as well as other activities could result in nest abandonment. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with nesting habitat for white-tailed kite, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid white-tailed kite nesting habitat in and adjacent to the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

Table 3.7-12 shows the areal extent of nesting habitat for this species within the project footprint. Alternative B (Viaduct to Scott Boulevard) would affect the most nesting habitat because of the greater extent of ornamental woodland, which provides nesting habitat, in the project footprint associated with the TCE at the De La Cruz Boulevard/Coleman Avenue interchange. The magnitude of permanent and temporary impacts on white-tailed kite nesting habitat would be, in descending order, 15.0 acres and 13.2 acres, respectively, under Alternative B (Viaduct to Scott Boulevard); 12.6 acres and 10.6 acres under Alternative A; and 14.7 and 5.8 acres under Alternative B (Viaduct to I-880). White-tailed kites often nest in or adjacent to urban development, and nest sites (i.e., dense-topped trees and shrubs near open fields or marsh that support prey populations [e.g., voles]) are abundant throughout the habitat study area. Accordingly, nesting habitat for this species is not prone to degradation by increased nonnative invasive plant cover and the project would not have indirect impacts on nesting habitat.

While pre-construction actions to protect special-status species are part of the project, these actions would not prevent the conversion and temporary disturbance of habitat in the project footprint, nor would they necessarily eliminate the risk of injury, mortality, and disturbance of individual birds. Vegetation removal in nesting habitat for this species could crush eggs or kill nestlings in active nests. Construction-generated noise and vibration near active nests could cause adults to abandon eggs or recently hatched young if they perceive such disturbances as a threat.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could result in a substantial adverse effect, through direct mortality, disturbance of individuals, or habitat modification on white-tailed kite. While actions would be implemented before construction to educate workers about the presence of special-status species habitat, the project could result in injury and mortality of individual birds and eggs, as well as nest abandonment. These impacts could adversely affect the viability of the local population. Mitigation measures to address this

impact and avoid take of this fully protected species are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#10: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Dusky-Footed Woodrat and Ringtail

Construction activities in the San Jose Diridon Station Approach Subsection would take place in riparian habitat for San Francisco dusky-footed woodrat, a CDFW species of special concern and ringtail, a state fully protected species. Construction activities would convert and temporarily disturb habitat and could result in the disturbance, injury, and mortality of individual woodrats and ringtails.

Prior to construction in habitat for these species, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid special-status species habitat in and adjacent to the work area (BIO-IAMF#3). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

During construction, the Authority would implement several actions to minimize impacts on San Francisco dusky-footed woodrat and ringtail. Covering trenches, pits, and other excavations when not in use, providing them with escape ramps, and inspecting them regularly (BIO-IAMF#7) would prevent woodrats and ringtails from becoming trapped. Staging areas would be sited away from sensitive resources (BIO-IAMF#8). Excavated soils or waste materials unsuitable for treatment or reuse would be disposed at an off-site location (BIO-IAMF#9), avoiding degradation of habitat. Construction equipment would be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10).

Table 3.7-12 shows the areal extent of habitat for these species within the project footprint. The slightly greater extent of habitat affected by Alternative B is associated with larger footprints at the Los Gatos Creek and Guadalupe River crossings. The magnitude of permanent and temporary impacts on San Francisco dusky-footed woodrat and ringtail habitat would be, in descending order, 1.5 acres and 8.9 acres, respectively, under Alternative B (Viaduct to Scott Boulevard); 1.2 acres and 1.5 acres under Alternative B (Viaduct to I-880); and 0.7 acre and 0.1 acre under Alternative A.

While pre-construction and construction actions to protect special-status species are part of the project, these actions would not prevent the conversion and temporary disturbance of suitable habitat in the project footprint, nor would they necessarily eliminate the risk of disturbance, injury, or mortality of individual animals. Construction-related ground disturbance (e.g., grading, vegetation removal) and vehicle traffic may injure or kill woodrats or ringtails by destroying woodrat stick houses or ringtail nests or by vehicle strike. Animals could become entrapped in excavated areas as well as in pipe and other construction materials and equipment. Noise and vibration generated by construction activities may impair breeding, feeding, and sheltering behaviors or cause adults to abandon their young in areas subject to such disturbance. Potential hazardous material and pollutant releases and maintenance activities that involve pesticides or herbicides could degrade habitat or reduce prey species composition over the long term. Introduction of invasive nonnative vegetation could alter the structure of the vegetation community, making it less suitable to support woodrats and ringtails, and could adversely affect the productivity of the food web upon which these species depend.

CEQA Conclusion

The impact under CEQA would be significant for both alternatives because the project could result in a substantial adverse effect, through direct mortality or disturbance of individuals and habitat modification, on San Francisco dusky-footed woodrat and ringtail. While actions would be implemented before and during construction to reduce the potential for direct harm to individuals and to minimize the loss of habitat, the project would result in loss and degradation of habitat, could result in injury or mortality of individuals, and could cause noise- and vibration-related disturbance beyond the project footprint. Both species nest in specific microhabitats (i.e., woodlands with dense understory and abundant woody debris, hollow logs, and tree crevices) and are therefore patchily distributed within suitable habitat. San Francisco dusky-footed woodrat also has a limited distribution. Therefore, any reduction in available habitat or displacement of individuals from the habitat study area would reduce the viability of affected populations. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.89 describes the measures in detail.

Impact BIO#11: Removal of Roost Sites for and Direct Mortality or Disturbance of Special-Status Bats

Construction activities in all subsections would take place near bridges or trees that provide roosting habitat for pallid bat, Townsend's big-eared bat, and western red bat, all of which are CDFW species of special concern. Construction activities would convert and temporarily disturb roosting habitat and could result in the disturbance, injury, and mortality of individual bats and the disruption of both night and maternity roost sites. The loss of roosting habitat is considered one of the primary conservation issues facing bat populations, with loss of maternity roosts considered especially significant (Caltrans 2004: page 21). This impact would also occur inside BCDC's Bay jurisdiction (see Section 3.7.8.10).

Prior to construction in areas with roosting habitat for special-status bats, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid bat roosts in and adjacent to the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

Table 3.7-12 shows the areal extent of roosting habitat for special-status bats within the project footprint. Habitat for pallid bat and Townsend's big-eared bat (i.e., bridges over streams) is greater under Alternative A than Alternative B (both viaduct options) because the project footprint of Alternative A overlaps with the bridges over Los Gatos Creek and Guadalupe River to a greater extent. The aggregate permanent and temporary impacts on pallid bat and Townsend's big-eared bat roosting habitat would be, in descending order, 1.5 acres and 0 acres, respectively, under Alternative A; and 1.0 acre and 0.3 acre under Alternative B (both viaduct options). The aggregate permanent and temporary impacts on western red bat habitat would be, in descending order, 10.7 acres and 10.9 acres, respectively, under Alternative B (Viaduct to Scott Boulevard); 10.4 acres and 3.6 acres under Alternative B (Viaduct to I-880); and 9.3 and 1.7 acres under Alternative A. The greater extent of western red bat habitat under Alternative B (Viaduct to Scott Boulevard) is associated with the TCE at the De La Cruz Boulevard/Coleman Avenue interchange in the San Jose Diridon Station Approach Subsection; the passing track associated with Alternative B in the San Mateo to Palo Alto Subsection would also affect more riparian habitat and urban landscaping than Alternative A.

While pre-construction actions to protect special-status bats are part of the project, these actions would not prevent the conversion and temporary disturbance of roosting habitat in the project footprint, nor would they necessarily eliminate the risk of disturbance, injury, or mortality of individual bats or the disruption of roost sites. Structure demolition (e.g., removal or modification

of culverts and bridges) in suitable habitat for these species could destroy occupied roost sites, resulting in injury or mortality of adults and young. Construction-generated noise and vibration near potential roost sites could disturb maternity roosts and cause bats to abandon their young.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could result in a substantial adverse effect, through disturbance, modification, or loss of maternity roosts, on pallid bat, Townsend's big-eared bat, and western red bat. While actions would be implemented before construction to educate workers about the presence of special-status species habitat, disturbance or removal of occupied bat roosts could still occur because focused surveys of the project footprint have not yet been conducted. In addition, noise- and vibration-related disturbance beyond the project footprint may cause bats to abandon maternity roosts. These impacts could adversely affect the reproductive viability of local populations, further contributing to the decline of these species. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Operations Impacts

Operations of the project alternatives would involve scheduled train travel along the blended system through the Bay Area, as well as inspection and maintenance along the track and railroad right-of-way, at stations, at the Brisbane LMF, and on structures, fencing, power systems, positive train control, and communications.

Impact BIO#12: Intermittent Disturbance of Habitat for Special-Status Plants during Operations

Project operations would include inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Prior to on-site maintenance and inspection activities, the Authority would require that all O&M personnel attend worker environmental awareness program (WEAP) training about sensitive biological resources (BIO-IAMF#4) within and adjacent to the right-of-way. Training materials would identify and describe land cover types that may support special-status plants (e.g., saline emergent wetland, freshwater emergent wetland) and their approximate locations within or adjacent to the right-of-way. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Because inspection and maintenance activities at the site of the stations and Brisbane LMF would be conducted in areas that had already been cleared of vegetation and subjected to extensive ground disturbance to build the facilities, it is highly unlikely that any special-status plants would remain within the right-of-way. These activities along the Caltrain right-of-way would be a continuation of existing inspection and maintenance activities for Caltrain, and therefore would not cause any new impacts on existing special-status plant habitat within or adjacent to the right-of-way.

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because HSR operations would be conducted in areas that would already have been subjected to construction activities. Moreover, these activities would be a continuation of existing inspection and maintenance activities for Caltrain, which are intermittent and widely dispersed spatially and temporally. Accordingly, because sensitive land cover types, including habitat for special-status plants, would no longer be present in the areas of activity, no additional substantial adverse effect on special-status plants would result from project operations. Therefore, CEQA does not require any mitigation.

Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations

Project operations would include passing HSR trains and inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Most of the right-of-way has been previously subjected to extensive ground disturbance and provides limited habitat for most special-status wildlife. Prior to on-site maintenance and inspection activities, the Authority would

require that all O&M personnel attend WEAP training about sensitive biological resources (BIO-IAMF#4) within and adjacent to the right-of-way. Training materials would identify and describe land cover types that may support special-status wildlife species (i.e., saline emergent wetland, freshwater emergent wetland, all land cover adjacent to the SFO West-of-Bayshore property) and their approximate locations within or adjacent to the right-of-way.

Because inspection and maintenance activities would be a continuation of existing inspection and maintenance activities for Caltrain, they would not cause any new impacts on existing special-status wildlife habitat. Special-status amphibians, reptiles, and mammals with small body sizes may still be able to access and occasionally move through or along the right-of-way, but any features that once supported breeding (e.g., aquatic features) would either be removed or degraded during construction. Any special-status species that do use the right-of-way after construction would be subjected to increased mortality risk from the addition of HSR trains operating at speeds up to 110 miles per hour (mph). This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because project operations would have a substantial adverse effect, through direct mortality, on special-status wildlife species, including species listed under FESA and CESA. Although special-status wildlife are already subject to high mortality risk from Caltrain operations, additional mortality of any listed species caused by passing HSR trains would be significant because it would reduce the viability of already vulnerable populations (e.g., California red-legged frog and San Francisco garter snake populations at the SFO West-of-Bayshore property, burrowing owls nesting at SJC). Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

3.7.8.3 Non-Special-Status Wildlife

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2, Special-Status Species. The same planned development and transportation projects would generally result in increases in vehicle miles traveled (VMT), construction of new impervious surfaces, and conversion of land cover types to transportation uses, all of which would affect non-special-status wildlife.

Non-special-status wildlife species within and adjacent to the project footprint would continue to be subjected to existing stressors (e.g., predation by nonnative urban predators, noise and light associated with nearby residential and commercial land uses, train traffic) under the No Project Alternative. Existing O&M activities within the Caltrain right-of-way would continue to pose risks to wildlife where their habitat overlaps with the right-of-way. Future changes in land use or allowable density of development, as well as ground disturbance associated with future infrastructure improvements such as highway expansions to accommodate population growth, would have impacts on non-special-status wildlife species similar to those that have resulted from past development, such as habitat loss and degradation, potential mortality of individuals, and fluctuating population levels in response to human activities.

Project Impacts

Construction of the project alternatives would result in temporary and permanent impacts on non-special-status wildlife. All aspects of construction and operations have the potential to cause impacts, either from direct removal of habitat or mortality of individuals where wildlife occur and impacts cannot be avoided through IAMFs, or from indirect impacts such as habitat degradation from the introduction of invasive species. Habitat for non-special-status wildlife (e.g., ornamental woodland, urban, barren) is ubiquitous throughout the habitat study area and permanent and temporary impacts on such habitat under the project alternatives would be minor. Therefore, the following impact discussion focuses on direct mortality of individuals.

Construction Impacts

Impact BIO#14: Mortality of Non-Special-Status Terrestrial Wildlife

Project construction in all subsections would take place in habitat for non-special-status terrestrial wildlife species. Although biologists did not map habitat for non-special-status wildlife species, such habitat is ubiquitous throughout the habitat study area. Construction activities could result in mortality of individuals of such species. Alternative B would have a slightly greater likelihood of causing non-special-status wildlife mortality because of the larger footprint (e.g., culvert modification activities at Borel, Belmont, and Cordilleras Creeks) associated with construction of the passing track. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction, the Authority would submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5); although these requirements pertain primarily to special-status species, they would also benefit non-special-status species. The contractor would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

During construction, several actions would be undertaken to protect non-special-status wildlife. Erosion control materials that could entrap small animals would be prohibited (BIO-IAMF#6) to prevent mortality and harm associated with inadvertent entrapment. Covering trenches, pits, and other excavations when not in use and inspecting them regularly (BIO-IAMF#7) would prevent small animals from falling into these areas and being trapped there.

While pre-construction and construction actions to protect wildlife species are part of the project, these actions would not prevent the conversion and temporary disturbance of habitat suitable to support myriad non-special-status species in the project footprint, nor would they necessarily eliminate the risk of disturbance, injury, or mortality of individual animals. Construction-related ground disturbance (e.g., grading, excavation) and vehicle traffic may injure or kill wild animals through vehicle strike or by crushing animals in subterranean burrows. Animals may become entrapped in excavated areas, pipes, or other equipment used for construction. Vegetation removal and structure modification or demolition activities could cause mortality of non-special-status birds and bats. Noise and vibration generated by construction activities may impair breeding, feeding, and sheltering behaviors. Introduction of invasive nonnative vegetation could alter the structure of the vegetation community, making it less suitable to support some species.

CEQA Conclusion

Mandatory findings of significance pursuant to the CEQA Guidelines specify that a lead agency shall find that a project may have a significant effect on the environment if it has the potential to substantially reduce the habitat of a wildlife species, cause a wildlife population to drop below self-sustaining levels, or threaten to eliminate an animal community. In view of the relatively limited amount of disturbance and habitat loss in the context of the extensive range of common terrestrial species and urban setting of the project, there is no evidence that any of these criteria would be met, particularly in consideration of project features that would avoid potential impacts on non-special-status wildlife, for either alternative. The impact under CEQA would therefore be less than significant for both project alternatives because, although construction activities could cause some mortality of non-special-status wildlife, it would not cause a substantial reduction in the habitat for such wildlife, cause any wildlife populations to drop below self-sustaining levels or threaten to eliminate any such populations. Therefore, CEQA does not require any mitigation.

Impact BIO#15: Removal of Active Non-Special-Status Bird Nests

Construction activities in all subsections would occur in or adjacent to land cover types that provide nesting habitat for native bird species. Removal or trimming of vegetation during the nesting season (February 1 to August 31) could result in injury and mortality of nestlings and eggs. Biologists did not model nesting habitat for non-special-status birds because such habitat (e.g., ornamental woodland, urban, barren) is ubiquitous throughout the habitat study area. Permanent and temporary impacts on such habitat under the project alternatives would be minor, so the following discussion focuses on removal or disturbance of active nests only. Alternative A would have a slightly greater likelihood of removing active bird nests because of the greater extent of coyote brush scrub that would be affected by the East Brisbane LMF. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction, the Authority would submit the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of wildlife habitat (including trees to be avoided) and species (BIO-IAMF#5). Staging areas would be sited away from sensitive resources (BIO-IAMF#8). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

While pre-construction actions to protect wildlife are part of the project, these actions would not necessarily eliminate the risk of affecting active bird nests. Ground disturbance (e.g., grubbing during site preparation) in nesting habitat could crush eggs or kill nestlings in active nests. Construction-generated noise and vibration near active nests could cause adults to abandon eggs or recently hatched young if they perceive such disturbances as a threat.

CEQA Conclusion

Mandatory findings of significance pursuant to the CEQA Guidelines specify that a lead agency shall find that a project may have a significant effect on the environment if it has the potential to substantially reduce the habitat of a wildlife species, cause a wildlife population to drop below self-sustaining levels, or threaten to eliminate an animal community. In view of the project's urban setting and that non-special-status bird species expected to nest in the project footprint are common urban generalists, there is no evidence that any of these criteria would be met for non-special-status birds, for either alternative. The impact under CEQA would therefore be less than significant for both project alternatives because, although project construction could cause some mortality of non-special-status birds, it would not cause a substantial reduction in the habitat of the wildlife species, cause any local urban bird populations to drop below self-sustaining levels or threaten the existence of any such populations. Therefore, CEQA does not require any mitigation.

Operations Impacts

Impact BIO#16: Intermittent Disturbance of Habitat for and Direct Mortality of Non-Special-Status Wildlife during Operations

Project operations would include passing HSR trains and inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Most of the right-of-way has been previously subjected to extensive ground disturbance and provides limited habitat for most wildlife. Prior to on-site maintenance and inspection activities, the Authority would require that all O&M personnel attend WEAP training about sensitive biological resources (BIO-IAMF#4) within and adjacent to the right-of-way. Training materials would identify and describe land cover types that provide habitat for wildlife (e.g., trees and shrubs that could support nesting birds) and their approximate locations within or adjacent to the right-of-way.

Because these activities would be a continuation of existing inspection and maintenance activities for Caltrain, they would not cause any new impacts on existing non-special-status wildlife habitat within or adjacent to the right-of-way. Non-special-status amphibians, reptiles, and mammals with small body sizes may still be able to access and occasionally move through or along the right-of-

way, but any features that once supported breeding (e.g., aquatic features) would either be removed or degraded during construction. Any species that do use the right-of-way after construction would be subjected to increased mortality risk from the addition of HSR trains operating at speeds up to 110 mph. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because, although HSR operations could cause some mortality of non-special-status wildlife, mortality of non-special-status species is not a threshold of significance under CEQA; however, mandatory findings of significance pursuant to the CEQA Guidelines specify "substantially degrade the quality of the environment, reduce habitat of wildlife species, cause wildlife populations to drop below self-sustaining levels, threaten to eliminate a plant or animal community" as criteria for a finding of significance. Because non-special-status wildlife in the habitat study area are already exposed to existing Caltrain operations, have presumably adapted to such operations and the surrounding urban environment, and are not expected to experience substantially higher mortality from the addition of HSR trains than under existing conditions, there is no evidence that any of these criteria would be met. Therefore, CEQA does not require any mitigation.

3.7.8.4 Special-Status Plant Communities

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, all of which would affect special-status plant communities.

Special-status plant communities within and adjacent to the project footprint would continue to be subjected to existing stressors under the No Project Alternative. Existing O&M activities within the Caltrain right-of-way would continue to occasionally disturb such communities where they overlap the right-of-way. Future changes in land use or allowable density of development, as well as ground disturbance associated with future infrastructure improvements such as highway expansions to accommodate population growth, would have impacts on special-status plant communities similar to those that have resulted from past development, such as loss and degradation of high-quality community occurrences.

Project Impacts

Project construction could result in temporary and permanent changes to special-status plant communities. All aspects of construction and operations have the potential to result in impacts, either through direct removal associated with construction or through indirect impacts such as noxious weed infestations.

Construction Impacts

Impact BIO#17: Permanent Conversion or Degradation of Special-Status Plant Communities

Construction of the project would take place adjacent to saline emergent wetlands that support pickleweed mats and within or adjacent to mixed riparian and scrub/shrub wetland land cover that may support arroyo willow thickets. Pickleweed mats and arroyo willow thickets are listed on the CDFW Sensitive Natural Community List (CDFW 2018a). Construction would result in the conversion and degradation of these communities, if present within mapped land cover types. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in areas that could support special-status plant communities, the project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5), including special-status plant communities. Workers would be provided with environmental awareness

training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

During construction, several actions that the Authority has incorporated into project design would be undertaken specifically to protect special-status plant communities. Cleaning of construction equipment (BIO-IAMF#10) would help to reduce the spread of invasive plant species and changes in vegetation structure. The contractor would develop a BMP field manual that would address proper waste management and storage, nonstormwater management, and other general site cleanliness measures to avoid spills of hazardous materials, reducing degradation of special-status plant communities (BIO-IAMF#9). The Authority would develop and implement a BMP field manual addressing proper waste management and storage, nonstormwater management, and other general site cleanliness measures (BIO-IAMF#11).

Table 3.7-13 shows the areal extent of direct permanent and temporary impacts on special-status plant communities. Because both alternative footprints would be identical where they overlap with saline emergent wetlands at Brisbane Lagoon in the San Francisco to South San Francisco Subsection, there would be no difference in the area of impact on pickleweed mats between alternatives. Alternative A would affect a slightly greater amount of arroyo willow thickets because of the greater extent of scrub/shrub wetland within the project footprint of the East Brisbane LMF. The aggregate magnitude of permanent and temporary impacts on special-status plant communities would be, in descending order, 3.5 acres and 0.7 acre, respectively, under Alternative A; and 3.3 acres and 0.5 acre under Alternative B (both viaduct options).

Table 3.7-13 Impacts on Special-Status Plant Communities (acres)

Impacts	Alternative A			Alternative B[1]		
	Permanent	Temporary	Total	Permanent	Temporary	Total
Arroyo willow thickets	1.8	0.7	2.5	1.6	0.5	2.1
Pickleweed mats	1.7	0.0	1.7	1.7	0.0	1.7
Total	3.5	0.7	**4.2**	3.3	0.5	**3.8**

[1] The affected acreage would be identical under both Alternative B options (Viaduct to I-880 and Viaduct to Scott Boulevard).

While pre-construction and construction actions to protect special-status plant communities are part of the project, these actions may not prevent the permanent conversion or temporary disturbance of special-status plant communities in the project footprint. Replacement of the Tunnel Avenue overpass near Brisbane Lagoon in the San Francisco to South San Francisco Subsection may temporarily disturb small areas of pickleweed mats in the lagoon. Track and associated structure modifications near mixed riparian land cover at stream crossings in all subsections may require trimming or removal of arroyo willow thickets. Construction of the LMF in Brisbane would remove scrub/shrub wetlands known to contain arroyo willow thickets. Ground disturbance could indirectly affect special-status plant communities by creating new areas of bare soil that are easily colonized by nonnative invasive plants. Such plants could spread into and degrade adjacent special-status plant communities.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could have substantial adverse effects, through conversion or degradation, on sensitive natural communities (which are equivalent to special-status plant communities in this report) identified by the CDFW. While actions would be implemented before and during construction to minimize such impacts, the project could still result in loss and degradation of special-status plant communities. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Operations Impacts

Impact BIO#18: Intermittent Disturbance of Special-Status Plant Communities during Operations

Project operations would include inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Prior to on-site maintenance and inspection activities, the Authority would require that all O&M personnel attend WEAP training about sensitive biological resources (BIO-IAMF#4) within and adjacent to the right-of-way. Training materials would identify and describe land cover types that may support special-status plant communities (i.e., saline emergent wetland, riparian, scrub/shrub) and their approximate locations within or adjacent to the right-of-way.

Right-of-way maintenance activities would include vegetation management, including potential trimming of arroyo willow thickets growing within or adjacent to the right-of-way. Such direct impacts would be short in duration and sporadic, and would not remove existing stands of arroyo willow thickets. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because operations along the HSR right-of-way would not result in substantial adverse effects on special-status plant communities. Operational activities would be conducted in areas that have already been subjected to extensive ground disturbance and construction activities and would only result in trimming of trees within existing communities, not removal. Moreover, these activities would be intermittent and widely dispersed spatially. Conversion and degradation of special-status plant communities would already have been addressed, as necessary, through compensatory mitigation as provided for construction impacts. Therefore, CEQA does not require any mitigation.

3.7.8.5 Aquatic Resources

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, all of which would affect aquatic resources.

Aquatic resources within and adjacent to the project footprint would continue to be subjected to existing stressors under the No Project Alternative. Existing O&M activities within the Caltrain right-of-way would continue to occasionally disturb such communities where they overlap the right-of-way. Future changes in land use or allowable density of development, as well as ground disturbance associated with future infrastructure improvements such as highway expansions to accommodate population growth, would have impacts on aquatic resources similar to those that have resulted from past development, such as filling or degradation of wetlands and streams.

Project Impacts

Project construction would result in temporary and permanent impacts on aquatic resources. The project alternatives would result in direct and indirect impacts on waters of the state regulated by SWRCB, federally protected wetlands and other waters of the U.S., as well as riparian areas not considered jurisdictional under Section 404 of the CWA but not subject to notification under Cal. Fish and Game Code Section 1600 et seq. Additionally, the project alternatives would result in direct and indirect impacts on some aquatic resources regulated as waters of the state, regulated under Section 404 of the CWA, and subject to notification under Cal. Fish and Game Code Section 1600 et seq. (e.g., natural watercourses).

Construction Impacts

Impact BIO#19: Permanent Conversion or Degradation of Aquatic Resources Considered Jurisdictional under Section 404 of the Federal Clean Water Act and the State Porter-Cologne Act, or under Section 10 of the Rivers and Harbors Act

Construction activities would take place in areas that support aquatic resources considered jurisdictional under Section 404 of the CWA and the state Porter-Cologne Act, or navigable waters considered jurisdictional under Section 10 of the RHA. Construction may result in the conversion and degradation of such aquatic resources through direct removal, filling, and hydrological interruption. Construction may also result in discharges that could adversely affect navigable waters.

Construction of either alternative would result in the conversion and degradation of aquatic resources by relocating a portion of Visitacion Creek and filling several wetlands. Both project alternatives would require the construction of new bridges or culverts for the railbed, roadways, and other infrastructure to cross over watercourses, or the modification of existing bridges and culverts for the same purpose. To complete this work, the contractor may need to perform minor trimming of vegetation or other activities in or near wetlands or nonwetland waters that cross below or run parallel to the railbed. Some of this work may need to be conducted from within these features. Temporary stream diversions would be needed to conduct the work within perennial watercourses.

Prior to construction in areas that could support aquatic resources, the project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

During construction, several actions that the Authority has incorporated into project design would be undertaken specifically to protect aquatic resources. Cleaning of construction equipment (BIO-IAMF#10) would help to reduce the spread of invasive plant species into wetlands. The contractor would develop a BMP field manual that would address proper waste management and storage, nonstormwater management, and other general site cleanliness measures to avoid spills of hazardous materials, reducing degradation of aquatic resources (BIO-IAMF#9).

Table 3.7-14 shows the areal extent of direct permanent and temporary impacts (direct removal, filling, or hydrological interruption) on aquatic resources considered jurisdictional under Section 404 of the CWA and Porter-Cologne Act. The aggregate magnitude of permanent and temporary impacts on CWA/Porter-Cologne Act aquatic resources would be, in descending order, 15.7 acres and 2.4 acres, respectively, under Alternative B; and 10.1 acres and 3.1 acres under Alternative A. Alternative B would affect more CWA aquatic resources because of the greater extent of freshwater emergent wetland in the West Brisbane LMF footprint.

Table 3.7-14 also shows the areal extent of direct permanent and temporary impacts on navigable waters considered jurisdictional under Section 10 of the RHA. The aggregate magnitude of permanent and temporary impacts on RHA navigable waters would be, in descending order, 3,1 acres and 0.3 acre, respectively, under Alternative A; and 2.7 acres and 0.1 acre under Alternative B. Alternative A would affect more RHA navigable waters because of the greater extent of tidally influenced constructed watercourses in the right-of-way.

Table 3.7-14 Impacts on Aquatic Resources Considered Jurisdictional under Section 404 of the Clean Water Act and the State-Porter Cologne Act and Navigable Waters Regulated under Section 10 of the Rivers and Harbors Act, by Project Alternative (acres)

Impacts	Alternative A						Alternative B[1]					
	CWA Section 404 Aquatic Resources[2]			RHA Section 10 Navigable Waters[3]			CWA Section 404 Aquatic Resources[2]			RHA Section 10 Navigable Waters[3]		
	Permanent	Temporary	Total	Permanent	Temporary	Total	Permanent	Temporary	Total	Permanent	Temporary	Total
Wetlands												
Freshwater emergent wetland	1.8	1.9	3.7	0.0	0.0	0.0	9.1	0.4	9.5	0.0	0.0	0.0
Saline emergent wetland	1.7	0.0	1.7	1.5	0.0	1.5	1.7	0.0	1.7	1.5	0.0	1.5
Scrub/shrub wetland	0.3	0.4	0.7	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
Seasonal wetland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Wetlands	3.8	2.3	6.1	1.5	0.0	1.5	10.9	0.5	11.4	1.5	0.0	1.5
Nonwetlands												
Constructed basin	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Constructed watercourse	3.9	0.3	4.2	1.0	0.1	1.1	3.5	0.3	3.8	0.5	0.0	0.5
Natural watercourse	1.7	0.3	2.0	0.1	0.2	0.3	0.8	1.6	2.4	0.2	0.1	0.3
Open water	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.5
Pond	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Nonwetlands	6.3	0.8	7.1	1.6	0.3	1.9	4.8	1.9	6.7	1.2	0.1	1.3
Total	**10.1**	**3.1**	**13.2**	**3.1**	**0.3**	**3.4**	**15.7**	**2.4**	**18.1**	**2.7**	**0.1**	**2.8**

Sources: Authority 2020a, 2020c
CWA = Clean Water Act
I- = Interstate
RHA = Rivers and Harbors Act
[1] The affected acreage would be identical under both Alternative B options (Viaduct to I-880 and Viaduct to Scott Boulevard).
[2] All the wetland and nonwetland waters mapped in the aquatic resource study area are waters of the U.S. and waters of the state; as such all of the permanent and temporary impacts on aquatic resources considered jurisdictional under Section 404 of the CWA would also be permanent and temporary impacts on waters of the state.
[3] The acres identified in the Section 404 CWA and Section 10 RHA column overlap. CWA Section 404 jurisdiction in tidal areas typically extends slightly beyond RHA Section 10 jurisdictional areas.

While pre-construction and construction actions to protect aquatic resources are part of the project, these actions would not prevent the permanent conversion or temporary disturbance of aquatic resources in the project footprint. Construction activities would also result in the temporary disturbance of aquatic resources during construction and reduced value for some time after construction is completed until aquatic resources are restored and recover.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project could have a substantial adverse effect on state and federally protected aquatic resources through direct removal and filling. While actions would be implemented before and during construction to minimize such impacts, the project could still result in the loss and degradation of aquatic resources. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Impact BIO#20: Permanent Conversion or Degradation of Aquatic Resources, including Riparian Communities, Subject to Notification under California Fish and Game Code Section 1600 et seq.

Construction activities in all subsections would take place in areas that support rivers and streams subject to notification under Cal. Fish and Game Code Section 1600 et seq., including riparian communities (i.e., mixed riparian). Construction may result in the conversion and degradation of such aquatic and riparian habitat that supports fish and wildlife. Some of these resources are located within BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to construction in a resource covered under Section 1602, the project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

During construction, several actions that the Authority has incorporated into project design would be undertaken specifically to protect aquatic resources and species dependent on such resources. Cleaning of construction equipment (BIO-IAMF#10) would help to reduce the spread of invasive plant species into wetlands and riparian areas. The contractor would develop a BMP field manual that would address proper waste management and storage, nonstormwater management, and other general site cleanliness measures to avoid spills of hazardous materials, reducing degradation of aquatic resources (BIO-IAMF#9).

Table 3.7-15 shows the areal extent of direct permanent and temporary impacts on resources subject to notification under Cal. Fish and Game Code Section 1600 et seq. The aggregate magnitude of permanent and temporary impacts on these resources would be, in descending order, 6.8 acres and 3.1 acres, respectively, under Alternative B (both viaduct options); and 7.8 acres and 1.2 acres under Alternative A. Alternative B would affect more Section 1600 resources because of the greater extent of mixed riparian land cover in the project footprint along Los Gatos Creek and the Guadalupe River.

While pre-construction and construction actions to protect Section 1600 resources are part of the project, these actions would not prevent the permanent conversion or temporary disturbance of aquatic resources in the project footprint. Construction activities would result in the temporary disturbance of Section 1600 resources during construction and reduced value to fish and wildlife using those resources for some time after construction is completed until resources are restored and recover.

Table 3.7-15 Impacts on Resources Subject to Notification under California Fish and Game Code Section 1600 et seq. by Project Alternative (acres)

Section 1600 et seq. Resource	Alternative A			Alternative B[1]		
	Permanent	Temporary	Total	Permanent	Temporary	Total
Riparian						
Mixed Riparian	2.0	0.4	2.4	2.5	1.2	3.7
Subtotal Riparian	*2.0*	*0.4*	*2.4*	*2.5*	*1.2*	*3.7*
Streams/Lakes/Rivers						
Constructed basin	0.2	0.2	0.4	0.0	0.0	0.0
Constructed watercourse	3.9	0.3	4.2	3.5	0.3	3.8
Natural watercourse	1.7	0.3	2.0	0.8	1.6	2.4
Subtotal Streams/Lakes/Rivers	*5.8*	*0.8*	*6.6*	*4.3*	*1.9*	*6.2*
Total	7.8	1.2	**9.0**	6.8	3.1	**9.9**

Sources: Authority 2020a, 2020c
[1] The affected acreage would be identical under both Alternative B options (Viaduct to I-880 and Viaduct to Scott Boulevard).

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because the project would have substantial adverse effects, through conversion or degradation, on aquatic resources and related riparian vegetation (these areas are also subject to notification under Cal. Fish and Game Code Section 1602). While actions would be implemented before and during construction to minimize such impacts, the project would result in loss and degradation of aquatic resources and related riparian vegetation. Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

Operations Impacts

Impact BIO#21: Intermittent Disturbance or Degradation of Aquatic Resources during Operations

Project operations would include inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Right-of-way maintenance activities would include minor grading, clearing, and excavation needed to maintain adequate drainage or repair infrastructure; vegetation management, including potential trimming of riparian trees growing adjacent to the right-of-way and application of herbicide to invasive weeds within the right-of-way; and vehicle traffic along maintenance roads. Permanently affected aquatic features in the project footprint would have been eliminated during construction, and therefore would not be affected further. Aquatic resources inside the project footprint that were avoided during construction (e.g., natural watercourses spanned by bridges) and outside but adjacent to the project footprint would remain and could potentially be affected by these activities. In addition, construction would result in the creation of new aquatic resources (e.g., constructed basins and watercourses for drainage) in some portions of the project footprint, and these features could also be affected. Minor ground disturbance within the right-of-way may result in minor direct (e.g., filling, sedimentation, inadvertent release of oils and chemicals from parked vehicles or equipment) or indirect (e.g., introduction of invasive species) impacts on aquatic resources in and adjacent to the right-of-way. Occasional trimming of riparian tree branches overhanging the right-of-way is not expected to substantially degrade riparian aquatic resources because the branches of such trees are typically fast growing. If applied during high winds, herbicides could drift into aquatic resources in and beyond the right-of-way, degrading water quality and causing mortality of wetland vegetation. Dust generated by maintenance vehicles could settle on the leaves of wetland plants in and

adjacent to the right-of-way, increasing the rate of water loss (i.e., transpiration). Such impacts would degrade aquatic resources remaining in the right-of-way after construction as well as those outside but within 250 feet (i.e., aquatic RSA) of the right-of-way. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction (see Section 3.7.8.10).

Prior to on-site maintenance and inspection activities, the Authority would require that all O&M personnel attend WEAP training about sensitive biological resources (BIO-IAMF#4) within and adjacent to the right-of-way. Training materials would identify and describe Section 1600 resources that remain within or adjacent to the right-of-way (i.e., constructed basins at Brisbane Lagoon, natural and constructed watercourses and mixed riparian land cover that cross the right-of-way). This action would avoid and minimize impacts on remaining aquatic resources inside and adjacent to the project footprint during operations.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because operations could have a substantial adverse effect on protected wetlands and other aquatic and related resources through direct removal, filling, or other means. While actions would be implemented before operations to reduce the potential for impacts on aquatic resources, project operations would entail disturbance and potential degradation of aquatic resources through inspection and maintenance. The mitigation measure to address this impact is identified in Section 3.7.11. Section 3.7.9 describes the measure in detail.

3.7.8.6 Protected Trees

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, all of which could affect protected trees.

Protected trees[6] within and adjacent to the project footprint would remain in their current locations under the No Project Alternative. Future changes in land use or allowable density of development, as well as ground disturbance associated with future infrastructure improvements such as highway expansions to accommodate population growth, could result in the removal or trimming of protected trees.

Project Impacts

Construction of the project alternatives would result in the removal of trees protected under local ordinances. Protected trees are located throughout the habitat study area and are those that are identified in local ordinances or in local planning documents that have policies for protection.

Construction Impacts

Impact BIO#22: Removal of Trees Protected under Municipal Tree Ordinances

Ground disturbance and vegetation removal activities associated with project construction could require removal or trimming of protected trees. Direct impacts on protected trees would be permanent if such trees are removed or have significant pruning to either the canopy or roots, grading or compaction in the root zone, or significantly modified drainage patterns (primarily causing water to pond in the root zone) during construction; impacts would be considered temporary if trees are minimally trimmed or their root systems have minor disruption. Alternative B would have a slightly greater likelihood of direct and temporary impacts on protected trees than Alternative A because of the greater extent of mixed riparian and ornamental woodland associated with the passing track. Any protected trees in the project footprint are in a dense urban setting and are adapted to a human-modified environment, including pavement and compaction of the root zone and the proliferation of introduced nonnative plants. The project may

[6] *Protected trees* are trees that have special significance and are afforded protection by, and specifically identified in, county and city ordinances, codes, or general plans.

have indirect impacts on protected trees outside the project footprint in natural settings as a result of grading and drainage pattern modifications that may cause compaction of the tree's root zone or increase ponding of water that causes anaerobic condition and root decay. An increase in introduced nonnative plants after soil disturbance would not have an impact on established, protected trees.

Prior to construction, the project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5). Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

While pre-construction actions to identify and preserve protected trees are part of the project, these actions would not entirely preclude impacts on protected trees. Some trees would be removed and others would be trimmed to facilitate project construction.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because project construction would conflict with local ordinances protecting designated trees. Construction may require the removal of some protected trees and the trimming of others. While actions would be implemented before construction to educate workers about the location of sensitive biological resources, these actions would not entirely preclude impacts on protected trees. Some trees would be removed and others would be trimmed to facilitate project construction. The mitigation measure to address this impact is identified in Section 3.7.11. Section 3.7.9 describes the measure in detail.

Operations Impacts

Impact BIO#23: Disturbance of Trees Protected under Municipal Tree Ordinances during Operations

Operations would not result in permanent impacts (i.e., removal) on protected trees under either project alternative but ongoing vegetation management within the electrical safety zone could result in temporary impacts (i.e., occasional trimming).

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because project operations would not remove any protected trees. Any protected trees within the footprint of HSR tracks, facilities, or infrastructure would have been removed during construction. Intermittent operations impacts on protected trees would occur when such trees are trimmed during vegetation management activities within the right-of-way. Nonprotected trees may grow into protected size classes during the operational period and need to be trimmed. These impacts would not conflict with local tree preservation policies or ordinances because they would not involve the permanent removal of protected trees. Therefore, CEQA does not require any mitigation.

3.7.8.7 Wildlife Corridors

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, some of which could affect wildlife corridors.

Wildlife corridors that intersect the project footprint would continue to be used by common urban-adapted wildlife under the No Project Alternative. Any wildlife that use these corridors have adapted to existing Caltrain O&M activities by becoming habituated to their regular occurrence or timing their movement outside peak activity periods (e.g., at night). Future changes in land use or allowable density of development, as well as ground disturbance associated with future

infrastructure improvements such as highway expansions to accommodate population growth, could have impacts on wildlife corridors if they add new fences or walls that create new barriers to wildlife movement or remove or block culverts that currently facilitate wildlife movement.

Project Impacts

The project would have minimal impacts on wildlife corridors. Construction activities at 8 of the 18 watercourses[7] that currently facilitate wildlife movement (Table 3.7-4) under the existing Caltrain tracks (Guadalupe Valley Creek, Borel Creek, Belmont Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and Guadalupe River) would temporarily disrupt local wildlife movement but would not create any new movement barriers to wildlife. HSR operations would not affect existing wildlife movement through these corridors because any local wildlife that use these corridors would have habituated to existing Caltrain O&M.

Construction Impacts

Impact BIO#24: Temporary Disruption of Wildlife Movement

Construction activities in or near the 8 of the 18 watercourses that facilitate local wildlife movement under the Caltrain right-of-way (Guadalupe Valley Creek, Borel Creek, Belmont Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and Guadalupe River) would temporarily affect wildlife movement through several mechanisms. Construction fencing and dewatering could create temporary barriers to movement, precluding the normal movement of animals. Noise and vibration from construction vehicles and pile driving may alter or delay movement of individuals as they attempt to avoid the construction area. Nighttime construction or security lighting could cause animals to delay or alter movement patterns because they may avoid lighted areas. These impacts would be similar under both project alternatives, with slightly higher potential for impacts at Borel, Belmont, Cordilleras, and Los Gatos Creeks under Alternative B because of culvert modification activities at the first three creeks as part of the passing track and construction of a new free-span viaduct over Los Gatos Creek. None of the affected corridors are identified as established wildlife corridors in statewide or regional reports (Penrod et al. 2013). This impact would also occur inside BCDC's Bay and shoreline band jurisdiction at Guadalupe Valley Creek (see Section 3.7.8.10).

Prior to construction, the project biologist would prepare a BRMP consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5), including design of protective fencing around environmentally sensitive areas (ESA) and construction staging areas and specific measures for protection of riparian areas. Workers would be provided with environmental awareness training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and sensitive resources present in the work area (BIO-IAMF#3). Staging areas would be sited away from sensitive resources (BIO-IAMF#8).

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because project construction would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors. No established wildlife corridors identified in statewide or regional reports occur within the project footprint. Project construction would not create any new movement barriers to wildlife that move along existing watercourses under the existing Caltrain track crossings. Moreover, any wildlife that currently use these crossings would have habituated to existing Caltrain operations. Therefore, CEQA does not require any mitigation.

[7] Colma Creek, Mills Creek, Easton Creek, San Mateo Creek, Matadero Creek, Barron Creek, Adobe Creek, Sunnyvale East Channel, Calabazas Creek, and San Tomas Aquino Creek also facilitate wildlife movement but would not be affected by the project.

Operations Impacts

Impact BIO#25: Permanent Disruption of Wildlife Movement

Project operations would have minimal impacts on wildlife corridors under both project alternatives. All eight watercourses that facilitate local wildlife movement under the existing Caltrain tracks are already subject to daily train traffic and regular O&M activities along the tracks. Any wildlife that use these corridors have adapted to these activities by becoming habituated to their regular occurrence or by timing their movement outside peak activity periods (e.g., at night). The addition of HSR trains operating at speeds up to 110 mph would increase the frequency and velocity of train traffic to which wildlife would be exposed and would result in some additional animal deaths from being struck by trains but is not expected to prevent continued wildlife use of the corridors over time. Species that use these corridors are primarily generalists with life history traits enabling survival and reproduction in dense urban environments, and they are expected to habituate to HSR operations, as they have to Caltrain operations. This impact would also occur inside BCDC's Bay and shoreline band jurisdiction at Guadalupe Valley Creek (see Section 3.7.8.10).

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because project operations would not prevent continued wildlife use of local wildlife corridors over time. Therefore, CEQA does not require any mitigation.

3.7.8.8 Conservation Areas

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, some of which could affect conservation areas within the habitat study area.

Project Impacts

Project construction and operations would have no impact on conservation areas. The only areas identified by the CPAD within the project footprint (Table 3.7-10) are urban parks that do not serve as refuges or ecological reserves.

3.7.8.9 Habitat Conservation Plans

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses. Construction of those projects that overlap with the San Jose Diridon Station Approach Subsection, as listed in Section 3.18, could conflict with the provisions of the SCVHP (County of Santa Clara et al. 2012) and Santa Clara Valley Greenprint (SCVOSA 2014). Both HCPs were developed with these projects and development patterns in mind, however, minimizing the potential for conflicts.

Project Impacts

The project footprint overlaps with the planning areas for three HCPs and is within 1,000 of the planning area for the San Bruno Mountain HCP (County of San Mateo 1982). The entire footprint is within the planning area for the PG&E Bay Area O&M HCP (PG&E 2017) and contains habitat for five of its covered species: callippe silverspot butterfly, Bay checkerspot butterfly, Mission blue butterfly, California red-legged frog, and San Francisco garter snake. The San Jose Diridon Station Approach Subsection overlaps with the planning areas for two HCPs: the SCVHP (County of Santa Clara et al. 2012) and Santa Clara Valley Greenprint (SCVOSA 2014). All of the remaining project subsections are outside of the SCVHP and Santa Clara Valley Greenprint planning areas. The small portion of the San Bruno Mountain HCP planning area within 1,000

feet of the project footprint (approximately 55 acres) would not be directly or indirectly affected by HSR construction or operations because construction in this area would be limited to minor track shifts of less than 1 foot within the existing Caltrain right-of-way. These activities would occur on the opposite side of the Bayshore Freeway from the planning area and would therefore not degrade existing grassland or scrub habitat for the three listed butterflies covered under the HCP. Potential conflicts with the remaining HCPs are discussed in the following subsections.

The PG&E Bay Area O&M HCP and SCVHP are adopted HCPs prepared pursuant to Section 10 of the FESA; the SCVHP is also an NCCP prepared pursuant to the NCCPA. The provisions of both HCPs are expressed through an organizing hierarchy of biological goals and biological objectives. The SCVHP is further organized into two types of conservation actions: acquisition actions, which address the acquisition of conservation areas; and management actions, which address the management of conservation areas. Each biological goal is implemented through the pursuit of one or more biological objectives, and some biological objectives require an acquisition or management action. Some of the PG&E Bay Area O&M HCP objectives require habitat mitigation through the acquisition, enhancement, management, or restoration of habitat to promote the recovery of covered species in the Bay Area. Therefore, a conflict could occur if construction and operation of any project alternative would result in a failure to achieve any acquisition or management action specified under either HCP, and if such a failure would thereby preclude achieving a biological goal or objective of either HCP.

The Greenprint is an approved local plan for conserving habitats. Its provisions are expressed through an organizing hierarchy of goals and strategies. Each biological goal is implemented through the pursuit of one or more strategies. Therefore, a conflict could occur if construction or operation of any project alternative would result in a failure to implement any strategy specified under the Greenprint.

Following the completion of a thorough HCP conflict analysis for the San Jose to Merced Project Section (including the San Jose Diridon Station Approach Subsection) it has been determined that project construction and operations would have no impact on the SCVHP or Greenprint. This analysis is summarized in Tables I-1 (for the SCVHP) and I-2 (for the Greenprint) in Appendix I of the San Jose to Merced Biological and Aquatic Resources Technical Report (Authority 2020c). Although the analysis identified potential project conflicts with three acquisition actions under the SCVHP, none of these actions involve land within the San Jose Diridon Station Approach Subsection.

Construction Impacts

Impact BIO#26: Conflict with Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan

The project has potential to conflict with one objective of the PG&E Bay Area O&M HCP, listed below under its corresponding biological goal.

- Goal 2—Contribute to the network of permanently protected and managed lands in the study area that support populations of covered species.
  - Objective 2.1—Increase the amount of lands protected or managed for covered species adjacent to existing protected areas (e.g., preserves, mitigation banks, and protected watersheds) or within areas identified as having high priority for conservation through mitigation purchases over the permit term.

To achieve this objective, PG&E will provide mitigation for permanent and temporary impacts on habitat for covered species through the following mechanisms (in order of preference):

- Purchase of high-quality habitat with encumbrance of the purchased property with a conservation easement and endowment
- Purchase or placement of conservation easements on land containing habitat for and occupied by covered species

- Purchase of credits from approved mitigation or conservation banks
- Partnerships with and/or contributions to existing conservation planning and recovery efforts
- Placement of conservation easements on existing PG&E lands
- Habitat enhancement and restoration on lands already protected

Under Alternative A, the Authority would also need to provide mitigation for permanent and temporary impacts on habitat for two species covered under the HCP: California red-legged frog and San Francisco garter snake. Under Alternative B, it would need to provide mitigation for these species as well as Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly, which are also covered under the PG&E Bay Area O&M HCP. Therefore, a conflict would occur if the combined mitigation needs of the Authority and PG&E exceeded the amount of available lands.

The mitigation needs of the project for California red-legged frog and San Francisco garter snake under both alternatives would not conflict with those of the PG&E Bay Area O&M HCP. The HCP's mitigation commitment for California red-legged frog and San Francisco garter snake is 1,110 and 38 acres, respectively (PG&E 2017: pages 5-37 to 5-38). The project's maximum estimated mitigation for these species is 32 and 26 acres, respectively (Authority 2020e). Therefore, the combined mitigation need for the HCP and the project is 1,142 acres of California red-legged frog habitat and 64 acres of San Francisco garter snake habitat. Under the HCP, mitigation for impacts on San Francisco garter snake would occur in San Mateo County (since the species only occurs there) and may be combined with mitigation for impacts on California red-legged frog because of their overlapping habitat requirements (freshwater wetlands and watercourses for breeding and adjacent uplands for refugia and dispersal). Mitigation would primarily be accomplished by pursuing conservation partnerships with public agencies or regional conservation organizations that own land occupied by both species because opportunities for acquiring new habitat near SFO and Crystal Springs Reservoir are very limited. The project alternatives would affect habitat for the same San Francisco garter snake population that would be affected by PG&E O&M activities covered under the HCP (i.e., SFO West-of-Bayshore), so the Authority would likely pursue the same mitigation approach (Authority 2020e). There are an estimated 6,020 acres of San Francisco garter snake habitat and 1,190,384 acres of California red-legged frog habitat in the nine-county study area for the PG&E Bay Area O&M HCP, 573 and 33,242 of which occur in the HCP's plan area, respectively (PG&E 2017: pages 2-12 and 2-13). Therefore, the amount of land available for California red-legged frog and San Francisco garter snake mitigation far exceeds the combined mitigation need of the project and HCP (i.e., 1,142 and 64 acres, respectively).

The mitigation need of the project for Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly under Alternative B (40 acres based on a 5:1 mitigation ratio) would not conflict with that of the PG&E Bay Area O&M HCP (145 acres). Most of PG&E's O&M activities covered under the HCP would affect modeled habitat in Solano, Contra Costa, and Alameda Counties, so all land acquisition mitigation would occur there. In contrast, the Authority would likely pursue mitigation locally by the mechanisms outlined in BIO-MM#11: Compensate for Impacts on Listed Butterfly Habitat, so would not be seeking mitigation in the same geographic area as PG&E. Therefore, the Authority would not be "competing" for compensatory mitigation land acquisition, enhancement, or restoration with PG&E.

CEQA Conclusion

There would be no impact under CEQA for both alternatives because neither alternative would conflict with the provisions of an adopted HCP. The Authority would need to provide mitigation for impacts on species that are covered under the PG&E Bay Area O&M HCP, which would also need to provide mitigation. However, the project's mitigation needs would not interfere with those of the HCP. Therefore, CEQA does not require any mitigation.

Operations Impacts

Project operations are not expected to have any conflicts with the PG&E Bay Area O&M HCP, SCVHP, Greenprint, or San Bruno Mountain HCP because any conflicts would have occurred from construction (including mitigation for construction-related impacts). Therefore, the project alternatives would not have any impacts on an approved HCP.

3.7.8.10 BCDC Jurisdictional Areas

No Project Impacts

The conditions for the No Project Alternative are the same as those described in Section 3.7.8.2. The same planned development and transportation projects would generally result in increases in VMT, construction of new impervious surfaces, and conversion of land cover types to transportation uses, some of which could affect BCDC jurisdiction.

Project Impacts

Project construction and operations would have impacts on seven BCDC jurisdictional areas but they would be the same as those described above for any biological and aquatic resources that occur within such areas. For example, impacts on saline emergent wetland within BCDC's Bay and shoreline band jurisdictions would be the same as those described in Section 3.7.8.2; Section 3.7.8.3, Non-Special-Status Wildlife; Section 3.7.8.4, Special-Status Plant Communities; and Section 3.7.8.5, Aquatic Resources, because this land cover type provides habitat for special-status species and non-special-status wildlife, could potentially support the "pickleweed mats" special-status plant community, and is an aquatic resource regulated under state and federal regulations. In other words, there are no biological or aquatic resources unique to BCDC jurisdictional areas that have not already been described in preceding sections, but the areal extent of such resources within BCDC jurisdiction is different than the acreages in the above impact tables. Therefore, most of the following impact information is conveyed in tables showing resource acreages within each type of jurisdictional area. For the purpose of this analysis, it is conservatively assumed that all resources present within BCDC jurisdictional areas within the project footprint would be affected. Actual impacts are anticipated to be less because of opportunities for avoidance provided by design refinements and construction planning. Because these impacts have already been discussed for the project as a whole in preceding sections, this information is provided for disclosure only and therefore does not require a separate CEQA conclusion.

Special-Status Species (BCDC Jurisdiction)

Most impacts on special-status species habitat within BCDC jurisdiction would occur at Visitacion Creek (Alternative A only) and Brisbane Lagoon/Guadalupe Valley Creek (both alternatives) (Table 3.7-16). This is due to the greater extent of grassland and wetland land cover types at these locations that provide habitat for various species. Most impacts in Bay jurisdiction are due to the presence of saline emergent wetland that provides habitat for tidal marsh plants (California seablite, coastal marsh milkvetch, Point Reyes salty bird's-beak, and saline clover), Alameda song sparrow, and saltmarsh common yellowthroat. A very small amount of habitat for pallid bat and Townsend's big-eared bat (i.e., Tunnel Avenue bridge over Guadalupe Valley Creek) is also present within Bay jurisdiction at the Brisbane Lagoon location. Most impacts on special-status species habitat in the shoreline band are due to the presence of California annual grassland that provides habitat for grassland plants (bent-flowered fiddleneck, Congdon's tarplant, and pappose tarplant) and burrowing owl, freshwater emergent wetland that provides habitat for bristly sedge and saltmarsh common yellowthroat, scrub/shrub wetland that provides habitat for saltmarsh common yellowthroat and white-tailed kite, and mixed riparian or coyote brush scrub that provides habitat for white-tailed kite and western red bat. Impacts on burrowing owl habitat within BCDC jurisdiction would be higher under Alternative A because of the removal of grassland habitat adjacent to Visitacion Creek from construction of the East Brisbane LMF.

Impacts at the remaining BCDC locations would be very small because the dominant land cover is urban at these locations. The existing Caltrain bridges over Oyster Point Channel and Colma

Creek provide marginal habitat for pallid bat and Townsend's big-eared bat. A small amount of constructed watercourse and adjacent grassland that provide habitat for California red-legged frog, San Francisco garter snake, and western pond turtle is present within Bay and shoreline band jurisdiction at El Zanjon Creek (also known as Cupid Row Canal).

Non-Special-Status Wildlife (BCDC Jurisdiction)

Non-special-status wildlife species expected to occur in Bay and Shoreline Band jurisdiction are those associated with the land cover types identified in Table 3.7-11. These include waterfowl and shorebirds associated with open water habitat (Brisbane Lagoon and tidal channels); amphibians, reptiles, birds, and mammals associated with developed areas, scrub, and/or grassland; and common birds and bats that may nest or roost under bridges. Examples of such species are provided in Sections 3.7.7.2, Biological Conditions, and 3.7.8.3. Impacts would only occur where project construction within BCDC's Bay or shoreline band jurisdiction resulted in direct mortality or injury of species individuals, and are the same as those described in Section 3.7.8.3.

Special-Status Plant Communities (BCDC Jurisdiction)

Impacts on special-status plant communities in BCDC jurisdiction would be the same as those described under Section 3.7.8.4, but the areal extent of these impacts would be limited to the Bay and shoreline band jurisdictional boundaries. Impacts would be limited to the Visitacion Creek and Brisbane Lagoon locations because these are the only BCDC jurisdictional areas that support these species communities (Table 3.7-17).

Aquatic Resources Regulated under Section 404 of the Clean Water Act (and waters of the state) or Subject to Notification under California Fish and Game Code Section 1600 et seq. (BCDC Jurisdiction)

Impacts on aquatic resources in BCDC jurisdiction would be the same as those described under Section 3.7.8.5, but the areal extent of these impacts would be limited to the Bay and shoreline band jurisdictional boundaries. The primary difference in impacts occurs in relation to Visitacion Creek (Alternative A only), with some minor differences in Brisbane Lagoon/ Guadalupe Valley Creek. Table 3.7-18 and Table 3.7-19 summarize impacts within BCDC jurisdictional areas.

Wildlife Corridors (BCDC Jurisdiction)

Impacts on wildlife corridors in BCDC jurisdiction would be the same as those described under Section 3.7.8.7, Wildlife Corridors, but the areal extent of these impacts would be limited to the Bay and shoreline band jurisdictional boundaries at Guadalupe Valley Creek near Brisbane Lagoon. These impacts were not quantified as part of the GIS impact calculations but the area of BCDC jurisdiction overlap with Guadalupe Valley Creek as measured on Google Earth is approximately 0.3 acre (Google, Inc. 2018).

Table 3.7-16 Impacts on Special-Status Species Habitat within BCDC Jurisdiction by Project Alternative (acres)

Location[1]	Species[2]	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Visitacion Creek	Bent-flowered fiddleneck	0.1	0.0	0.1	4.7	0.6	5.3	0.0	0.0	0.0	0.0	0.0	0.0
	Bristly sedge	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Congdon's tarplant	0.1	0.0	0.1	4.7	0.6	5.3	0.0	0.0	0.0	0.0	0.0	0.0
	Pappose tarplant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal Plant Habitat (nonoverlapping)	*0.1*	*0.0*	*0.1*	*4.8*	*0.7*	*5.5*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
	Burrowing owl	0.1	0.0	0.1	4.8	0.8	5.6	0.0	0.0	0.0	0.0	0.0	0.0
	Pacific Coast salmon EFH	0.6	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Green sturgeon—southern DPS	0.6	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Saltmarsh common yellowthroat	0.0	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	Steelhead—central California coast DPS	0.6	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	White-tailed kite	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal Wildlife Habitat (nonoverlapping)	0.7	0.1	0.8	*4.9*	*0.8*	5.7	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Brisbane Lagoon/Guadalupe Valley Creek	Bent-flowered fiddleneck	0.2	0.0	0.2	1.5	0.3	1.8	0.2	0.1	0.3	2.0	0.7	2.7
	California seablite	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Coastal marsh milkvetch	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Congdon's tarplant	0.2	0.0	0.2	1.3	0.3	1.6	0.2	0.1	0.3	1.8	0.7	2.5
	Pappose tarplant	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0

Location[1]	Species[2]	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
	Point Reyes salty bird's-beak	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Saline clover	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Subtotal Plant Habitat (nonoverlapping)	*1.9*	*0.0*	*1.9*	*1.6*	*0.3*	*1.9*	*2.0*	*0.1*	*2.1*	*2.1*	*0.7*	*2.8*
	Burrowing owl	0.3	0.0	0.3	1.8	0.3	2.1	0.3	0.1	0.4	2.3	0.7	3.0
	Pacific Coast salmon EFH	0.6	0.2	0.8	0.0	0.0	0.0	0.7	0.1	0.8	0.0	0.0	0.0
	Green sturgeon—southern DPS	0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Steelhead—central California coast DPS	0.6	0.2	0.8	0.0	0.0	0.0	0.7	0.1	0.8	0.0	0.0	0.0
	Alameda song sparrow	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Saltmarsh common yellowthroat	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	White-tailed kite	0.1	0.0	0.1	0.4	0.3	0.7	0.1	0.0	0.1	0.4	0.3	0.7
	Western red bat	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.1	0.3	0.4
	Subtotal Wildlife Habitat (nonoverlapping)	*2.5*	*0.3*	*2.8*	*2.2*	*0.6*	*2.8*	*2.7*	*0.2*	2.9	*2.7*	*1.0*	*3.7*
Colma Creek	Pallid bat	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Townsend's big-eared bat	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Subtotal Wildlife Habitat (nonoverlapping)	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*

Location[1]	Species[2]	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
El Zanjon	California red-legged frog	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	Western pond turtle	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	San Francisco garter snake	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	Subtotal Wildlife Habitat (nonoverlapping)	*0.0*	*0.0*	*0.0*	*0.3*	*0.0*	*0.3*	*0.0*	*0.0*	*0.0*	*0.3*	*0.0*	*0.3*
All Locations	Bent-flowered fiddleneck	0.3	0.0	0.3	6.2	0.9	7.1	0.2	0.1	0.3	2.0	0.7	2.7
	Bristly sedge	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	California seablite	1.7	0.0	1.7	0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Coastal marsh milkvetch	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Congdon's tarplant	0.3	0.0	0.3	6.0	0.9	6.9	0.2	0.1	0.3	1.8	0.7	2.5
	Pappose tarplant	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Point Reyes bird's-beak	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Saline clover	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Total Plant Habitat (nonoverlapping)	2.1	0.0	**2.1**	6.5	1.1	**7.6**	2.0	0.1	**2.1**	2.1	0.7	**2.8**
	Burrowing owl	0.4	0.0	0.4	6.6	1.1	7.7	0.3	0.1	0.4	2.3	0.7	3.0
	Pacific Coast salmon EFH	1.2	0.3	1.5	0.0	0.0	0.0	0.7	0.1	0.8	0.0	0.0	0.0
	Steelhead—central California coast DPS	1.2	0.3	1.5	0.0	0.0	0.0	0.7	0.1	0.8	0.0	0.0	0.0
	Green sturgeon—southern DPS	1.2	0.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alameda song sparrow	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0

Location[1]	Species[2]	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
	Saltmarsh common yellowthroat	1.7	0.0	1.7	0.2	0.1	0.3	1.7	0.0	1.7	0.0	0.0	0.0
	White-tailed kite	0.1	0.0	0.1	0.5	0.3	0.8	0.1	0.0	0.1	0.4	0.3	0.7
	California red-legged frog	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	Western pond turtle	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	San Francisco garter snake	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3
	Pallid bat	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Townsend's big-eared bat	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Western red bat	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.1	0.3	0.4
	Total Wildlife Habitat (nonoverlapping)	3.4	0.3	**3.7**	7.4	1.4	**8.8**	3.0	0.2	**3.2**	3.0	1.0	**4.0**

Source: Authority 2020a
BCDC = San Francisco Bay Conservation and Development Commission
DPS = distinct population segment
EFH = essential fish habitat
Perm = permanent
Temp = temporary
[1] Only the BCDC locations with special-status species habitat overlapping the project footprint are included in the table. Actual impacts are not expected in Brisbane Lagoon, Colma Creek, or El Zanjon because there is no in-water work proposed at these locations. There would be a small amount of in-water work in Guadalupe Valley Creek under both alternatives. The other three BCDC locations overlap the project footprint but none of the overlapping land cover types are considered suitable habitat for special-status species.
[2] Nonoverlapping habitat acreage reflects the aggregate areal extent of all species taken together—in other words, the exterior perimeter of the overlapping boundaries of mapped habitat, so that land where habitat has been mapped for more than one species is present, it is only counted once.

Table 3.7-17 Impacts on Special-Status Plant Communities within BCDC Jurisdiction by Project Alternative (acres)

Location[1]	Community	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Visitacion Creek	Arroyo willow thickets	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Brisbane Lagoon/Guadalupe Valley Creek	Pickleweed mats	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Arroyo willow thickets	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.1	0.3	0.4
	Subtotal	*1.7*	*0.0*	*1.7*	*0.1*	*0.3*	*0.4*	*1.7*	*0.0*	*1.7*	*0.1*	*0.3*	*0.4*
All Locations	Pickleweed mats	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Arroyo willow thickets	0.0	0.0	0.0	0.2	0.3	0.5	0.0	0.0	0.0	0.1	0.3	0.4
	Total	1.7	0.0	**1.7**	0.2	0.3	**0.5**	1.7	0.0	**1.7**	0.1	0.3	**0.4**

Source: Authority 2020a
BCDC = San Francisco Bay Conservation and Development Commission
Perm = permanent
Temp = temporary
[1] Only the BCDC locations with land cover types potentially supporting special-status plant communities overlapping the project footprint are included in the table. Actual impacts on pickleweed mats in Brisbane Lagoon are not expected because there is no in-water work proposed. The other five BCDC locations overlap the project footprint but none of the overlapping land cover types have the potential to support special-status plant communities.

Table 3.7-18 Impacts on Aquatic Resources Considered Jurisdictional under Section 404 of the Clean Water Act and Regulated as Waters of the State that are within BCDC Jurisdiction by Project Alternative (acres)

Location[1]	Aquatic Resource	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Visitacion Creek	Constructed basin	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Constructed watercourse	0.6	0.1	0.7	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Freshwater emergent wetland	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Scrub/shrub wetland	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal	*0.6*	*0.1*	*0.7*	*0.4*	*0.2*	*0.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
	Natural watercourse	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
	Saline emergent wetland	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0

Location[1]	Aquatic Resource	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Brisbane Lagoon/Guadalupe Valley Creek	*Subtotal*	*1.7*	*0.2*	*1.9*	0.0	0.0	0.0	*1.8*	*0.1*	*1.9*	0.0	0.0	0.0
Oyster Point Channel	Constructed watercourse	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Subtotal	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*
Colma Creek	Constructed watercourse	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Subtotal	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*
All Locations	Constructed basin	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Constructed watercourse	0.8	0.1	0.9	0.1	0.0	0.1	0.2	0.0	0.2	0.0	0.0	0.0
	Freshwater emergent wetland	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Natural watercourse	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
	Saline emergent wetland	1.7	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0
	Scrub/shrub wetland	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Total	2.5	0.3	**2.8**	0.4	0.2	**0.6**	2.0	0.1	**2.1**	0.0	0.0	**0.0**

Source: Authority 2020a
BCDC = San Francisco Bay Conservation and Development Commission
Perm = permanent
Temp = temporary
[1] Only the BCDC locations with aquatic resources overlapping the project footprint are included in the table. Actual impacts are not expected in Brisbane Lagoon, Oyster Point Channel, or Colma Creek because there is no in-water work proposed at these locations. There would be a small amount of in-water work in Guadalupe Valley Creek under both alternatives. The other BCDC locations overlap the project footprint but do not contain aquatic resources.

Table 3.7-19 Impacts on Aquatic Resources Subject to Notification under California Fish and Game Code Section 1600 et seq. within BCDC Jurisdiction by Project Alternative (acres)

Location[1]	Aquatic or Other Related Resources	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Visitacion Creek	Constructed watercourse	0.6	0.1	0.7	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal	*0.6*	*0.1*	*0.7*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*

Location[1]	Aquatic or Other Related Resources	Alternative A						Alternative B					
		Bay			Shoreline Band			Bay			Shoreline Band		
		Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total	Perm	Temp	Total
Brisbane Lagoon/Guadalupe Valley Creek	Mixed riparian	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.1	0.3	0.4
	Natural watercourse	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
	Subtotal	*0.0*	*0.2*	*0.2*	*0.1*	*0.3*	*0.4*	*0.1*	*0.1*	*0.2*	*0.1*	*0.3*	*0.4*
Oyster Point Channel	Constructed watercourse	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Subtotal	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*
Colma Creek	Constructed watercourse	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
	Subtotal	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*
All Locations	Constructed watercourse	0.8	0.1	0.9	0.1	0.0	0.1	0.2	0.0	0.2	0.0	0.0	0.0
	Mixed riparian	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.1	0.3	0.4
	Natural watercourse	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
	Total	0.8	0.3	**1.1**	0.2	0.3	**0.5**	0.3	0.1	**0.4**	0.1	0.3	**0.4**

Source: Authority 2020a
BCDC = San Francisco Bay Conservation and Development Commission
Perm = permanent
Temp = temporary
[1] Only the BCDC locations with aquatic resources overlapping the project footprint are included in the table. Actual impacts are not expected in Brisbane Lagoon, Oyster Point Channel, or Colma Creek because there is no in-water work proposed at these locations. There would be a small amount of in-water work in Guadalupe Valley Creek under both alternatives. The other BCDC locations overlap the project footprint but do not contain aquatic resources.

3.7.9 Mitigation Measures

The mitigation measures described in this section would be implemented to address impacts on biological and aquatic resources. Except for BIO-MM#11, which would only apply to Alternative B for impacts on listed butterfly habitat at Icehouse Hill, mitigation measures would apply equally to both project alternatives.

BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan

Prior to any ground-disturbing activity, the project biologist would prepare a restoration and revegetation plan (RRP) to address temporary impacts resulting from ground-disturbing activities within areas that potentially support special-status species, wetlands, or other aquatic resources. Restoration activities may include, but not be limited to: grading landform contours to approximate pre-disturbance conditions, revegetating disturbed areas with native plant species, and using certified weed-free straw and mulch. The Authority would implement the RRP in all temporarily disturbed areas outside of the permanent right-of-way that potentially support special-status species, wetlands, or other aquatic resources.

Consistent with Section 1415 of the Fixing America's Surface Transportation Act restoration activities would provide habitat for native pollinators through plantings of native forbs and grasses. The project biologist would obtain a locally sourced native seed mix. The restoration success criteria would include limits on invasive species, as defined by the California Invasive Plant Council, to an increase no greater than 10 percent compared to the pre-disturbance condition, or to a level determined through a comparison with an appropriate reference site consisting of similar natural communities and management regimes. The RRP would outline at a minimum:

- Procedures for documenting pre-construction conditions for restoration purposes
- Sources of plant materials and methods of propagation
- Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas
- Specification of success criteria for re-established plant communities
- Specification of the remedial measures to be taken if success criteria are not met
- Methods and requirements for monitoring restoration/replacement efforts, which may involve a combination of qualitative and quantitative data gathering
- Maintenance, monitoring, and reporting schedules, including an annual report due to the Authority by January 31st of the following year

The RRP would be submitted to the Authority and regulatory agencies, as defined in the conditions of regulatory authorizations, for review and approval.

BIO-MM#2: Prepare and Implement a Weed Control Plan

Prior to any ground-disturbing activity during the construction phase, the project biologist would develop a weed control plan (WCP), subject to review and approval by the Authority. The purpose of the WCP is to establish approaches to minimize and avoid the spread of invasive weeds during ground-disturbing activities during construction and O&M.

The WCP would include, at a minimum, the following:

- A requirement to delineate ESAs in the field prior to weed control activities
- A schedule for weed surveys to be conducted in coordination with the BRMP
- Success criteria for invasive weed control. The success criteria would be linked to the BRMP standards for on-site work during ground-disturbing activities. In particular, the criteria would establish limits on the introduction and spread of invasive species, as defined by the California Invasive Plant Council, to less than or equal to the pre-disturbance conditions in

the area temporarily affected by ground-disturbing activities. If invasive species cover is found to exceed pre-disturbance conditions by greater than 10 percent or is 10 percent greater than levels at a similar, nearby reference site, a control effort would be implemented. If the target, or other success criteria identified in the WCP, has not been met by the end of the WCP monitoring and implementation period, the Authority would continue the monitoring and control efforts, and remedial actions would be identified and implemented until the success criteria are met.

- Provisions for consistency between the WCP and the RRP, including verification that the RRP includes measures to minimize the risk of the spread or establishment of invasive species and reflects the same revegetation performance standards as the WCP
- Identification of weed control treatments, including permitted herbicides and manual and mechanical removal methods
- Timeframes for weed control treatment for each plant species
- Identification of fire prevention measures

BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones

Prior to any ground-disturbing activity in a work area, the project biologist would use flagging to mark ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The project biologist would also direct the installation of wildlife exclusion fencing (WEF) to prevent special-status wildlife species from entering work areas. The WEF would have exit doors to allow animals that may be inside an enclosed area to leave the area. The project biologist would also direct the installation of construction exclusionary fencing at the boundary of the work area, as appropriate, to avoid and minimize impacts on special-status species or aquatic resources outside of the work area during the construction period. The ESAs, WEF, and exclusionary fencing would be delineated by the project biologist based on the results of habitat mapping or modeling and any pre-construction surveys, and in coordination with the Authority. The ESA, WEF, and exclusionary fencing would be regularly inspected and maintained by the project biologist.

The ESA, WEF, and exclusionary fencing locations would be identified and depicted on an exclusion fencing exhibit. The purpose of the ESAs and WEF would be explained at WEAP training and the locations of the ESA and WEF areas would be noted during worker tailgate sessions.

BIO-MM#4: Conduct Monitoring of Construction Activities

During any initial ground-disturbing activity, the project biologist would be present in the work area to verify compliance with avoidance and minimization measures, to establish ESAs, and install WEF and construction exclusion fencing.

BIO-MM#5: Establish and Implement a Compliance Reporting Program

The project biologist would prepare monthly and annual reports documenting compliance with all IAMFs, mitigation measures, and requirements set forth in regulatory agency authorizations. The Authority would review and approve all compliance reports prior to submittal to the regulatory agencies. Reports would be prepared in compliance with the content requirements outlined in the regulatory agency authorizations.

Pre-activity survey reports would be submitted within 15 days of completing the surveys and would include:

- Location(s) of where pre-activity surveys were completed, including latitude and longitude, and Assessor Parcel Number
- Written description of the surveyed area. A figure of each surveyed location would be provided that depicts the surveyed area and survey buffers over an aerial image
- Date, time, and weather conditions observed at each location

- Personnel who conducted the pre-activity surveys
- Verification of the accuracy of the Authority's habitat mapping at each location, provided in writing and on a figure
- Observations made during the survey, including the type and locations (written and GIS) of any sensitive resources detected
- Identification of relevant measures from the BRMP to be implemented as a result of the survey observations

Daily compliance reports would be submitted to the Authority via the Environmental Mitigation Management and Assessment system (EMMA) within 24 hours of each monitoring day. Noncompliance events would be reported to the Authority the day of the occurrence. Daily compliance reports would include:

- Date, time, and weather conditions observed at each location where monitoring occurred
- Personnel who conducted compliance monitoring
- Project activities monitored, including construction equipment in use
- Compliance conditions implemented successfully
- Noncompliance events observed

Daily compliance reports would also be included in the monthly compliance reports, which would be submitted to the Authority by the 10th of each month and would include:

- Summary of construction activities and locations during the reporting month, including any noncompliance events and their resolution, work stoppages, and take of threatened or endangered species
- Summary of anticipated project activities and work areas for the upcoming month
- Tracking of impacts on suitable habitats for each threatened and endangered species identified in USFWS and CDFW authorizations, including:
  - An accounting of the number of acres of habitats for which we provide compensatory mitigation that has been disturbed during the reporting month
  - An accounting of the cumulative total number of acres of threatened and endangered species habitat that has been disturbed during the project period
- Up-to-date GIS layers, associated metadata, and photodocumentation used to track acreages disturbed
- Copies of all pre-activity survey reports, daily compliance reports, and noncompliance/work stoppage reports for the reporting month

Annual reports would be submitted to the Authority by the 20th of January and would include:

- Summary of all monthly compliance reports for the reporting year
- A general description of the status of the project, including projected completion dates
- All available information about project-related incidental take of threatened and endangered species
- Information about other project impacts on the threatened and endangered species
- A summary of findings from pre-construction surveys (e.g., number of times a threatened or endangered species or a den, burrow, or nest was encountered, location, if avoidance was achieved, if not, what other measures were implemented)
- Written description of disturbances to threatened and endangered species habitat within work areas, both for the preceding 12 months and in total since issuance of regulatory authorizations by USFWS, NMFS, and CDFW, and updated maps of all land disturbances

and updated maps of identified habitat features suitable for threatened and endangered species within the project area.

In addition to the compliance reporting requirements, the following items would be provided for compliance documentation purposes:

- If agency personnel visit the construction footprint in accordance with BIO-IAMF#2, the project biologist would prepare a memorandum within 1 day of the visit that memorializes the issues raised during the field meeting. This memorandum would be submitted to the Authority via EMMA. Any issues regarding regulatory compliance raised by agency personnel would be reported to the Authority and the contractor.
- Compliance reporting would be submitted to the Authority via EMMA in accordance with the report schedule. The project biologist would prepare and submit compliance reports that document the following:
  - Implementation and performance of the RRP described in BIO-MM#1
  - Summary of progress made regarding the implementation of the WCP described in BIO-MM#2
  - Compliance with BIO-MM#3
  - Compliance with BIO-IAMF#6
  - Compliance with BIO-IAMF#7
  - Compliance with BIO-IAMF#8
  - Compliance with BIO-IAMF#9
  - Compliance with BIO-IAMF#10
  - Compliance with BIO-IAMF#11
  - Compliance with BIO-IAMF#12
  - BMP field manual implementation and any recommended changes to construction site housekeeping practices outlined in BIO-IAMF#11
- Work stoppages and measures taken under BIO-MM#12: Work Stoppage, would be documented in a memorandum prepared by the project biologist and submitted to the Authority within 2 business days of the work stoppage.

BIO-MM#6: Conduct Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities

Prior to any ground-disturbing activity, the project biologist would conduct presence/absence botanical surveys for special-status plant species and special-status plant communities in all potentially suitable habitats within a work area. The surveys would be consistent with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018c) and *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000). The project biologist would flag and record in GIS the locations of any observed special-status plant species and special-status plant communities.

BIO-MM#7: Prepare and Implement Plan for Salvage, Relocation, or Propagation of Special-Status Plant Species

Prior to any ground-disturbing activity, the project biologist would collect seeds and plant materials and stockpile and segregate the top 4 inches of topsoil from locations within the work area where species listed as threatened or endangered under the FESA, threatened, endangered, or candidate for listing under CESA, state-designated “Rare” species, and CRPR 1B and 2 species were observed during surveys for use on off-site locations. Suitable sites to receive

salvaged material include Authority mitigation sites, refuges, reserves, federal or state lands, and public/private mitigation banks.

If relocation or propagation is required by authorizations issued under the FESA, CESA, or both, the project biologist would prepare a plant species salvage plan to address monitoring, salvage, relocation, or seed banking of federal or state-listed plant species. The plan would include provisions that address the techniques, locations, and procedures required for the collection, storage, and relocation of seed or plant material; collection, stockpiling, and redistribution of topsoil and associated seed. The plan would also include requirements related to outcomes such as percent absolute cover of highly invasive species, as defined by the California Invasive Plant Council (less than documented baseline conditions), maintenance, monitoring, implementation, and the annual reporting. The plan would reflect conditions required under regulatory authorizations issued for federal or state-listed species. The project biologist would submit the plan to the Authority for review and approval.

BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat

The Authority would prepare a compensatory mitigation plan (CMP) that sets out the compensatory mitigation that would be provided to offset permanent and temporary impacts on federal and state-listed species and their habitat, fish and wildlife resources regulated under Section 1600 et seq. of the Cal. Fish and Game Code, and certain other special-status species. The CMP would include the following:

- A description of the species and habitat types for which compensatory mitigation is being provided
- A description of the methods used to identify and evaluate mitigation options. Mitigation options would include one or more of the following:
  - Purchase of mitigation credits from an agency-approved mitigation bank
  - Protection of habitat through acquisition of fee-title or conservation easement and funding for long-term management of the habitat. Title to lands acquired in fee would be transferred to CDFW and conservation easements would be held by an entity approved in writing by the applicable regulatory agency. In circumstances where the Authority protects habitat through a conservation easement, the terms of the conservation easement would be subject to approval of the applicable regulatory agencies, and the conservation easement would identify applicable regulatory agencies as third party beneficiaries with a right of access to the easement areas.
  - Payment to an existing in-lieu fee program
- A summary of the estimated direct permanent and temporary impacts on species and species habitat
- A description of the process that would be used to confirm impacts. Actual impacts on species and habitat could differ from estimates. Should this occur, adjustments would be made to the compensatory mitigation that would be provided. Adjustments to impact estimates and compensatory mitigation would occur in the following circumstances:
  - Impacts on species (typically measured as habitat loss) are reduced or increased as a result of changes in project design
  - Pre-construction site assessments indicate that habitat features are absent (e.g., because of errors in land cover mapping or land cover conversion)
  - The habitat is determined to be unoccupied based on negative species surveys
  - Impacts initially categorized as permanent qualify as temporary impacts
- An overview of the strategy for mitigating impacts on species. The overview would include the ratios to be applied to determine mitigation levels and the resulting mitigation totals.

- A description of habitat restoration or enhancement projects, if any, that would contribute to compensatory mitigation commitments.
- A description of the success criteria that would be used to evaluate the performance of habitat restoration or enhancement projects, and a description of the types of monitoring that would be used to verify that such criteria have been met.
- A description of the management actions that would be used to maintain the habitat on the mitigation sites, and the funding mechanisms for long-term management.
- A description of adaptive management approaches, if applicable, that would be used in the management of species habitat.
- A description of financial assurances that would be provided to demonstrate that the funding to implement mitigation is assured.

Secondary Impacts of Implementing Compensatory Mitigation

Some of the activities and actions that would be implemented under BIO-MM#8, especially those involving ground disturbance, could result in impacts similar to those described in Section 3.7.8. Specifically, direct and indirect impacts on special-status plant and wildlife species, special-status plant communities, and aquatic resources could occur where such resources are present on the mitigation sites. BIO-MM#9: Implement Measures to Minimize Impacts during Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites, which requires a site assessment and appropriate regulatory authorizations, would be implemented at compensatory mitigation sites to reduce or avoid impacts on these resources.

Restoration and enhancement of aquatic resources may result in the permanent conversion of grassland to wetland or riparian habitat. While such activities would be beneficial for special-status riparian species (for example), they would result in a small but measurable loss of upland habitat that could support nesting and foraging by burrowing owl and foraging by white-tailed kite.

The CMP would be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, Cal. Fish and Game Code Section 1600 et seq. Streambed Alteration Agreement, and FESA and CESA as they apply to their jurisdiction and resources on-site. Potential impacts on site-specific hydrology and the downstream resources would be evaluated as a result of implementation of the restoration-related activity. Site-specific BMPs and a stormwater pollution prevention plan would be implemented as appropriate.

Environmental impacts on other resource categories (beyond biological resources) could result from implementing restoration activities at mitigation sites. These impacts would result from transportation to and from the mitigation sites and from ground-disturbing activities on these sites to create habitat. Table 3.7-20 shows discussions of the different resource categories and the potential for impacts from the off-site restoration activities.

Table 3.7-20 Potential Nonbiological Impacts of Compensatory Mitigation Implementation

Resource Type	Potential for Impacts
Transportation	No. During initial restoration of habitat areas, earthmoving equipment and other construction vehicles would be transported to the sites. These relatively few trips would not be anticipated to cause traffic congestion near or en route to and from the sites. After restoration, there would be intermittent transportation to and from the mitigation sites. These largely single-vehicle trips would be intermittent and would not be anticipated to cause traffic congestion near or en route to and from the sites.
Air quality and global climate change	Yes. Exhaust from construction equipment and vehicles during management activities would contribute to emissions of criteria pollutants, TACs, DPM, and GHGs. Earthmoving, grading, and vegetation removal activities on the mitigation sites would result in fugitive dust during construction. Habitat restoration and revegetation would be undertaken on off-site mitigation sites in rural areas, and potential receptors sensitive to localized air impacts are anticipated to be distant from the sites. The establishment and management of these mitigation sites would not involve any materials or activities that may subject receptors to objectionable odors. Vehicle trips and the use of mowers and other machinery associated with the establishment and management of the mitigation sites would contribute to emissions of criteria pollutants, TACs, DPM, and GHGs. However, these activities would be temporary and short-term during construction, and intermittent afterward.
Noise and vibration	No. Restoration activities may result in noise and vibration impacts from vehicles, heavy equipment, mowers, and other small machinery. These activities would occur in a limited capacity and for a short duration in comparison with the overall construction noise associated with the project as a whole. Because these sites are in a rural environment, sensitive receptors are generally distant; consequently, human receptors would not be exposed to the generation of noise levels in excess of established standards or local noise ordinances.
Electromagnetic fields and electromagnetic interference	No. No large electrical equipment would be installed or removed and no ongoing radio or electrical transmissions would be required at the mitigation sites. Therefore, no electromagnetic fields would be generated that could cause electromagnetic interference.
Public utilities and energy	No. No existing energy infrastructure would be affected or required for the mitigation sites. The removal of any existing structures on the mitigation sites would generate small quantities of solid waste. These quantities are expected to be relatively small in the context of the total solid waste generated for construction of the alternatives, and local landfills have adequate capacity to accept any waste materials that would be hauled from the sites. Mitigation sites would not require construction or expansion of wastewater treatment facilities or stormwater drainage facilities.
Hydrology and water resources	No. Restoration activities at mitigation sites could result in channel/basin excavation, wetland and upland habitat enhancement and revegetation (hydroseed/plantings), channel enhancement and stabilization (installation of large woody debris, excavation of pools), and installation of erosion measures. Construction BMPs would be used to minimize or avoid discharge of sediment from construction activities to waterways. Activities at mitigation sites would not include actions that would deplete groundwater supplies or interfere with groundwater recharge, such as creating an increase in impervious surfaces. Temporary construction activities associated with mitigation measures would not alter drainage patterns to a degree that would result in flooding or exceed the capacity of stormwater drainage facilities.

Resource Type	Potential for Impacts
Geology, soils, seismicity, and paleontological resources	No. Restoration of the mitigation sites would not expose people or structures to potential impacts from the ruptures of an earthquake, strong seismic ground shaking, seismic-related ground failure, or landslides because no structures are proposed as part of the mitigation. Excavation and vegetation removal could result in soil erosion. However, erosion control measures would be implemented that would prevent impacts from soil erosion and landslides. No structures are proposed that could be affected by unstable soils, lateral spreading, subsidence, liquefaction, or collapse. Ground-disturbing activities associated with the restoration of mitigation sites could result in impacts on known and previously unknown paleontological deposits. Project features include effective measures to engage a paleontological resource specialist for direct monitoring during construction and provisions to halt construction if paleontological resources are found. These measures would avoid and reduce the potential loss of valuable paleontological resources.
Hazardous materials and wastes	No. The establishment and management of off-site mitigation lands, including operation of heavy equipment and use of herbicides, could result in a temporary increase in the transportation, use, and storage of hazardous materials. Demolition of existing structures is unlikely; however, if needed, such activities may result in a temporary increase in waste disposal. However, structures likely to be removed would be small and are not anticipated to contain large amounts of hazardous materials. Facilities and construction sites that use, store, generate, or dispose of hazardous materials or wastes and hazardous material/waste transporters are required through stringent regulations to maintain plans for warning, notification, evacuation, and site security. Routine transport, use, storage, and disposal of hazardous materials are governed by numerous laws, regulations, and ordinances, thereby reducing the risk of accidental spills or releases.
Safety and security	No. These mitigation sites would not be open to the public and there would be no safety and security issues related to their establishment and management.
Socioeconomics and communities	No. Use of these off-site mitigation sites would not divide an established community or displace housing or businesses. These sites do not presently contain public facilities that would require relocation and they would not affect the economy through changes in property tax or sales tax revenues.
Land use and development	No. These mitigation sites would not conflict with any applicable land use plans, policies, or regulations. As these sites are presently agricultural or range land, their protection from development to use for biological resource mitigation would not create new incompatible land uses.
Parks, recreation, and open space	No. No impacts on parks and recreation would occur because these mitigation sites would not preclude the use of parks or recreation areas, acquire any current public open-space areas, create a barrier to the access of any park or recreation area, result in acquisition of a recreation resource, increase the use of existing neighborhood and regional parks, or result in the alteration of existing recreational facilities.
Aesthetics and visual quality	No. No structures are needed or proposed for the mitigation sites and no lighting would be used. Therefore, none of the mitigation activities would block views or be sources of nighttime glare or light.

Resource Type	Potential for Impacts
Cultural resources	Yes, for archaeological resources, if such resources were demolished or altered. Ground-disturbing activities associated with the restoration of mitigation sites could result in impacts on known and previously unknown archaeological deposits. Such resources may be eligible for listing in the CRHR or the NRHP. The eligibility of historic architectural resources on these mitigation sites has not yet been evaluated and would take place prior to construction. Existing structures could be found to be eligible for listing the CRHR or the NRHP. Existing project features and legal requirements would prevent the destruction or unauthorized alteration of any such architectural resources.

BMP = best management practice
CRHR = California Register of Historical Resources
DPM = diesel particulate matter
GHG = greenhouse gas
NRHP = National Register of Historic Places
TAC = toxic air contaminant

In conclusion, there are no new unique impacts associated with the establishment and management of compensatory mitigation lands that have not already been evaluated and addressed in other sections of this Draft EIR/EIS.

BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites

Prior to ground-disturbing activities associated with habitat restoration, enhancement, or creation actions at a mitigation site, the Authority would conduct a site assessment of the work area to identify biological and aquatic resources, including plant communities, land cover types, and the distribution of special-status plants and wildlife.

Based on the results of the site assessment, the Authority would obtain any necessary regulatory authorizations prior to conducting habitat restoration, enhancement, or creation activities, including authorization under the FESA or CESA, Cal. Fish and Game Code Section 1600 et seq., the CWA, and the Porter-Cologne Act.

Restoration, enhancement, or creation of aquatic resources may result in the permanent conversion of grassland to wetland or riparian habitat. While such activities would be beneficial for riparian, and aquatic-breeding species, they would result in a small but measurable loss of upland habitat for other species (e.g., foraging habitat for tricolored blackbird, nonbreeding habitat for California red-legged frog). Permanent impacts on grassland habitat from aquatic resource restoration, enhancement, and creation would be mitigated at a minimum ratio of 1:1 (acres preserved, enhanced, or restored: acres affected).

BIO-MM#10: Compensate for Impacts on Listed Plant Species

The Authority would provide compensatory mitigation for direct impacts on federally and state-listed plant species based on the number of acres of plant habitat directly affected. Such mitigation would include the following measures:

- Compensatory mitigation would be provided at a 1:1 ratio to offset direct impacts on federally listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under the FESA.
- Compensatory mitigation would be provided at a 1:1 ratio to offset direct impacts on state-listed plant species habitat, unless a higher ratio is required pursuant to regulatory authorizations issued under CESA.
- Compensatory mitigation would be provided using one or more of the methods described in BIO-MM#8

BIO-MM#11: Compensate for Impacts on Listed Butterfly Habitat

The Authority would provide compensatory mitigation at a 5:1 ratio, unless a higher ratio is required pursuant to regulatory authorizations issued under the FESA, to offset direct impacts on habitat for Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly. Compensatory mitigation could include one or more of the following:

- Purchase of mitigation credits from an agency-approved mitigation bank
- Protection of habitat through acquisition of fee-title or conservation easement and funding for long-term management of the habitat. Conservation easements would be held by an entity approved in writing by the applicable regulatory agency. In circumstances where the Authority protects habitat through a conservation easement, the terms of the conservation easement would be subject to approval of the applicable regulatory agencies, and the conservation easement would identify applicable regulatory agencies as third party beneficiaries with a right of access to the easement areas.
- Payment to an existing in-lieu fee program
- Restoration or enhancement of preserved habitat

Mitigation for listed butterflies would prioritize acquisition of suitable habitat near San Bruno Mountain that is currently under private ownership in coordination with local conservation efforts. Compensatory mitigation areas and methods selected would include appropriate measures to guide habitat management (e.g., grazing, weed control), monitor population size, and identify methods to establish or reestablish populations, if necessary.

Appropriate grazing management would verify that habitats are neither overgrazed nor overgrown. Weeding, biological control, mowing, herbicides, and fire would also be considered as possible tools to control nonnative plant species.

Monitoring of population size would be conducted in accordance with existing methods on San Bruno Mountain and would identify whether habitat management activities are working as intended (i.e., maintain or increase the number of butterflies)

Several factors are important in deciding which areas to protect: (1) habitat size and quality, including habitat diversity; (2) location in relation to other habitat patches and to core populations; (3) presence, current or historic, of Bay checkerspots, callippe silverspots, and Mission blues; and (4) ease and cost of protection. Habitat protection should include buffer zones as necessary. Listed butterfly habitat areas considered for mitigation can be ranked in approximate order as follows:

- Areas identified by San Bruno Mountain Watch (2019):
  - Upper Brisbane Acres—110 acres of undeveloped land above Brisbane with native grassland and wildflowers
  - Brisbane Quarry—140 acres of aggregate quarry with high-quality callippe silverspot habitat around its periphery
  - Callippe Hill and surrounding lands—75 acres of undeveloped land east of San Bruno Mountain with habitat for callippe silverspot and other listed butterflies
  - Sign Hill Park—44.7 acres of undeveloped land on Sign Hill north of South San Francisco that provides habitat for callippe silverspot and Mission blue butterfly
- Other current or historic localities or suitable habitat areas, generally larger than 2.5 acres, within the historic range of the butterfly, identified for their habitat value, function as dispersal corridors, proximity to other habitat, or other biological value

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#12: Work Stoppage

In the event that any special-status wildlife species is found in a work area, the project biologist would have the authority to halt work to prevent the death or injury to the species. Any such work stoppage would be limited to the area necessary to protect the species and work may be resumed once the project biologist determines that the individuals of the species have moved out of harm's way or the project biologist has relocated them out of the work area. Relocation areas for listed reptiles or amphibians would be a minimum of 500 feet from the work area boundary and would not include staging areas or roads.

Any such work stoppages and the measures taken to facilitate the removal of the species, if any, would be documented in a memorandum prepared by the project biologist and submitted to the Authority within 2 business days of the work stoppage.

BIO-MM#13: Restore Temporary Riparian Habitat Impacts

Within 90 days of completing construction in a work area, the project biologist would direct the revegetation of any riparian areas temporarily disturbed as a result of the construction activities, using appropriate native plants and seed mixes. Native plants and seed mixes would be obtained from stock originating from areas within the local watershed, to the extent feasible. The project biologist would monitor restoration activities consistent with provisions in the RRP (BIO-MM#1).

BIO-MM#14: Prepare Plan for Dewatering and Water Diversions

Prior to initiating any construction activity that occurs within open or flowing water, or streamside activities, the Authority would prepare a dewatering plan, which would be subject to review and approval by the applicable regulatory agencies. The plan would incorporate measures to minimize turbidity and siltation. The project biologist would monitor the dewatering or water diversion sites, including collection of water quality data, as applicable. Prior to the dewatering or diverting of water from a site, the project biologist would conduct pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody. In the event that special-status species are detected during pre-activity surveys, the project biologist would relocate the species (unless the species is fully protected under state law), consistent with any regulatory authorizations applicable to the species.

BIO-MM#15: Prepare and Implement a Cofferdam Fish Rescue Plan

If cofferdam construction or stream dewatering is required, the Authority would develop a fish rescue plan. The fish rescue plan would outline the methods for removing and relocating fish to adjacent waterways and would be implemented by a qualified fisheries biologist. The plan would also include methods for minimizing the risk of stress and mortality from capture and handling and adverse impacts on listed fish species (if present) associated with fish stranding. NMFS and CDFW would be notified at least 48 hours prior to the start of fish rescue efforts, and a report of the species, number, and size of fish collected would be submitted to CDFW and NMFS within 30 days of the fish rescue. The area to be dewatered would first be seined and then electrofished to remove remaining fish. The agency-approved biologist must have appropriate training and experience in electrofishing techniques and all electrofishing must be conducted according to the NMFS *Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act* (NMFS 2000). A fisheries biologist would be on-site during initial dewatering to confirm compliance with the fish rescue plan. In streams bearing anadromous fish, in-water construction would avoid migration periods, and dewatering (installation of cofferdams) would begin no earlier than June 1 and would be completed (i.e., cofferdams removed) by October 15.

If a cofferdam is required, the Authority would implement the following measures, unless other methods are approved by NMFS:

- Build cofferdams 30 to 50 feet upstream and downstream of the construction location
- Minimize the cofferdam footprint to the minimum extent possible
- Pump water from the upstream location to the downstream location through a flexible corrugated pipe
- Match pumping volumes and velocities to upstream flows and maintain pumping volumes and velocities to match changes in upstream flows
- Install a T-pipe and riprap apron at the discharge location to disperse outflow and minimize erosion
- Build cofferdams and riprap aprons over visqueen or similar material to facilitate cleanup and removal of materials
- Remove all construction materials, including sandbags and rock, and restore the area to pre-construction contours

The agency-approved biologist would continuously monitor the placement of cofferdams and dewatering of isolated areas for the purpose of removing and relocating any listed species that were not detected or could not be removed and relocated prior to construction. The agency-approved biologist would be present at the work site until all listed species have been removed and relocated.

BIO-MM#16: Prepare and Implement an Underwater Sound Control Plan

The Authority would develop an underwater sound control plan to avoid and minimize potential adverse impacts from in-water pile-driving activities on federally listed salmonid species. The underwater sound control plan would include the following:

- Measures to minimize underwater sound pressure levels to below the following thresholds for peak pressure and accumulated sound exposure levels:
  - Peak pressure = 206 decibels
  - Accumulated sound exposure levels = 183 decibels
- Underwater sound monitoring during pile-driving activities
- Oversight of all monitoring and construction activities by an agency-approved biological monitor to enforce full compliance with the underwater sound control plan
- Use of vibratory or non-impact methods (i.e., hydraulic) to drive sheet piling that results in sound pressures below threshold levels to the extent feasible
- Restrictions on pile driving to daytime hours

Initial drives would be low energy with reduced impact frequency, gradually increasing in energy and frequency until necessary full force and frequency are achieved.

BIO-MM#17: Provide Compensatory Mitigation for Permanent Impacts on Steelhead Habitat, Green Sturgeon Habitat, and Essential Fish Habitat

The Authority would provide compensatory mitigation for permanent impacts on habitat for CCC steelhead, green sturgeon and EFH that is commensurate with the type (rearing, migratory, or critical habitat) and amount of habitat lost as follows:

- All rearing and migratory aquatic and riparian habitat within critical habitat would be protected and restored or protected and enhanced at a minimum of 2:1 (protected:affected) or as specified in authorizations issued under the FESA

- All other rearing and migratory aquatic and riparian habitat would be protected and restored or protected and enhanced at a minimum of 1:1 (protected:affected) or as specified in authorizations issued under the FESA

The Authority would purchase riparian and aquatic habitat credits at an NMFS-approved anadromous fish conservation bank, or another NMFS-approved conservation option, for the areal extent of riparian and suitable aquatic habitat affected by the project. In the event the Authority chooses not to utilize existing mitigation banks, it would propose other approaches to the applicable regulatory agencies for consideration. Any such approaches would take into account the following:

- Riparian habitat conditions that are consistent with the existing flow regime and maintain and improve habitat characteristics (e.g., shade, formation and maintenance of refugia)
- Local and regional conservation goals
- Long-term access for monitoring and maintenance
- Upstream and downstream conditions

Conservation options developed to offset impacts to steelhead and green sturgeon habitat and EFH would be considered in the development of the Compensatory Mitigation Plan (BIO-MM#8), Restoration and Revegetation Plan (BIO-MM#1) and Flood Protection Plan (HYD-IAMF#2).

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#18: Conduct Pre-Construction Surveys for Special-Status Reptile and Amphibian Species

Prior to any ground-disturbing activities in suitable habitat for special-status reptile and amphibian species, the project biologist would conduct a pre-construction survey of the work area no more than 30 days before the start of ground-disturbing activities in the work area. The results of the pre-construction survey would be used to guide the placement of ESAs or conduct species relocation. The following species are subject to this measure:

- California red-legged frog
- San Francisco garter snake
- Western pond turtle

BIO-MM#19: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species

The project biologist would monitor all initial ground-disturbing activities that occur within suitable habitat for special-status reptiles and amphibians, and would conduct clearance surveys of suitable habitat in the work area on a daily basis. If a special-status reptile or amphibian is observed, the project biologist would identify actions, to the extent feasible, sufficient to avoid impacts on the species and to allow it to leave the area of its own volition. Such actions may include establishing a temporary ESA in the area where a special-status reptile or amphibian has been observed and delineating a 50-foot no-work buffer around the ESA. In circumstances where a no-work buffer is not feasible the project biologist would relocate any of the species observed from the work area. For federal or state-listed species, relocations would be undertaken in accordance with regulatory authorizations issued under the FESA, CESA, or both. Fully protected species would not be relocated and would instead be allowed to leave the work area of their own volition.

BIO-MM#20: Install San Francisco Garter Snake and California Red-Legged Frog Exclusion Fencing at SFO West-of-Bayshore Property

Prior to any ground-disturbing activity adjacent to or within San Francisco garter snake and California red-legged frog habitat at the SFO West-of-Bayshore property (between MP 11.4 and

13.4), the contractor, under the direction of the project biologist, would install temporary WEF along the boundary of the work area or would implement similar measures as otherwise required pursuant to regulatory authorizations issued under the FESA. WEF must be installed for a 2-week period prior to the initiation of ground-disturbing activity and trenched into the soil at least 6 inches deep, with the soil compacted against both sides of the fence for its entire length to prevent San Francisco garter snakes and California red-legged frogs from passing under the fence. The WEF must have intermittent exit points. The project biologist would monitor construction activities inside the WEF on a full-time basis during the peak activity period for San Francisco garter snakes and California red-legged frogs (March to July [SFO 2014]) and would conduct daily inspections of the WEF prior to and during any construction activities inside the WEF from August to February. Vehicle speeds inside WEF work areas would be limited to 5 mph. Any needed repairs to the WEF will be made within 24 hours. During monitoring and daily inspections, the project biologist would check for San Francisco garter snakes and California red-legged frogs under vehicles and equipment that have been inactive for periods of eight hours or more. Temporary WEF would be removed after all ground disturbance and equipment use (including vehicles) for the activity is completed.

BIO-MM#21: Compensate for Impacts on San Francisco Garter Snake and California Red-Legged Frog Habitat

The Authority would provide compensatory mitigation to offset the loss of modeled San Francisco garter snake and California red-legged frog habitat. Compensatory mitigation would be provided in the following ratios, unless higher ratios are required through regulatory authorizations issued under the FESA:

- 2:1 for permanent impacts on aquatic habitat
- 1:1 for permanent impacts on refugia habitat

Compensatory mitigation would be provided using one or more of the methods described in BIO-MM#8.

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#22: Conduct Surveys for Burrowing Owls

No more than 30 days but no less than 14 days prior to any ground-disturbing activity in burrowing owl habitat, the project biologist would conduct pre-construction surveys for burrowing owl within suitable habitat in the work area and extending 250 feet from the boundary of the work area, where access is available. Surveys would be conducted in accordance with the SCVHP's condition of approval for covered activities in burrowing owl habitat (County of Santa Clara et al. 2012: page 6-62). This methodology is consistent with the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012), but it may be updated based on future changes by the SCVHA.

BIO-MM#23: Implement Avoidance and Minimization Measures for Burrowing Owls

Occupied burrowing owl burrows found during pre-construction surveys would be avoided in accordance with the SCVHP's condition of approval for covered activities in burrowing owl habitat (County of Santa Clara et al. 2012: page 6-62). To the extent feasible, the project biologist would establish 250-foot no-work buffers around occupied burrowing owl burrows in the work area. An occupied burrow is defined as any burrow at which (1) an adult owl is observed on two or more pre-construction surveys, or (2) a pair of adult owls is observed on one or more pre-construction surveys. Construction may proceed outside the 250-foot nondisturbance zone. Construction may proceed inside the 250-foot nondisturbance no-work buffer zone during the breeding season if the season-specific criteria (nesting season: February 1 to August 31; non-nesting season: September 1 to January 31) described in the SCVHP are met.

BIO-MM#24: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat

To compensate for permanent impacts on occupied burrowing owl breeding habitat, the Authority would provide compensatory mitigation at a minimum 1:1 ratio for occupied breeding and foraging habitat. Lands proposed as compensatory mitigation would meet one of the following criteria:

- Support at least two breeding adult owls for every breeding adult owl displaced by construction of the project
- Support at least 1 acre of burrowing owl breeding habitat for every acre of habitat affected (i.e., 1:1 mitigation ratio). For the purposes of this measure, burrowing owl breeding habitat is defined as any land cover type with all of the following attributes:
  - Open terrain with well-drained soils
  - Short, sparse vegetation with few shrubs and no trees
  - Underground burrows or burrow surrogates (e.g., debris piles, culverts, pipes) for nesting and shelter from predators or weather. Burrows in earthen levees, berms, or canal banks within or along the margins of agricultural fields can be counted as compensatory breeding habitat as long as adjacent fields or pastures are suitable for foraging.
  - Abundant and accessible prey (e.g., arthropods, small rodents, amphibians, lizards)

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#25: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds

Prior to any ground-disturbing activity, including vegetation removal, scheduled to occur during the bird breeding season (February 1 to September 1), the project biologist would conduct visual pre-construction surveys within the work area for nesting birds and active nests (nests with eggs or young) of native bird species listed under the MBTA, the Cal. Fish and Game Code, or both.

In the event that active bird nests are observed during the pre-construction survey, the project biologist would delineate no-work buffers. No-work buffers would be set at a distance of 75 feet. No-work buffers would be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival or the project biologist determines that the nest has been abandoned. In circumstances where it is not feasible to maintain the standard no-work buffer, the no-work buffer may be reduced, provided that the project biologist monitors the active nest during the construction activity so that the nesting birds do not become agitated.

BIO-MM#26: Conduct Pre-Construction Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies

Prior to initiation of construction at any location within 300 feet of suitable nesting habitat, a CDFW-approved biologist with experience surveying for and observing tricolored blackbird would conduct pre-construction surveys to establish use of nesting habitat by tricolored blackbird colonies. Surveys would be conducted in suitable habitat within 300 feet of proposed construction areas, where access allows, during the nesting season (generally March 15 to July 31).

If construction is initiated near suitable habitat during the nesting season, three surveys would be conducted within 15 days prior to construction, with one of the surveys within 5 days prior to the start of construction. If active tricolored blackbird nesting colonies are identified, construction activities must avoid the nesting colonies and associated habitat during the breeding season (generally March 15 to July 31) to the extent practicable within 300 feet of the colony, consistent with the CDFW's *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015* (CDFW 2015b). This minimum buffer may be

reduced in areas with dense forest, buildings, or other habitat features between the construction activities and the active nest colony, or where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance as determined by a CDFW-approved biologist experienced with tricolored blackbird. If tricolored blackbirds colonize habitat adjacent to construction after construction has been initiated, the Authority, or a contractor on behalf of the Authority, would reduce disturbance through establishment of buffers or sound curtains, as determined by a CDFW-approved biologist experienced with tricolored blackbird.

BIO-MM#27: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat

The Authority would provide compensatory mitigation required to offset impacts on tricolored blackbird. Compensatory mitigation would replace permanent loss of habitat with habitat that is commensurate with the type (nesting, roosting, and foraging) and amount of habitat lost.

- Suitable tricolored blackbird nesting habitat would be permanently protected or restored and managed at a ratio of 3:1 (protected or restored:affected) at a location subject to CDFW approval, and in proximity to the nearest breeding colony observed within the past 15 years, if possible.
- Suitable breeding season foraging habitat would be protected and managed at a ratio of 1:1 (protected:affected) at a location subject to CDFW approval.
- Suitable nonbreeding season foraging habitat would be protected or restored at a ratio of 1:1 (protected:affected).

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#28: Conduct Pre-Construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures

Prior to any ground-disturbing activity, the project biologist would conduct pre-construction surveys for ringtail and ringtail den sites in suitable habitat within the work area. These surveys would be conducted no more than 30 days before the start of ground-disturbing activities in a work area. The project biologist would establish 100-foot no-work buffers around occupied maternity dens throughout the pup-rearing season (May 1 to June 15) and a 50-foot no-work buffer around occupied dens during other times of the year.

BIO-MM#29: Conduct Pre-Construction Surveys for Dusky-Footed Woodrat and Implement Avoidance Measures

Prior to any ground-disturbing activity, the project biologist would conduct pre-construction surveys for woodrat stick houses within suitable habitat located in the work area. These surveys would be conducted no more than 14 days before the start of ground-disturbing activities in a work area. The project biologist would establish a 10-foot no-work buffer around each stick house using ESA fencing. If stick houses are found within temporary or permanent impact areas and cannot be avoided, the following condition would be implemented:

- Removal of woodrat stick houses would not occur between March and May when nesting is most likely. Outside this period, the contractor, under supervision of the project biologist, may dismantle stick houses by hand or using small construction machinery (e.g., Bobcat or similar) and move nesting material to suitable habitat outside the project footprint so that woodrats may rebuild new houses.

BIO-MM#30: Conduct Pre-Construction Surveys for Special-Status Bat Species

Prior to replacement or modification of any bridges modeled as bat habitat, the project biologist would conduct pre-construction bridge surveys as follows:

- The project biologist would conduct a survey of the bridge looking for evidence of roosting bats no less than 2 months prior to construction. If bat sign is detected, biologists would

conduct an evening visual emergence survey of the bridge, from a half hour before sunset to 1 to 2 hours after sunset for a minimum of 2 nights within the season that construction would be taking place. Night-vision goggles, full-spectrum acoustic detectors, or both would be used during emergence surveys to assist in species identification. All emergence surveys would be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted).

- If a potentially active bat roost is in the bridge, passive monitoring with full-spectrum bat detectors would be used to assist in determining species present. A minimum of 4 nights of acoustic monitoring surveys would be conducted within the season that construction would be taking place. If site security allows, detectors would be set to record bat calls for the duration of each night. To the extent possible, all monitoring would be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists would analyze the bat call data using appropriate software and would prepare a report to be submitted to the Authority.

Prior to the removal of large (i.e., greater than 24 inches diameter-at-breast-height) trees, the project biologist would conduct pre-construction tree removal surveys as follows:

- Within 2 weeks prior to tree removal, the project biologist would examine trees to be removed for suitable bat roosting habitat. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags) would be identified, and the area around these features searched for bats and bat sign (e.g., guano, culled insect parts, staining).
- If bat sign is detected, biologists would conduct an evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1 to 2 hours after sunset for a minimum of 2 nights within the season that construction would be taking place. Night-vision goggles, full-spectrum acoustic detectors, or both would be used during emergence surveys to assist in species identification. All emergence surveys would be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted).
- If a potentially active bat roost is identified within a tree proposed for removal, passive monitoring with full-spectrum bat detectors would be used to assist in determining species present. A minimum of 4 nights of acoustic monitoring surveys would be conducted within the season that construction would be taking place. If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring would be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists would analyze the bat call data using appropriate software and prepare a report to be submitted to the Authority.

BIO-MM#31: Implement Bat Avoidance and Relocation Measures

If active hibernacula or maternity roosts are found in the work area during pre-construction surveys, avoidance would be the preferred approach to minimize impacts. If avoidance of the roost is not feasible, the project biologist would prepare a relocation plan and provide for an alternative bat roost outside the project footprint.

The project biologist would implement the relocation plan before the commencement of any ground-disturbing activities in the work area and within 75 feet of the roost. Removal of roosts would only occur between August 1 and October 31 and would be guided by accepted exclusion and deterrent techniques. If delay of construction activities until the period between August 1 and October 31 for removal of a roost is not feasible, then construction may proceed.

BIO-MM#32: Implement Bat Exclusion and Deterrence Measures

If nonbreeding or nonhibernating individuals or groups of bats are found roosting within the work area, the project biologist would facilitate the eviction of the bats by either opening the roosting area to change the lighting and airflow conditions, or installing one-way doors or other appropriate methods.

To the extent feasible, the Authority would leave the roost undisturbed by project activities for a minimum of 1 week after implementing exclusion or eviction activities. Steps would not be taken to evict bats from active maternity or hibernacula; instead such features may be relocated pursuant to a relocation plan.

BIO-MM#33: Install Aprons or Barriers within Security Fencing

Prior to final construction design the project biologist would review the fencing plans along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the permanent security fencing would be enhanced with a barrier (e.g., fine mesh fencing) that extends at least 12 inches below ground and 12 inches above ground to prevent special-status reptiles, amphibians, and mammals from moving through or underneath the fencing and gaining access to areas within the right-of-way. At the 12-inch depth of the below-grade portion of the apron, it would extend or be bent at an approximately 90-degree angle and oriented outward from the right-of-way a minimum of 12 inches, to prevent fossorial mammals, reptiles, and amphibians from digging or tunneling below the security fence and gaining access to the right-of-way. A climber barrier (e.g., rigid curved or bent overhang) would be installed at the top of the apron to prevent reptiles, amphibians and mammals from climbing over the apron.

The project biologist would make sure that the selected apron material and climber barrier does not cause harm, injury, entanglement, or entrapment to wildlife species. The Authority would provide for quarterly inspection and repair of the fencing.

The specific design and method for installation of an apron or barrier may vary as required by regulatory authorizations issued under the FESA, CESA, or both. Prior to operation the project biologist would field inspect the fencing along any portion of the permanent right-of-way that is adjacent to natural habitats and confirm that the fencing has been appropriately installed. Fencing plan review and field inspection would be documented in a memorandum from the project biologist and provided to the Authority.

BIO-MM#34: Minimize Permanent Intermittent Impacts on Aerial Species Movement

To address the permanent intermittent impact of operations on aerial wildlife movement from train strike and entrapment, the Authority would implement an array of deterrent and diversion features for avian species. These features include the following:

- Install pigeon wire or other features to discourage birds from perching on OCS throughout the project
- In selected areas near SJC, place flight barriers such as fencing, pole barriers or a tubular screen (Life Impacto Cero 2015) to the height of OCS to avoid birds (especially burrowing owls) flying into the rail alignment and being struck by the train: Alternative B between Stations B2270 and 2390 (near SJC); Alternative A between Stations B2872 and 2930 (near SJC).
- Modify OCS poles to preclude bird entrapment in hollow poles (e.g., avoid the use of tubular poles or cap openings in all poles)
- Design aerial structures and tunnel portals to discourage bats from roosting in expansion joints or other crevices; light tunnel entrances

BIO-MM#35: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat

The Authority would compensate for permanent impacts on riparian habitats at a ratio of 2:1, unless a higher ratio is required by agencies with regulatory jurisdiction over the resource. Compensatory mitigation may occur through habitat restoration, the acquisition of credits from an approved mitigation bank, or participation in an in-lieu fee program.

Secondary Impacts of Implementing Compensatory Mitigation

As addressed in the discussion of BIO-MM#8, compensatory mitigation could involve some secondary impacts; however, these impacts would be beneficial and measures would be implemented to minimize any adverse impacts.

BIO-MM#36: Restore Aquatic Resources Subject to Temporary Impacts

Within 90 days of the completion of construction activities in a work area, the Authority would begin to restore aquatic resources that were temporarily affected by the construction. Aquatic resources are those resources considered waters of the U.S. under the federal CWA or waters of the state under the Porter-Cologne Act. As set out in the RRP (BIO-MM#1), such areas would be, to the extent feasible, restored to their natural topography. In areas where gravel or geotextile fabrics have been installed to protect substrate and to otherwise minimize impacts, the material would be removed and the affected features would be restored. The Authority would revegetate affected aquatic resources using appropriate native plants and seed mixes (from local vendors where available). The Authority would conduct maintenance monitoring consistent with the provisions of the RRP.

BIO-MM#37: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources

The Authority would prepare and implement a CMP that identifies mitigation to address temporary and permanent loss, including functions and values, of aquatic resources as defined as waters of the U.S. under the federal CWA and waters of the state under the Porter-Cologne Act. Compensatory mitigation would prevent net loss of functions and values and may involve the restoration, establishment, enhancement, and/or preservation of aquatic resources through one or more of the following methods:

- Purchase of credits from an agency-approved mitigation bank
- Preservation of aquatic resources through acquisition of property
- Establishment, restoration, or enhancement of aquatic resources
- In-lieu fee contribution determined through consultation with the applicable regulatory agencies

The following ratios would be used for compensatory mitigation for aquatic resources unless a higher ratio is required pursuant to regulatory authorizations issued under Section 404 of the CWA, the Porter-Cologne Act, or Section 10 of the RHA:

- Seasonal wetlands: between 1.1:1 and 1.5:1 based on impact type, function and values lost
  - 1:1 off-site for permanent impacts
  - 1:1 on-site and 0.1:1 to 0.5:1 off-site for temporary impacts
- All other wetland types: 1:1
- All nonwetland types: mitigated on-site at 1:1 or off-site 1:1 if on-site mitigation is not practicable.

For mitigation involving establishment, restoration, enhancement, or preservation of aquatic resources by the Authority, the CMP would contain, but would not be limited to, the following primary information:

- Objectives—A description of the resource types and amounts that would be provided, the type of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the compensatory mitigation project would address the needs of the watershed or ecoregion.
- Site selection—A description of the factors considered during the term sustainability of the resource.
- Adaptive management plan—A management strategy to address changes in site conditions or other components of the compensatory mitigation project.
- Financial assurances—A description of financial assurances that would be provided for the success of compensatory mitigation.

Additional information required in a CMP as outlined in 33 C.F.R. Section 332.4(c), as deemed appropriate and necessary by USACE would also be addressed in the CMP. In circumstances

where the Authority intends to fulfill compensatory mitigation obligations by securing credits from approved mitigation banks or in-lieu fee programs, the CMP need only include the name of the specific mitigation bank or in-lieu fee program to be used, the number of credits proposed to be purchased, and a rationale for why this number of credits was determined appropriate.

Secondary Impacts of Implementing Compensatory Mitigation

Potential secondary impacts on biological and other resources from compensatory mitigation would be the same as those described under BIO-MM#8. No other secondary impacts are anticipated.

BIO-MM#38: Prepare and Implement an Annual Vegetation Control Plan

Prior to O&M of the HSR, the Authority would prepare an annual vegetation control plan (VCP) to address vegetation removal for the purpose of maintaining clear areas around facilities, reducing the risk of fire, and controlling invasive weeds during the operational phase. The Authority would generally follow the procedures established in Chapter C2 of the Caltrans Maintenance Manual to manage vegetation on Authority property (Caltrans 2010). Vegetation would be controlled by chemical, thermal, biological, cultural, mechanical, structural, and manual methods. The VCP would be updated each winter and completed in time to be implemented no later than April 1 of each year. The annual update to the VCP would include a section addressing issues encountered during the prior year and changes to be incorporated into the VCP. The plan would describe site-specific vegetation control methods:

- Chemical vegetation control methods
- Mowing program consistent with Section 1415 of the Fixing America's Surface Transportation Act
- Other nonchemical vegetation control
- Other chemical pest control methods (e.g., insects, snail, rodent)

Only Caltrans-approved herbicides may be used in the vegetation control program. Pesticide application would be conducted by certified pesticide applicators in accordance with all requirements of the California Department of Pesticide Regulation and County Agricultural Commissioners. Noxious/invasive weeds would be treated where requested by County Agricultural Commissioners. The Authority would cooperate in area-wide efforts to control noxious/invasive weeds if such programs have been established by local agencies.

BIO-MM#39: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees

Prior to ground-disturbing activities, the project biologist would conduct surveys in the work area to identify protected trees.

The project biologist would establish ESAs around protected trees with the potential to be affected by construction activities, but do not require removal. The ESAs would extend outward 5 feet from the drip lines of such protected trees. For protected trees greater than 50 feet in height, the ESAs would extend outward 10 feet from the drip line.

The Authority would provide compensatory mitigation for impacts on protected trees, including impacts associated with removing or trimming a protected tree. Compensation would be based on requirements set out in applicable local government ordinances, policies and regulations. Compensatory mitigation may include, but is not limited to, the following:

- Transplantation of protected trees to areas outside of the work area.
- Replacement of protected trees at an off-site location, based on the number of protected trees affected, at a ratio not to exceed 3:1 for native trees or 1:1 for ornamental trees, unless higher ratios are required by local government ordinances or regulations.
- Contribution to a tree-planting fund.

3.7.10 Impact Summary for NEPA Comparison of Alternatives

As described in Section 3.1.5.4, the effects of project actions under NEPA are compared to the No Project condition when evaluating the impact of the project on the resource. The

determination of effect was based on the context and intensity of the change that would be generated by construction and operations of the project. Table 3.7-21 shows a comparison of project impacts by alternative, followed by a summary of the impacts.

Table 3.7-21 Comparison of Project Alternative Impacts for Biological and Aquatic Resources[1]

Impacts	Alternative A	Alternative B[2]
Impact BIO#1: Permanent Conversion or Degradation of Habitat for Special-Status Plant Species	Construction activities would remove or disturb habitat for eight special-status plant species, one of which is listed under FESA (California seablite), and could degrade habitat outside of but adjacent to the project footprint.	
Habitat for bent-flowered fiddleneck	94.1	43.8
Habitat for bristly sedge	3.7	9.5
Habitat for California seablite	1.7	1.7
Habitat for coastal marsh milkvetch	1.7	1.7
Habitat for Congdon's tarplant	92.6	38.7/39.4
Habitat for pappose tarplant	1.7	1.7
Habitat for saline clover	1.7	1.7
Habitat for Point Reyes salty bird's-beak	1.7	1.7
Impact BIO#2: Permanent Conversion of Habitat for and Direct Mortality of Listed Butterfly Species	Construction activities would not remove habitat for listed butterfly species at Icehouse Hill in Brisbane because the Brisbane LMF would be built east of the existing Caltrain tracks and would not require grading of Icehouse Hill.	Construction activities would remove habitat for listed butterfly species at Icehouse Hill in Brisbane, and could result in direct mortality of individuals, if present in affected habitat.
Habitat for Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly	0.0	8.0

Impacts	Alternative A	Alternative B[2]
Impact BIO#3: Permanent Conversion or Degradation of Habitat for and Central California Coast Steelhead, Pacific Lamprey, and Green Sturgeon, and Permanent Conversion or Degradation of Essential Fish Habitat	Construction of the East Brisbane LMF would remove potential habitat in Visitacion Creek for CCC steelhead and green sturgeon and designated EFH for Pacific Coast salmon. Modification of the existing bridge and culvert at Guadalupe Valley Creek would affect a small amount of habitat for these same species. Trimming or removal of riparian vegetation could degrade freshwater migration habitat for CCC steelhead and Pacific lamprey. In-water activities at Sanchez Creek would impact designated EFH for Pacific Coast Salmon and Pacific Coast groundfish. In-water activities at Guadalupe Valley Creek and the Guadalupe River could generate underwater sound levels that result in injury or mortality of individual fish.	Modification of the existing bridge and culvert at Guadalupe Valley Creek would affect a small amount of habitat for CCC steelhead and green sturgeon and designated EFH for Pacific Coast salmon. Trimming or removal of riparian vegetation could degrade freshwater migration habitat for CCC steelhead and Pacific lamprey. In-water activities at Sanchez Creek would impact designated EFH for Pacific Coast Salmon and Pacific Coast groundfish. In-water activities at Guadalupe Valley Creek and the Guadalupe River could generate underwater sound levels that result in injury or mortality of individual fish.
Habitat for central California coast steelhead[3]	3.0	2.0
Habitat for green sturgeon	1.9	1.2
Habitat for Pacific lamprey	2.4	3.0
Essential Fish Habitat for Pacific Coast Salmon	5.3	4.0
Essential Fish Habitat for Pacific Coast Groundfish	2.2	1.4
Impact BIO#4: Permanent Conversion or Degradation of Habitat for and Direct Mortality of California Red-Legged Frog and Western Pond Turtle	Construction activities would remove or disturb habitat for California red-legged frog and western pond turtle, and could degrade habitat outside of but adjacent to the project footprint. Activities could also result in mortality of individuals, if present in affected habitat.	
Habitat for California red-legged frog	13.6	15.3
Habitat for western pond turtle	45.6	73.7/72.9
Impact BIO#5: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Garter Snake	Construction activities would remove or disturb habitat for San Francisco garter snake, and could degrade habitat outside of but adjacent to the project footprint. Activities could also result in mortality of individuals, if present in affected habitat.	
Habitat for San Francisco garter snake	6.5	6.5
Impact BIO#6: Permanent Conversion or Degradation of Habitat for and Direct Mortality or Disturbance of Burrowing Owl	Construction in the San Jose Diridon Station Approach Subsection would convert and temporarily disturb habitat and could result in injury and mortality of individual owls and eggs, as well as nest abandonment.	

Impacts	Alternative A	Alternative B[2]
Habitat for burrowing owl	128.0	96.0/96.9
Impact BIO#7: Removal or Disturbance of Active Alameda Song Sparrow and Saltmarsh Common Yellowthroat Nests	Construction activities would remove or disturb nesting habitat for Alameda song sparrow and saltmarsh common yellowthroat. Activities during the breeding season (February 1 to August 31) could result in injury and mortality of individual birds and eggs, as well as nest abandonment.	
Habitat for Alameda song sparrow	1.7	1.7
Habitat for saltmarsh common yellowthroat	4.8	10.0
Impact BIO#8: Permanent Conversion and Degradation of Habitat for and Direct Mortality or Disturbance of Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird	Construction activities in the San Jose Diridon Station Approach Subsection would remove or disturb habitat for least Bell's vireo, yellow warbler, and tricolored blackbird along Los Gatos Creek and the Guadalupe River. Activities during the breeding season (February 1 to August 31) could result in injury and mortality of individual birds and eggs, as well as nest abandonment.	
Habitat for least Bell's vireo	2.1	3.6
Habitat for yellow warbler	0.8	2.6
Habitat for tricolored blackbird	11.7	4.7/5.6
Impact BIO#9: Removal or Disturbance of Active White-Tailed Kite Nests	Construction activities would remove or disturb nesting habitat for white-tailed kite. Activities during the breeding season (February 1 to August 31) could result in injury and mortality of individual birds and eggs, as well as nest abandonment.	
Nesting habitat for white-tailed kite	23.2	20.5/28.2
Impact BIO#10: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Dusky-Footed Woodrat and Ringtail	Construction activities in the San Jose Diridon Station Approach Subsection would remove or disturb habitat for San Francisco dusky-footed woodrat and ringtail along Los Gatos Creek and the Guadalupe River. Activities could also result in mortality of individuals, if present in affected habitat.	
Habitat for San Francisco dusky-footed woodrat and ringtail	0.8	2.7/10.4
Impact BIO#11: Removal of Roost Sites for and Direct Mortality or Disturbance of Special-Status Bats	Construction activities would remove or disturb roosting habitat for special-status bats. Modification of bridges and culverts and tree removals could destroy or cause abandonment of active roost sites, if present in affected habitat.	
Roosting habitat for pallid bat	1.5	1.3
Roosting habitat for Townsend's big-eared bat	1.5	1.3
Roosting habitat for western red bat	11.0	14.0/21.6
Impact BIO#12: Intermittent Disturbance of Habitat for Special-Status Plants during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain and are not expected to cause any new effects on habitat for special-status plants in and adjacent to the project footprint. Annual environmental awareness training for maintenance personnel would further reduce the likelihood of intermittent direct effects on special-status plants.	

Impacts	Alternative A	Alternative B[2]
Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain and are not expected to cause any new effects on habitat for special-status wildlife. The addition of HSR trains operating at speeds up to 110 mph would increase the mortality risk for special-status wildlife individuals with small body sizes that may still be able to access the project footprint. Annual environmental awareness training for maintenance personnel would reduce but not eliminate the likelihood of intermittent direct effects on special-status wildlife.	
Impact BIO#14: Mortality of Non-Special-Status Terrestrial Wildlife	Construction activities would take place in habitat for non-special-status terrestrial wildlife species and could result in mortality of individuals of such species. Project features to prepare a BRMP, provide training for all workers, and avoid entrapment of small animals would reduce mortality risk for terrestrial wildlife.	Same as Alternative A, except for slightly higher potential for effects at Borel, Belmont, and Cordilleras Creeks because of culvert modification activities associated with construction of passing track.
Impact BIO#15: Removal of Active Non-Special-Status Bird Nests	Construction activities would remove or disturb nesting habitat for native birds. Activities during the breeding season (February 1 to August 31) could result in injury and mortality of individual birds and eggs, as well as nest abandonment.	Same as Alternative A, with slightly lower likelihood of effects due to less coyote brush scrub affected by the West Brisbane LMF.
Impact BIO#16: Intermittent Disturbance of Habitat for and Direct Mortality of Non-Special-Status Wildlife during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain and are not expected to introduce new mortality sources for non-special-status wildlife individuals in and adjacent to the project footprint. Annual environmental awareness training for maintenance personnel would further reduce the likelihood of intermittent direct effects on non-special-status wildlife.	
Impact BIO#17: Permanent Conversion or Degradation of Special-Status Plant Communities	Construction activities would remove or disturb land cover types potentially supporting special-status plant communities, and could degrade such communities outside of but adjacent to the project footprint.	
Riparian and scrub/shrub wetland potentially supporting arroyo willow thickets	2.5	2.1
Saline emergent wetland potentially supporting pickleweed mats	1.7	1.7
Impact BIO#18: Intermittent Disturbance of Special-Status Plant Communities during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain or conducted in areas that had already been subject to construction impacts and are expected to cause minor effects on special-status plant communities in and adjacent to the project footprint (trimming of arroyo willow thickets). Annual environmental awareness training for maintenance personnel would further reduce the likelihood of intermittent direct effects on special-status plant communities.	

Impacts	Alternative A	Alternative B[2]
Impact BIO#19: Permanent Conversion or Degradation of Aquatic Resources Considered Jurisdictional under Section 404 of the Federal Clean Water Act and the State Porter-Cologne Act, or under Section 10 of the Rivers and Harbors Act	Construction activities would remove or disturb aquatic resources considered jurisdictional under Section 404 of the CWA and the state Porter-Cologne Act, or navigable waters considered jurisdictional under Section 10 of the RHA.	
Wetlands	6.1	11.4
Nonwetlands	7.1	6.7
Total aquatic resources	13.2	18.1
Impact BIO#20: Permanent Conversion or Degradation of Aquatic Resources, including Riparian Communities, Subject to Notification under California Fish and Game Code Section 1600 et seq.	Construction activities would remove or disturb resources considered jurisdictional under the California Fish and Game Code Section 1600 et seq.	
Riparian habitat	2.4	3.7
Rivers, lakes, and streams	6.6	6.2
Total aquatic resources	9.0	9.9
Impact BIO#21: Intermittent Disturbance or Degradation of Aquatic Resources during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain. Permanently affected aquatic features in the project footprint would have been eliminated during construction, and therefore would not be affected further. Aquatic resources inside the project footprint that were avoided during construction (e.g., natural watercourses spanned by bridges) and outside but adjacent to the project footprint would remain and could potentially be affected by these activities. In addition, construction would result in the creation of new aquatic resources (e.g., constructed basins and watercourses for drainage) in some portions of the project footprint, and these features could also be affected.	
Impact BIO#22: Removal of Trees Protected under Municipal Tree Ordinances	Construction activities may remove or disturb trees protected under municipal ordinances.	
Impact BIO#23: Disturbance of Trees Protected under Municipal Tree Ordinances during Operations	Ongoing vegetation management within the electrical safety zone could result in temporary impacts (i.e., occasional trimming). Any protected trees requiring removal would have been removed during construction. The Authority would require that all workers attend WEAP training about sensitive biological resources, including protected trees.	

Impacts	Alternative A	Alternative B[2]
Impact BIO#24: Temporary Disruption of Wildlife Movement	Construction activities in or near the 8 of the 18 watercourses that facilitate local wildlife movement under the Caltrain right-of-way (Guadalupe Valley Creek, Borel Creek, Belmont Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and Guadalupe River) may temporarily disrupt such movement by creating temporary barriers and disturbance that causes animals to delay or alter movements.	Same as Alternative A, except for slightly higher potential for effects at Borel, Belmont, Cordilleras, and Los Gatos Creeks because of culvert modification activities at the first three creeks associated with construction of the passing track and construction of a new free-span viaduct over Los Gatos Creek.
Impact BIO#25: Permanent Disruption of Wildlife Movement	Operations activities would have minimal impacts on wildlife corridors because any wildlife that use these corridors have adapted to these activities by becoming habituated to the regular occurrence of train traffic and operations and maintenance activities or by timing their movement outside peak activity periods.	
Impact BIO#26: Conflict with Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan	Construction and operational activities would not conflict with the provisions of an adopted HCP.	

BRMP = biological resources management plan
CCC = central California coast
CWA = Clean Water Act
EFH = essential fish habitat
FESA = federal Endangered Species Act
HCP = habitat conservation plan
HSR = high-speed rail
I- = Interstate
LMF = light maintenance facility
mph = miles per hour
RHA = Rivers and Harbors Act
WEAP = worker environmental awareness program
[1] Where presented, acreages represent estimates of direct (temporary and permanent) impacts on a given resource. See Section 3.7.6.7, Methods for Impact Analysis, for additional information.
[2] Where applicable, values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard). If only one value is presented, the affected acreage would be identical under the Viaduct to I-880 and Viaduct to Scott Boulevard options.
[3] Impact values for both alternatives include 0.16 acre of permanent impact on designated critical habitat for CCC steelhead at San Francisquito Creek (0.09 acre) and Stevens Creek (0.07 acre).

3.7.10.1 Special-Status Species

Special-Status Plants

Construction of the project alternatives may have direct and indirect impacts on habitat for special-status plant species and individual special-status plant occurrences, if any are present in affected habitat. Track modifications and construction of the Brisbane LMF in the San Francisco to South San Francisco Subsection have the highest potential for impacts because of the greater amount of California annual grassland, coyote brush scrub, freshwater emergent wetland, seasonal wetland, and saline emergent wetland in this area. Alternative A would affect more habitat for bent-flowered fiddleneck and Congdon's tarplant because of the greater acreage of California annual grassland and coyote brush scrub in the East Brisbane LMF footprint. Alternative B would affect more habitat for bristly sedge because of the greater acreage of freshwater emergent wetland in the West Brisbane LMF footprint. Both alternatives would affect the same amount of habitat for the remaining species because of their identical footprints near saline emergent wetland at Brisbane Lagoon. Project features to develop a comprehensive BRMP, provide training to all workers, and locate

staging areas away from sensitive resources would address these impacts. BIO-MM#1 to BIO-MM#10 are available to further reduce this impact.

Bay Checkerspot Butterfly, Callippe Silverspot Butterfly, and Mission Blue Butterfly

Construction of Alternative B would have direct impacts on habitat for three listed butterfly species at Icehouse Hill in Brisbane and on individuals, if any are present in affected habitat. Excavation of Icehouse Hill to build the West Brisbane LMF would remove all 8.0 acres of grassland habitat at this location. Alternative A would not have direct impacts on habitat for these species because the East Brisbane LMF would be east of the existing Caltrain tracks and would not require any ground disturbance at Icehouse Hill. It would also not have any indirect impacts (e.g., habitat degradation through increased cover of nonnative invasive plants) because both Icehouse Hill and the East Brisbane LMF footprint are already highly disturbed and it is unlikely that ground disturbance in the latter would substantially degrade existing habitat at Icehouse Hill from its current condition. BIO-MM#5, BIO-MM#8, BIO-MM#9, and BIO-MM#11 are available to reduce this impact.

Central California Coast Steelhead, Pacific Lamprey, and Green Sturgeon Habitat

Construction of the project alternatives would have direct impacts on habitat for special-status fish species, designated critical habitat, and designated EFH. Construction of the East Brisbane LMF under Alternative A would directly affect potential estuarine rearing habitat for CCC steelhead and foraging habitat for green sturgeon in Visitacion Creek. In-water work at Guadalupe Valley Creek under both alternatives would also result in small but permanent impacts on potential habitat for these two species. Construction of the alternatives may degrade freshwater migration habitat for CCC steelhead or Pacific lamprey in Mills Creek, San Mateo Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and the Guadalupe River. San Francisquito Creek and Stevens Creek are also designated critical habitat for CCC steelhead. Vegetation management activities at these locations may include removal or trimming of riparian trees that provide stream shading, which results in moderated water temperatures conducive for fish movement and food sources (e.g., leaves and arboreal invertebrates that fall into the water). In-water work at the Guadalupe River could also injure or kill individuals of these species, if present at the time of such activities. All of the above activities could also affect designated EFH for Pacific Coast (Chinook and coho) salmon and in-water work for a proposed culvert extension at Sanchez Creek would affect designated EFH for Pacific Coast salmon and Pacific Coast groundfish. Alternative A would have slightly higher permanent impacts on steelhead habitat than Alternative B (both viaduct options) because of the greater extent of HSR right-of-way at Los Gatos Creek and the Guadalupe River. Similarly, Alternative A would have greater permanent impacts on Pacific Coast salmon EFH and Pacific lamprey habitat than Alternative B because of the greater extent of HSR right-of-way at these streams; however, the total impact would be slightly higher because of the greater extent of TCE over Cordilleras Creek and the Guadalupe River. Potential impacts on individual special-status fish from in-water construction would only occur at Guadalupe Valley Creek and the Guadalupe River under both alternatives. Project features to conduct biological resource monitoring, develop a comprehensive BRMP, and provide training to all workers would minimize these impacts. BIO-MM#1, BIO-MM#3 to BIO-MM#5, BIO-MM#8, BIO-MM#9, and BIO-MM#12 to BIO-MM#17 are available to further reduce this impact.

California Red-Legged Frog and Western Pond Turtle

Construction of the project alternatives would have direct and indirect impacts on habitat for California red-legged frog and western pond turtle and on individuals, if any are present in affected habitat. Track modifications between Angus Avenue in San Bruno and the Millbrae Station (San Bruno to San Mateo Subsection) have the highest potential for impacts because the adjacent SFO West-of-Bayshore property is known to support California red-legged frogs and may support western pond turtles. Alternative B would have slightly higher impacts on California red-legged frog and western pond turtle habitat because of the larger footprint of the passing track at Borel, Belmont, and Cordilleras Creeks. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources

would minimize these impacts. BIO-MM#3 to BIO-MM#5, BIO-MM#8, BIO-MM#9, BIO-MM#12, and BIO-MM#18 to BIO-MM#21 are available to further reduce this impact.

San Francisco Garter Snake

Construction of the project alternatives would have direct impacts on San Francisco garter snake habitat and on individuals, if any are present in affected habitat. Track modifications (e.g., relocation of OCS poles associated with lateral track displacements) next to the SFO West-of-Bayshore property in the San Bruno to San Mateo Subsection would take place in or adjacent to habitat for this species. Both alternatives would have identical impacts on San Francisco garter snake habitat because the portions of the alternatives that overlap with habitat have identical footprints. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize these impacts. BIO-MM#3 to BIO-MM#5, BIO-MM#8, BIO-MM#9, BIO-MM#12, BIO-MM#18, and BIO-MM#21 are available to further reduce this impact. BIO-MM#20 and BIO-MM#33 would avoid direct impacts on individuals of this fully protected species.

Burrowing Owl

Construction of the project alternatives would have direct impacts on habitat for burrowing owl and may have impacts on individuals, if any are present in affected habitat. Alternative A would affect more habitat than Alternative B (both viaduct options) because of the larger footprint associated with the staging areas at Reed and Grant Streets in Santa Clara and Tamien Station in San Jose. BIO-MM#1 to BIO-MM#5, BIO-MM#8, BIO-MM#9, BIO-MM#12, and BIO-MM#22 to BIO-MM#24 are available to further reduce this impact.

Alameda Song Sparrow and Saltmarsh Common Yellowthroat

Construction of the project alternatives would have direct and indirect impacts on habitat for Alameda song sparrow and saltmarsh common yellowthroat and may have impacts on individuals, if any are present in affected habitat. Both alternatives would require relocating the Tunnel Avenue overpass and widening of the bridge crossing Guadalupe Valley Creek at the north end of Brisbane Lagoon where habitat for both species occurs. Construction of the West Brisbane LMF under Alternative B would affect more saltmarsh common yellowthroat habitat because of the greater acreage of freshwater emergent wetlands west of Tunnel Avenue. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize these impacts. BIO-MM#12 and BIO-MM#25 are available to further reduce this impact.

Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird

Construction of the project alternatives would have direct impacts on habitat for least Bell's vireo and yellow warbler along Los Gatos Creek, and for these species and tricolored blackbird along the Guadalupe River; activities could also result in injury or mortality of individual birds and eggs, as well as nest abandonment. Alternative B would have a greater impact on least Bell's vireo and yellow warbler habitat than Alternative A because of the greater extent of mixed riparian land cover in the project footprint along Los Gatos Creek and the Guadalupe River. Alternative B would also affect slightly more potential nesting colony habitat for tricolored blackbird than Alternative A for this reason but the total impact on tricolored blackbird habitat would be greater under Alternative A because of temporary impacts on foraging habitat associated with the staging areas at Reed and Grant Streets in Santa Clara and Tamien Station in San Jose. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize these impacts. BIO-MM#1 to BIO-MM#5, BIO-MM#8, BIO-MM#9, BIO-MM#12, BIO-MM#13, and BIO-MM#25 to BIO-MM#27 are available to further reduce this impact.

White-Tailed Kite

Construction of the project alternatives would have direct impacts on habitat for white-tailed kite and may have direct impacts on individuals, if any are present in affected habitat. Removal or trimming of trees or shrubs in mixed riparian, ornamental woodland, and coyote brush scrub land

cover types could result in injury and mortality of individual birds and eggs, and these as well as other activities could result in nest abandonment. Alternative B (Viaduct to Scott Boulevard) would affect the most nesting habitat because of the greater extent of ornamental woodland in the project footprint associated with the TCE at the De La Cruz Boulevard/Coleman Avenue interchange. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize these impacts. BIO-MM#12 and BIO-MM#25 are available to further reduce this impact and would avoid direct impacts on individuals of this fully protected species.

San Francisco Dusky-Footed Woodrat and Ringtail

Construction of the project alternatives would have direct impacts on riparian habitat for San Francisco dusky-footed woodrat and ringtail along Los Gatos Creek and the Guadalupe River and may have direct impacts on individuals, if present in affected habitat. Alternative B would affect more habitat for these species than Alternative A because of the larger footprint associated with construction of new viaduct crossings over the two streams. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize these impacts. BIO-MM#1 to BIO-MM#5, BIO-MM#12, BIO-MM#13, and BIO-MM#29 are available to further reduce this impact. BIO-MM#28 would avoid direct impacts on individual ringtails of this fully protected species.

Special-Status Bats

Construction of the project alternatives would have direct impacts on habitat for special-status bats and may have direct impacts on individuals, if any active roosts are present in affected habitat. Structure demolition (e.g., removal or modification of culverts and bridges) in habitat could destroy occupied roost sites, resulting in injury or mortality of adults and young. Construction-generated noise and vibration near potential roost sites could disturb maternity roosts and cause bats to abandon their young. Alternative A would affect a greater amount of pallid bat and Townsend's big-eared bat roosting habitat than Alternative B (both viaduct options) because of the greater extent of project footprint that overlaps with the existing bridges over Los Gatos Creek and the Guadalupe River. Alternative B would affect a greater amount of western red bat habitat than Alternative A because of the greater amount of riparian habitat and urban landscaping affected by the passing track and urban landscaping affected by the TCE at the De La Cruz Boulevard/Coleman Avenue interchange. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would address these impacts. BIO-MM#30 to BIO-MM#32 are available to further reduce this impact.

3.7.10.2 Non-Special-Status Wildlife

Construction of the project alternatives would involve activities that could result in mortality of non-special-status terrestrial wildlife. Heavy equipment (e.g., excavator, bulldozer) could crush or mangle small, ground-dwelling amphibians (e.g., Sierran treefrog), reptiles (e.g., common garter snake), or mammals (e.g., western harvest mouse) hidden underground or in dense herbaceous cover, and vehicle traffic on dirt roads could crush burrows occupied by such animals. Inadvertent release of hazardous materials (e.g., oils, fluids) into aquatic habitat during construction could cause mortality of amphibians and reptiles through dermal contact or absorption.

Vegetation removal and structure modification or demolition activities could cause mortality of non-special-status birds and bats. This permanent direct impact could occur throughout the project footprint because all terrestrial wildlife species (not just special-status species limited to specific land cover types) could potentially be affected. Project features to develop a comprehensive BRMP, provide training to all workers, restrict the use of plastic monofilament netting for erosion control, and prevent entrapment of small animals would address these impacts. BIO-MM#25 is available to further reduce this impact.

3.7.10.3 Special-Status Plant Communities

Construction of the project alternatives may have direct and indirect impacts on special-status plant communities. These impacts would include conversion or degradation of saline emergent wetland supporting pickleweed mats near Brisbane Lagoon and mixed riparian or scrub/shrub wetland supporting arroyo willow thickets throughout the project footprint. Alternative A would affect slightly more arroyo willow thickets because of the greater extent of scrub/shrub wetland within the East Brisbane LMF footprint. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would address these impacts. BIO-MM#1 to BIO-MM#6, BIO-MM#13, and BIO-MM#35 to BIO-MM#37 are available to further reduce this impact.

3.7.10.4 Aquatic Resources

Construction and operation of the project alternatives would have direct and indirect impacts on aquatic resources. Construction of the Brisbane LMF would result in the conversion and degradation of aquatic resources through direct removal and filling. Construction activities in all subsections (e.g., construction or modification of existing bridges and culverts) may result in conversion or degradation of aquatic resources where they overlap with the project footprint. Alternative B would affect more aquatic resources because of the greater extent of freshwater emergent wetland in the West Brisbane LMF footprint and mixed riparian land cover in the project footprint along Los Gatos Creek and the Guadalupe River. Project operations would include right-of-way maintenance activities that could result in minor direct (e.g., filling, sedimentation, inadvertent release of oils and chemicals from parked vehicles or equipment) or indirect (e.g., introduction of invasive species) impacts on aquatic resources in and adjacent to the right-of-way. Project features to develop a comprehensive BRMP, provide training to all workers, locate staging areas away from sensitive resources, clean construction equipment, and maintain construction sites would address these impacts. BIO-MM#1 to BIO-MM#5, BIO-MM#13, and BIO-MM#35 to BIO-MM#37 are available to further reduce this impact.

3.7.10.5 Protected Trees

Construction of the project may have direct impacts on trees protected under local ordinances through removal (permanent) and trimming or root disruption (temporary). Alternative B would have a slightly greater likelihood of direct impacts on protected trees because of the greater extent of mixed riparian and ornamental woodland associated with the passing track. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would address these impacts. BIO-MM#39 is available to further reduce this impact. Operations would not result in permanent impacts (i.e., removal) on protected trees under either project alternative but ongoing vegetation management within the electrical safety zone could result in temporary impacts (i.e., occasional trimming).

3.7.10.6 Wildlife Corridors

No established wildlife corridors identified in statewide reports occur within the project footprint, although numerous watercourses that could support wildlife movement between the Santa Cruz Mountains and San Francisco Bay would cross the Project Section. Modification of existing bridges or culverts or vegetation management activities at Guadalupe Valley Creek, Borel Creek, Belmont Creek, Cordilleras Creek, San Francisquito Creek, Stevens Creek, Los Gatos Creek, and the Guadalupe River could temporarily alter or delay movement of animals as they attempt to avoid the construction area, but such impacts would be localized and of short duration and would not affect the long-term viability of these urban wildlife corridors. Project features to develop a comprehensive BRMP, provide training to all workers, and locate staging areas away from sensitive resources would minimize temporary construction impacts on wildlife movement.

Project operations would have minimal impacts on wildlife corridors under both project alternatives, because watercourses that facilitate local wildlife movement under the existing Caltrain tracks are already subject to daily train traffic and regular O&M activities along the tracks. Any wildlife that use these corridors have adapted to these activities by becoming habituated to

their regular occurrence or by timing their movement outside peak activity periods (e.g., at night). As a result, project operations are not expected to prevent continued wildlife use of the corridors over time.

3.7.10.7 Conservation Areas

Construction and operation of the project alternatives would have no impact on conservation areas. There are no public lands designated as ecological reserves or refuges, conservation easements, conservation banks, or mitigation banks in the project footprint.

3.7.10.8 Habitat Conservation Plans

While the San Jose Diridon Station Approach Subsection overlaps with the planning areas for the PG&E Bay Area O&M HCP (PG&E 2017), SCVHP (County of Santa Clara et al. 2012) and Santa Clara Valley Greenprint (SCVOSA 2014), the project would not conflict with the provisions of the two HCPs or the locally adopted Greenprint plan. The planning area for the San Bruno Mountain HCP (County of San Mateo 1982) is near but outside the project footprint at Brisbane and there would be no conflicts with the provisions of this HCP. Therefore, construction and operation of the project alternatives would not have an impact on adopted HCPs.

3.7.11 CEQA Significance Conclusions

As described in Section 3.1.5.4, the impacts of project actions under CEQA are evaluated against thresholds to determine whether a project action would result in no impact, a less-than-significant impact, or a significant impact. Table 3.7-22 identifies the CEQA significance conclusions for each impact discussed in Section 3.7.7. A summary of the significant impacts, mitigation measures, and factors supporting the significance conclusions after mitigation follows the table.

Table 3.7-22 CEQA Significance Conclusions and Mitigation Measures for Biological and Aquatic Resources

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Special-Status Species			
Impact BIO#1: Permanent Conversion or Degradation of Habitat for Special-Status Plant Species	Significant for both project alternatives. Construction of the project would remove or disturb habitat for special-status plant species and could degrade habitat outside of but adjacent to the project footprint.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#6: Conduct Protocol-Level or Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities BIO-MM#7: Prepare and Implement Plan for Salvage, Relocation, or Propagation of Special-Status Plant Species	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#10: Compensate for Impacts on Listed Plant Species	
Impact BIO#2: Permanent Conversion of Habitat for and Direct Mortality of Listed Butterfly Species	No impact for Alternative A. Significant for Alternative B. Construction of the West Brisbane LMF would remove habitat for Bay checkerspot butterfly, callippe silverspot butterfly, and Mission blue butterfly at Icehouse Hill in Brisbane and could result in direct mortality of individuals, if individuals are in the habitat at the time of construction.	BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#11: Compensate for Impacts on Listed Butterfly Habitat	Less than Significant
Impact BIO#3: Permanent Conversion or Degradation of Habitat for and Direct Mortality of Central California Coast Steelhead, Pacific Lamprey, and Green Sturgeon, and Permanent Conversion or Degradation of Essential Fish Habitat	Significant for both project alternatives. Construction of the East Brisbane LMF under Alternative A would remove potential habitat for steelhead and green sturgeon and designated EFH in Visitacion Creek. Modification of the existing crossing over Guadalupe Valley Creek under both alternatives would also affect potential habitat for these species. Construction of the project could result in temporary habitat degradation by removing or trimming riparian trees that moderate water temperatures and provide food sources for migrating steelhead and Pacific lamprey in Mills Creek, San Mateo Creek, San Francisquito Creek, and Stevens Creek; and would result in permanent and temporary impacts on habitat for steelhead and Pacific lamprey in Los Gatos Creek and the Guadalupe River, and for steelhead and green	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#12: Work Stoppage BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#14: Prepare Plan for Dewatering and Water Diversions BIO-MM#15: Prepare and Implement a Cofferdam Fish Rescue Plan BIO-MM#16: Prepare and Implement an Underwater Sound Control Plan BIO-MM#17: Provide Compensatory Mitigation for Permanent Impacts on	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
	sturgeon in Guadalupe Valley Creek. In-water activities at Sanchez Creek would affect designated EFH for Pacific Coast Salmon and Pacific Coast groundfish. In-water activities at the Guadalupe River under both alternatives could result in injury or mortality of individual steelhead and Pacific lamprey; in-water activities at Guadalupe Valley Creek under both alternatives could result in injury or mortality of individual steelhead and green sturgeon.	Steelhead and Green Sturgeon Habitat and Essential Fish Habitat	
Impact BIO#4: Permanent Conversion or Degradation of Habitat for and Direct Mortality of California Red-Legged Frog and Western Pond Turtle	Significant for both project alternatives. Construction of the project would remove or disturb habitat for California red-legged frog and western pond turtle and could result in mortality of individuals.	BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts during Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#12: Work Stoppage BIO-MM#18: Conduct Pre-Construction Surveys for Special-Status Reptile and Amphibian Species BIO-MM#19: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species BIO-MM#20: Install San Francisco Garter Snake and California Red-Legged Frog Exclusion Fencing at SFO West-of-Bayshore Property BIO-MM#21: Compensate for Impacts on San Francisco Garter Snake and California Red-Legged Frog Habitat	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#5: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Garter Snake	Significant for both project alternatives. Construction of the project would remove or disturb habitat for San Francisco garter snake and could result in mortality of individuals.	BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#12: Work Stoppage BIO-MM#18: Conduct Pre-Construction Surveys for Special-Status Reptile and Amphibian Species BIO-MM#19: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species BIO-MM#20: Install San Francisco Garter Snake and California Red-Legged Frog Exclusion Fencing at SFO West-of-Bayshore Property BIO-MM#21: Compensate for Impacts on San Francisco Garter Snake and California Red-Legged Frog Habitat	Less than Significant
Impact BIO#6: Permanent Conversion or Degradation of Habitat for and Direct Mortality or Disturbance of Burrowing Owl	Significant for both project alternatives. Construction of the project would remove or disturb habitat for burrowing owl and could result in injury or mortality of individuals and nest abandonment.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#12: Work Stoppage BIO-MM#22: Conduct Surveys for Burrowing Owls BIO-MM#23: Implement Avoidance and Minimization Measures for Burrowing Owl BIO-MM#24: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat	
Impact BIO#7: Removal or Disturbance of Active Alameda Song Sparrow and Saltmarsh Common Yellowthroat Nests	Significant for both project alternatives. Construction could result in injury, mortality, or nest abandonment.	BIO-MM#12: Work Stoppage BIO-MM#25: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds	Less than Significant
Impact BIO#8: Permanent Conversion and Degradation of Habitat for and Direct Mortality or Disturbance of Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird	Significant for both project alternatives. Construction of the project would remove or disturb riparian habitat for least Bell's vireo and yellow warbler along Los Gatos Creek and for these species and tricolored blackbird along the Guadalupe River. Activities could also result in injury, mortality, or nest abandonment.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#12: Work Stoppage BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#25: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds BIO-MM#26: Conduct Pre-Construction Surveys and Implement Avoidance Measures for Active Tricolored Blackbird Nest Colonies	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		BIO-MM#27: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat	
Impact BIO#9: Removal or Disturbance of Active White-Tailed Kite Nests	Significant for both project alternatives. Construction could result in injury, mortality, or nest abandonment.	BIO-MM#12: Work Stoppage BIO-MM#25: Conduct Pre-Construction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds	Less than Significant
Impact BIO#10: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Dusky-Footed Woodrat and Ringtail	Significant for both project alternatives: Construction of the project would remove or disturb riparian habitat for these species along Los Gatos Creek and the Guadalupe River and could result in injury or mortality of individuals.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#12: Work Stoppage BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#28: Conduct Pre-Construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures BIO-MM#29: Conduct Pre-Construction Surveys for Dusky-Footed Woodrat and Implement Avoidance Measures	Less than Significant
Impact BIO#11: Removal of Roost Sites for and Direct Mortality or Disturbance of Special-Status Bats	Significant for both project alternatives. Construction could result in disturbance, modification, or loss of special-status bat maternity roosts.	BIO-MM#30: Conduct Pre-Construction Surveys for Special-Status Bat Species BIO-MM#31: Implement Bat Avoidance and Relocation Measures BIO-MM#32: Implement Bat Exclusion and Deterrence Measures	Less than Significant
Impact BIO#12: Intermittent Disturbance of Habitat for Special-Status Plants during Operations	Less than significant for both project alternatives. Operations would take place within Caltrain right-of-way, where most impacts would already have taken place and would have been addressed through mitigation prior to HSR operations.	No mitigation measures are required.	N/A

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations	Significant for both project alternatives. Operations would result in mortality of special-status wildlife, including species listed under FESA and CESA.	BIO-MM#33: Install Aprons or Barriers within Security Fencing BIO-MM#34: Minimize Permanent Intermittent Impacts on Aerial Species Movement	Less than Significant
Non-Special-Status Wildlife			
Impact BIO#14: Mortality of Non-Special-Status Terrestrial Wildlife	Less than significant for both project alternatives. Although construction activities could cause some mortality of non-special-status wildlife, it would not cause a substantial reduction in the habitat for such wildlife, cause any populations to drop below self-sustaining levels or threaten to eliminate any such populations.	No mitigation measures are required.	N/A
Impact BIO#15: Removal of Active Non-Special-Status Bird Nests	Less than significant for both project alternatives. Construction activities could result in removal or destruction of active bird nests but would not cause any bird populations to drop below self-sustaining levels or threaten their existence.	No mitigation measures are required.	N/A
Impact BIO#16: Intermittent Disturbance of Habitat for and Direct Mortality of Non-Special-Status Wildlife during Operations	Less than significant for both project alternatives. Not a threshold of significance under CEQA. Resident wildlife already habituated to Caltrain operations and presumably adapted to rail operations.	No mitigation measures are required.	N/A

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Special-Status Plant Communities			
Impact BIO#17: Permanent Conversion or Degradation of Special-Status Plant Communities	Significant for both project alternatives. Construction could result in conversion or degradation of special-status plant communities.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#6: Conduct Protocol-Level or Presence/Absence Pre-Construction Surveys for Special-Status Plant Species and Special-Status Plant Communities BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#35: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat BIO-MM#36: Restore Aquatic Resources Subject to Temporary Impacts BIO-MM#37: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources	Less than Significant
Impact BIO#18: Intermittent Disturbance of Special-Status Plant Communities during Operations	Less than significant for both project alternatives. Operations would take place within Caltrain right-of-way, where most impacts would already have taken place and would have been addressed through mitigation prior to HSR operations.	No mitigation measures are required.	N/A

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Aquatic Resources			
Impact BIO#19: Permanent Conversion or Degradation of Aquatic Resources Considered Jurisdictional under Section 404 of the Federal Clean Water Act and the State Porter-Cologne Act, or under Section 10 of the Rivers and Harbors Act	Significant for both project alternatives. Construction activities could result in loss and degradation of aquatic resources subject to jurisdiction under CWA Section 404 and the State Porter-Cologne Act, or under Section 10 of the Rivers and Harbors Act through direct removal and filling.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#35: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat BIO-MM#36: Restore Aquatic Resources Subject to Temporary Impacts BIO-MM#37: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources	Less than Significant
Impact BIO#20: Permanent Conversion or Degradation of Aquatic Resources, including Riparian Communities, Subject to Notification under California Fish and Game Code Section 1600 et seq.	Significant for both project alternatives. Construction activities could result in loss and degradation of aquatic resources subject to regulation under Section 1600 et seq.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#2: Prepare and Implement a Weed Control Plan BIO-MM#3: Establish Environmentally Sensitive Areas and Nondisturbance Zones BIO-MM#4: Conduct Monitoring of Construction Activities BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#13: Restore Temporary Riparian Habitat Impacts BIO-MM#35: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat BIO-MM#36: Restore Aquatic Resources Subject to Temporary Impacts BIO-MM#37: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources	Less than Significant

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#21: Intermittent Disturbance or Degradation of Aquatic Resources during Operations	Significant for both project alternatives. Operations activities may occasionally disturb or degrade aquatic resources in and adjacent to the project footprint.	BIO-MM#38: Prepare and Implement an Annual Vegetation Control Plan	Less than Significant
Protected Trees			
Impact BIO#22: Removal of Trees Protected under Municipal Tree Ordinances	Significant for both project alternatives. Construction may require trimming and removal of protected trees.	BIO-MM#39: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees	Less than Significant
Impact BIO#23: Disturbance of Trees Protected under Municipal Tree Ordinances during Operations	Less than significant for both project alternatives. Any trees within the project footprint would already have been removed. Occasional trimming of protected trees would not conflict with tree protection ordinances.	Not mitigation measures are required.	N/A
Wildlife Corridors			
Impact BIO#24: Temporary Disruption of Wildlife Movement	Less than significant for both project alternatives. No established wildlife corridors are present, and no new barriers to movement would be created.	No mitigation measures are required.	N/A
Impact BIO#25: Permanent Disruption of Wildlife Movement	Less than significant for both project alternatives. Project operations would not prevent continued wildlife use of the corridors over time.	No mitigation measures are required.	N/A
Habitat Conservation Plans			
Impact BIO#26: Conflict with Pacific Gas and Electric Company Bay Area Operations & Maintenance Habitat Conservation Plan	No impact for both project alternatives. The project's mitigation needs would not interfere with those of this HCP, and therefore would not conflict with HCP provisions.	No mitigation measures are required.	N/A

CEQA = California Environmental Quality Act
CESA = California Endangered Species Act
CWA = Clean Water Act
FESA = federal Endangered Species Act
HCP = habitat conservation plan
HSR = high-speed rail
LMF = light maintenance facility
N/A = not applicable
SFO = San Francisco International Airport

Impact BIO#1: Permanent Conversion or Degradation of Habitat for Special-Status Plant Species

The Authority would implement mitigation measures to reduce the impacts on special-status plants. BIO-MM#1 would entail preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would involve preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into special-status plant habitat during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including special-status plant occurrences) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#6 would require pre-construction surveys for special-status plant occurrences within work areas. If occurrences are found in a work area, BIO-MM#7 would require preparation and implementation of a plan for the salvage and possible relocation and propagation of affected occurrences. BIO-MM#8 would involve preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (e.g., habitat for special-status species, aquatic resources, special-status plant communities) to compensate for permanent and temporary impacts on such resources, and BIO-MM#10 would require compensatory mitigation for special-status plants at a 1:1 ratio. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. These measures would minimize direct and indirect impacts on habitat for special-status plants and would provide for the avoidance or survival of special-status plant occurrences in the project footprint. Therefore, the impact would be less than significant.

Impact BIO#2: Permanent Conversion of Habitat for and Direct Mortality of Listed Butterfly Species

The Authority would implement mitigation measures to reduce the impacts on listed butterfly species under Alternative B, including BIO-MM#5, which outlines procedures for reporting compliance with all mitigation measures and regulatory agency authorizations. BIO-MM#8 would entail preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. In addition, the Authority would implement BIO-MM#11, which would require compensatory mitigation for permanent impacts on listed butterfly habitat at Icehouse Hill at a minimum 5:1 ratio (i.e., protect, enhance, or restore at least 40 acres of suitable habitat). Icehouse Hill has “fairly high potential” to support callippe silverspots (City of Brisbane 2013: page 4.C-14) but focused surveys have not been conducted to date to confirm this. Similarly, Icehouse Hill supports larval host plants for Bay checkerspot butterfly (*Plantago lanceolate*) and provides habitat for larval host plants for Mission blue butterfly (*Lupinus albifrons*, *L. formosus*), but focused surveys for host plants and/or listed butterflies have not been conducted. Although Alternative B would result in the permanent loss of this suitable habitat patch, the Authority would protect, enhance, or restore similar areas of occupied or suitable but unoccupied habitat identified by the USFWS as important for Bay checkerspot, callippe silverspot, and Mission blue conservation, prioritizing areas on or adjacent to San Bruno Mountain identified by local conservation organizations (San Bruno Mountain Watch 2019). Neither of the project alternatives would affect core occupied habitat on San Bruno Mountain. Therefore, the impact would be less than significant under Alternative B.

Impact BIO#3: Permanent Conversion or Degradation of Habitat for and Direct Mortality of Central California Coast Steelhead, Pacific Lamprey, and Green Sturgeon, and Permanent Conversion or Degradation of Essential Fish Habitat

The Authority would implement mitigation measures to reduce the impacts on special-status fish, including BIO-MM#1, which would involve preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#3 would require

the project biologist to establish ESAs and nondisturbance zones (including WEF, where applicable) that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures prior to ground-disturbing activity. BIO-MM#4 and BIO-MM#5 would require the project biologist to monitor construction activities for compliance with avoidance and minimization measures and established ESAs and nondisturbance zones, and to document such monitoring through a compliance reporting program, respectively. BIO-MM#12 would give the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. BIO-MM#14 would require the preparation of a dewatering plan prior to construction in flowing water and monitoring of dewatering during construction. BIO-MM#15 and BIO-MM#16 would minimize direct impacts on individual special-status fish during construction by establishing procedures for rescuing stranded fish during stream dewatering and minimizing adverse impacts from in-water pile driving, respectively.[8] BIO-MM#13 would require the revegetation of any riparian areas temporarily disturbed during construction with native plants and seed mixes. This measure would also reduce impacts on habitat for special-status fish by restoring riparian vegetation that shades streams, thus maintaining suitable water temperatures for fish movement. BIO-MM#8 would entail preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. BIO-MM#17 identifies minimum compensatory mitigation requirements for steelhead that would be included in the CMP developed under BIO-MM#8; such requirements would also be expected to benefit Pacific lamprey and Pacific salmon EFH. These measures are expected to avoid direct and indirect impacts on special-status fish habitat and individuals. Therefore, the impact would be less than significant.

Impact BIO#4: Permanent Conversion or Degradation of Habitat for and Direct Mortality of California Red-Legged Frog and Western Pond Turtle

The Authority would implement mitigation measures to reduce the impacts on California red-legged frog and western pond turtle. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including habitat for special-status wildlife) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#18 would require pre-construction surveys for California red-legged frog and western pond turtle no more than 30 days prior to ground disturbance in suitable habitat. BIO-MM#19 would require the project biologist to monitor all ground disturbance in suitable habitat and establish avoidance measures (e.g., temporary ESA) or relocate individuals of these species, if any are found during construction. BIO-MM#12 would give the project biologist authority to temporarily stop any construction activities that could injure or kill special-status species individuals. BIO-MM#20 would require the installation of WEF around work areas on or adjacent to the SFO West-of-Bayshore property to prevent entry by individual California red-legged frogs. BIO-MM#8 would entail preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources. BIO-MM#21 would require compensatory mitigation for permanent impacts on California red-legged frog aquatic and refugia habitats at a 2:1 and 1:1 ratio, respectively. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. These measures would minimize direct impacts on habitat for California red-legged frog and western pond turtle and avoid direct impacts on individuals during construction. Therefore, the impact would be less than significant.

[8] BIO-MM#14 to BIO-MM#16 would only be implemented for construction over and adjacent to the Guadalupe River under both alternatives.

Impact BIO#5: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Garter Snake

The Authority would implement mitigation measures to reduce impacts on San Francisco garter snake. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including habitat for special-status wildlife) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#18 would require pre-construction surveys for California red-legged frog and western pond turtle no more than 30 days prior to ground disturbance in suitable habitat. BIO-MM#19 would require the project biologist to monitor all ground disturbance in suitable habitat and establish avoidance measures (e.g., temporary ESA). BIO-MM#20 would require the installation of WEF around work areas on or adjacent to the SFO West-of-Bayshore property to prevent entry by individual San Francisco garter snakes. BIO-MM#12 would require the project biologist to monitor all ground disturbance in these fenced work areas and would give the project biologist authority to temporarily stop all work that could injure or kill special-status wildlife individuals, including San Francisco garter snakes. BIO-MM#8 would involve preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources; BIO-MM#21 would require compensatory mitigation for permanent impacts on San Francisco garter snake aquatic and refugia habitats at a 2:1 and 1:1 ratio, respectively. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. These measures would minimize direct impacts on habitat for San Francisco garter snake at the SFO West-of-Bayshore property and avoid take of individuals during construction. Therefore, the impact would be less than significant.

Impact BIO#6: Permanent Conversion or Degradation of Habitat for and Direct Mortality or Disturbance of Burrowing Owl

The Authority would implement mitigation measures to reduce impacts on burrowing owl. BIO-MM#1 would entail preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would involve preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into special-status species habitat during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including special-status wildlife) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#12 would give the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. BIO-MM#8 would entail preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. BIO-MM#22 and BIO-MM#23 would require habitat surveys of modeled habitat to confirm presence/absence of suitable burrows in the project footprint and subsequent pre-construction surveys for and avoidance of occupied burrows during construction. BIO-MM#24 identifies compensatory mitigation requirements for occupied breeding habitat that would be included in the CMP developed under BIO-MM#8. These measures would reduce direct and indirect impacts on western burrowing owl habitat and avoid direct impacts on individuals. Therefore, the impact would be less than significant.

Impact BIO#7: Removal or Disturbance of Active Alameda Song Sparrow and Saltmarsh Common Yellowthroat Nests

The Authority would implement mitigation measures to avoid direct impacts on Alameda song sparrow and saltmarsh common yellowthroat nests. BIO-MM#25 would require the project biologist to conduct visual pre-construction surveys of work areas for active bird nests prior to ground-disturbing activity during the breeding season (February 1 to August 31). If active nests

are found, no-work buffers would be established around nests and would be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival, or the project biologist determines that the nest has been abandoned. This measure would avoid direct impacts on active bird nests, including those of Alameda song sparrow and saltmarsh common yellowthroat, by identifying and marking nests for avoidance during construction. BIO-MM#12 would also avoid impacts on active nests by giving the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. These measures would avoid direct impacts on Alameda song sparrow and saltmarsh common yellowthroat individuals. Therefore, the impact would be less than significant.

Impact BIO#8: Permanent Conversion and Degradation of Habitat for and Direct Mortality or Disturbance of Least Bell's Vireo, Yellow Warbler, and Tricolored Blackbird

The Authority would implement mitigation measures to reduce impacts on least Bell's vireo, yellow warbler, and tricolored blackbird. BIO-MM#1 would entail preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would involve preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into special-status species habitat during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including special-status wildlife) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#25 would require the project biologist to conduct visual pre-construction surveys of work areas for active bird nests prior to ground-disturbing activity during the breeding season (February 1 to August 31) and identify and mark active nests for avoidance during construction. BIO-MM#26 would avoid direct impacts on nesting tricolored blackbirds during construction by requiring pre-construction surveys for and avoidance of nest colonies within 300 feet of work areas. BIO-MM#12 would give the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. BIO-MM#13 would require the revegetation of any riparian areas temporarily disturbed during construction with native plants and seed mixes, which would reduce temporary impacts on habitat for these riparian-nesting species. BIO-MM#27 identifies minimum compensatory mitigation requirements for tricolored blackbird that would be included in the CMP developed under BIO-MM#8. BIO-MM#8 would entail preparation and implementation of a CMP that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent and temporary impacts on such resources. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. These measures would reduce direct and indirect impacts on riparian habitat for these species and avoid direct impacts on individuals. Therefore, the impact would be less than significant.

Impact BIO#9: Removal or Disturbance of Active White-Tailed Kite Nests

The Authority would implement mitigation measures to avoid direct impacts on white-tailed kite nests. BIO-MM#25 would require the project biologist to conduct visual pre-construction surveys of work areas for active bird nests prior to ground-disturbing activity during the breeding season (February 1 to August 31). If active nests are found, no-work buffers would be established around nests and would be maintained until nestlings have fledged and are no longer reliant on the nest or parental care for survival, or the project biologist determines that the nest has been abandoned. This measure would avoid direct impacts on active bird nests, including those of white-tailed kite, by identifying and marking nests for avoidance during construction. BIO-MM#12 would also avoid impacts on active nests by giving the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. These measures would avoid direct impacts on white-tailed kite individuals. Therefore, the impact would be less than significant.

Impact BIO#10: Permanent Conversion or Degradation of Habitat for and Direct Mortality of San Francisco Dusky-Footed Woodrat and Ringtail

The Authority would implement mitigation measures to avoid direct impacts on San Francisco dusky-footed woodrat and ringtail. BIO-MM#1 would entail preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would involve preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into special-status species habitat during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including special-status wildlife) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#12 would give the project biologist authority to halt any construction activities that could injure or kill special-status species individuals. BIO-MM#13 would require the revegetation of any riparian areas temporarily disturbed during construction with native plants and seed mixes, which would reduce temporary impacts on habitat for these riparian species. BIO-MM#28 and BIO-MM#29 would avoid direct impacts on individual ringtails and dusky-footed woodrats, respectively, by requiring pre-construction surveys for and avoidance of ringtail dens and dusky-footed woodrat stick houses where modeled habitat overlaps with the project footprint. These measures would avoid direct impacts on San Francisco dusky-footed woodrat and ringtail individuals. Therefore, the impact would be less than significant.

Impact BIO#11: Removal of Roost Sites for and Direct Mortality or Disturbance of Special-Status Bats

The Authority would implement mitigation measures to avoid direct impacts on special-status bats. BIO-MM#30 and BIO-MM#31 would avoid direct impacts on individual special-status bats by requiring pre-construction surveys for and avoidance or relocation of active hibernacula or maternity roosts in or within 75 feet of the project footprint. BIO-MM#32 would also avoid direct impacts on individuals by requiring the project biologist to safely exclude nonbreeding roosting bats from trees or structures in the project footprint before removing the trees or structures. These measures would avoid direct impacts on special-status bat individuals by identifying active roosts before construction and avoiding or safely relocating nonmaternity roosts. Therefore, the impact would be less than significant.

Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife

The Authority would implement mitigation measures to avoid direct mortality of special-status wildlife during operations. BIO-MM#33 would require the Authority to enhance permanent security fencing adjacent to natural habitats with a barrier that extends at least 12 inches below ground and 12 inches above ground to prevent special-status reptiles, amphibians and mammals from moving through or underneath the fencing and gaining access to areas within the right-of-way. This is expected to avoid intermittent direct mortality of special-status wildlife during operations because it would prevent small animals from accessing the right-of-way. BIO-MM#34 would implement design features to minimize or avoid direct mortality of birds (including burrowing owls at SJC) and bats. Combined with the intermittent and widely dispersed nature of special-status wildlife accessing the right-of-way, the impact would be less than significant.

Impact BIO#17: Permanent Conversion or Degradation of Special-Status Plant Communities

The Authority would implement measures to reduce the impacts on special-status plant communities. BIO-MM#1 would require preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would require preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into special-status plant communities during construction and operations. BIO-MM#3, BIO-MM#4, BIO-MM#5, and BIO-MM#6 outline procedures for marking ESAs that support sensitive biological resources (including special-status plant communities) prior to construction,

monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#13 would require the revegetation of any riparian areas (including arroyo willow thickets) temporarily disturbed during construction with native plants and seed mixes and that such revegetation be monitored by the project biologist. BIO-MM#35 would require compensatory mitigation for permanent impacts on riparian habitat at a 2:1 ratio. BIO-MM#36 would require the restoration of aquatic resources (including saline emergent wetlands and scrub/shrub wetlands supporting arroyo willow thickets) temporarily disturbed during construction with native plants and seed mixes. BIO-MM#37 would require compensatory mitigation for impacts on seasonal wetlands at a 0.1:1 to 0.5:1 ratio for indirect temporary impacts and a 1.1:1 to 1.5:1 ratio for permanent impacts, and a ratio of 1:1 for impacts on all other wetland and nonwetland types. These measures would minimize direct and indirect construction impacts on special-status plant communities and compensate for impacts by restoring, creating, preserving, or enhancing communities with equal value. Therefore, the impact would be less than significant.

Impact BIO#19: Permanent Conversion or Degradation of Aquatic Resources Considered Jurisdictional under Section 404 of the Federal Clean Water Act and the State Porter-Cologne Act, or under Section 10 of the Rivers and Harbors Act

The Authority would implement measures to reduce the impacts on aquatic resources under federal and state jurisdiction. BIO-MM#1 would require preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would entail preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into wetlands during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including aquatic resources) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#13 would require the restoration of aquatic resources temporarily disturbed during construction with native plants and seed mixes. BIO-MM#35 would require compensatory mitigation for permanent impacts on riparian habitat at a 2:1 ratio. BIO-MM#36 would require the restoration of aquatic resources (including saline emergent wetlands and scrub/shrub wetlands supporting arroyo willow thickets) temporarily disturbed during construction with native plants and seed mixes. BIO-MM#37 would require compensatory mitigation for impacts on seasonal wetlands at a 1.1:1 to 1.5:1 ratio, and a 1:1 ratio for impacts on all other wetland and nonwetland types. These measures would minimize direct and indirect construction impacts on special-status plant. These measures would minimize direct and indirect construction impacts on aquatic resources and compensate for impacts by restoring, creating, preserving, or enhancing aquatic resources with equal value. Therefore, the impact would be less than significant.

Impact BIO#20: Permanent Conversion or Degradation of Aquatic Resources, including Riparian Communities, Subject to Notification under California Fish and Game Code Section 1600 et seq.

The Authority would implement measures to reduce the impacts on resources under Cal. Fish and Game Code jurisdiction. BIO-MM#1 would involve preparation of an RRP that would identify and describe procedures for restoring temporarily disturbed habitat to its former state. BIO-MM#2 would require preparation of a WCP that would establish procedures for avoiding and minimizing the spread of invasive weeds into wetlands during construction and operations. BIO-MM#3, BIO-MM#4, and BIO-MM#5 outline procedures for marking ESAs that support sensitive biological resources (including aquatic resources) prior to construction, monitoring ESAs during construction, and reporting compliance with construction-period avoidance and minimization measures, respectively. BIO-MM#13 would require the revegetation of any riparian areas temporarily disturbed during construction with native plants and seed mixes and that such revegetation be monitored by the project biologist. BIO-MM#35 would require compensatory mitigation for permanent impacts on riparian habitat at a 2:1 ratio. BIO-MM#36 would require the restoration of aquatic resources temporarily disturbed during construction with native plants and seed mixes. BIO-MM#37 would require compensatory mitigation for impacts on seasonal

wetlands at a 0.1:1 to 0.5:1 ratio for indirect temporary impacts and a 1.1:1 to 1.5:1 ratio for permanent impacts, and a ratio of 1:1 for impacts on all other wetland and nonwetland types. These measures would minimize direct and indirect construction impacts on Section 1600 resources and compensate for impacts by restoring, creating, preserving, or enhancing aquatic and other resources with equal value. Therefore, the impact would be less than significant.

Impact BIO#21: Intermittent Disturbance or Degradation of Aquatic Resources during Operations

The Authority would implement BIO-MM#38 to reduce the impact on aquatic resources during operations. This measure would require the Authority to prepare an annual VCP to address vegetation removal for maintaining clear areas around facilities and controlling invasive weeds during the operational phase and would limit herbicide use to products approved by Caltrans. By establishing controls on the types of herbicides used for vegetation management and defining the situations in which herbicides are and are not an appropriate control method, VCPs are expected to minimize direct and indirect impacts on aquatic resources from herbicide drift. Combined with the intermittent and widely dispersed nature of effects from inspection and maintenance activities, the impact would be less than significant.

Impact BIO#22: Removal of Trees Protected under Municipal Tree Ordinances

The Authority would implement BIO-MM#39 to reduce impacts on protected trees. This measure would require the project biologist to survey work areas for protected trees prior to construction and establish ESAs around trees that do not need to be removed. It would also require compensatory mitigation for removal of protected trees based on requirements set out in applicable local government ordinances, policies, and regulations. This measure is expected to avoid or compensate for direct impacts on protected trees. Therefore, the impact would be less than significant.

3.7.12 Preliminary Federal Endangered Species Act Findings

In addition to various technical reports prepared for the project, the Authority will prepare a BA and submit it to USFWS and NMFS for review in 2020. The BA will evaluate the potential adverse effects of the project (i.e., proposed action) on species listed as endangered or threatened, species proposed for listing as endangered or threatened under the FESA, as well as potential effects on designated or proposed critical habitat.

Based on a preliminary evaluation of potential effects of the proposed action prior to implementation of IAMFs and mitigation measures, the Authority has determined that the project could have effects on species and critical habitat as shown in Table 3.7-23.

Table 3.7-23 Summary of Effects for Federally Listed Species and their Critical Habitat

Species	Federal Status	Preliminary Species Determination	Critical Habitat Determination
Plants			
California seablite	FE	May affect, and is likely to adversely affect	N/A
Invertebrates			
Bay checkerspot butterfly[1]	FT	May affect, and is likely to adversely affect	No Effect
Callippe silverspot butterfly[1]	FE	May affect, and is likely to adversely affect	N/A
Mission blue butterfly[1]	FE	May affect, and is likely to adversely affect	N/A

Species	Federal Status	Preliminary Species Determination	Critical Habitat Determination
Fish			
Green sturgeon – southern DPS	FT	May affect, and is likely to adversely affect	Not Likely to Adversely Affect
Steelhead—Central California Coast DPS	FT	May affect, and is likely to adversely affect	Not Likely to Adversely Affect
Birds			
Least Bell's vireo	FE	May affect, and is likely to adversely affect	No Effect
Amphibians			
California red-legged frog	FT	May affect, and is likely to adversely affect	No Effect
Reptiles			
San Francisco garter snake[2]	FE	May affect, and is likely to adversely affect	N/A

DPS = distinct population segment
FE = federally endangered
FT = federally threatened
N/A = not applicable because critical habitat has not been designated for this species
[1] Would only be affected under Alternative B.
[2] California Fish and Game Code Fully Protected Species

In light of the finding of may affect, and is likely to adversely affect, the Authority will request initiation of formal consultation with USFWS in accordance with Section 7 of FESA for the following species: Bay checkerspot butterfly (Alternative B only), callippe silverspot butterfly (Alternative B only), Mission blue butterfly (Alternative B only), California red-legged frog, San Francisco garter snake, and Least Bell's vireo. Although project impacts during construction and operation may remain likely to adversely affect San Francisco garter snake, the Authority has incorporated IAMFs into project design and would implement mitigation measures to completely avoid occupied habitat, or to wait until animals have moved outside an active work area before beginning construction in occupied habitat that cannot be avoided to ensure that take (defined under state law to include mortality or capture) of the state fully protected species is avoided. With implementation of the conservation measures discussed in the BA, the Authority intends to request concurrence from USFWS regarding the determination that the proposed action would have no effect on critical habitat for California red-legged frog because the project footprint would not overlap with designated critical habitat units for this species.

In light of the finding of may affect, and is likely to adversely affect, the Authority will request initiation of formal consultation with NMFS in accordance with Section 7 of FESA, which could result in an incidental take statement for green sturgeon and CCC steelhead. With implementation of the conservation measures discussed in the BA, the Authority intends to request concurrence from NMFS regarding the determination that the proposed action is not likely to adversely affect critical habitat for these species.