3.4 Biological Resources

3.4.1 Introduction

This section describes the regulatory and environmental setting for biological resources, including wetlands, in the vicinity of the Proposed Project (including all track variants, technology variants, and the Greenville and Mountain House initial operating segments [IOS]) and the alternatives analyzed at an equal level (Southfront Road Station Alternative, Stone Cut Alignment Alternative, West Tracy Operation and Maintenance Facility [OMF] Alternative, Mountain House Station Alternative, and Downtown Tracy Station Parking Alternatives 1 and 2). It also describes the direct and indirect impacts on biological resources including wetlands, and the mitigation measures to reduce significant impacts where feasible and appropriate for the Proposed Project and the alternatives analyzed at an equal level of detail. Appendix M, *Supporting Biological Resources Information*, contains additional technical information for this section.

Cumulative impacts on biological resources and wetlands, in combination with planned, approved, and reasonably foreseeable projects, are discussed in Chapter 4, *Other CEQA-Required Analysis*.

3.4.2 Regulatory Setting

This section summarizes the federal, state, regional, and local regulations related to biological resources and wetlands that are applicable to the Proposed Project and the alternatives analyzed at an equal level of detail.

3.4.2.1 Federal

Federal Endangered Species Act

The federal Endangered Species Act (ESA) of 1973 requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) when a federal action may result in take of a species listed as threatened or endangered under the ESA. *Take*, as defined by the ESA, means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures a species, including through significant habitat modification." Under federal regulations, take is further defined to include habitat modification or degradation that results, or is reasonably expected to result, in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Pursuant to the requirements of the ESA, when reviewing a proposed action within its jurisdiction, an agency must determine whether any federally listed species may be present on a project site and determine if the proposed action will result in a take of such species. Under the ESA, habitat loss is considered an impact on a species. In addition, an agency is required to determine whether a proposed action is likely to jeopardize the continued existence of any species that is proposed for listing under the ESA or result in the destruction or negative modification of critical habitat that has been proposed or designated for such species (16 United States Code [U.S.C.] § 1536(3), (4)).

Endangered Species Act Section 7 (Consultation Process)

The USFWS and NMFS maintain areas of critical habitat for federally regulated species to safeguard the continued existence of such species by restricting the type and extent of activities proposed under Section 7 of the ESA. Section 7 of the ESA requires federal agencies to consult with the USFWS and/or NMFS for actions that may take a listed species or its habitat. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult with the USFWS and/or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed action "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment to evaluate the nature and severity of the expected effect. In response, the USFWS and/or NMFS will issue a biological opinion (BO), with a determination that the proposed action will result in one of the following:

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

The BO issued by the USFWS and/or NMFS may stipulate discretionary "reasonable and prudent" conservation measures. If the proposed action would not jeopardize a listed species, the USFWS and/or NMFS will issue an incidental take statement to authorize the proposed activity.

For this Proposed Project and the alternatives analyzed at an equal level of detail, Section 7 consultation may be initiated by the Federal Railroad Administration (FRA), depending on the level of FRA involvement in the proposed improvements relative to approval or funding. If the FRA is not involved in overall or certain proposed improvements, then the U.S. Army Corps of Engineers (USACE) would be the lead federal agency and would complete consultation under Section 7 related to permits for improvements that would affect wetlands or waters within their jurisdiction. To the extent that Section 7 consultation does not address certain improvements, the Tri-Valley–San Joaquin Valley Regional Rail Authority (Authority) may need to obtain take coverage under Section 10 of the federal ESA instead.

Endangered Species Act Section 9 (Prohibitions)

Section 9 of the ESA prohibits the take of any fish or wildlife species that has been listed under the ESA as endangered. Take of threatened species is also prohibited under Section 9, unless otherwise authorized by federal regulations. In addition to the take definition described above, Section 9 prohibits removing, digging up, cutting, or maliciously damaging or destroying federally listed plants on sites that are under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites that are not under federal jurisdiction.

Endangered Species Act Section 10 (Habitat Conservation Plans)

In cases where a nonfederal entity is undertaking an action that does not require federal authorization, the take of listed species must be permitted by the USFWS and/or NMFS through the Section 10 process. If a proposed project would result in incidental take of a listed species,

the project proponent must first obtain a Section 10(a)(1)(B) incidental take permit (ITP). Incidental take is defined under Section 10 as the take of federally listed fish and wildlife species that are "incidental to, but not the purposes of, otherwise lawful activities."

To receive an ITP, the nonfederal entity is required to prepare a habitat conservation plan (HCP). The HCP must include conservation measures to avoid, minimize, or mitigate a project's impact on listed species and their habitat. If the FRA or USACE is not the lead federal agency, the Authority would use the Section 10 consultation process for an overall project or for certain improvements. The Authority would work with the USFWS or NMFS as necessary to meet Section 10 process requirements.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a management system for national marine and estuarine fishery resources. This legislation requires all federal agencies to consult with the NMFS regarding all actions or proposed actions, whether permitted, funded, or undertaken, that may adversely affect *essential fish habitat* (EFH), defined as "the waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The phrase *adversely affect* refers to any impact that reduces the quality or quantity of EFH.

The Magnuson-Stevens Act states that migratory routes to and from anadromous fish spawning grounds are considered EFH. Federal activities that occur outside of EFH but may have an impact on EFH must also be considered in the consultation process.

Habitat Areas of Particular Concern (HAPC) are a subset of EFH. HAPCs are considered high-priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. Current HAPC types are estuaries, canopy kelp, seagrass, rocky reefs, and "areas of interest" (i.e., a variety of submarine features, such as banks, seamounts, and canyons, along with Washington State waters) (National Marine Fisheries Service 2019a).

Clean Water Act: Sections 404 and 401

Waters of the United States are protected under Section 404 of the Clean Water Act (CWA). Waters of the United States may include both wetlands and non-wetland waters. Any activity that involves a discharge of dredged or fill material into waters of the United States, including wetlands, is subject to regulation by the USACE. *Waters of the United States* are defined to include navigable waters of the United States; interstate waters; all other waters that, through their use, degradation, or destruction, could affect interstate or foreign commerce; tributaries to any of these waters; and wetlands that meet any of the criteria or are adjacent to any of these waters or their tributaries. Wetlands are defined under Section 404 as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration that may support, and, under normal circumstances, do support, a prevalence of vegetation that is typically adapted for life in saturated soil conditions. Jurisdictional wetlands must meet three wetland delineation criteria:

- They support hydrophytic vegetation (i.e., plants that grow in saturated soil).
- They have hydric soil types (i.e., soils that are wet or moist enough to develop anaerobic conditions).
- They have wetland hydrology (i.e., flooding, inundation, or saturation conditions that support wetland communities).

The extent of the USACE jurisdiction in inland situations extends to the ordinary high-water mark (OHWM)—the line on the shore established by fluctuations in water levels, as indicated by a clear, natural line impressed on the bank; shelving; changes in soil character; the destruction of terrestrial vegetation; and/or the presence of litter and debris. In coastal situations, the USACE jurisdiction extends to the mean high-water line, which is based on elevation.

Activities requiring a Section 404 permit must also obtain certification from the state where the discharge would originate or, if appropriate, the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate, pursuant to CWA Section 401. Either the State Water Resources Control Board (SWRCB) or both the Central Valley Regional Water Quality Control Board (RWQCB) and San Francisco Bay RWQCB would have to issue such certification prior to alteration of or discharge to waters of the United States and the state (e.g., work involving bridge crossings of jurisdictional waters). Waters of the state are defined in Section 3.4.2.2, *State*.

Clean Water Act Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System program, as administered by the U.S. Environmental Protection Agency. CWA Section 402 is discussed in detail in Section 3.10, *Hydrology and Water Quality*, of this environmental impact report (EIR).

General Bridge Act of 1946

Any individual, partnership, corporation, or local, state, or federal legislative body, agency, or authority planning to construct or modify a bridge or causeway across a navigable waterway of the United States must apply for a U.S. Coast Guard bridge permit. This includes all temporary bridges used for construction access or a traffic detour.

Executive Order 11990: Protection of Wetlands

Executive Order 11990 (May 24, 1997) directs federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A project that encroaches on wetlands may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to construction, (2) the project includes all practicable measures to minimize harm to wetlands affected, and (3) the impact will be minor.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union (now Russia) and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 U.S.C. § 703, 50 Code of Federal Regulations [CFR] § 21, 50 CFR § 10). Most actions that result in take or permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are possession of a hunting license to pursue specific game birds, legitimate research activities, displays in zoological gardens, banding, and other similar activities.

The USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues.

Executive Order 13186: Responsibilities of Federal Agencies with Respect to Protecting Migratory Birds

Executive Order 13186 (January 10, 2001) directs each federal agency, when conducting actions that will have or be likely to have a negative impact on migratory bird populations, to work with the USFWS to develop a memorandum of understanding and promote the conservation of migratory bird populations. Protocols developed under the memorandum of understanding must include the following agency responsibilities:

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance the habitat of migratory birds, as practicable.
- Prevent or abate pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The Executive Order is designed to assist federal agencies in their efforts to comply with the MBTA; it does not constitute any legal authorization to take migratory birds.

Executive Order 13112: Invasive Species Prevention

Executive Order 13112 (February 3, 1999) directs all federal agencies to prevent and control the introduction and spread of invasive nonnative species in a cost-effective and environmentally sound manner and minimize their effects on economic, ecological, and human health.

3.4.2.2 State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) of 1970 requires state and local agencies to identify the significant environmental impacts of their actions and avoid or mitigate those impacts, if feasible. A public agency must comply with CEQA when it undertakes an activity that has been defined by CEQA as a "project." A project is any activity undertaken by a public agency or any activity undertaken by a private entity that must receive discretionary approval (meaning that an agency has the authority to deny a requested permit or approval) from a government agency that may cause either a direct physical change in the environmental or a reasonably foreseeable indirect change in the environment.

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code [Fish & G. Code] §§ 2050–2116) states that native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants and their habitats that are threatened with extinction, as well as those experiencing a significant decline that, if not halted, will lead to a threatened or endangered designation, will be protected or preserved.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (Fish & G. Code §§ 1900–1913) prohibits take, possession, transportation, exportation, importation, or sale of rare and threatened plants, except as a result of agricultural practices, fire control measures, timber operations, mining, or actions of public agencies or private utilities. Private landowners are also exempt from the prohibition against removing rare and endangered plants, although they must provide 10-day notice to the California Department of Fish and Wildlife (CDFW) before removing the plants. This act has been mostly superseded by CESA.

California Fish and Game Code (§§ 1600, 2081, 3503, 3503.3, 3511, 4700, 5050, and 5515)

Section 1600 et seq. (Lake and Streambed Alteration)

Section 1600 et seq. requires any project proponent to obtain a permit from the CDFW prior to any project activity undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel.

Section 2081 (Incidental Take Permit)

Under Section 2081, an ITP from CDFW is required for projects that could result in take of a species that is state listed as threatened or endangered or identified as a candidate for threatened or endangered listing under the CESA. *Take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include harm or harass, as does the definition of take under the federal ESA. In addition, habitat destruction is not included in the definition of take. Consequently, the threshold for take under the CESA is higher than that under the ESA. For example, habitat modification is not necessarily considered take under the CESA. The CDFW administers the CESA and authorizes take through Section 2081 agreements (ITPs), except for species that have been designated as fully protected. Section 2081 also requires measures to avoid or minimize take of CESA-regulated species and fully mitigate the impact of take.

Sections 3503 and 3503.3 (Bird Nesting Protections)

Sections 3503 and 3503.3 state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation made pursuant thereto.

Sections 3511, 4700, 5050, and 5515 (Fully Protected Species)

These sections list 37 fully protected species and prohibit take or possession of the listed species at any time, except when collecting these species for scientific research or relocating bird species for the protection of livestock.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act; California Water Code [Wat. Code] § 13000 et. seq.) governs water quality in California. This act delegates responsibility to the SWRCB for water rights and water quality protection and directs the nine statewide RWQCBs to develop and enforce water quality standards within their jurisdictions. The Porter-Cologne Act requires any entity that discharges waste, or proposes to discharge waste, within any

region that could affect the quality of waters of the state to file a report of waste discharge with the appropriate RWQCB. *Waters of the state* are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Wat. Code § 13050(e)). The appropriate RWQCB must then issue a permit, referred to as a waste discharge requirement (WDR). WDRs implement water quality control plans and take into consideration beneficial uses to be protected, water quality objectives reasonably required for such purposes, other waste discharges, and the need to prevent nuisances (Wat. Code 13263).

3.4.2.3 Regional and Local

Appendix I, *Regional Plans and Local General Plans*, provides a list of applicable goals, policies, and objectives from regional and local plans of the jurisdictions in which the Proposed Project and the alternatives analyzed at an equal level of detail are proposed. Section 15125(d) of the CEQA Guidelines requires an EIR to discuss "any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans." These plans were considered during preparation of this analysis and reviewed to assess whether the Proposed Project and the alternatives analyzed at an equal level of detail would be consistent[1] with the plans of relevant jurisdictions. This investigation found that the Proposed Project and the alternatives analyzed at an equal level of detail would generally be consistent with the applicable goals, policies, and objectives related to biological resources and wetlands identified in Appendix I.

3.4.3 Environmental Setting

This section discusses the environmental setting of the biological study area. For the purposes of this analysis, the biological resource study area consists of the footprint and an associated 250-foot buffer for the Proposed Project and the alternatives analyzed at an equal level of detail. Figures 3.4-1 to 3.4-16 depicts the study area for biological resources.

To identify biological resources occurring or potentially occurring in the study area, ICF biologists derived information from the following sources and activities:

- Background research from the California Natural Diversity Database (CNDDB), USFWS, California Native Plant Society (CNPS), and NMFS online lists; existing HCPs, such as the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan [SJMSCP]; and other conservation studies (such as the East Alameda County Conservation Strategy [EACCS]).
- Draft EIR for the San Joaquin Regional Rail Commission ACE*forward* Project (ICF 2017).[2]
- Biological reconnaissance-level surveys of land cover types and general habitat characteristics.
- Reconnaissance-level floristic surveys for special-status plant species.
- Biological reconnaissance-level surveys for special-status wildlife species and their habitats, sensitive habitats of concern, and wildlife corridors.

[1] An inconsistency with regional or local plans is not necessarily considered a significant impact under CEQA, unless it is related to a physical impact on the environment that is significant in its own right.

[2] The San Joaquin Regional Rail Commission published a draft EIR for the ACE*forward* project in May 2017. That project included study of a corridor similar to the Valley Link corridor. The San Joaquin Regional Rail Commission did not complete a final EIR or approve the ACE*forward* project.

- Waters and wetlands:
  - Field analysis of potential waters and wetlands within the footprint.
  - Identification of waters and wetlands using aerial photography and existing water/wetland inventory data (such as the National Wetland Inventory and Bay Area Aquatic Resource Inventory).

3.4.3.1 Natural Communities, Land Cover Types

For the purposes of this EIR, *natural communities* are an assemblage of species that co-occur in the same habitat or area and interact through trophic and spatial relationships; *land cover types* are defined by the dominant character of the land surface, as determined by vegetation, water, or human uses. Natural communities are defined by vegetative communities, as identified by the land cover types. There are six natural communities in the study area:

- Aquatic
- Grassland
- Riparian
- Ruderal
- Scrub
- Wetland

In addition to the six natural communities and respective land cover types, the biological study area also includes two categories of non-natural land cover types:

- Cropland
- Developed/Landscaped

Table 3.4-1 lists natural communities and land cover types in the environmental footprint of the Proposed Project and the alternatives analyzed at an equal level of detail. Vegetation (including plant community and/or vegetation association information from Sawyer et al. 2009, if available) and wildlife associations (including special-status species, which are also discussed in Section 3.4.3.2, *Special-Status Species*) for each land cover type are described in the subsections that follow. Figures 3.4-17 to 3.4-32 depict the land cover within the study area and environmental footprint.

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area

Tri-Valley ▲ San Joaquin Valley REGIONAL RAIL AUTHORITY

Valley Link Project



FIGURE 3.4-1
Biological Study Area



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Data Sources: Esri Imagery, 2016.

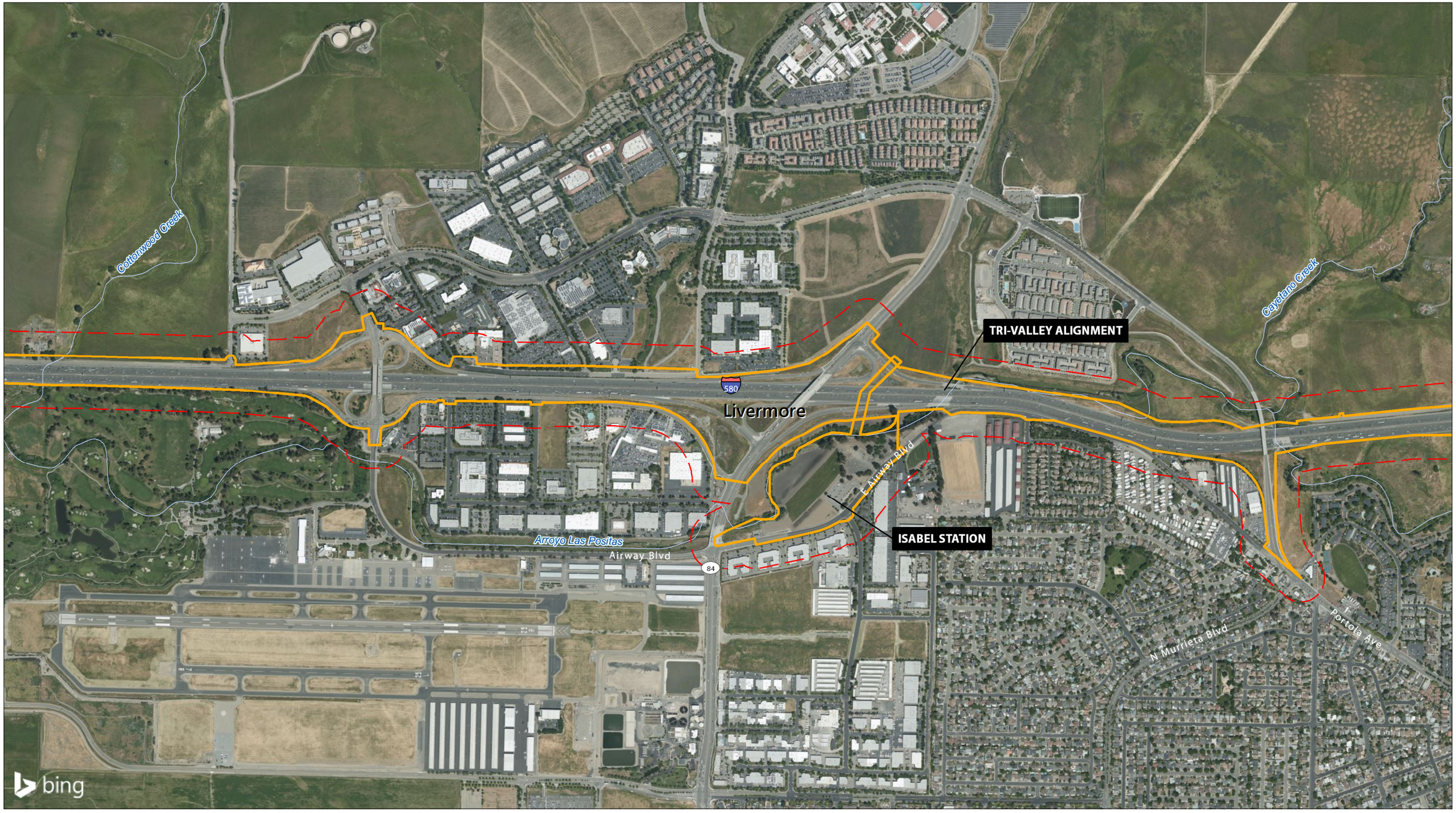
Environmental Footprint
Biological Study Area



Tri-Valley • San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-2
Biological Study Area

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Data Sources: Esri Imagery, 2016.

Environmental Footprint

Biological Study Area



FIGURE 3.4-3

Biological Study Area

Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY

Valley Link Project

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area



Tri-Valley • San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-4
Biological Study Area

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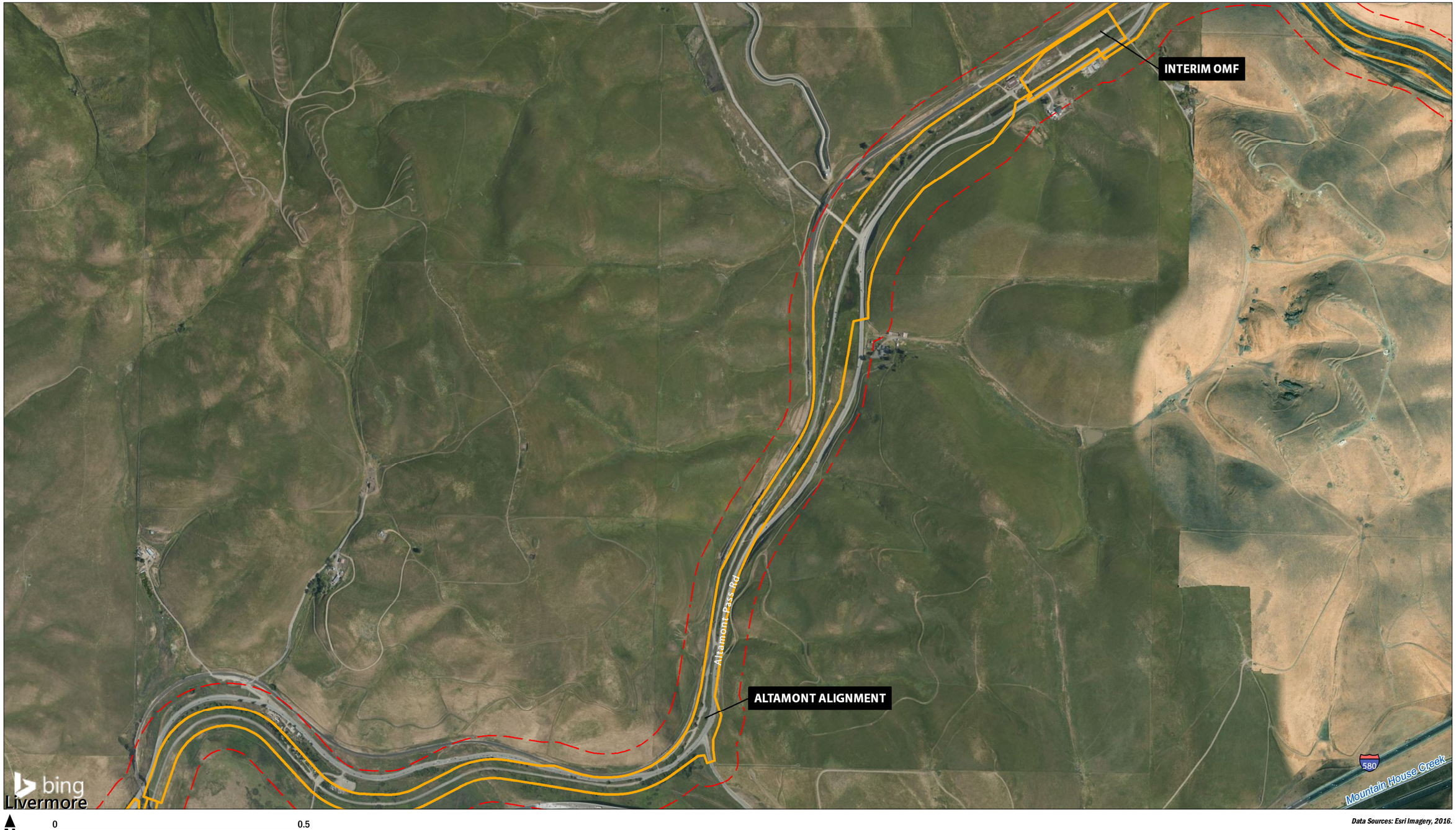
Environmental Footprint
Biological Study Area



FIGURE 3.4-5
Biological Study Area

Tri-Valley ▲ San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area

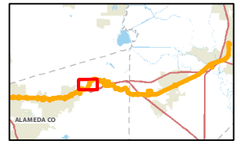
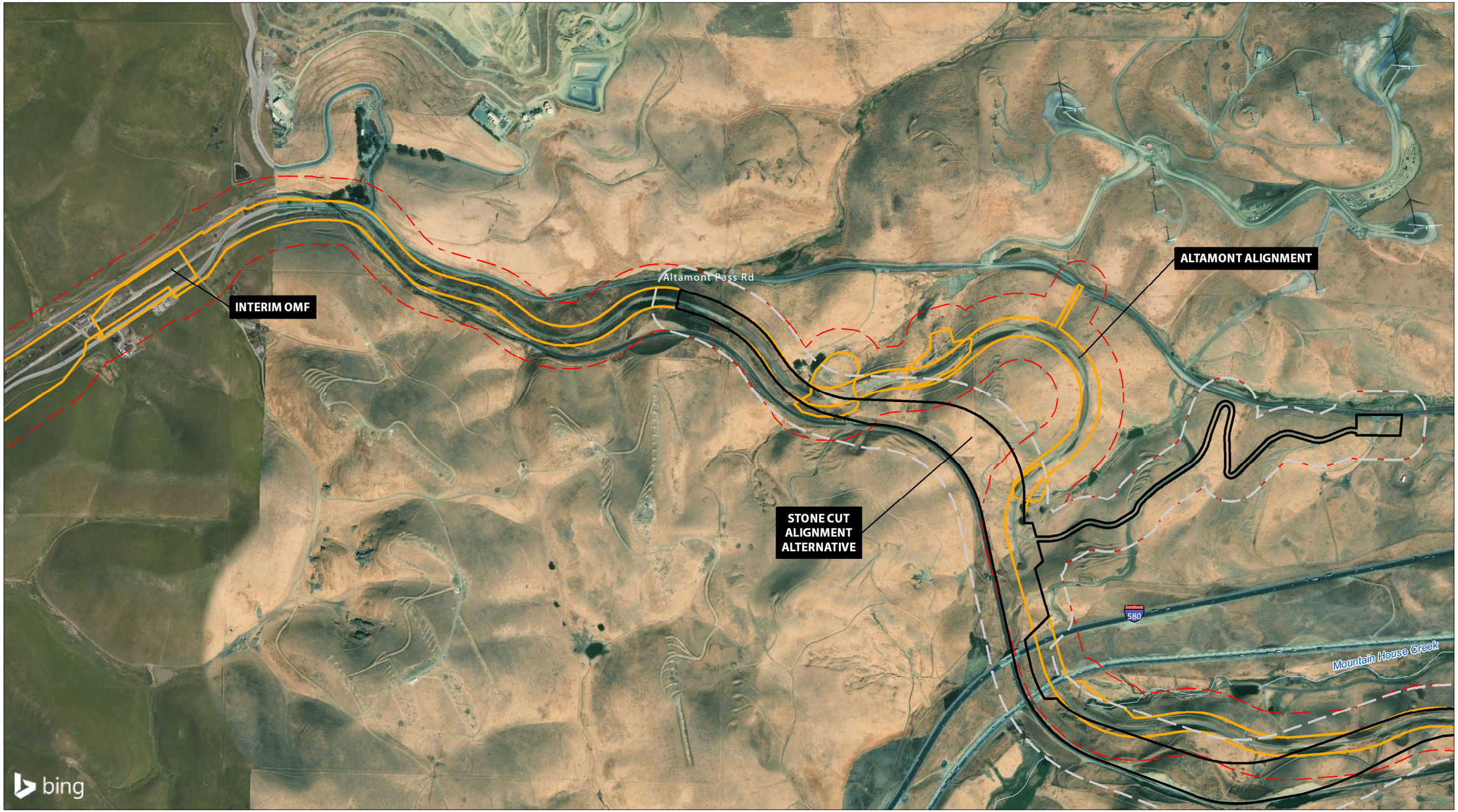


FIGURE 3.4-6
Biological Study Area

Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

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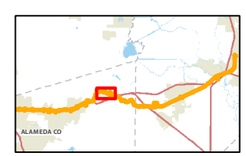


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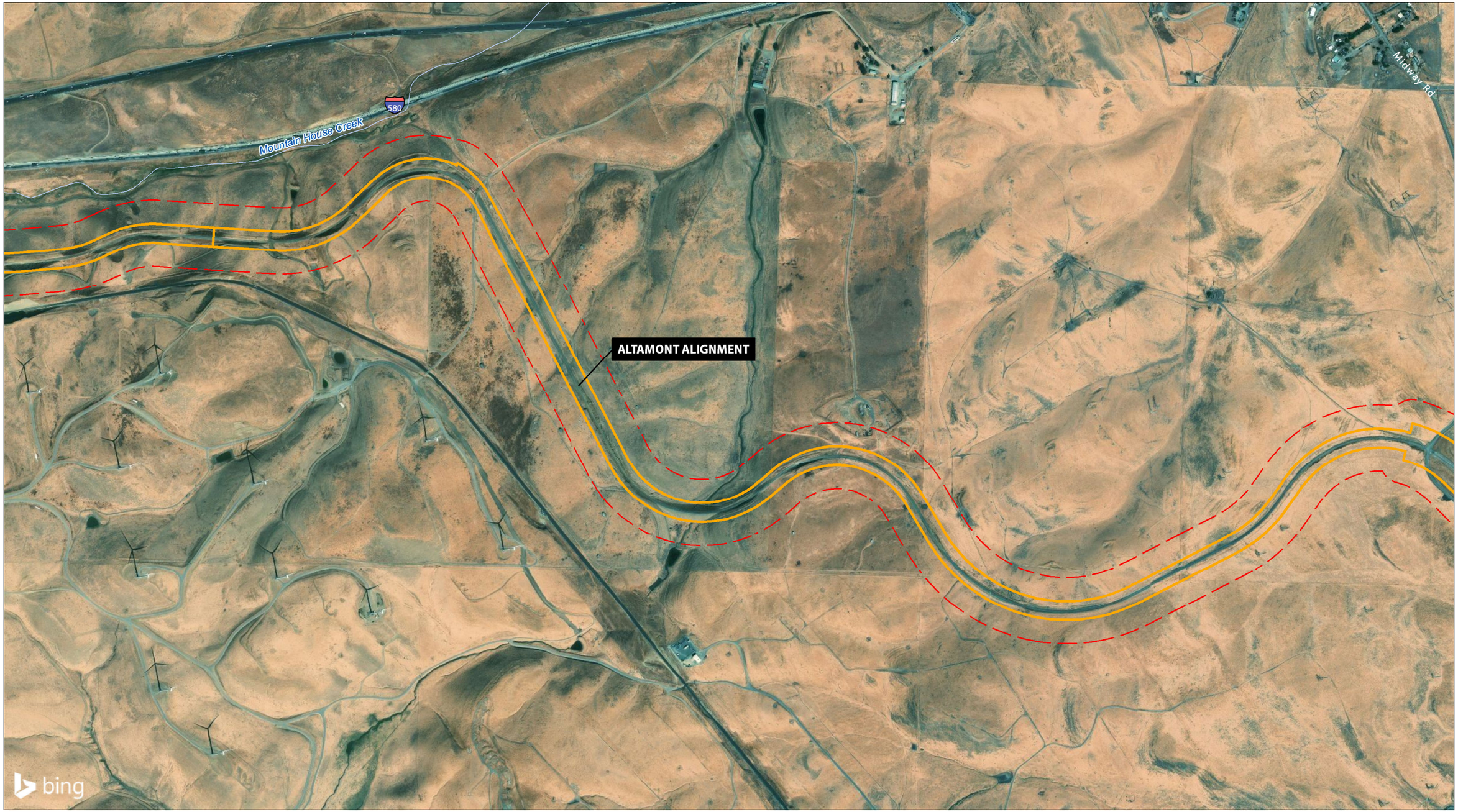
- Environmental Footprint
- Biological Study Area
- Environmental Footprint - Stone Cut Alignment Alternative
- Biological Study Area - Stone Cut Alignment Alternative



Tri-Valley ▲ San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-7
Biological Study Area

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area



FIGURE 3.4-8
Biological Study Area

Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

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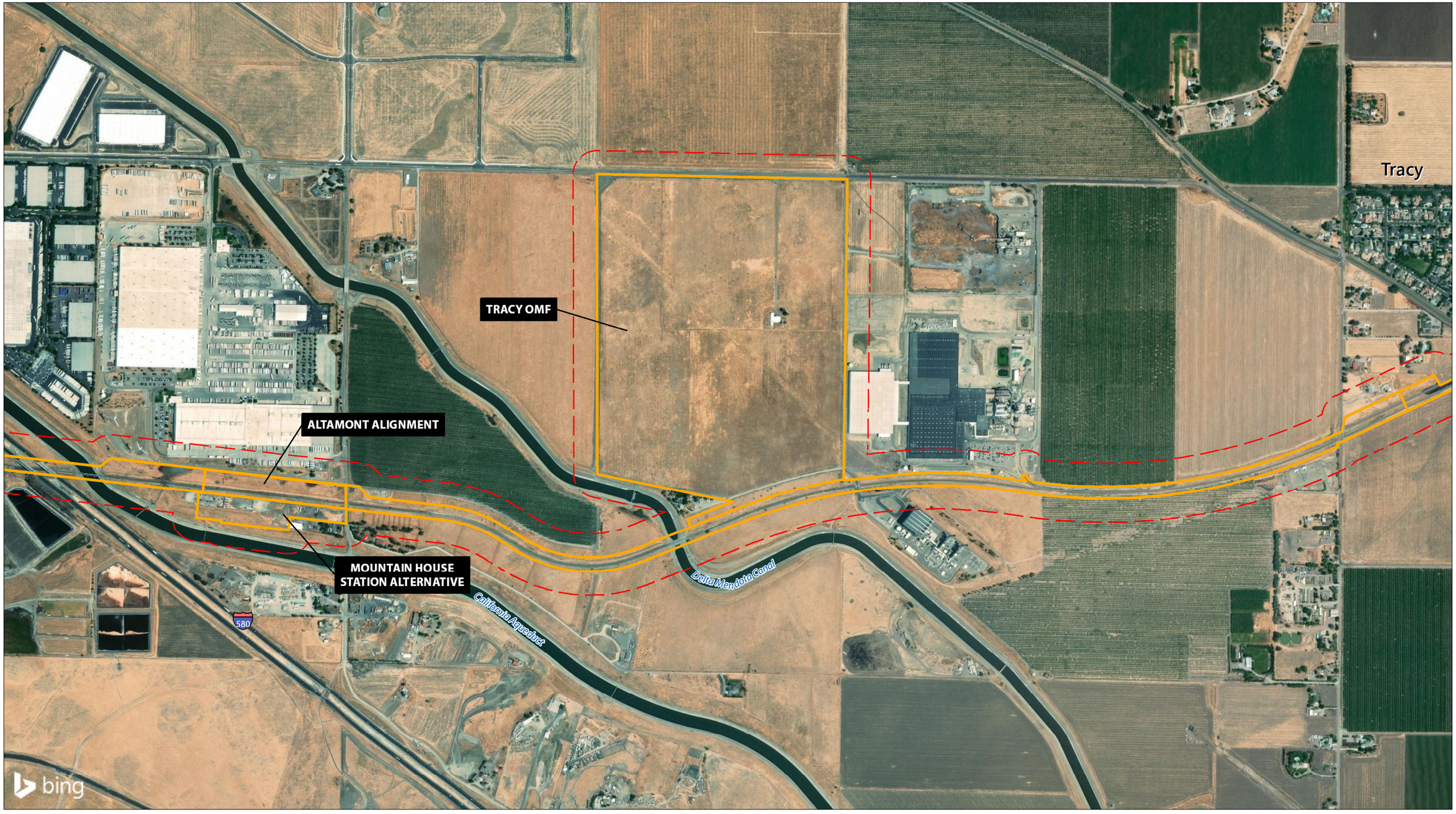
Environmental Footprint
Biological Study Area



Tri-Valley ▲ San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-9
Biological Study Area

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area

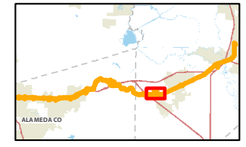


FIGURE 3.4-10
Biological Study Area

Tri-Valley • San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

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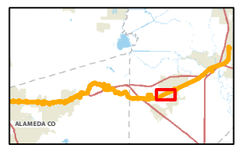


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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area



Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY

Valley Link Project

FIGURE 3.4-11

Biological Study Area

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area



FIGURE 3.4-12
Biological Study Area

Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

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Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area

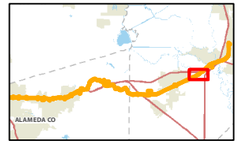
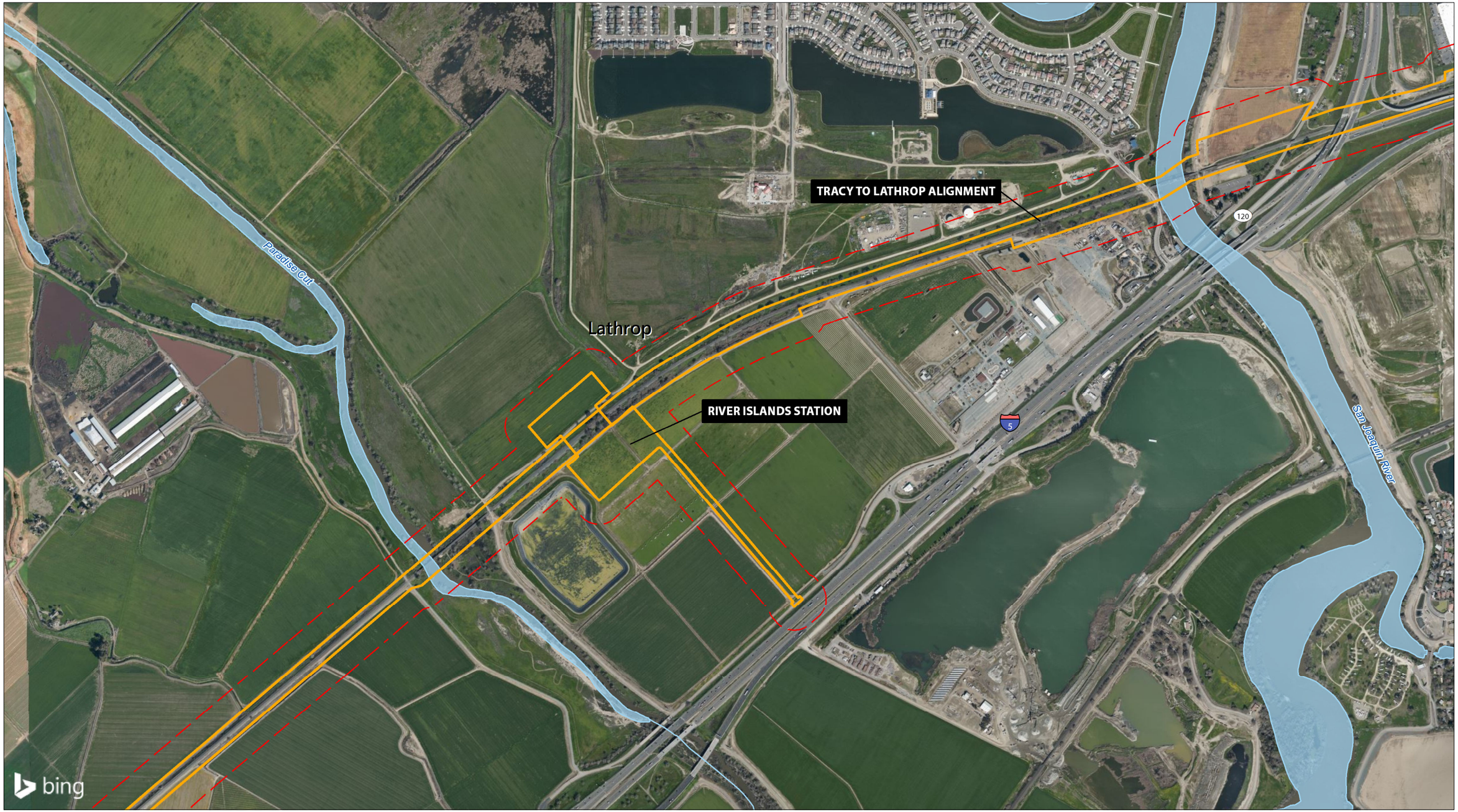


FIGURE 3.4-13
Biological Study Area

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Valley Link Project

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Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint
Biological Study Area

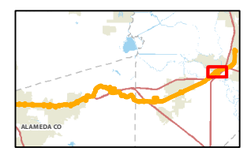
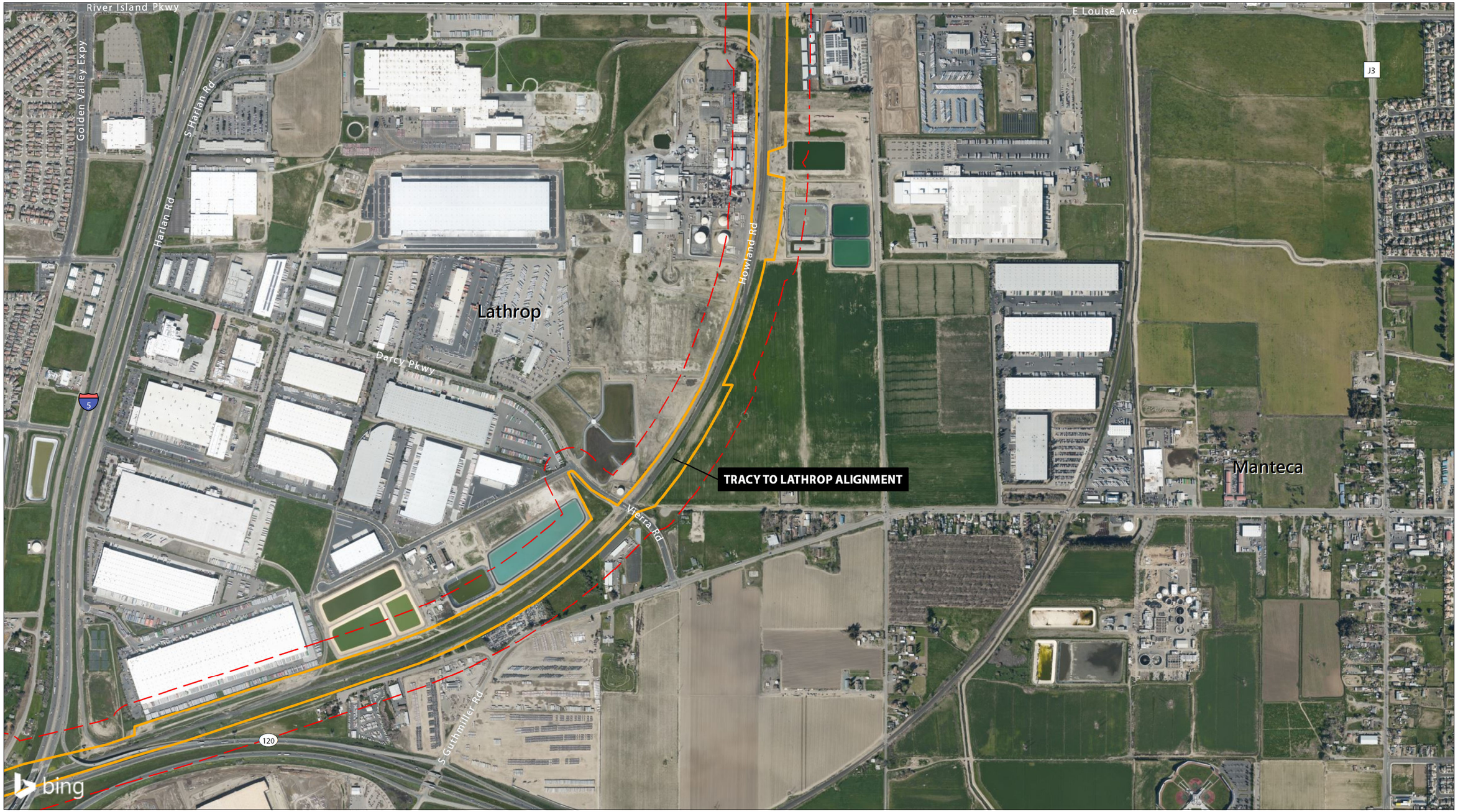


FIGURE 3.4-14
Biological Study Area

Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

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Data Sources: Esri Imagery, 2016.

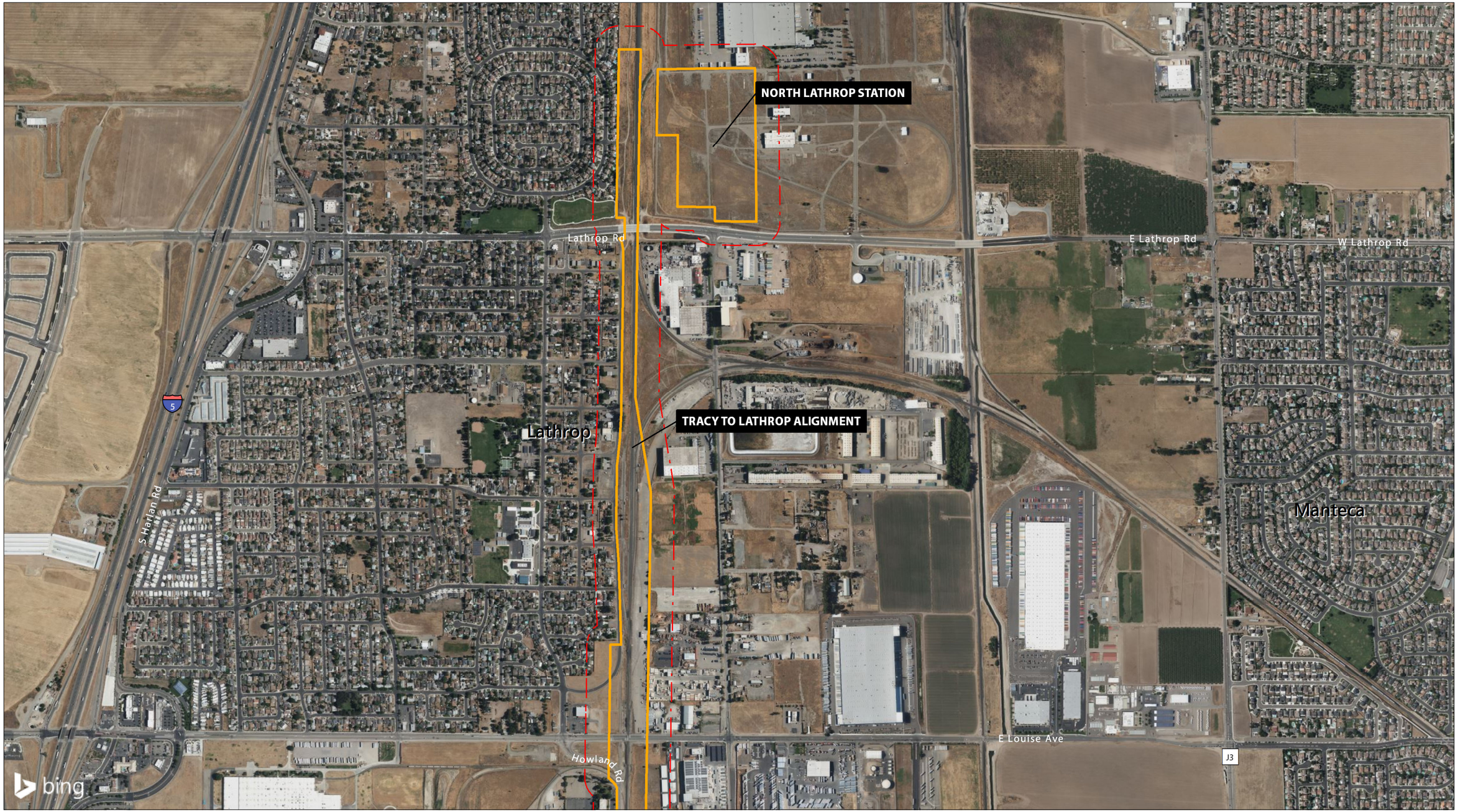
Environmental Footprint
Biological Study Area



FIGURE 3.4-15
Biological Study Area

Tri-Valley ▲ San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

ICF11/4/2020 USER 29391 PATH \\PDCOITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\110_Update_BioStudyArea_20201103\ValleyLink_BioStudyArea_20201103.mxd



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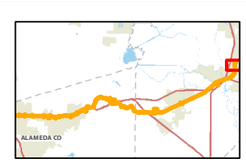
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Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint

Biological Study Area



Tri-Valley ▲ San Joaquin Valley REGIONAL RAIL AUTHORITY

Valley Link Project

FIGURE 3.4-16

Biological Study Area

Table 3.4-1. Land Cover Types in the Proposed Project, Alternative Stations, and Alternative OMF Footprint (acres) [a]

	Aquatic				Cropland				Grassland		Riparian			Scrubland	Wetland				
Proposed or Alternative Facility	**Ditch**	**Ephemeral Drainage**	**Pond**	**Riverine**	**Fallow**	**Orchard**	**Row Crops**	**Developed/ Landscaped**	**California Annual Grassland**	**Salt Grass Flat**	**Mixed Willow Riparian Scrub**	**Mixed Riparian Forest and Woodland**	**Ruderal**	**Alkali Scrub**	**Alkali Seasonal Wetland**	**Freshwater Marsh**	**Riverine Seasonal Wetland**	**Vernal Pool**	**Total**
Tri-Valley Segment																			
Tri-Valley Alignment [b]	0.23	0.03	0.02	1.73	1.29	—	—	557.00	22.59	0.24	0.05	2.98	74.65	0.48	0.11	—	—	—	661.39
Temporary Construction Areas [b]	—	—	—	—	—	—	—	2.78	0.04	—	—	—	1.85	—	—	—	—	—	4.67
Isabel Station	—	—	—	—	11.49	—	—	7.57	—	—	—	3.46	6.19	—	—	—	—	—	28.70
Southfront Road Station Alternative	—	—	—	—	—	—	—	16.07	—	—	—	—	11.95	—	—	—	—	—	28.02
Greenville Station	—	—	—	—	—	—	—	28.37	0.60	1.10	—	—	11.49	—	—	—	0.29	—	41.85
Altamont Segment																			
Altamont Alignment [c]	—	0.02	<0.01	1.26	1.45	1.99	0.30	85.70	255.26	1.90	1.74	—	36.01	—	23.96	—	1.90	0.04	411.76
Temporary Construction Areas [c]	—	—	0.06	—	—	—	—	1.26	13.22	—	—	—	—	—	—	—	0.03	—	14.62
Stone Cut Alignment Alternative [d]	—	0.06	—	—	—	—	—	5.30	94.47	—	—	—	—	—	—	—	—	0.04	99.87
Mountain House Station	—	—	—	—	—	—	—	0.03	30.30	—	—	—	0.48	—	—	—	—	—	30.81
Mountain House Station Alternative	—	—	—	—	—	—	—	1.18	13.44	—	—	—	1.84	—	—	—	0.74	—	17.20
West Tracy OMF Alternative	—	—	—	—	0.37	—	—	0.07	46.53	—	—	—	0.12	—	—	—	0.06	—	47.15
Tracy OMF	—	—	—	—	—	—	84.11	0.48	3.39	—	—	—	0.62	—	—	—	—	—	88.59
Interim OMF	—	—	—	—	—	—	—	8.40	0.76	—	—	—	—	—	—	—	—	—	9.16
Tracy to Lathrop Segment																			
Tracy to Lathrop Alignment Variant 1, Single Track	0.89	—	0.02	1.87 [e]	16.38	2.1	17.6	158.7	2.29	—	0.6	24.24	200.16	—	—	0.19	—	—	425.04
Tracy to Lathrop Alignment Variant 2, Double Track	0.89	—	0.02	3.67 [e]	16.38	2.1	17.6	159	2.29	—	0.72	24.24	200.17	—	—	0.19	—	—	427.27
Downtown Tracy Station	—	—	—	—	—	—	—	5.45	—	—	—	—	7.32	—	—	—	—	—	12.77
Downtown Tracy Station Parking Alternative 1	—	—	—	—	—	—	—	3.13	—	—	—	—	5.52						8.65
Downtown Tracy Station Parking Alternative 2	—	—	—	—	—	—	—	3.19	—	—	—	—	—	—	—	—	—		6.36
River Islands Station	0.04	—	—	<0.01	14.17	—	6.02	1.06	—	—	—	2.02	—	—	—	—	—	—	23.42
North Lathrop Station	—	—	—	—	—	—	—	13.56	—	—	—	—	19.33	—	—	—	—	—	32.90

Notes:
a. Potential impacts associated with implementation of the Proposed Project and the alternatives analyzed at an equal level of detail assume the larger environmental footprint at proposed and alternative stations associated with a potential IOS (i.e., Greenville IOS, Mountain House IOS, Southfront Road Station Alternative IOS, and Mountain House Station Alternative IOS) and/or the expanded parking in 2040. To identify the worst-case scenario, Table 3.4-1 considers the larger footprints of stations associated with a potential IOS and/or the expanded parking in 2040. As such, Table 3.4-1 represent a conservative estimate of land cover within the environmental footprint of the Proposed Project and the alternatives analyzed at an equal level of detail.
b. Impacts from Dublin/Pleasanton Station on developed/landscaped areas are included as part of the Tri-Valley Alignment because this station occurs within developed areas next to the existing station. In addition, the temporary construction areas are associated with the Altamont Alignment.
c. The impact areas for the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track are included as part of the Altamont Alignment. In addition, the temporary construction areas are also associated with the Tri-Valley Alignment.
d. In comparison, the portion of the Altamont Alignment that would be replaced by the Stone Cut Alignment Alternative would include the following land cover within its footprint: ephemeral drainage (0.02 acre); pond (0.06 acre); developed/landscaped (6.73 acres); California annual grassland (74.28 acres); riverine seasonal wetland (0.09 acre); and vernal pool (0.04 acre).
e. The riverine habitat associated with these acreages is associated with Paradise Cut and the San Joaquin River. The Project would include track repairs on the existing bridge (Tracy to Lathrop Alignment Variant 1, Single Track) and construction of two new bridges (Tracy to Lathrop Alignment Variant 2, Double Track). Although Paradise Cut and the San Joaquin River are within the environmental footprint, there would be no direct impacts on this riverine habitat. No piles would be implemented as a part of the Tracy to Lathrop Alignment Variant 1, Single Track, and the piles that would be implemented as a part of the bridges for the Tracy to Lathrop Alignment Variant 2, Double Track, would be on land. The bridges would span Paradise Cut and the San Joaquin River.

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Aquatic

Land Cover Types

Riverine (Streams)

The riverine land cover type includes perennial, intermittent, and ephemeral watercourses, which are characterized by a defined bed and bank. Perennial streams support flowing water year-round in normal rainfall years. Intermittent streams carry water through most of the wet season (November to April), then are dry through most or all of the dry season (May to October) in a normal rainfall year. Ephemeral streams carry water only during or immediately following a rainfall event. The riverine land cover is most closely associated with riparian plant communities. The riparian plant composition as well as the width of the riparian corridor vary, depending on channel slope, magnitude, the frequency of channel and overbank flows, and the frequency and duration of flooding that inundates the broader floodplain.

Major perennial watercourses within the biological study area are the San Joaquin River and Paradise Cut. Numerous intermittent and ephemeral watercourses occur within the study area, including streams, creeks, canals, and ditches (see Figures P-3A, P-3B, and P-3C in Appendix P, *Supporting Hydrology and Water Quality Information*). Intermittent streams include Tassajara Creek, Arroyo Mocho, Arroyo Las Positas, Cottonwood Creek, Collier Canyon Creek, Cayetano Creek, Mountain House Creek, and Tom Paine Slough. Canals and ditches are included in the riverine land cover type because their functions are similar to those of degraded streams. In addition, the Delta-Mendota Canal and the California Aqueduct convey water to Southern California. Because of the nature of these built structures, canals and ditches often are managed with minimal vegetation to enhance the flow of water through the channels.

Ditch

Ditches, which are artificial channels, are typically constructed of natural soil materials in upland areas to convey seasonal water (often associated with agriculture). Although the banks are generally composed of soil, portions of the ditch may be lined with riprap, concrete, or rock gabions for bank stabilization. Ditches have functions similar to those of degraded streams. Because of their purpose, ditches often are managed with minimal vegetation to enhance the flow of water through the channels. Ditches are found throughout the study area (Table 3.4-1, Figure 3.4-2).

Ephemeral Drainage

Ephemeral drainages have flowing water only during, or for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Runoff from rainfall is the primary source of water for streamflow, not groundwater. Numerous ephemeral drainages occur within the study area, primarily in the Altamont segment (Table 3.4-1).

Pond

Ponds are small (smaller than 0.4 acre in surface area) perennial or seasonal water bodies that support little or no vegetation. If vegetation is present, it is typically submerged or floating. Ponds within the study area are limited to stock ponds, settlement ponds, and constructed ponds (Table 3.4-1).

Wildlife and Fish Associations

Streams and ponds provide habitat for many fish and wildlife species. Fish species in the study area are both native and nonnative. Species composition in aquatic habitat varies, depending on physical characteristics such as salinity, temperature, flow velocity, dissolved oxygen, organic matter, and the composition of plant species. Some of the watercourses and water bodies contain special-status anadromous species, such as green sturgeon (*Acipenser medirostris*), steelhead (*Oncorhynchus mykiss*), river lamprey (*Lampetra ayresi*), and Chinook salmon (*Oncorhynchus tshawytscha*). Other watercourses contain California Species of Special Concern, such as hardhead (*Mylopharodon conocephalus*).

Special-status wildlife species known to use freshwater aquatic habitat include California red-legged frog, California tiger salamander (*Ambystoma californiense*), western pond turtle (*Actinemys marmorata*), and giant garter snake (*Thamnophis gigas*). Several water bird species that are known to use aquatic communities include American wigeon (*Anas americana*), pied-billed grebe (*Podilymbus podiceps*), mallard, American coot (*Fulica americana*), and great egret (*Ardea alba*). Common fish species occurring in the creeks include mosquito fish, threespine stickleback (*Gasterosteus aculeatus*), prickly sculpin (*Cottus asper*), and green sunfish (*Leponis cyanellus*). Common amphibian species that inhabit freshwater aquatic habitat for a portion of their life cycle include Sierran tree frog, California toad (*Anaxyrus boreas halophilus*), and California newt (*Taricha torosa*).

Cropland

Cover Types

Cropland includes both currently cultivated lands (e.g., row crops, orchards) and fallow fields. The majority of croplands occur in the eastern portion of the study area, from Tracy to Lathrop (Table 3.4-1).

Row Crop

Row crops in the study area include, but are not limited to, alfalfa (*Medicago sativa*), strawberries (*Fragaria* sp.), watermelon (*Citrullus lanatus*), cantaloupe (*Cucumis melo*), tomato (*Lycopersicon* sp.), and pumpkin (*Curcurbita pepo*).

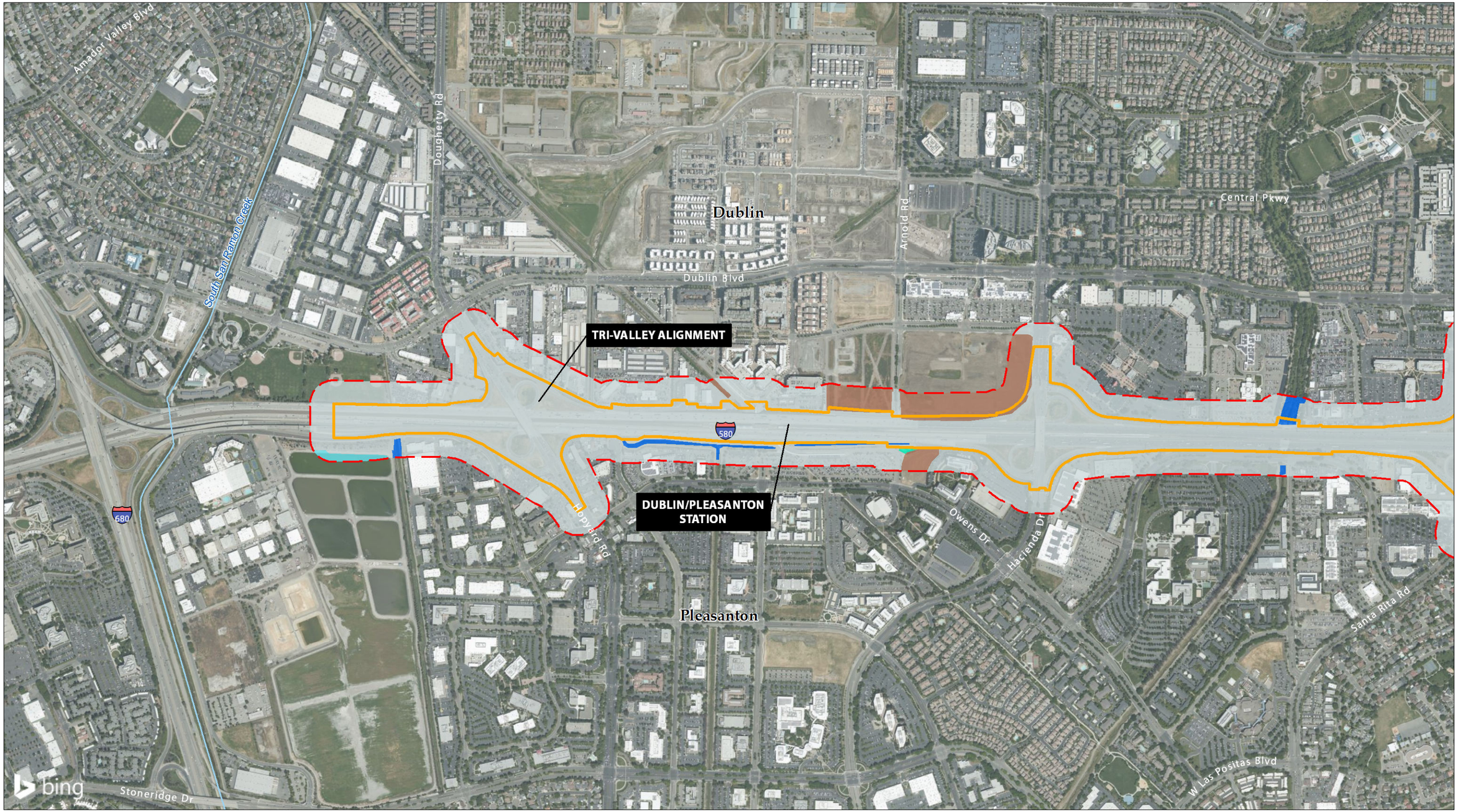
Orchard

Orchards consist of monocultures of evenly spaced, generally low bushy trees that are similar in canopy size and height. Canopy cover ranges from open to dense, depending on the age of the trees, with saplings and young trees having relatively open canopies and older trees providing more closed canopy cover. Depending on management practices, the understory is either devoid of vegetation or composed of various weedy annual grasses and forbs. Where herbaceous vegetation is present, it is often mowed, sprayed, or tilled to facilitate harvesting and conserve water.

Fallow

Fallow fields are agricultural lands that are not currently used for cultivation. These areas are generally devoid of vegetation and left unseeded for several seasons so that the soil can regain fertility prior to being cultivated again for row or orchard crops.

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N

0 0.5

Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Open Water
Aquatic, Pond
Aquatic, Riverine
Developed/Landscaped
Ruderal

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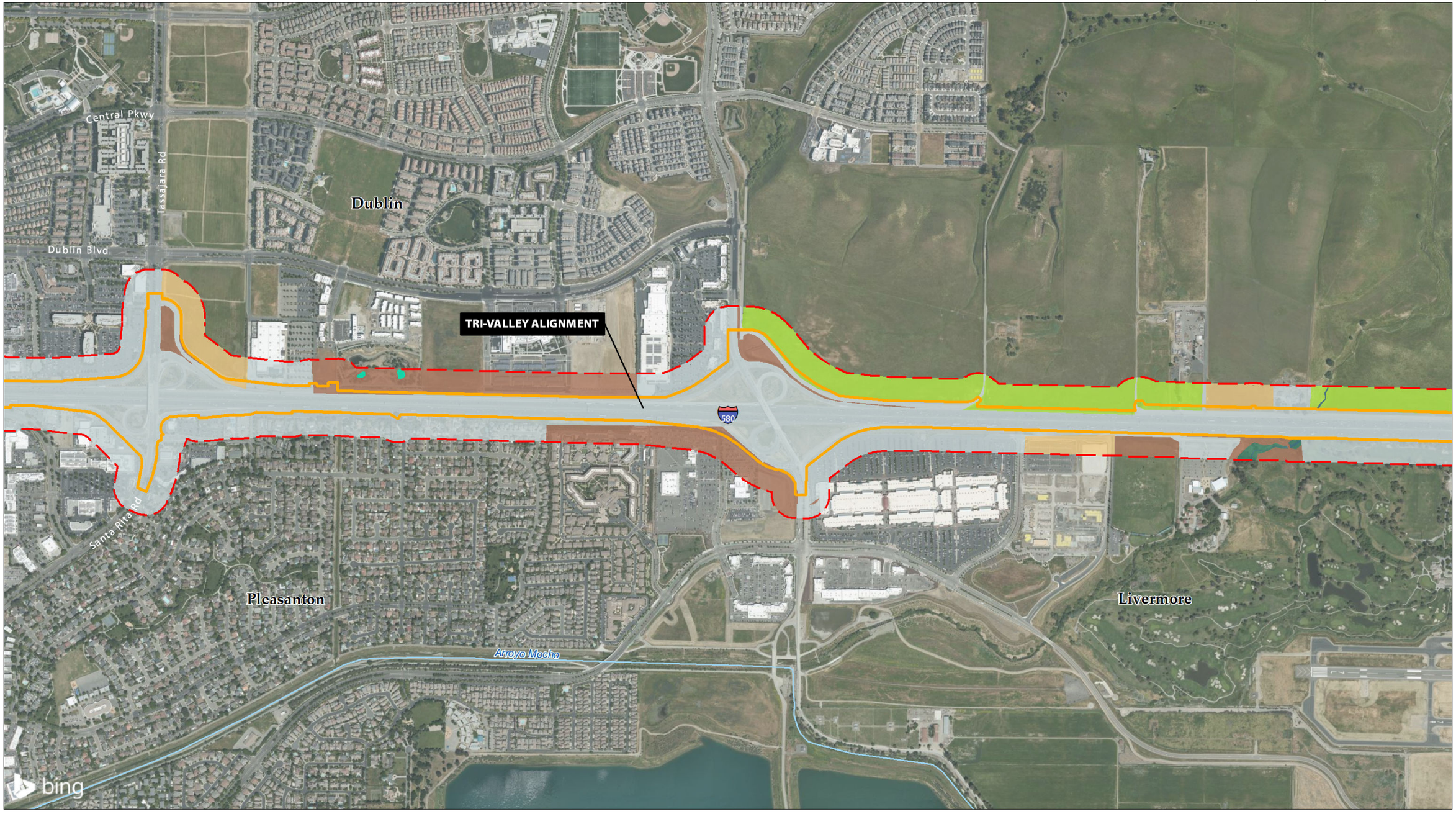
Valley Link Project



FIGURE 3.4-17

Land Cover

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Miles

Data Sources: Esri Imagery, 2016.

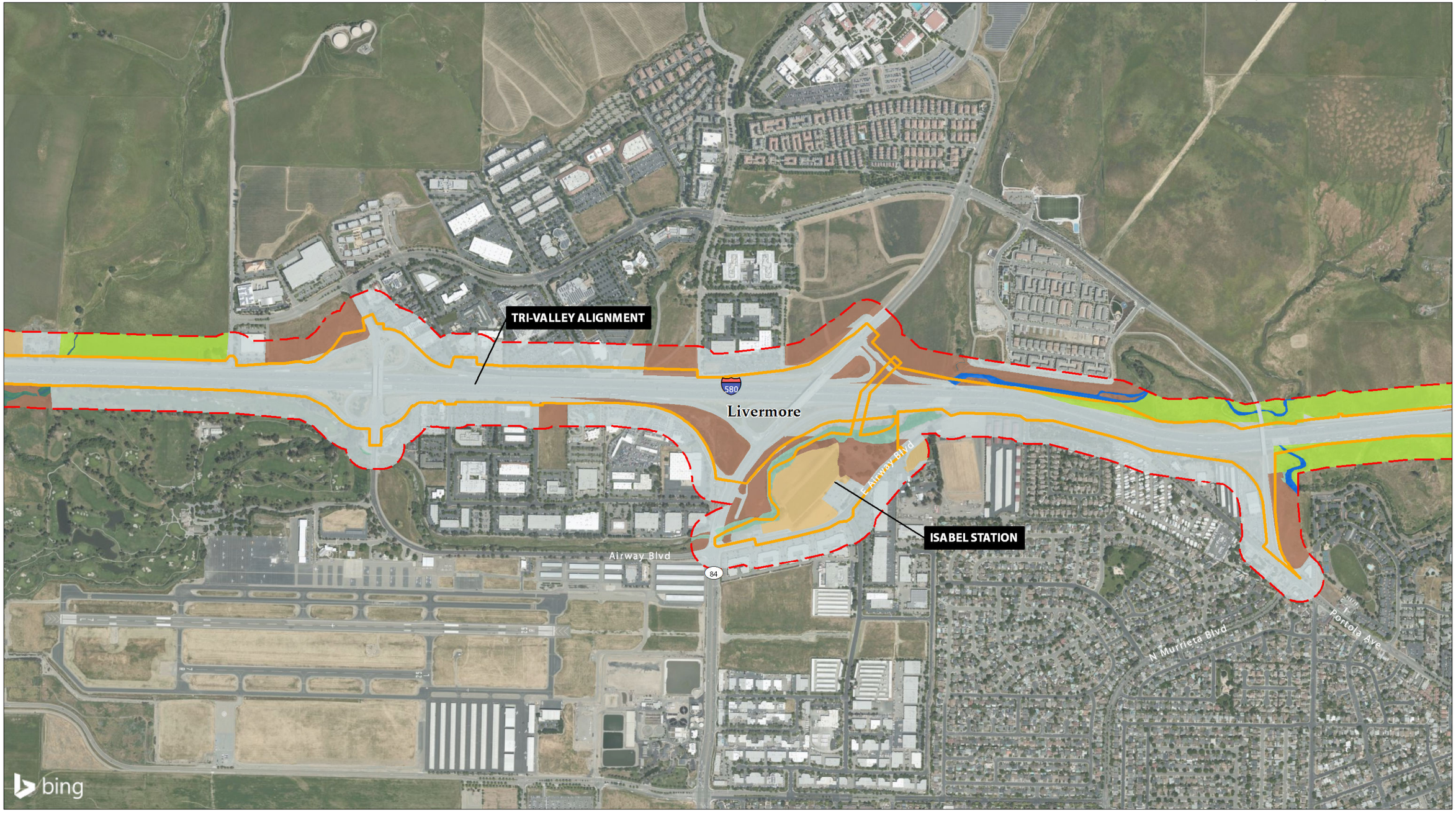
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Ephemeral Drainage
Aquatic, Pond
Cropland, Fallow
Developed/Landscaped
Grassland, California Annual Grassland
Riparian, Mixed Willow Scrub
Ruderal



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Valley Link Project

FIGURE 3.4-18
Land Cover

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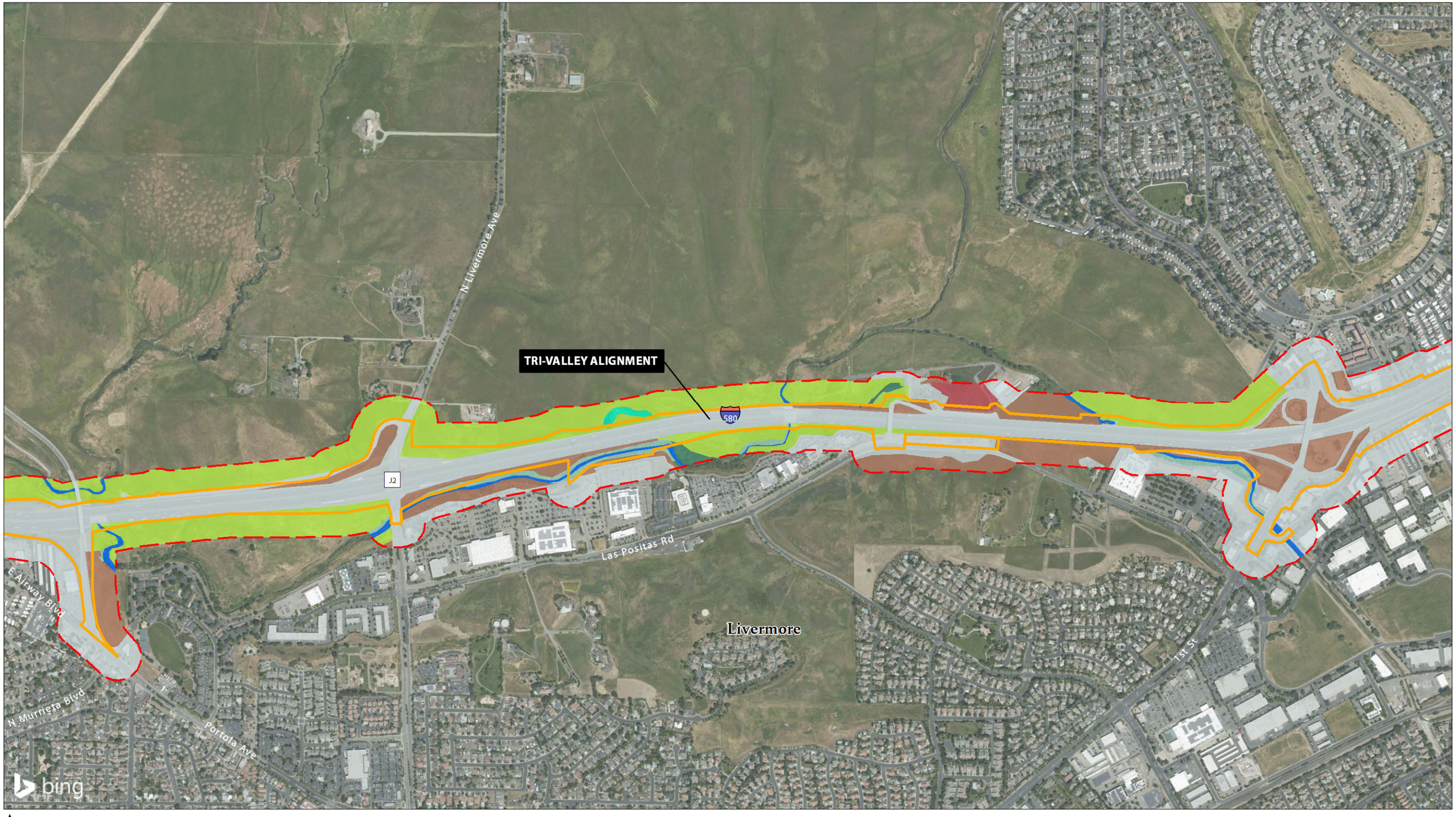
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Ephemeral Drainage
Aquatic, Riverine
Cropland, Fallow
Developed/Landscaped
Grassland, California Annual Grassland
Riparian, Mixed Riparian Forest and Woodland
Riparian, Mixed Willow Scrub
Ruderal

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Valley Link Project



FIGURE 3.4-19
Land Cover

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0 0.5
Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area

Aquatic, Ephemeral Drainage
Aquatic, Pond
Aquatic, Riverine

Developed/Landscaped
Grassland, California Annual Grassland
Riparian, Mixed Riparian Forest and Woodland

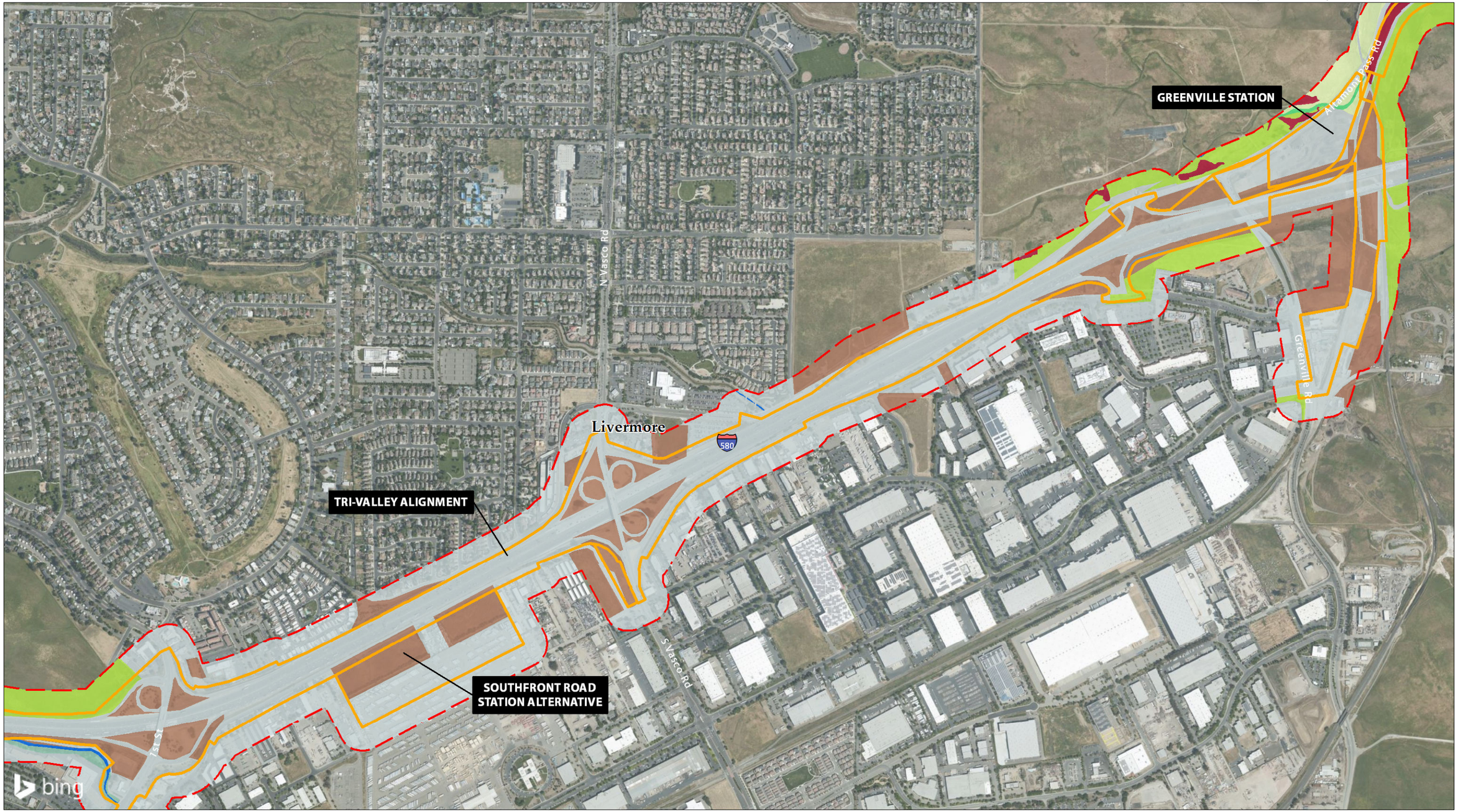
Riparian, Mixed Willow Scrub
Ruderal
Scrub, Alkaline



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Valley Link Project

FIGURE 3.4-20
Land Cover

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Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area

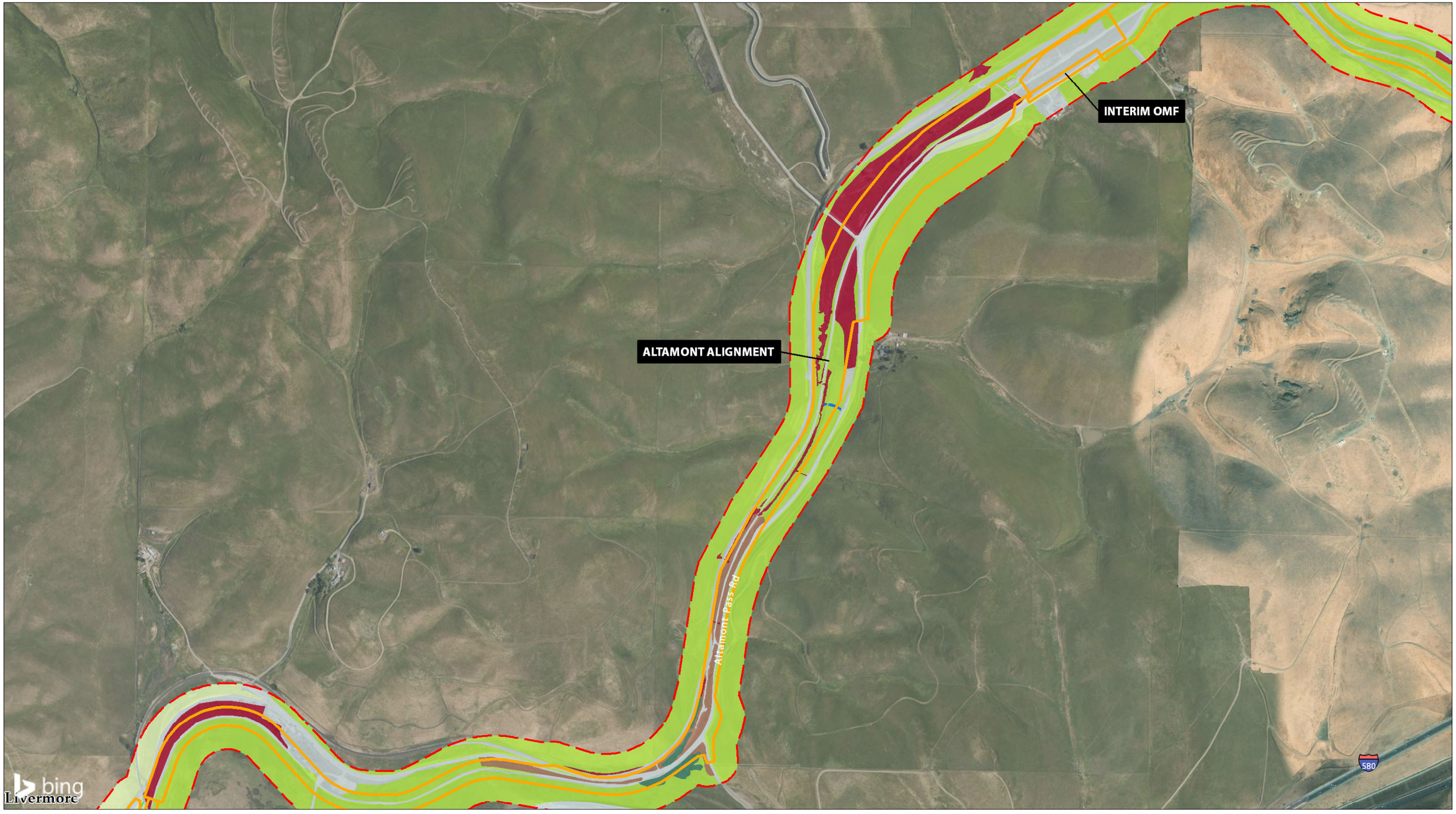
Aquatic, Ditch
Aquatic, Riverine
Developed/Landscaped
Grassland, California Annual Grassland
Grassland, Salt Grass Flat
Riparian, Mixed Riparian Forest and Woodland
Ruderal
Wetland, Alkali Seasonal
Wetland, Riverine Seasonal Wetland



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FIGURE 3.4-21
Land Cover

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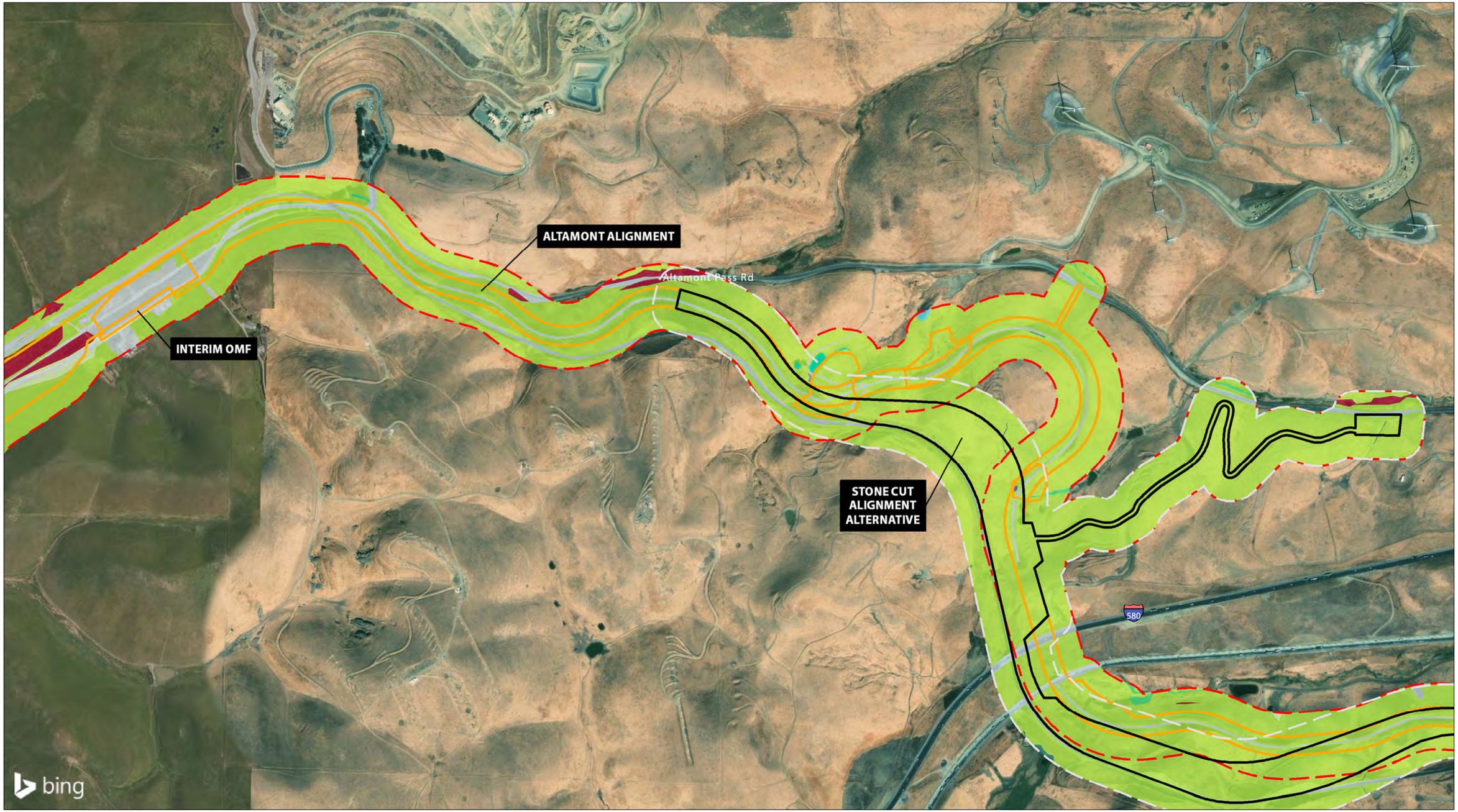
Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Riverine
Developed/Landscaped
Grassland, California Annual Grassland
Grassland, Salt Grass Flat
Riparian, Mixed Willow Scrub
Ruderal
Wetland, Alkali Seasonal
Wetland, Riverine Seasonal Wetland



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Valley Link Project

FIGURE 3.4-22
Land Cover



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0 0.5

Miles

Data Sources: Esri Imagery, 2016.

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Valley Link Project

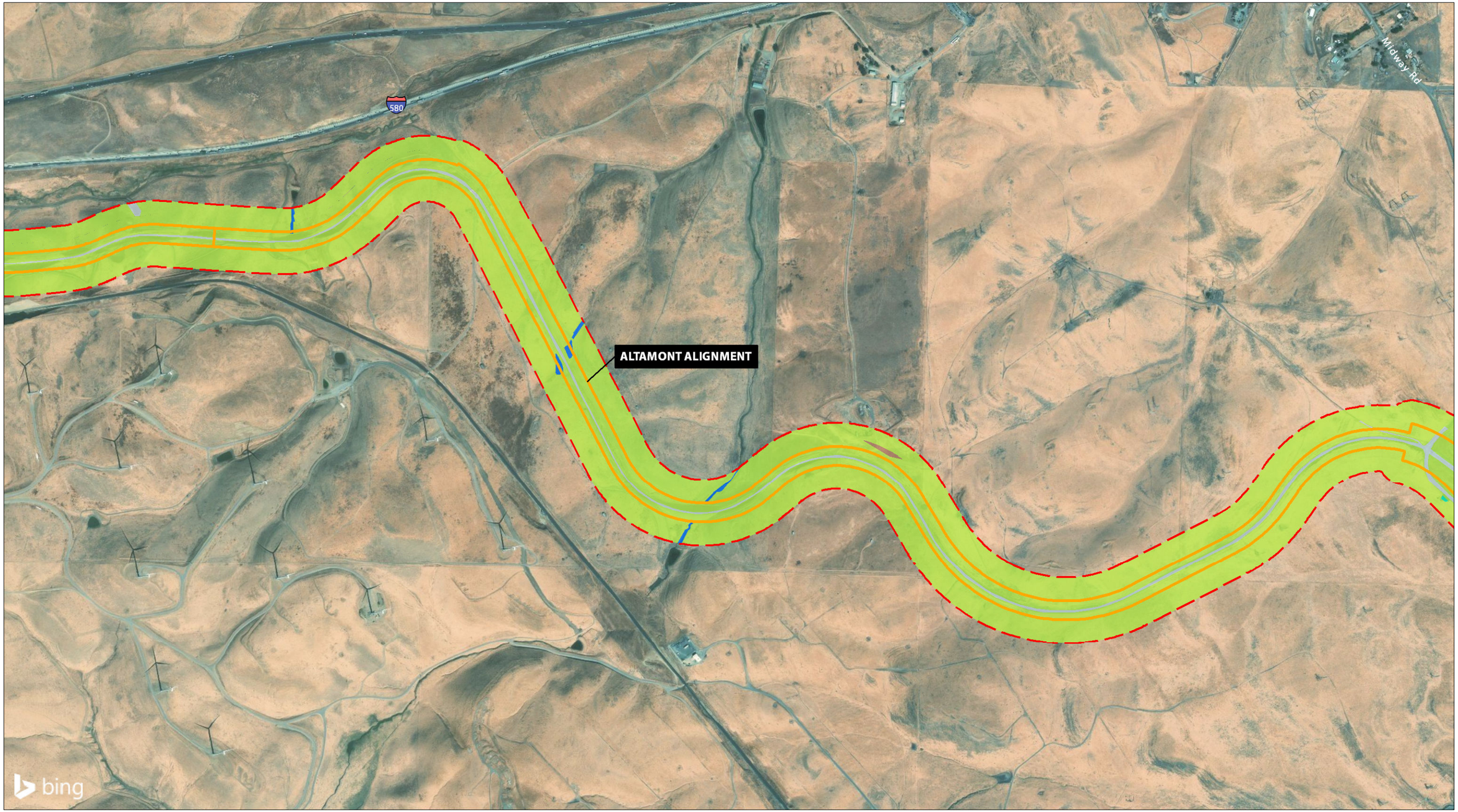
- Environmental Footprint Direct Impacts
- Biological Study Area
- Environmental Footprint Direct Impacts – Stone Cut Alignment Alternative
- Biological Study Area – Stone Cut Alignment Alternative
- Aquatic, Ephemeral Drainage
- Aquatic, Open Water
- Aquatic, Pond
- Developed/Landscaped
- Grassland, California Annual Grassland
- Grassland, Salt Grass Flat
- Wetland, Alkali Seasonal
- Wetland, Freshwater Marsh
- Wetland, Riverine Seasonal Wetland
- Wetland, Seasonal Wetland
- Wetland, Vernal Pool



FIGURE 3.4-23

Land Cover

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Data Sources: Esri Imagery, 2016.

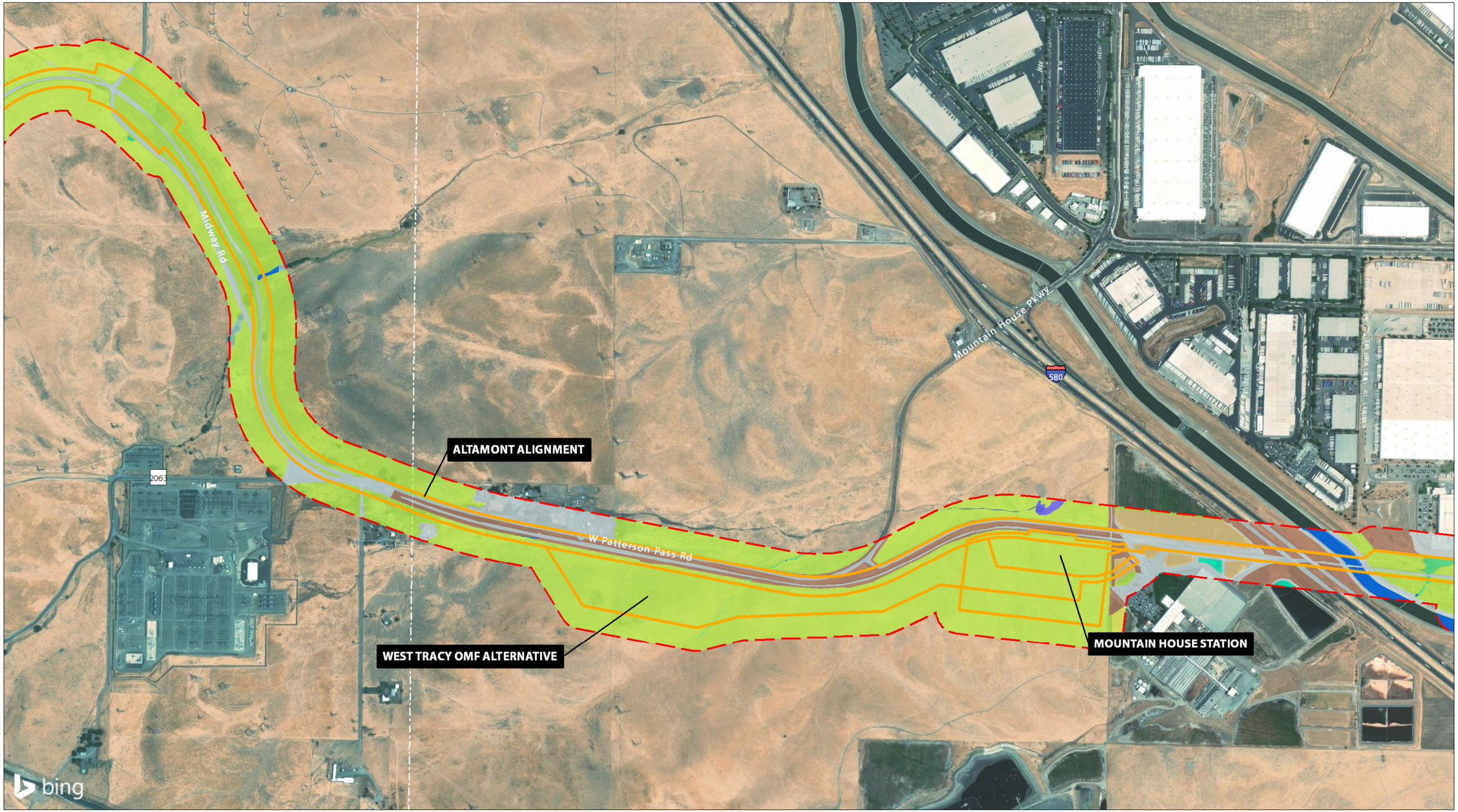
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Pond
Aquatic, Riverine
Developed/Landscaped
Grassland, California Annual Grassland
Grassland, Salt Grass Flat
Ruderal



Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-24
Land Cover

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Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area

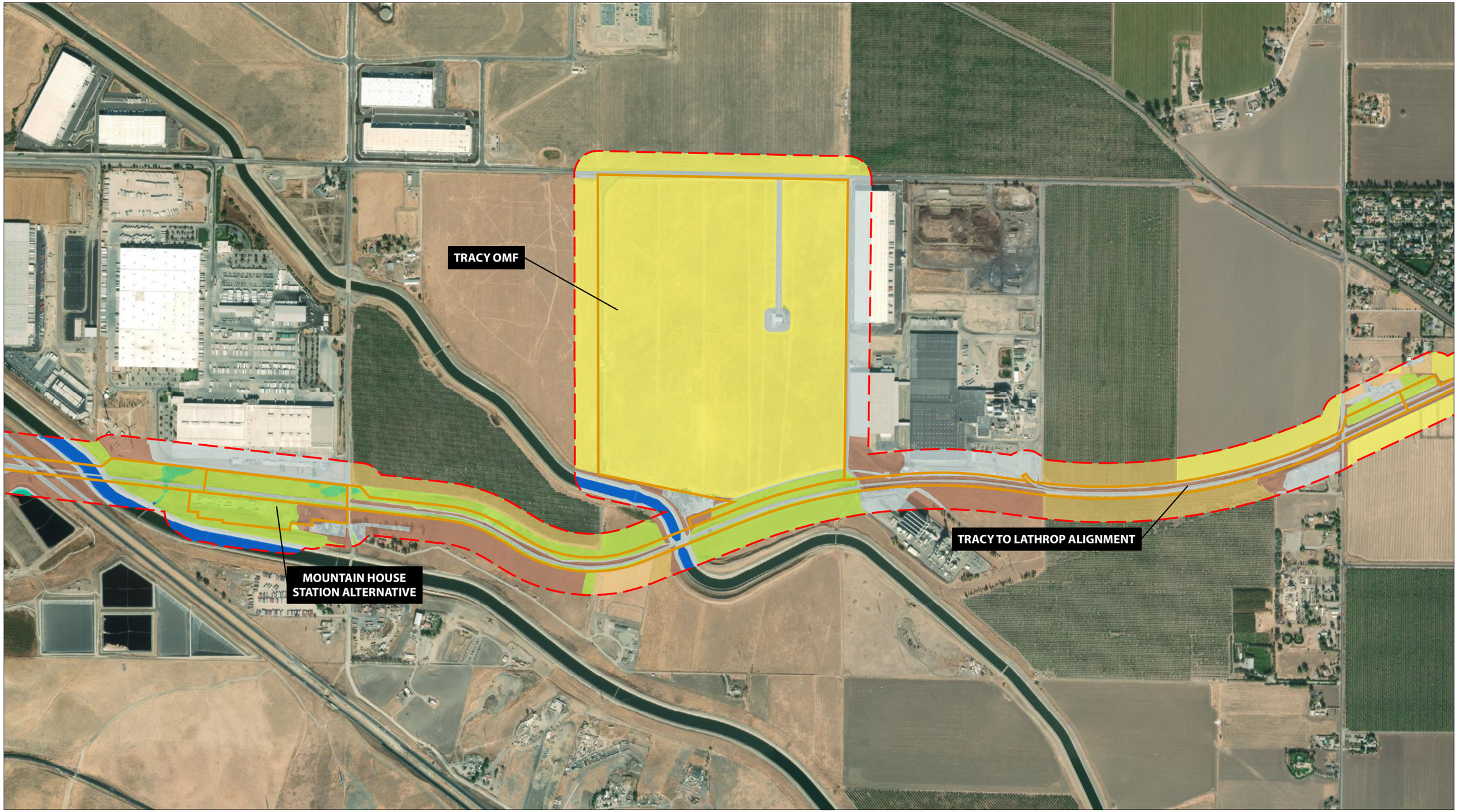
Aquatic, Ephemeral Drainage
Aquatic, Pond
Aquatic, Riverine
Cropland, Fallow
Cropland, Rowcrops
Developed/Landscaped
Grassland, California Annual Grassland
Riparian, Mixed Riparian Forest and Woodland
Ruderal
Wetland, Riverine Seasonal Wetland
Wetland, Vernal Pool



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FIGURE 3.4-25
Land Cover

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0 0.5
Miles

Data Sources: Esri Imagery, 2016.

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Valley Link Project

- Environmental Footprint Direct Impacts
- Biological Study Area
- Aquatic, Pond
- Aquatic, Riverine
- Cropland, Fallow
- Cropland, Orchard
- Cropland, Rowcrops
- Developed/Landscaped
- Grassland, California Annual Grassland
- Ruderal
- Wetland, Riverine Seasonal Wetland



FIGURE 3.4-26
Land Cover

ICF 7/15/2020 USER 24991 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\98_LandCover_Fig_20200714\ValleyLink_LandCover_20200714.mxd



N

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Miles

Data Sources: Esri Imagery, 2016.

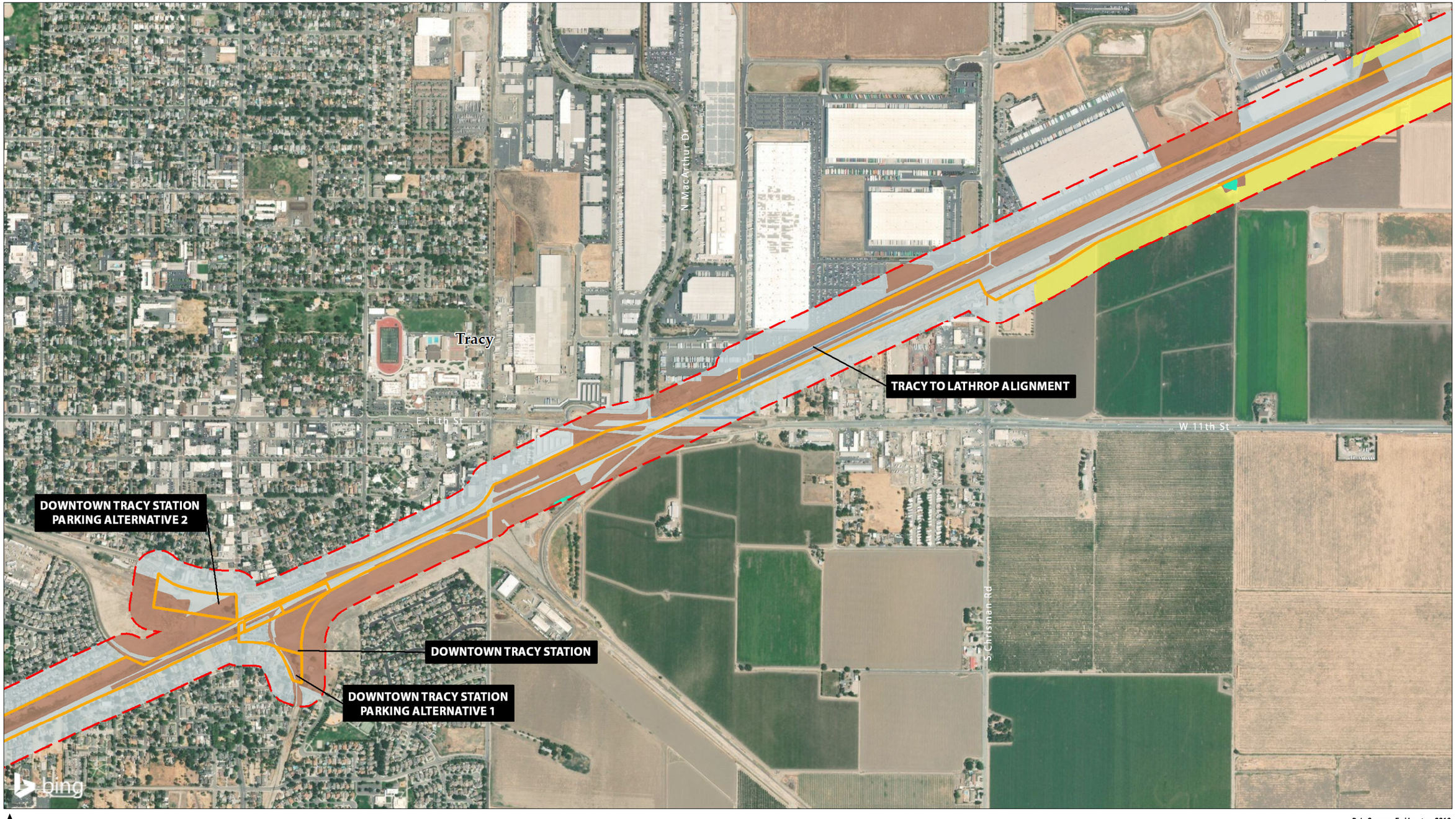
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Riverine
Cropland, Fallow
Cropland, Orchard
Cropland, Rowcrops
Developed/Landscaped
Grassland, California Annual Grassland
Ruderal



Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-27
Land Cover

ICF7/15/2020 USER 24991 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\98_LandCover_Fig_20200714\ValleyLink_LandCover_20200714.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

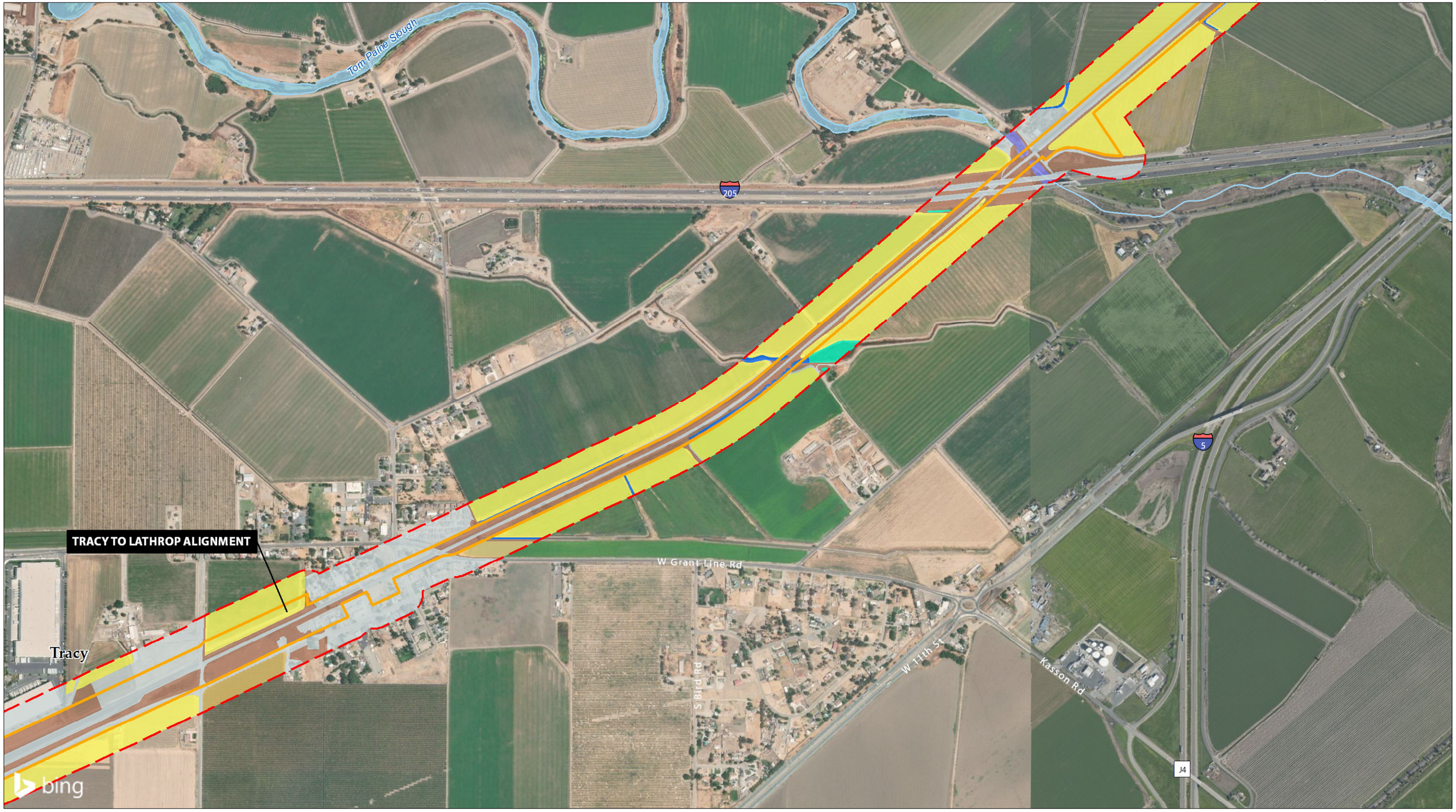
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Ditch
Aquatic, Pond
Cropland, Rowcrops
Developed/Landscaped
Ruderal



Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-28
Land Cover

ICF 7/15/2020 USER 24991 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\98_LandCover_Fig_20200714\ValleyLink_LandCover_20200714.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

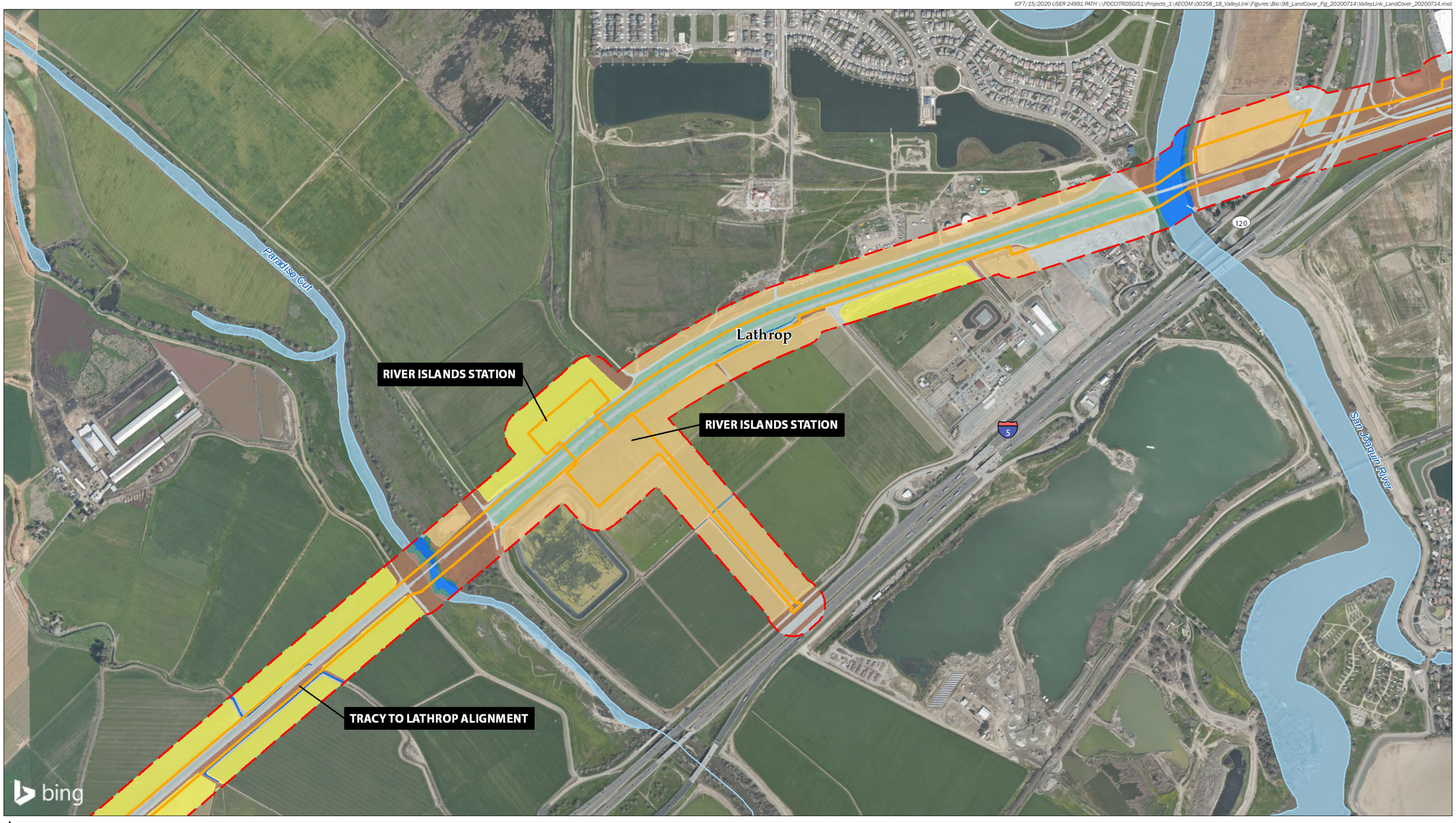
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Pond
Aquatic, Riverine
Cropland, Fallow
Cropland, Orchard
Cropland, Rowcrops
Developed/Landscaped
Ruderal
Wetland, Freshwater Marsh



Tri-Valley • San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-29
Land Cover

ICF7/15/2020 USER 24991 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\98_LandCover_Fig_20200714\ValleyLink_LandCover_20200714.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

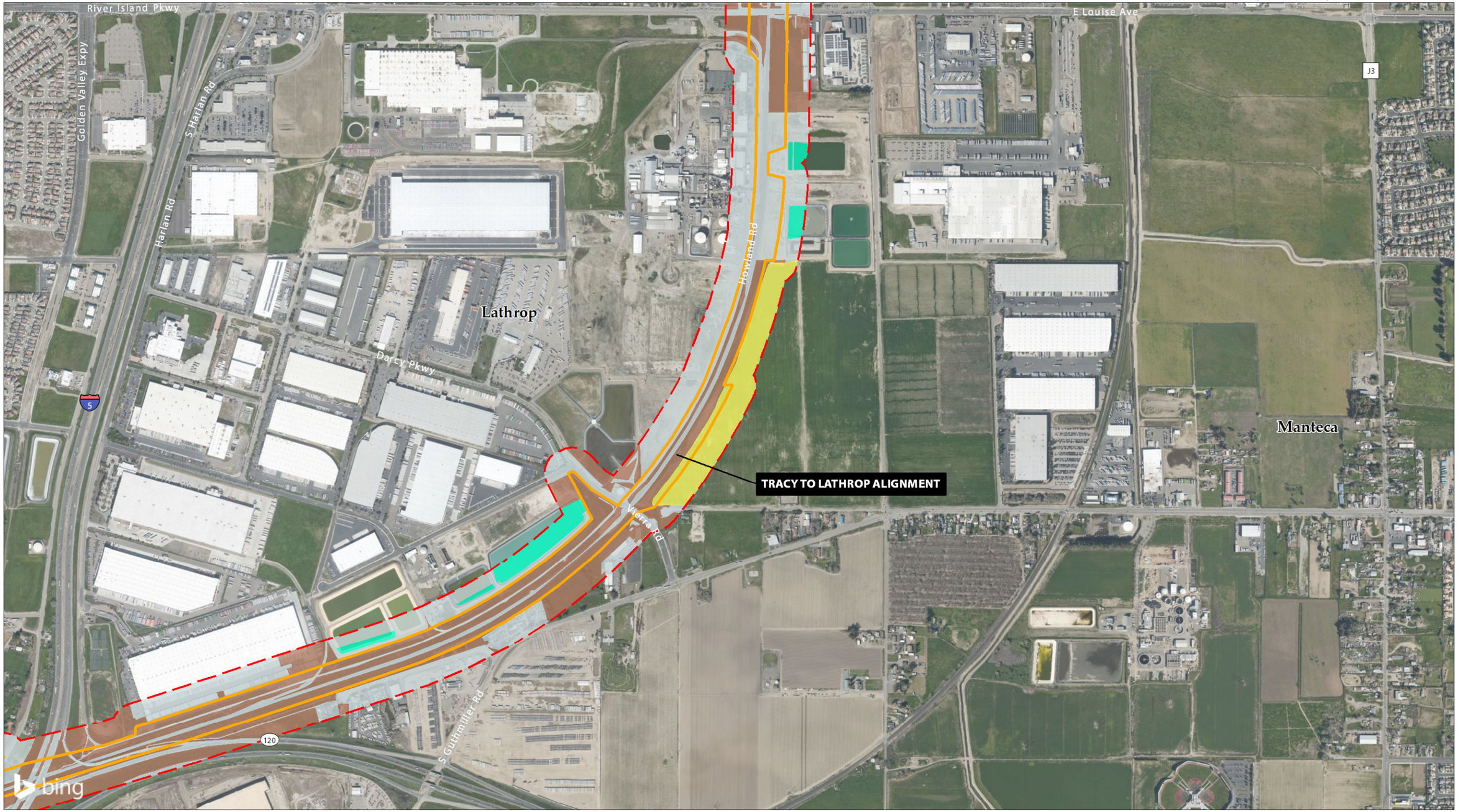
Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Ditch
Aquatic, Riverine
Cropland, Fallow
Cropland, Rowcrops
Developed/Landscaped
Riparian, Mixed Riparian Forest and Woodland
Riparian, Mixed Willow Scrub
Ruderal



FIGURE 3.4-30
Land Cover

ICF7/15/2020 USER 24991 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\98_LandCover_Fig_20200714\ValleyLink_LandCover_20200714.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

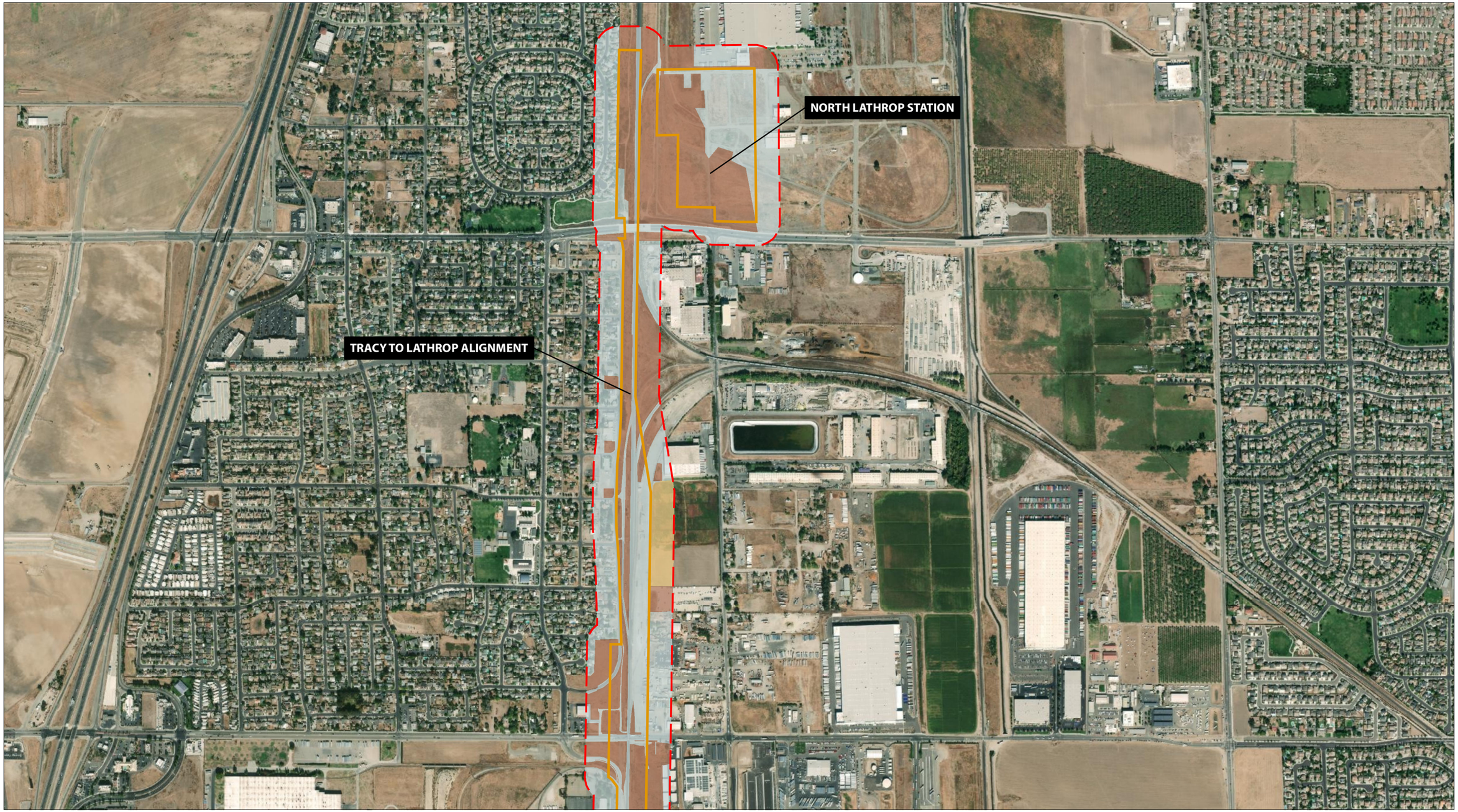
Environmental Footprint Direct Impacts
Biological Study Area
Aquatic, Pond
Cropland, Rowcrops
Developed/Landscaped
Ruderal

Tri-Valley • San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project



FIGURE 3.4-31
Land Cover

ICF 11/4/2020 USER 29391 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\115_UpdateLandCoverFig_20201104\ValleyLink_LandCover_20201104.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint Direct Impacts
Biological Study Area
Cropland, Fallow
Developed/Landscaped
Ruderal



Tri-Valley San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-32
Land Cover

Wildlife Associations

Field and row crops, such as alfalfa, provide foraging habitat for raptors, particularly Swainson's hawk. Fallow fields and inactive farmland may provide nesting and foraging habitat for several wildlife species, including northern harrier and burrowing owl. These and other agricultural lands may provide foraging or dispersal habitat for loggerhead shrike (*Lanius ludovicianus*), white-tailed kite (*Elanus leucurus*), and western red bat (*Lasiurus blossevillii*), which is known to use orchards as day roosts (Western Bat Working Group 2019). Croplands, when in bloom, can also provide foraging habitat for a variety of invertebrates including honeybees (*Apis* sp.) and bumble bees (*Bombus* sp.).

Developed/Landscaped

Developed/landscaped areas include all types of residential, commercial, industrial, transportation, landscaping, and recreational development (e.g., sites with structures, paved surfaces, horticultural plantings, golf courses, irrigated lawns). Vegetation in developed/landscaped areas is highly variable, ranging from nonexistent in paved areas to maintained lawns and ornamental shade trees. Common ornamental species include California fan palm (*Washingtonia filifera*), Canary Island palm (*Phoenix canariensis*), eucalyptus (*Eucalyptus* sp.), olive (*Olea europaea*), oleander (*Nerium oleander*), and pepper tree (*Schinus molle*), among others. Ground cover generally consists of ruderal vegetation. The developed/landscaped land cover type is one of the most expansive land cover types in the study area (Table 3.4-1).

Wildlife Associations

Wildlife species occurring in developed/landscaped areas are typically generalists that have adapted to human-modified landscapes. Ornamental trees and lawns provide nesting and foraging habitat for urban-adapted birds such as American crow (*Corvus brachyrhynchos*), western scrub-jay, American robin, northern mockingbird, European starling (*Sturnus vulgaris*), and house finch (*Haemorhous mexicanus*). Other common wildlife species found in developed/landscaped areas include Virginia opossum (*Didelphis virginiana*), northern raccoon (*Procyon lotor*), striped skunk, and a variety of rodents. Some barren areas along existing railroad grades also support California ground squirrels, which create burrows that provide habitat for burrowing owl.

Grassland

Cover Types

California Annual Grassland

California annual grassland is an herbaceous plant community that is dominated by nonnative annual grasses (Holland 1986; Sawyer et al. 2009). In the study area, California annual grassland was mapped where grasses dominate the land cover and trees and shrubs provide minimal cover. Dominant species are wild oats (*Avena barbata*, *A. fatua*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), rye grass (*Festuca perennis*), and wall barley (*Hordeum murinum*). Herbaceous cover includes native and nonnative forbs such as bristly ox-tongue (*Helminthotheca echioides*), bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*), lupine (*Lupinus* sp.), prickly lettuce (*Lactuca serriola*), shortpod mustard (*Hirschfeldia incana*), stinkwort (*Dittrichia graveolens*), and yellow star-thistle (*Centaurea solstitialis*).

Table 3.4-1 and Figures 3.4-17 to 3.4-32 depict the extent of California annual grassland mapped throughout the study area. This land cover type is generally found in the central portion of the study area, from the Altamont to the western part of Tracy. It is often intermixed with woodland plant communities and ruderal land cover.

Salt Grass Flats

Salt grass flats are an herbaceous plant community that is dominated by salt grass (*Distichlis spicata*) in uplands, as opposed to wetlands. Salt grass flats are a natural community of special concern in undisturbed situations (California Department of Fish and Wildlife 2018a). In the study area, salt grass flats contain more than a 30 percent relative cover of salt grass in the herbaceous layer (Sawyer et al. 2009). California annual grassland species are found scattered throughout the salt grass flat community. This land cover type occurs in the Tri-Valley and Altamont segments (Table 3.4-1).

Wildlife Associations

Grasslands support insects, amphibians, reptiles, small birds, and mammals that are prey for carnivorous wildlife species such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), burrowing owl (*Athene cunicularia*), turkey vulture (*Cathartes aura*), coyote (*Canis latrans*), and American badger (*Taxidea taxus*). Grasslands near open water and woodlands are used more than grasslands that lack such features because they provide places for resting and breeding as well as escape cover for species that breed in adjacent habitats. Additionally, large tracts of undisturbed grassland provide movement and foraging habitat for large mammals such as black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor*). Other common wildlife species occurring in grasslands include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel *(Spermophilus beecheyi*), striped skunk (*Mephitis mephitis*), western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), gopher snake (*Pituophis catenifer*), ring-necked pheasant (*Phasianus colchicus*), western kingbird (*Tyrannus verticalis*), loggerhead shrike, horned lark (*Eremophila alpestris*), savannah sparrow (*Passerculus sandwichensis*), and western meadowlark (*Sturnella neglecta*). Grasslands can also provide foraging habitat for a variety of invertebrates, including honeybees (*Apis* sp.) and bumble bees (*Bombus* sp.) when spring flowers are in bloom; bare patches within grasslands can also provide nesting habitat for ground-nesting insects.

Riparian

Cover Types

Mixed Riparian Forest and Woodland

Mixed riparian forest and woodland is a natural community of special concern in undisturbed situations (California Department of Fish and Wildlife 2018a). This land cover type occurs along the margins of an active channel. Generally, no single species dominates the canopy, and composition varies with elevation, aspect, and hydrology. The dominant canopy species are California sycamore (*Platanus racemosa*), valley oak, coast live oak, willow (*Salix* spp.), California bay, and Fremont cottonwood (*Populus fremontii*). Mixed riparian forest and woodland is found in association with intermittent creeks in the Altamont segment and near the San Joaquin River (Table 3.4-1).

Mixed Willow Riparian Scrub

Typically, mixed willow riparian scrub consists of willow stands that may or may not be dominated by a single species; the willow stands occur in environmental conditions similar to those for alder (*Alnus* spp.), cottonwood (*Populus* spp.), and other willow series (Holland 1986). Within the study area, the mixed willow riparian scrub community typically consists of scattered willows and fast-growing shrubs and vines. In the study area, mixed willow riparian scrub is found in patches that are associated with the mixed riparian forest and woodland surrounding the intermittent creeks in the Altamont segment and along Paradise Cut (Table 3.4-1).

Wildlife Associations

Riparian vegetation is diverse, comprising multiple vegetative strata that provide high-value habitat for many wildlife species. Dense multilayered riparian communities provide escape cover as well as foraging and nesting opportunities for wildlife. Riparian communities also provide valuable movement corridors for wildlife, including mountain lion, bobcat, coyote, and black-tailed deer. Riparian woodlands support many of the same species that occur in other woodland communities discussed in this section as well as several riparian-specific species, such as Pacific-slope flycatcher (*Empidonax difficilis*), warbling vireo (*Vireo gilvus*), Wilson's warbler (*Cardellina pusilla*), and black-headed grosbeak (*Pheucticus melanocephalus*). Riparian corridors also function as wildlife corridors because they provide cover and foraging habitat in otherwise suboptimal wildlife habitat (e.g., tree-lined streams in Central Valley cropland). Riparian canopy cover along streams and creeks provides shaded riverine aquatic (SRA) cover that benefits fish by reducing water temperatures, providing in-water cover, and increasing aquatic productivity through vegetation input (leaves, branches) into the channel.

Ruderal

Ruderal cover occurs in areas where natural vegetation has been removed or significantly degraded by past or current human activity. Ruderal vegetation is often associated with areas alongside railroad tracks, vacant lots, roadsides, and other highly disturbed areas. Ruderal vegetation is typified by the dominance of nonnative forbs that thrive in disturbed conditions, including bristly ox-tongue, bull thistle, Italian thistle, prickly lettuce, shortpod mustard, stinkwort, yellow star-thistle, English plantain (*Plantago lanceolata*), jimson weed (*Datura* sp.), and Russian thistle (*Salsola* sp.). Because of the highly variable nature of ruderal habitats, this type was not classified according to Sawyer et al. (2009) or Holland (1986). Ruderal areas may be similar to California annual grassland areas but are characterized by a greater level of disturbance. The ruderal land cover type can be found throughout the biological study area (Table 3.4-1).

Wildlife Associations

The wildlife species occurring in ruderal land cover are determined primarily by the characteristics of nearby natural, less-disturbed habitat, although the dense cover provided by weeds often attracts large flocks of foraging songbirds, which are otherwise absent from adjacent developed, grassland, woodland, and wetland areas. Species within this category include white-crowned sparrow (*Zonotrichia leucophrys*), American goldfinch (*Spinus tristis*), dark-eyed junco (*Junco hyemalis*), and song sparrow (*Melospiza melodia*). Such cover also provides habitat for common reptiles such as western fence lizard, gopher snake, and common garter snake. Insects, such as bees, can also use ruderal land cover for foraging and nesting habitat.

Scrub

Cover Types

Alkali Scrub

Alkali scrub is typically dominated by a salt-tolerant shrub known as four-winged saltbush (*Atriplex lentiformis*), with salt grass (*Distichlis spicata*) often present in the understory. Alkali scrub occurs in abandoned agricultural fields and is often dominated by monocultures of saltbush. The spatial extent of alkali shrub appears to have increased greatly in conjunction with anthropogenic disturbance. Alkali scrub is found in the Tracy to Lathrop segment of the study area (Table 3.4-1).

Wildlife Associations

Scrub-dominated cover supports a unique species assemblage and offers habitat for species that are typically associated with adjacent woodland and grassland areas. The combination of exposed rock, grass, and brush, as well as exposed slopes, creates a habitat mosaic that supports a variety of reptiles, such as western fence lizard (*Sceloporus occidentalis*) and Skilton's skinks (*Plestiodon skiltonianus*), both of which are major prey for the Alameda whipsnake, a state and federally listed threatened species. The dense shrub layer, characteristic of scrub, provides nest sites and foraging opportunities for bird species such as wrentit (*Chamaea fasciata*), blue-gray gnatcatcher (*Polioptila caerulea*), and California thrasher (*Toxostoma redivivum*).

Wetland

Cover Types

Alkali Seasonal Wetland

The dominant species seen throughout the study area in the alkali seasonal wetland is salt grass (*Distichlis spicata*), but this community represents seasonal wetlands as opposed to uplands. The majority of alkali seasonal wetland in the study area is generally north and east of Livermore or in the Altamont Hills. Alkali seasonal wetland is a natural community of special concern in undisturbed situations (California Department of Fish and Wildlife 2018a). Associated species include alkali heath (*Frankenia salina*), alkali Russian thistle (*Salsola soda*), annual beard grass (*Polypogon monspeliensis*), common gumplant (*Grindelia camporum*), common spikeweed (*Centromadia pungens*), perennial pepperweed (*Lepidium latifolium*), pickleweed (*Salicornia pacifica*), rye grass, and fat-hen (*Atriplex prostrata*). Ripgut grass, soft chess, and wall barley are also present in small amounts. In the study area, alkali seasonal wetlands occur in the Tri-Valley and Altamont segments (Table 3.4-1).

Freshwater Marsh

Freshwater marshes in the study area are dominated by emergent herbaceous wetland plants in areas that are either intermittently flooded or perennially saturated. Typically, cattails (*Typha* spp.) and bulrushes (*Schoenoplectus* spp.) are the dominant plant species in freshwater marshes. Freshwater marshes can be found in numerous locations within the biological study area (Table 3.4-1).

Seasonal Wetland/Riverine Seasonal Wetland

Seasonal wetlands in the study area are freshwater wetlands that support inundation or saturated soil conditions, typically during the wet season. These features are often inundated by direct rainfall and runoff from adjacent uplands (seasonal wetlands) or runoff from adjacent streams (riverine seasonal wetlands). Seasonal wetlands do not inundate as long as vernal pools, ultimately resulting in a hydroperiod that is too short to support vernal pool branchiopods (e.g., fairy shrimp). As such, plants that are often found on the higher margins of vernal pools (where the pools first dry down) make up the floristic species composition of seasonal wetlands. These floristic species include smooth-rayed goldfields (*Lasthenia glaberrima*), Fitch's spikeweed (*Centromadia fitchii*), peppergrass (*Lepidium nitidum*), cowbag clover (*Trifolium depauperatum*), Oregon timwort (*Cicendia quadrangularis*), and Greene's popcornflower (*Plagiobothrys greenei*). Seasonal wetlands can be found in multiple locations within the biological study area but are found mainly in the Altamont segment (Table 3.4-1).

Vernal Pool

Vernal pools are seasonal wetlands in which water ponds on the surface for extended durations in winter and spring, then dries completely in late spring and summer. Areas with higher concentrations of vernal pools in the study area are generally southwest of Fremont, north and east of Livermore, in the Altamont Hills, and west of Tracy. These areas support flora that is largely made up of native wetland plant species such as Fremont's goldfields (*Lasthenia fremontii*), yellow rayed goldfields (*Lasthenia glabrata*), common spikerush (*Eleocharis macrostachya*), vernal pool buttercup (*Ranunculus bonariensis*), coyotethistle (*Eryngium vaseyi*), doublehorn calicoflower (*Downingia bicornuta*), toothed calicoflower (*Downingia cuspidata*), flatface downingia (*Downingia pulchella*), and blow wives (*Achyrachaena mollis*). Vernal pools in the biological study area occur in the Altamont segment (Table 3.4-1).

Wildlife and Fish Associations

Physical characteristics of wetland communities, including salinity, vegetation species composition, the degree of non-vegetated ground, vegetative stratification, and hydraulic regime, strongly determine wildlife species' use. Therefore, common wildlife associations are discussed by wetland community type.

Wildlife species frequently observed within the freshwater marsh in the study area include mallard (*Anas platyrhynchos*), black phoebe (*Saynoris nigricans*), mosquito fish (*Gambusia affinis*), great egret, black-necked stilt (*Himantopus mexicanus*), song sparrow, red-winged blackbird (*Agelaius phoeniceus*), and American coot. Freshwater marshes provide drinking water for numerous species of wildlife and attract prey for larger predators when water sources are limited. As such, freshwater wetlands typically support many wildlife species in addition to those that use such areas exclusively.

Alkali seasonal wetlands, seasonal wetlands, and vernal pools can support a variety of invertebrates and amphibians that, in turn, provide food for many other wildlife species, such as great egret, mallard, song sparrow, great blue heron (*Ardea herodias*), American avocet (*Recurvirostra americana*), and killdeer (*Charadrius vociferus*). Vernal pools generally have longer periods of inundation compared with alkali seasonal wetlands and seasonal wetlands and provide suitable habitat for special-status branchiopods (fairy shrimp), including vernal pool tadpole shrimp (*Lepidurus packardi*), vernal pool fairy shrimp (*Branchinecta lynchi*), and longhorn fairy shrimp (*Branchinecta longiantenna*). Seasonal wetlands and vernal pools also provide aquatic breeding

habitat for Sierran treefrog (*Pseudacris sierra*), western spadefoot toad (*Spea hammondi*), and California tiger salamander. When in bloom, vernal pool plants can provide foraging opportunities for insects including honeybee and bumble bee.

3.4.3.2 Special-Status Species

Special-Status Plants

A brief discussion of the species that have the highest potential to occur in the study area is provided in Appendix M-2, *Special-Status Species Accounts*, and Appendix M-3, *Special-Status Plant Species Known or with Potential to Occur in the Study Area*. Table M-3.1 in Appendix M-3 lists all of the special-status plants species identified during the review of existing information as having the potential to occur in the study area. Special-status plant species were determined to be either present or absent in the study area based on suitable habitat, the range of the species, and occurrences of the species within 3 miles of the study area (Appendix M-3, Table M-3.1).

Special-Status Wildlife

A brief discussion of the species that have the highest potential to occur in the study area is provided in Appendix M-2, *Special-Status Species Accounts*, and Appendix M-4, *Special-Status Wildlife Known or with Potential to Occur in the Study Area*. Table M-4.1 in Appendix M-4 lists all of the special-status wildlife species identified during the review of existing information as having the potential to occur in the study area. Special-status wildlife species were determined to be either present or absent in the study area based on suitable habitat, the range of the species, and occurrences of the species within 3 miles of the study area (Appendix M-4, Table M-4.1).

Special-Status Fish

A brief discussion of the species that have the highest potential to occur in the study area is provided in Appendix M-4. Table M-4.2 in Appendix M-4 lists all of the special-status fish species identified during the review of existing information as having the potential to occur in the study area. Special-status fish species were determined to be either present or absent in the study area based on suitable habitat and the range of the species (Appendix M-4, Table M-4.2).

3.4.3.3 Sensitive Natural Communities

Special-status or *sensitive natural communities* are communities (vegetation types) with a limited distribution statewide or in a county or region. CDFW's Vegetation Classification and Mapping Program (VegCAMP) works to classify and map the vegetation of California and determine the rarity of vegetation types. Vegetation types with a state rarity ranking of S1 through S3 in CDFW's *List of Vegetation Alliances and Associations* (California Department of Fish and Game 2010) are considered to be highly imperiled, and impacts on high-quality occurrences of these vegetation types are typically considered significant under CEQA.

Sensitive natural communities within the study area include the riparian and wetland plant natural communities as well as the pond and salt grass flats land cover types. At the state level, riparian plant communities are considered sensitive because of habitat loss and their value to a diverse community of plant and wildlife species (California Department of Fish and Game 2010). In general, wetlands, as well as ponds and salt grass flats, represent a sensitive biotic community because of their limited distribution and importance to special-status plant and wildlife species.

3.4.3.4 Potential Jurisdictional Waters, Wetlands, and Other Habitats

Waters of the United States Subject to U.S. Army Corps of Engineers Jurisdiction

The term *waters of the United States* is an encompassing term that is used by the USACE for areas that are subject to federal regulation under CWA Section 404, referring to wetlands and non-wetland features (other waters). Wetlands that exhibit a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology were identified within the study area. These include alkali seasonal wetlands, freshwater marshes, seasonal wetlands, and vernal pools. The jurisdictional determination of waters of the United States is in preparation and will be verified by the USACE once it is completed. The information presented in this EIR reflects the preliminary research conducted for the jurisdictional determination to date (see Section 3.4.3.1, *Natural Communities, Land Cover Types* (Wetlands).

Inland *non-wetland waters of the United States* are seasonal or perennial bodies of water, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an OHWM but lack positive indicators for one or two of the three wetland parameters (33 CFR § 328.4). Similar to inland non-wetland waters of the United States, coastal non-wetland waters of the United States possess the same distinguishing features, with the exception of their jurisdictional limit, which is defined as the mean high-water line, based on elevation data, not an OHWM. Non-wetland waters of the United States that occur in or near the biological study area include Tassajara Creek, Cottonwood Creek, Collier Canyon Creek, Arroyo Las Positas, Arroyo Seco, Altamont Creek, Mountain House Creek, Tom Paine Slough, Paradise Cut, the San Joaquin River, and other minor drainages (see Figures P-3A, P-3B, and P-3C in Appendix P, *Supporting Hydrology and Water Quality Information*).

California Fish and Game Code Section 1602 Jurisdiction

Fish & G. Code § 89.1, through referral to Wat. Code § 13050, defines *waters of the state* as "any surface water or groundwater, including saline waters, within the boundaries of the state." Activities that result in the diversion or obstruction of the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake require a project applicant to enter into a Lake or Streambed Alteration Agreement with CDFW under Section 1602 of the Fish & G. Code (see Section 3.4.2.2, *State*, and Section 3.4.3.1, *Natural Communities, Land Cover Types* (Aquatic, Riverine [Streams]).

Regional Water Quality Control Board Jurisdictional Areas

Waters that are subject to CWA Section 404 also require water quality certification from the RWQCB under CWA Section 401. The extent of RWQCB jurisdiction over wetlands and other waters of the United States is the same as that of the USACE. In addition, the RWQCB regulates under California's Porter-Cologne Act. Waters regulated under the Porter-Cologne Act are called *waters of the state*. Waters of the state include any surface or groundwater, including saline waters, within state boundaries. Riparian plant communities associated with stream channels in the study area could also be considered jurisdictional by the RWQCB. If a project requires water quality certification, the RWQCB will incorporate requirements to also comply with the Porter-Cologne Act (see Section 3.4.2.2, *State*). Features that do not fall under USACE jurisdiction (e.g., isolated features, ditches, features excavated in uplands) would be considered *waters of the state*.

Critical Habitat

The USFWS designates critical habitat for some federally listed species. The following designated critical habitat falls within the study area for vernal pool fairy shrimp, California red-legged frog, and delta smelt:

- Vernal pool fairy shrimp critical habitat unit VERFS 19C in the Altamont Hills, just northeast of Livermore (Tri-Valley Alignment).
- California red-legged frog critical habitat units CCS-2b and ALA-2 are north and south, respectively, of Interstate (I-) 580 in the Altamont Hills, between Livermore and Tracy (Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track).
- Longhorn fairy shrimp critical habitat unit LONFS 1B is approximately 0.95 mile north of the Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track, in the Altamont Hills.
- Delta smelt critical habitat occurs throughout the Tracy to Lathrop segment, including in Paradise Cut and the San Joaquin River (California Department of Fish and Wildlife 2019a) (Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track).

NMFS designates critical habitat for anadromous fish such as steelhead and green sturgeon. The following designated critical habitat falls within the study area:

- Central Valley steelhead critical habitat is in Paradise Cut (Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track).
- Green sturgeon critical habitat is in Paradise Cut (Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track).

Essential Fish Habitat

EFH in the study area was identified from the National Oceanic and Atmospheric Administration's EFH mapper (National Oceanic and Atmospheric Administration 2019). All water bodies in the study area are considered EFH for Pacific coast salmon, including Central Valley fall-run Chinook salmon. The following proposed alignments have water bodies associated with EFH: Tri-Valley Alignment; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track); Tracy to Lathrop Alignment Variant 1, Single Track; and Tracy to Lathrop Alignment Variant 2, Double Track.

3.4.3.5 Wildlife Corridors

The term *corridor* is used by ecologists and conservation biologists in a variety of ways. For the purposes of this EIR, a *wildlife corridor* is defined as "any space, usually linear in shape, that improves the ability of organisms to move among patches of their habitat" (Hilty et al. 2006). Corridors can be viewed over broad spatial scales, from those connecting continents (e.g., Isthmus of Panama) to structures crossing canals or roads. Most wildlife corridors analyzed within the context of land use planning, including those in this EIR, are moderate in scale, facilitating regional wildlife movement among habitat patches and through human-dominated landscapes.

The Proposed Project crosses natural waterways, including Tassajara Creek, Cottonwood Creek, Collier Canyon Creek, Arroyo Las Positas, Arroyo Seco, Altamont Creek, Mountain House Creek, Tom Paine Slough, Paradise Cut, the San Joaquin River, and minor drainages, that may be used by migratory fish and semi-aquatic species (see Figures P-3A, P-3B, and P-3C in Appendix P, *Supporting Hydrology and Water Quality Information*). The Proposed Project also intersects the Altamont Hills and lowlands along the historic San Joaquin River floodplain where upland wildlife movement is concentrated. Special-status species that may use these corridors include anadromous fish (e.g., Central Valley steelhead, Chinook salmon, river lamprey), California red-legged frog, California tiger salamander, western pond turtle, giant garter snake, and San Joaquin kit fox (Penrod et al. 2013).

Wildlife Movement by Project Segment

Tri-Valley Segment

Much of the Tri-Valley segment is fenced and within the urban footprint of the I-580 corridor in the cities of Dublin and Livermore, with limited opportunities for wildlife movement. Intermittent streams, including Tassajara Creek, Arroyo Las Positas, and Cottonwood Creek, support modest movement habitat for regional wildlife (e.g., coyote, California red-legged frog, western pond turtle) under the I-580 corridor.

The undeveloped areas along the railroad undercrossing at I-580 east of Greenville Road offer the safest options for regional wildlife in this corridor. These areas provide opportunities for a variety of terrestrial species to travel under I-580, in addition to supporting a viable linkage to the Altamont Hills (Figures 3.4-33 to 3.4-35) (Spencer et al. 2010; Penrod et al. 2013). The movement area, which is approximately 400 feet wide and more than a half mile long, is dominated by annual grassland, with a dirt road and the Union Pacific Railroad (UPRR) right-of-way (ROW) running in a north–south direction (from Altamont Pass Road south to Las Positas Road). The UPRR ROW crosses over Altamont Pass Road via a railroad bridge, which allows wildlife movement into the northeastern portion of the Altamont Pass. Las Positas Road bisects this movement corridor about 3,000 feet to the south (Alameda County Community Development Agency 2019).

Altamont Segment

The Altamont segment is in the Altamont Hills. The majority of the proposed alignment would be approximately 1 mile south of the I-580 corridor (Figures 3.4-33 to 3.4-35). The Altamont Hills are an important migration route for wildlife because they link the northern and southern sections of the Diablo Range as well as the East Bay and San Joaquin Valley (Spencer et al. 2010; Penrod et al. 2013). Amphibians, including California red-legged frog, may use perennial and ephemeral streams in the Altamont Hills as corridors for movement between suitable breeding habitats (Bulger et al. 2003; Tatarian 2008). California tiger salamander uses grasslands to move between stock ponds and vernal pools in the region (Penrod et al. 2013). Common mammal species, including California mule deer, mountain lion, bobcat, American badger, and a variety of bats, also move through this region. San Joaquin kit fox individuals migrate between core populations in the southwest San Joaquin Valley and an area west of Mendota as well as satellite populations in the Altamont Hills (Penrod et al. 2013). Reptiles such as Alameda whipsnake, western rattlesnake, and California garter snake can also be found moving through the scrub and grasslands of the Altamont Pass. Birds such as golden eagle, American peregrine falcon, and burrowing owl are also known to migrate through this area (Penrod et al. 2013).

I-580 is a major impediment to wildlife movement in the Altamont Hills. The highway, which bisects hilly terrain that is dominated by annual grassland, is at-grade or on a slight embankment for much of its length through the Altamont Hills (Penrod et al. 2013). Four-foot-high cement medians are present where the eastbound and westbound lanes come together, but no medians are present where the lanes are separated. No fencing exists to guide wildlife away from the roadway. There are only a few locations in the Altamont Hills where wildlife may pass over or under the I-580 corridor (see Figures 3.4-33 to 3.4-35):

- The Carroll Road/Flynn Road overpass may be used by mammals when crossing over the I-580 corridor; however, it is not a viable resource for the majority of regional wildlife because it is generally congested with vehicles that are entering/existing the highway and considered an unnatural crossing opportunity. The overpass, which lacks shoulders, is about 37 feet wide and 350 feet long. This section of highway is characterized by steep slopes that are dominated by annual grasses and forbs.
- The UPRR ROW (Oakland Subdivision) at the top of the Altamont Pass provides another opportunity for mammal movement over and under the I-580 corridor, with an undercrossing at I-580W and a railroad bridge over I-580E. The accessible UPRR ROW, which is about 25 feet wide and 150 feet long, is dominated by annual grassland and steep slopes (Alameda County Community Development Agency 2019).
- The Alameda County Transportation Corridor ROW at the top of the Altamont Pass, just east of the UPRR ROW bridge, provides another means of mammalian movement across I-580E. The Alameda County Transportation Corridor ROW includes a tunnel immediately to the north, which is not considered a viable option for wildlife movement. Mammals may use the UPRR ROW 500 feet to the west and cross under I-580W. The accessible Alameda County Transportation Corridor ROW, which is about 35 to 40 feet wide and 800 feet long, is dominated by annual grassland and steep slopes (Alameda County Community Development Agency 2019).
- The Contra Costa Water District (CCWD) I-580 wildlife undercrossing at Jess Ranch Road is a designated wildlife movement corridor. The undercrossing connects to CCWD's mitigation land and allows for safe passage under the I-580 alignment for a variety of wildlife species. This crossing is approximately 12 feet wide and 330 feet long and equipped with a wildlife camera at a monitoring station maintained by CCWD. The surrounding area is dominated by annual grassland (Contra Costa Water District 2015).
- Approximately 600 feet east of the CCWD wildlife undercrossing is a 20-foot-wide box culvert that extends about 500 feet under the highway. This is another potential wildlife movement area, although the Alameda County Resource Conservation District reports a high volume of roadkill at this particular section of the highway, indicating that the culvert is most likely not a viable crossing for regional wildlife (Alameda County Resource Conservation District et al. 2019).
- Grant Line Road is a two-lane road with shoulders that traverses under the highway and connects to Jess Ranch Road. This approximately 40-foot-wide road is generally less traveled than Carroll Road/Flynn Road and serves as viable passage for terrestrial wildlife. This area is also dominated by annual grassland (Penrod et al. 2013).
- Midway Road is a two-lane road with shoulders that cuts under the highway. Similar to Grant Line Road, this approximately 35-foot-wide roadway is surrounded by annual grassland and serves as passage for terrestrial wildlife in the eastern section of the Altamont Pass (Alameda County Community Development Agency 2019).

ICF8/13/2020 USER 50860 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\60_Wildlife_Movement_Update_20200630\ValleyLink_WildlifeMovement_TunnelAlt_StoneCutRevision_20200810.mxd

ALTAMONT ALIGNMENT

TRI-VALLEY ALIGNMENT

GREENVILLE STATION

Altamont Pass Rd

580

CARROLL ROAD/FLYNN ROAD OVERPASS

GREENVILLE ROAD OVERHEAD

bing

N

0 0.5

Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint

Environmental Footprint - Stone Cut Alignment Alternative

Wildlife Crossing



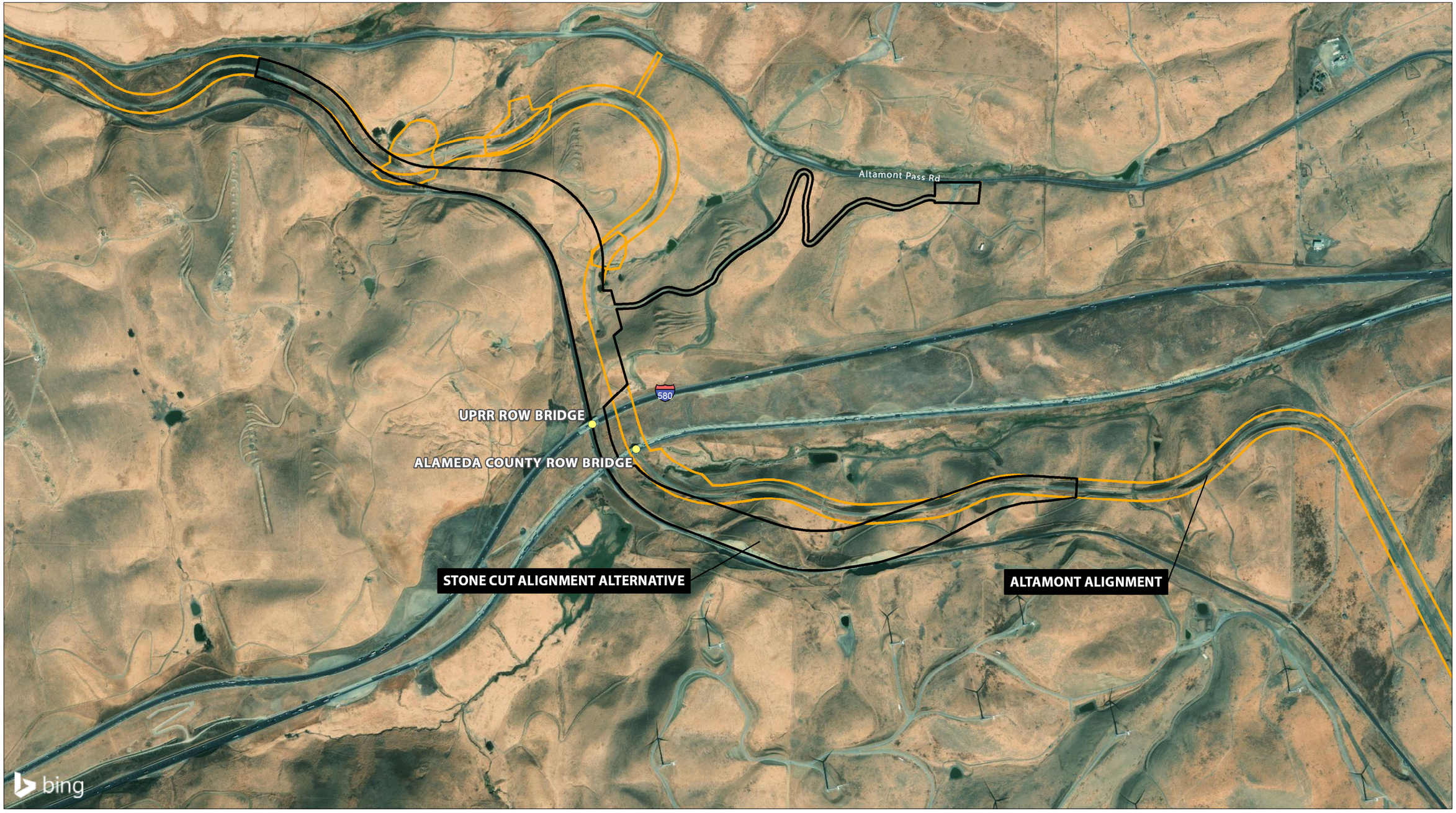
Tri-Valley • San Joaquin Valley REGIONAL RAIL AUTHORITY

Valley Link Project

FIGURE 3.4-33

Wildlife Movement

ICF8/13/2020 USER 50860 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\60_Wildlife_Movement_Update_20200630\ValleyLink_WildlifeMovement_TunnelAlt_StoneCutRevision_20200810.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint
Environmental Footprint - Stone Cut Alignment Alternative
Wildlife Crossing



FIGURE 3.4-34
Wildlife Movement

Tri-Valley San Joaquin Valley REGIONAL RAIL AUTHORITY
Valley Link Project

ICF8/13/2020 USER 50860 PATH \\PDCCITRDSGIS1\Projects_1\AECOM\00258_18_ValleyLink\Figures\Bio\60_Wildlife_Movement_Update_20200630\ValleyLink_WildlifeMovement_TunnelAlt_StoneCutRevision_20200810.mxd



N

0 0.5
Miles

Data Sources: Esri Imagery, 2016.

Environmental Footprint
Environmental Footprint - Stone Cut Alignment Alternative
Wildlife Crossing



Tri-Valley San Joaquin Valley
REGIONAL RAIL AUTHORITY
Valley Link Project

FIGURE 3.4-35
Wildlife Movement

Tracy to Lathrop Segment

Portions of the Tracy to Lathrop segment are within the urban footprint of the cities of Tracy and Lathrop; the majority of the segment bisects agricultural fields in the western San Joaquin Valley. Both urban and agricultural lands support limited wildlife movement opportunities. Perennial waterways, including Paradise Cut and the San Joaquin River floodplain and its tributaries, provide the best movement habitat for regional wildlife (e.g., California mule deer, California red-legged frog, western pond turtle), in addition to the earthen ditches and canals that line the agricultural fields (Penrod et al. 2013). Agricultural lands east of Banta and west of the San Joaquin River also provide movement opportunities for resident and migratory wildlife (California Department of Fish and Wildlife 2019b). For example, the western pond turtle occurs throughout the San Joaquin River and its tributaries, moving throughout the system where perennial water occurs. The giant garter snake uses sloughs, canals, ditches, and other suitable aquatic habitat to forage and migrate near Merced as well as from western Tracy to Manteca. Common species of terrestrial wildlife (e.g., California mule deer) also migrate through the lowlands along the historic San Joaquin River floodplain, including existing agricultural lands. In the Tracy to Lathrop segment, Paradise Cut would be used by Central Valley steelhead, Central Valley Chinook salmon, delta smelt, and longfin smelt as a migratory pathway from Old River to the San Joaquin River. Steelhead and Chinook salmon migrate up the San Joaquin River and many of its tributaries to reach spawning habitat. Green sturgeon may also use the San Joaquin River for foraging but would not migrate up the tributaries for spawning (Penrod et al. 2013; National Marine Fisheries Service 2019b).

3.4.4 Impact Analysis

This section describes the environmental impacts of the Proposed Project on biological resources, as well as the environmental impacts related to biological resources due to the alternatives analyzed at an equal level of detail. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate significant impacts are provided where appropriate.

3.4.4.1 Methods for Analysis

Potential negative effects on special-status species in the study area were evaluated, based on a review of the available literature regarding the status and known distribution of special-status species within the study area and data collected from surveys of the environmental footprint conducted by ICF biologists.

Desktop Review

Prior to and concurrent with conducting fieldwork, ICF biologists consulted the following data sources to identify biological resources occurring or potentially occurring in the study area:

- CDFW's CNDDB records search of the Altamont, Byron Hot Springs, Dublin, Clifton Court Forebay, Lathrop, Livermore, Manteca, Midway, Stockton East, Stockton West, Tracy, Union Island, and Vernalis U.S. Geological Survey (USGS) 7.5-minute quadrangles (California Department of Fish and Wildlife 2019b).
- CNPS's online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2019).
- California invasive plant inventory (California Invasive Plant Council 2019).

- USFWS list of endangered, threatened, and proposed species for the Proposed Project footprint and footprint of the alternatives analyzed at an equal level of detail (U.S. Fish and Wildlife Service 2019a).
- NMFS online list of endangered and threatened species, EFH, and critical habitat for Central Valley steelhead and green sturgeon (National Oceanic and Atmospheric Administration 2019).
- CDFW Biogeographic Information and Observation System (BIOS) viewer (California Department of Fish and Wildlife 2019a) for delta smelt critical habitat.
- USGS 7.5-minute quadrangles for Altamont, Dublin, Lathrop, Livermore, Midway, and Tracy.
- Environmental setting chapters from existing conservation planning documents (e.g., SJMSCP, EACCS).
- National Wetland Inventory data for waters of the United States, including wetlands.
- *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* report of habitat connectivity for wildlife movement in the Proposed Project segments.
- *Critical Linkages: Bay Area & Beyond* report for wildlife linkages known within Proposed Project segments.

Field Surveys

ICF biologists have conducted reconnaissance-level field surveys of the footprints for the Proposed Project, station alternatives, and OMF alternative multiple times since 2015. ICF's biological resources team consisted of a wildlife biologist, botanist, and two wetland delineators. Biological resource surveys included driving, walking, and scanning areas that were accessible at the time of the field surveys. Field surveys were conducted in 2015 on October 14; November 3, 4, and 18; and December 21. In 2016, surveys were conducted on January 11, 12, and 14; June 7 and 9; July 12, 26, and 27; and December 5. In 2017, surveys were conducted on March 8 and May 9. Recent surveys were also conducted by ICF biologists on February 6 and 7, 2019.

Biological resource surveys were conducted for resources within the study area that have the potential to be affected. These surveys included defining plant community land cover; conducting a biological reconnaissance survey for special-status plant and wildlife species and their habitats, sensitive habitats of concern, and wildlife corridors; and assessing existing waters of the United States, including wetlands. Fisheries resources and their potential to be affected were analyzed by ICF fisheries biologist Donna Maniscalco, using photos and notes taken during the biological resource surveys.

Because private property access was limited along some portions of the study area, most areas were viewed from agricultural and public roads during the 2019 field surveys. This level of survey was determined to be adequate given the extent of agricultural lands and relative lack of native habitats.

Vegetation

Geographic information system (GIS) based maps were the primary data source for land cover types, including vegetation communities, within the study area. A land cover type is defined by the dominant character of the land, 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, wetlands and streams, and special-status species habitat.

The following are the primary existing data sources of information for the land cover mapping in the study area:

- Base Map used in ArcMap Pro [10.5.1]
- EACCS, land cover types
- National Wetland Inventory wetland data
- GIS data from *Changes in the Distribution of Great Valley Vernal Pool Habitats from 2005 to 2012*
- GIS data from the USFWS *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*
- CNPS's *Botanical Priority Protection Areas Guidebook*, alkali soils

In addition to existing data sets, ICF biologists conducted field visits in accessible portions of the study area to develop and verify land cover mapping. Mapping was verified by visual inspection from locations that were accessible along public and agricultural roads as well as the Alameda County Transportation Corridor ROW. Classifications for land cover types in the study area were developed primarily from the *Manual of California Vegetation* (Sawyer et al. 2009; Sawyer and Keeler-Wolf 1995) and *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

ArcMap Pro [10.5.1] software was used to create a GIS dataset of land cover types. The mapping process involved digitizing polygons on screen from the data sources listed above, followed by field verification and a formal accuracy assessment. Digitizing was conducted while viewing the aerial imagery at mapping scales of 1:4,800 to 1:6,000. Once digitized, polygons were assigned to land cover types on the basis of the criteria in the land cover type definitions.

Land cover type data were used to identify natural communities within the study area. These natural communities were referenced to the current standard list of natural communities to determine if any were considered communities of special concern (S1–S3 rank) (California Department of Fish and Game 2010). Stands of natural communities in the study area that were considered to be communities of special concern were assessed to determine if they can be considered high-quality occurrences of a given community. High-quality occurrences lack invasive exotic species, have little evidence of human-caused disturbance, show continued reproduction, and do not have significant insect infestation or disease damage (California Department of Fish and Wildlife 2018a). Natural communities of special concern that met these criteria were determined to have the potential to occur within the study area.

A search of the USFWS species database, CNDDB records, and the CNPS's online *Inventory of Rare and Endangered Plants of California* (Appendix M-1, *USFWS, CNDDB, and CNPS Species Lists*) (California Native Plant Society 2019), as well as a literature review, identified special-status plant species with known occurrences in the 20 USGS 7.5-minute quadrangles of the study area (Table M-3.1, Appendix M-2 and M-3). Special-status plant species with the potential to occur in the study area were identified, based on the presence of suitable habitat, the range of the species, and occurrences of the species within 3 miles of the study area (Table M-3.1, Appendix M-3).

Wildlife and Fish

Wildlife and fish species are associated with and determined by the land cover types present. Consequently, wildlife and fish analysis methods are based on and include those used to determine land cover types, as described in Section 3.4.3.1, *Natural Communities, Land Cover Types*.

In addition to using existing data sets, an ICF biologist conducted field visits in accessible portions of the study area to develop and verify land cover mapping. The biologist also noted the wildlife species that were observed and determined the suitability and quality of the land cover types with respect to supporting the special-status wildlife and fish species that are known to occur within the region. Visual inspections were conducted at locations that were accessible from public or agricultural roads as well as the Alameda County Transportation Corridor ROW.

A query of the USFWS Environmental Conservation Online System Information for Planning and Conservation database, CNDDB records, and the CalFish database, as well as a literature review, identified special-status wildlife and fish species with known occurrences within the 20 USGS 7.5-minute quadrangles of the study area (Appendix M-1 and M-2). Special-status wildlife and fish species with the potential to occur in the study area were identified, based on the presence of suitable habitat, the range of the species, and occurrences of the species within 3 miles of the study area (Tables M-4.1 and M-4.2, Appendix M-4). Known native and resident fish and wildlife movement and migration corridors were reviewed (Spencer et al. 2010; Penrod et al. 2013), as discussed in the relevant impact sections, and potential impacts were qualitatively analyzed.

Wetlands

Wetlands and non-wetland waters were identified throughout the majority of the study area by previous work conducted for the ACE*forward* project (ICF 2017), which used the routine onsite determination method described in the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the supplemental procedures and wetland indicators provided in the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008) for guidance. Wetland boundaries were determined by establishing representative data points to evaluate the presence or absence of indicators of hydrophytic vegetation, hydric soil, and wetland hydrology, the three federal wetland parameters. The boundaries of inland non-wetland waters were identified by locating the OHWM, which represents the lateral extent of USACE jurisdiction over non-tidal, non-wetland waters in the absence of adjacent wetlands (33 CFR § 328.4(c)). For non-wetland waters, the OHWM was identified using the field indicators provided in 33 CFR §§ 328.3(e) and 329.11(a)(1) and *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* (U.S. Army Corps of Engineers 2014). Base maps were used during fieldwork to record observations and support mapping. The base maps consisted of 2012 aerial imagery obtained from Microsoft Bing maps with a scale of 1 inch = 50 feet. The delineators used a resource-grade global positioning system (GPS) unit with sub-meter accuracy, supplemented with aerial photograph interpretation, to map the boundaries of wetlands and non-wetland waters, sample point locations, and the locations of representative photographs taken during the site visits. All GPS data collected in the field were downloaded and differentially corrected using the nearest available base-station data. In some instances (i.e., in the Altamont Hills), private land could not be accessed to obtain soil data points and determine wetland boundaries. In these instances, field notes were taken regarding observable indicators of hydrophytic vegetation and wetland hydrology, and aerial photographs and USFWS National Wetland Inventory maps (2016) were reviewed to make a determination.

Potentially jurisdictional wetlands and waters in the study area were revisited in 2019 to confirm the 2016 boundary lines. In select areas, several updates to the 2016 delineation were included, based on observable field indicators of wetland vegetation and/or hydrology. In addition, the USFWS National Wetland Inventory maps (2019b) were reviewed in the field during the reconnaissance surveys.

Species Evaluation

Based on the results of the desktop review and field surveys, ICF developed lists of special-status species and other sensitive biological resources (e.g., waters of the United States) potentially occurring in the study area. Appendix M-1 provides a list of the special-status plant species that may occur in the study area. Appendices M-3 and M-4 contain lists of candidate, sensitive, and special-status wildlife species. For informational purposes, these tables also include species that have been determined to have no potential to occur within the study area.

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

- Species listed or proposed for listing as threatened or endangered under the ESA (50 CFR § 17.12 for listed plants, 50 CFR § 17.11 for listed animals, and various notices in the *Federal Register* for species proposed for listing).
- Species that are candidates for possible future listing as threatened or endangered under the ESA.
- Species that are listed or proposed for listing by the state as threatened or endangered under the CESA (14 California Code of Regulations [Cal. Code Regs.] § 670.5).
- Species that meet the definitions of rare or endangered under CEQA (CEQA Guidelines § 15380).
- Plants listed as rare under the California Native Plant Protection Act (Fish & G. Code § 1900 et seq.)
- Plants with a California Rare Plant Rank of 1A, 1B, 2A, or 2B (California Native Plant Society 2019).[3]
- Animals designated as California Species of Special Concern by the CDFW.[4]
- Animals that are fully protected in California (Fish & G. Code § 3511 [birds], § 4700 [mammals], § 5050 [amphibians and reptiles], and § 5515 [fish]).
- Bats identified as medium or high priority on the Western Bat Working Group regional priority species matrix.[5]

To refine the list of species that could be affected by construction of the Proposed Project and the alternatives analyzed at an equal level of detail, ICF biologists evaluated the species in Appendix M-3 and Appendix M-4 for their potential to occur in the study area.

- Species rated as having “no potential to occur” have either no suitable habitat within their range in the study area or a range that excludes the study area.

[3] http://www.rareplants.cnps.org/advanced.html
[4] http://www.dfg.ca.gov/wildlife/nongame/ssc/
[5] http://wbwg.org/matrices/species-matrix/

- Species rated as having "low potential to occur" are those species for which low-quality habitat occurs within their range or suitable habitat occurs in the study area but the species lacks records within 3 miles.
- Species rated as having "moderate or high potential to occur" are those species for which quality habitat occurs within their range or suitable habitat occurs in the study area and the species is known from within 3 miles.

Species rated as having "moderate or high potential to occur" or "known to occur" in the study area, as well as migratory bird nests, were considered in the impact analysis. Based on the tables in Appendices M-3 and M-4, ICF biologists identified the special-status species listed below as potentially occurring in the study area.

Table 3.4-2. Special-Status Species Potentially Occurring in the Study Area

Plants	
Alkali milk vetch	Large-flowered fiddleneck
Bent-flowered fiddleneck	Lemmon's jewelflower
Big-scale balsamroot	Lesser saltscale
Big tarplant	Livermore tarplant
Brewer's western flax	Long-styled sand-spurrey
Brittlescale	Mount Diablo buckwheat
California alkali grass	Mason's lilaeopsis
Caper-fruited tropidocarpum	Mount Diablo fairy-lantern
Chaparral ragwort	Oregon polemonium
Congdon's tarplant	Palmate-bracted bird's-beak
Contra Costa manzanita	Prostrate vernal pool navarretia
Delta button-celery	Recurved larkspur
Delta mudwort	Saline clover
Delta tule pea	Sanford's arrowhead
Diablo helianthella	San Joaquin spearscale
Diamond-petaled California poppy	Shining navarretia
Hairless popcorn-flower	Slough thistle Suisun marsh aster
Heartscale	Watershield
Hispid bird's-beak	Woolly rose-mallow
Hospital canyon larkspur	Wright's trichocornis
Total Number of Special-Status Plant Species	**42**
Wildlife	
Longhorn fairy shrimp	San Joaquin coachwhip
Vernal pool fairy shrimp	Coast horned lizard
Vernal pool tadpole shrimp	Swainson's hawk
Valley elderberry longhorn beetle	Northern harrier
Crotch bumble bee	Western bumble bee
California tiger salamander	Golden eagle
Foothill yellow-legged frog	Grasshopper sparrow

Western spadefoot toad	Short-eared owl
California red-legged frog	Burrowing owl
Western pond turtle	Loggerhead shrike
Coast horned lizard	Bank swallow
California legless lizard	Song sparrow (Modesto population)
California glossy snake	Tricolored blackbird
Western pond turtle	Yellow-headed blackbird
Pallid bat	Western mastiff bat
Townsend's big-eared bat	San Joaquin kit fox
Western red bat	American badger
Hoary bat	Mountain lion
Total Number of Special-Status Wildlife Species	**38**
Fish	
River lamprey	Central Valley fall-run Chinook salmon
Green sturgeon	Delta smelt
Central Valley steelhead	Longfin smelt
Hardhead	
Total Number of Special-Status Fish Species:	**7**

3.4.4.2 Thresholds of Significance

Appendix G of the CEQA Guidelines (14 Cal. Code Regs. § 15000 et seq.) has identified significance criteria to be considered for determining whether a project could have significant impacts on biological resources.

An impact would be considered significant if construction or operation of the Proposed Project and the alternatives analyzed at an equal level of detail would have any of the following consequences:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the 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 the CDFW or USFWS.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, 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, natural community conservation plan (NCCP), or other approved local, regional, or state HCP.

Direct impacts on biological resources are those that take place within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail. *Indirect impacts* on biological resources differ, based on resource type, and include impacts that are temporally or spatially separated from direct impacts. *Indirect impacts* are expected to occur within the environmental footprint, as well as within the 250-foot buffer of the Proposed Project and the alternatives analyzed at an equal level of detail.

3.4.4.3 Impacts and Mitigation Measures

Environmental Footprint Assumptions

Potential impacts associated with implementation of the Proposed Project and the alternatives analyzed at an equal level of detail assume the larger environmental footprint at proposed and alternative stations associated with a potential IOS (i.e., Greenville IOS, Mountain House IOS, Southfront Road Station Alternative IOS, and Mountain House Station Alternative IOS) and/or the expanded parking in 2040. As such, the analysis of the Proposed Project and the alternatives analyzed at an equal level of detail below considers the potential impacts associated with a potential IOS and/or the expanded parking in 2040.

DMU, HBMU, BEMU, and DLH Technology Variants

In addition, there would be some different impacts on biological resources depending on the implementation of the technology variants (diesel multiple unit [DMU], hybrid battery multiple unit [HBMU], battery-electric multiple unit [BEMU], or diesel locomotive haul [DLH]).

Construction of the DMU, HBMU, and DLH technology variants would have the same overall impact. Construction of the BEMU technology variant would require construction of an overhead catenary system (OCS) on the Altamont Pass and would, therefore, require more construction activity than the DMUHBMU, and DLH technology variants. To identify the worst-case scenario, this analysis considers the larger footprint required to construct the OCS associated with the BEMU technology variant. As such, the analysis of the Proposed Project below considers the potential impacts associated with the BEMU technology variant. Although the degree of impact during construction would be greater for the BEMU technology variant than the DMU, HBMU, and DLH technology variants, the overall impact conclusions identified below would be the same for the four technology variants (DMU, HBMU, BEMU, and DLH). As such, the construction impacts associated with the DMU, HBMU, BEMU, and DLH technology variants are not discussed any further.

Operation of the DMU, HBMU, and DLH technology variants would be the same. Operation of the BEMU technology variant would be different than the DMU, HBMU, and DLH technology variants because the BEMU technology variant would be quieter than the DMU,HBMU, and DLH technology variants and because the BEMU technology variant would include OCS. The OCS infrastructure would not be implemented as a part of the DMU, HBMU, and DLH technology variants. The differences in operational impacts between the DMU, HBMU, and DLH technology variants, and the BEMU technology variant are discussed in Impact BIO-4. There are no other differences in the impacts between the DMU, HBMU, BEMU, and DLH technology variants, other than what is described in Impact BIO-4.

Impact BIO-1: Construction of the Proposed Project could remove or degrade special-status plants and their habitat.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** Proposed Project Tri-Valley Alignment Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Interim OMF Mountain House Station Tracy OMF Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track River Islands Station Alternatives Analyzed at an Equal Level of Detail Stone Cut Alignment Alternative Mountain House Station Alternative West Tracy OMF Alternative **No Impact** Proposed Project Dublin/Pleasanton Station Downtown Tracy Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	BIO-1.1: Conduct preconstruction surveys for special-status plant species BIO-1.2: Prepare a salvage, relocation, or propagation and monitoring plan for special-status plant species BIO-1.3: Document affected special-status plant species BIO-1.4: Prevent introduction or spread of invasive plant species
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Most of the improvements would occur within the existing I-580 ROW, Alameda County Transportation Corridor ROW, and UPRR ROW and would therefore disturb primarily developed and ruderal land cover types, which have low suitability for special-status plant species. Special-status plant species have the potential to occur adjacent to the existing disturbed lands of the footprints for the Proposed Project and the alternatives analyzed at an equal level of detail, where natural land cover with suitable habitat characteristics (e.g., alkaline soils, vernal pools, riparian forests and woodlands) is present.

If and where special-status plant species are present, ground disturbance could result in the direct mortality of individuals through the removal of vegetation, crushing, trampling, introduction of nonnative or invasive plants, and degradation or loss of habitat. Other temporary construction impacts on special-status plant species would include exposure to air pollutants during construction (e.g., dust) and removal of vegetation that would most likely regenerate within 1 year. In addition, the potential exists for runoff with sediment and contaminants (e.g., oil, grease, concrete) to enter upland areas as well as water bodies adjacent to construction activities, which would decrease habitat quality and potentially indirectly affect special-status plant species.

Impact Details and Conclusions

Proposed Project

Table 3.4-3 identifies the proposed alignments, stations, and OMFs that potentially contain suitable habitat for special-status plant species, and which could be affected by vegetation removal or habitat degradation during construction. The acreages shown in Table 3.4-1 are for land cover where special-status plant species may be found. The actual impacts on special-status plant species would be much less than overall land cover impacts. Determinations of actual areas with special-status plant species would be based on preconstruction surveys (per mitigation), as discussed below, and most likely significantly less than the acreages reported in Table 3.4-1.

Tri-Valley Alignment

The Tri-Valley Alignment would entail construction of a varying track design within the alignment of the I-580 median, from the existing Dublin/Pleasanton Bay Area Rapid Transit (BART) Station to Greenville Road. The majority of direct impacts would occur within developed or ruderal lands and have little to no potential to affect special-status plant species given the existing disturbance and lack of suitable habitat. However, small pockets of land that support natural land cover, such as aquatic riverine, California annual grassland, riparian forest and woodland, and wetland habitats (see Table 3.4-1), do exist in areas adjacent to developed and ruderal lands along the outer portions of the alignment. In these natural land cover areas, I-580 widening and station construction would remove vegetation, compact soils, and have the potential to directly affect special-status plants (see Table 3.4-3). Indirect effects caused during construction (i.e., sedimentation) may also affect suitable habitat or extant special-status plant populations adjacent to the proposed alignment in existing natural land covers. Therefore, construction of the Tri-Valley Alignment would result in a potentially significant impact on special-status plant species.

Four temporary construction areas are associated with the Tri-Valley Alignment.

- The westernmost construction area is proposed north of I-580 and east of Campus Drive, continuing east to Hacienda Drive, within ruderal land cover. A 2011 occurrence of Congdon's tarplant was reported in the area (California Department of Fish and Wildlife 2019b).
- The second temporary construction area is proposed south of I-580, east of Las Colinas Road and north of Las Positas Road, within a previously disturbed gravel lot.
- The third temporary construction area is north of I-580, at Northfront Road, within previously disturbed ruderal land cover and surrounded by urban development.
- The fourth temporary construction area is south of the third temporary construction area, east of Southfront Road and west of South Vasco Road, within a previously disturbed ruderal area.

The last three temporary construction areas would most likely not result in temporary impacts on special-status plant species because of recent disturbances and the lack of suitable habitat. However, because there is a known presence of a special-status plant species (Congdon's tarplant) at the western temporary construction area, construction activities at this temporary construction area could affect a special-status plant population (see Table 3.4-3). Therefore, construction in the western temporary construction area would result in a potentially significant impact on special-status plant species.

Dublin/Pleasanton Station

The Dublin/Pleasanton Station would be constructed in the median of I-580, adjacent to the existing Dublin/Pleasanton BART station. The Dublin/Pleasanton Station would be entirely within developed/ landscaped areas or previously disturbed ruderal land cover. Therefore, no impacts on special-status plant species are anticipated because suitable habitat is absent from the Dublin/Pleasanton Station area.

Isabel Station

The Isabel Station would be constructed in the median of I-580. Construction of surface parking would affect disturbed land cover, including ruderal lands and cropland, whereas a pedestrian overcrossing would affect mixed riparian forest and woodland, a natural land cover. Ground disturbance in mixed riparian forest could affect special-status plants, if present, including Diablo helianthella, Mt. Diablo fairy-lantern, and Sanford's arrowhead. Arroyo Las Positas and its associated riparian corridor on the north side of the proposed Isabel Station may provide habitat for special-status plants species that could be affected by construction of the pedestrian overcrossing through effects on Arroyo Las Positas. Removal of vegetation and soil compaction could directly affect special-status plants during construction, and sedimentation could degrade habitat quality or nearby extant populations of special-status plants along Arroyo Las Positas. Therefore, construction of Isabel Station would result in a potentially significant impact on special-status plant species.

Greenville Station

The majority of disturbance for the Greenville Station would occur within developed land cover, which provides no suitable habitat for special-status plant species. Construction of Greenville Station would also disturb ruderal lands, California annual grassland, salt flats, and alkali seasonal wetland. Alkali seasonal wetland, salt grass flats, and California annual grassland provides suitable habitat for special-status species such as alkali milk vetch, brittlescale, hairless popcornflower, palmate-bracted bird's-beak, and shining navarretia. As stated above for Isabel Station, ground disturbance, the removal of vegetation, and degradation and/or loss of habitat could directly affect special-status plants during construction, and sedimentation could degrade habitat quality or nearby extant populations of special-status plants. Therefore, construction of Greenville Station would result in a potentially significant impact on special-status plant species.

Altamont Alignment

The majority of the Altamont Alignment would be a single-track alignment, requiring grading within the Alameda County Transportation Corridor and UPRR ROWs, track installation, construction of a new undercrossing at Altamont Pass Road west of Carroll Road, construction of at-grade crossings, reconfiguration of road intersections, and upgrades to the interior of an existing railroad tunnel. The Altamont Alignment would bisect natural land cover, including alkali and freshwater wetlands,

riparian scrub, and grasslands; therefore, construction could affect special-status plant species in the vicinity through ground disturbance, the removal of vegetation, and degradation and/or loss of habitat.

Disturbances to natural land covers from Owens-Illinois Industrial Lead Variant 1, Single Track, including vegetation removal, soil compaction, and degradation or loss of habitat, could affect special-status plants such as alkali milk vetch, California alkali grass, Congdon's tarplant, Diablo helianthella, large-flowered fiddleneck, Mt. Diablo fairy-lantern, recurved larkspur, and San Joaquin spearscale. Therefore, construction of the Altamont Alignment and Owens-Illinois Industrial Lead Variant 1, Single Track would result in a potentially significant impact on special-status plant species.

Construction of a new railroad track under Owens-Illinois Industrial Lead Variant 2, Double Track, would disturb California annual grassland, seasonal wetland, potential vernal pools, riparian forest, ponds, ruderal areas, agricultural lands (croplands, orchards) and riverine habitat types. This could affect special-status plant species such as bent-flowered fiddleneck, caper-fruited tropidocarpum, Delta button-celery, diamond-petaled California poppy, Hispid bird's-beak, Hospital canyon larkspur, Livermore tarplant, prostrate vernal pool navarretia, and saline clover through ground disturbances and habitat degradation (see Table 3.4-3). Therefore, construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would result in a potentially significant impact on special-status plant species.

Both variants of the Owens-Illinois Industrial Lead have the potential to affect special-status plants and their associated habitats; however, the Owens-Illinois Industrial Lead Variant 1, Single Track would affect less natural land cover than Owens-Illinois Industrial Lead Variant 2, Double Track.

Interim OMF

Vehicle storage and maintenance activities associated with implementation of service between Dublin/Pleasanton Station and Greenville Station would take place at the Interim OMF. The Interim OMF footprint is dominated by salt grass flats, which support habitat for a variety of special-status plant species, including Mt. Diablo fairy-lantern and shinning navarretia. Therefore, construction of the Interim OMF would result in a potentially significant impact on special-status plant species.

Mountain House Station

The Mountain House Station would be constructed on undeveloped California annual grassland land cover that has the potential to support special-status plant species. Disturbances in this land cover from construction could directly affect special-status plants such as big tarplant, Diablo helianthella, Lemmon's jewelflower, Mt. Diablo fairy-lantern, and shinning navarretia. Sedimentation could also indirectly degrade the habitat quality of nearby extant populations of special-status plants in the vicinity (California Department of Fish and Wildlife 2019b). Therefore, construction of Mountain House Station would result in a potentially significant impact on special-status plant species.

Table 3.4-3. Special-Status Plant Species Potentially Affected by Construction

Proposed or Alternative Facility	Alkali milk vetch	Bent-flowered fiddleneck	Big-scale balsmroot	Big tarplant	Brewer's western flax	Brittlescale	California alkali grass	Caper-fruited tropidocarpum	Chaparral ragwort	Congdon's tarplant	Delta button-celery	Diablo helianthella	Diamond-petaled California poppy	Hairless popcorn-flower	Heartscale	Hispid salty bird's-beak	Hospital canyon larkspur	Large-flowered fiddleneck	Lemmon's jewelflower	Lesser saltscale	Livermore tarplant	Long-styled sand-spurrey	Mt. Diablo fairy-lantern	Palmate-bracted bird's-beak	Prostrate vernal pool navarretia	Recurved larkspur	Saline clover	Sanford's arrowhead	San Joaquin spearscale	Shining navarretia	Showy golden madia	Slough thistle	Watershield	Woolly rose-mallow	Wright's trichocoronis
Tri-Valley Segment																																		
Tri-Valley Alignment	x	x	x	x	x	x	x	—	—	x	—	x	—	x	x	x	—	—	—	x	x	x	x	x	x	x	x	x	x	x	x	—	—	—
Dublin/Pleasanton Station	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Isabel Station	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	x	—	—	—	—	—	—
Southfront Road Station Alternative	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Greenville Station	x	x	x	x	x	x	x	—	—	x	—	x	—	x	x	x	—	—	—	x	—	—	x	x	x	x	x	—	x	x	x	—	—	—
Temporary Construction Areas	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Altamont Segment																																		
Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	—	—	—
Stone Cut Alignment Alternative	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	—	—	—
Mountain House Station	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	—	—	—
Mountain House Station Alternative	—	x	x	x	x	—	—	—	—	—	—	x	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	x	x	—	—	—
Interim OMF	—	x	x	x	x	—	—	—	—	—	—	x	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	x	x	—	—	—
West Tracy OMF Alternative	—	x	x	x	x	—	—	—	—	—	—	x	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	x	x	—	—	—
Tracy OMF	—	x	x	x	x	—	—	—	—	—	—	x	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	x	x	—	—	—
Tracy to Lathrop Segment																																		
Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track	x	x	—	x	—	x	x	—	—	—	x	x	—	—	x	x	—	x	x	x	—	—	—	x	x	x	x	x	x	x	x	x	x	x
Downtown Tracy Station, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
River Islands Station	—	—	—	—	—	—	—	—	—	—	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	x	—	x	x
North Lathrop Station	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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Tracy OMF

The Tracy OMF would be constructed on agricultural land (row crops) and a small amount of California annual grassland along the UPRR ROW. Because the area is surrounded by development and previously disturbed land, the potential for special-status plant species to occur is low. However, the presence of special-status plant species cannot be ruled out because natural land cover (i.e., annual grassland) is present. Ground disturbance within annual grassland natural land cover could affect special-status plants species such as bent-flowered fiddleneck, large-flowered fiddleneck, and Sanford's arrowhead (see Table 3.4-3). Therefore, construction of the Tracy OMF would result in a potentially significant impact on special-status plant species.

Tracy to Lathrop Alignment

The majority of the Tracy to Lathrop Alignment would occur within the existing railroad ROW. The alignment would require construction along portions of the Tracy Subdivision ROW, which is dominated by development and ruderal land cover. Outside the city limits, construction of the alignment would disturb ruderal, cropland (orchards, row crops, fallow land), aquatic pond, mixed riparian forest and woodland, riverine, and freshwater marsh land cover types. Ground disturbances such as vegetation removal, soil compaction, and habitat degradation during construction could affect special-status plant species (see Table 3.4-3).

Under the Tracy to Lathrop Alignment Variant 1, Single Track, the existing track would be upgraded but would continue to be a single-track railroad. Disturbances occurring in natural land cover types could affect special-status plants. Therefore, construction of the Tracy to Lathrop Alignment Variant 1, Single Track would result in a potentially significant impact on special-status plant species.

Under the Tracy to Lathrop Alignment Variant 2, Double Track, grading for the new track north of the existing track and construction of new bridges across Paradise Cut and the San Joaquin River would disturb natural land cover types, including California annual grassland, mixed riparian forest and woodland, riverine, and freshwater marsh. Ground disturbances such as vegetation removal, soil compaction, and habitat degradation during construction could affect special-status plant species. Therefore, construction of the Tracy to Lathrop Alignment Variant 2, Double Track, would result in a potentially significant impact on special-status plant species.

Downtown Tracy Station

The Downtown Tracy Station would be constructed at the existing Tracy Transit Center, within previously developed/landscaped and ruderal land covers. Rare plant populations are not known from the vicinity. Therefore, special-status plants are not expected to be present because no suitable habitat for special-status species is present and no impact would occur.

River Islands Station

The River Islands Station would be constructed primarily within an agricultural land cover type (row crops or fallow land). Mixed riparian forest is also present along the UPRR ROW and would be affected. The majority of the construction would occur outside the UPRR ROW in cropland areas. However, the presence of special-status plant species cannot be ruled out because natural land cover (i.e., mixed riparian forest) is present. Ground disturbance within natural land cover could affect special-status plants species such as Delta button celery, Diablo helianthella, and Wright's trichocoronis through vegetation removal, soil compaction, and degradation or loss of habitat. Therefore, construction of the River Islands Station would result in a potentially significant impact on special-status plant species.

North Lathrop Station

The North Lathrop Station would be constructed on the same site as the Altamont Corridor Express (ACE) North Lathrop Station (which is proposed as a part of another project and has not yet been constructed), within previously disturbed ruderal and developed land cover. These land cover types generally provide no habitat value for special-status plants because of their disturbed nature and lack of robust natural vegetation. Rare plant populations are not known from the vicinity. Therefore, construction of North Lathrop Station has no potential to affect special-status plants and no impact would occur.

Alternatives Analyzed at an Equal Level of Detail

Southfront Road Station Alternative

The Southfront Road Station Alternative would be constructed south of I-580, along Southfront Road, adjacent to developed, paved industrial areas. Widening of the I-580 median would be required for station construction, taking place in previously disturbed developed land cover. Construction of the surface parking lot would occur mostly within previously disturbed ruderal land cover and developed land cover. Therefore, special-status plants are not expected to be present because no suitable habitat for special-status species is present. In addition, the area is surrounded by industrial development, which further decreases the potential for special-status plants to be present. Therefore, construction of Southfront Road Station Alternative has no potential to affect special-status plants and no impact would occur.

Stone Cut Alignment Alternative

The Stone Cut Alignment Alternative would bisect natural land cover, including grasslands, ephemeral drainages, and seasonal wetlands; therefore, construction could affect special-status plant species in the vicinity through ground disturbance, the removal of vegetation, and degradation and/or loss of habitat. Disturbances to natural land covers from the Stone Cut Alignment Alternative, including vegetation removal, soil compaction, and degradation or loss of habitat, could affect special-status plants such as alkali milk vetch, bent-flowered fiddleneck, California alkali grass, caper-fruited tropidocarpum, Congdon's tarplant, Delta button-celery, Diablo helianthella, diamond-petaled California poppy, Hispid bird's-beak, Hospital canyon larkspur, large-flowered fiddleneck, Livermore tarplant, Mt. Diablo fairy-lantern, prostrate vernal pool navarretia, recurved larkspur, saline clover, and San Joaquin spearscale. Therefore, construction of the Stone Cut Alignment Alternative would result in a potentially significant impact on special-status plant species.

Mountain House Station Alternative

The Mountain House Station Alternative would be constructed on undeveloped California annual grassland, seasonal wetlands, and ruderal habitat. The area surrounding the station is developed and/or agricultural croplands (i.e., row crops). Because the area is surrounded by development and previously disturbed land, the potential for special-status plant species to occur is low. However, the presence of special-status plant species cannot be ruled out because natural land covers (i.e., annual grassland and seasonal wetlands) are present. Ground disturbance within annual grassland and seasonal wetlands natural land covers could affect special-status plants species such as big tarplant or Lemmon's jewelflower (see Table 3.4-3). Therefore, construction of the Mountain House Station Alternative would result in a potentially significant impact on special-status plant species.

West Tracy OMF Alternative

The West Tracy OMF Alternative would be constructed within California annual grassland, which is bisected by a drainage containing seasonal wetland vegetation. The California annual grassland and seasonal wetland drainage have the potential to support special-status plant species. Ground disturbance in natural land cover could affect special-status plants, including Diablo helianthella and showy golden madia during construction (see Table 3.4-3). Sedimentation could also indirectly degrade the habitat quality of nearby extant populations of special-status plants in the vicinity (California Department of Fish and Wildlife 2019b). Therefore, construction of the West Tracy OMF Alternative would result in a potentially significant impact on special-status plant species.

Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2

The Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 would be constructed at the existing Tracy Transit Center, within previously developed/landscaped and ruderal land covers. Rare plant populations are not known from the vicinity. Therefore, special-status plants are not expected to be present because no suitable habitat for special-status species is present. Construction of Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 have no potential to affect special-status plants and no impact would occur.

Mitigation Measures

Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, and BIO-1.4 would apply to the following proposed alignments, stations, and OMFs to mitigate construction impacts on special-status plant species: Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track; Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Descriptions of Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, and BIO-1.4 are presented in Section 3.4.4.4, *Mitigation Measures*.

Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, and BIO-1.4 would also apply to the Stone Cut Alignment Alternative, Mountain House Station Alternative, and West Tracy OMF Alternative.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, and BIO-1.4 would avoid or compensate for impacts on special-status plants through impact avoidance, salvage and relocation, impact documentation, and prevention of the spread of invasive plants. In addition, as described in Section 3.10, *Hydrology and Water Quality*, construction contractor(s) would be required to obtain applicable resource agency permits and approvals and comply with permit requirements to prevent impacts on water quality and demonstrate that water quality standards and/or WDRs are not violated. With implementation of Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, and BIO-1.4, impacts on special-status plant species during construction of the Proposed Project, due to implementation of the following proposed alignments, stations, and OMFs would be less than significant: Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track; Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station.

For the same reasons listed above, with implementation of the Mitigation Measures BIO-1.1, BIO-1.2, BIO-1.3, BIO-1.4, the impact on special-status plants due to construction of the Stone Cut Alignment Alternative, Mountain House Station Alternative, and West Tracy OMF Alternative would be less than significant.

Comparison of Alternatives

The Greenville Station would affect more natural land cover than the Southfront Road Station Alternative, including salt grass flats and riverine seasonal wetlands that may support special-status plants (see Table 3.4-1). The level of impact would be lower for the Southfront Road Station Alternative than the proposed Greenville Station, and the alternative would not require mitigation to be implemented. Therefore, implementation of the Southfront Road Station Alternative would eliminate a less than significant with mitigation impact.

The Stone Cut Alignment Alternative would have a similar impact on land cover as the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace. As such, both would have the same less-than-significant impact on special-status plants after implementation of mitigation.

The Mountain House Station would have a greater impact on natural land cover that may support special-status plants than the Mountain House Station Alternative (see Table 3.4-1 and Table 3.4-3). The level of impact would be lower for the Mountain House Station Alternative than the proposed station (Mountain House Station). Nonetheless, implementation of the Mountain House Station Alternative instead of the proposed Mountain House Station would not change the overall impact on special-status plant species during construction. Both the Mountain House Station Alternative and the proposed Mountain House Station would result in a less-than-significant impact on special-status plants after implementation of mitigation.

The Tracy OMF would affect a similar amount of special-status species as compared to the West Tracy OMF Alternative (see Table 3.4-1). The Tracy OMF would affect more agricultural land (row crops) and a small amount of California annual grassland, while the West Tracy OMF Alternative would affect more California annual grassland containing seasonal wetland vegetation. Therefore, implementation of the West Tracy OMF Alternative instead of the proposed Tracy OMF would not change the overall impact on special-status plant species during construction. Both the West Tracy OMF Alternative and the proposed Tracy OMF would result in a less-than-significant impact on special-status plants after implementation of mitigation.

The Downtown Tracy Station Parking Alternative 1, Downtown Tracy Station Parking Alternative 2, and the proposed Downtown Tracy Station would result in the same no impact conclusion because they would be constructed at the existing Tracy Transit Center, within previously developed/landscaped and ruderal land covers. Thus, there would be no difference in impacts between the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2).

Impact BIO-2: Construction of the Proposed Project could injure or kill special-status wildlife species and remove or degrade their habitat.

Level of Impact Prior to Mitigation	**Potentially Significant**
Mitigation Measures	Mitigation Measure BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible Mitigation Measure BIO-2.2: Conduct worker environmental training program for construction personnel Mitigation Measure BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible Mitigation Measure BIO-2.4: Implement seasonal restrictions for in-water work as feasible Mitigation Measure BIO-2.5: Protect wetlands during construction Mitigation Measure BIO-2.6: Protect sensitive natural communities, including riparian habitat, during construction Mitigation Measure BIO-2.7: Protect vernal pool–endemic species Mitigation Measure BIO-2.8: Protect valley elderberry longhorn beetle Mitigation Measure BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog Mitigation Measure BIO-2.10- Protect foothill yellow-legged frog Mitigation Measure BIO-2.11: Protect western pond turtle and giant garter snake Mitigation Measure BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip Mitigation Measure BIO-2.13: Protect special-status and non-special-status nesting birds Mitigation Measure BIO-2.14: Protect golden eagles Mitigation Measure BIO-2.15: Protect Swainson's hawk nests Mitigation Measure BIO-2.16: Compensate for Swainson's hawk foraging habitat loss Mitigation Measure BIO-2.17: Protect burrowing owls and burrowing owl habitat Mitigation Measure BIO-2.18: Compensate for burrowing owl habitat loss Mitigation Measure BIO-2.19: Protect special-status and non-special-status roosting bats Mitigation Measure BIO-2.20: Protect riparian brush rabbit Mitigation Measure BIO-2.21: Compensate for riparian brush rabbit habitat loss Mitigation Measure BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat Mitigation Measure BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss Mitigation Measure BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources Mitigation Measure BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Most of the construction would occur within the existing I-580 ROW, Alameda County Transportation Corridor ROW, and/or UPRR ROW and would therefore affect previously disturbed/landscaped or somewhat ruderal areas with limited potential to support special-status wildlife species. Although unlikely, special-status wildlife species could be present during construction within existing disturbed areas of the existing railroad ROW. However, some of the construction activities would take place within and adjacent to undeveloped, ruderal, agricultural land (orchards, row crops, fallow land), and annual grassland. Some aquatic land covers, such as creeks and seasonal wetlands, would also be affected by construction activities. Outside of the existing railroad ROW and developed areas, special-status wildlife species have higher potential to occur in natural land cover types with suitable habitat characteristics (e.g., annual grasslands with seasonal wetlands/vernal pools, creeks with riparian woodland, woodlands adjacent to low-growing agricultural crops).

If special-status wildlife species are present, construction activities (e.g., grading, grubbing, pile driving, excavation, vegetation removal, soil compaction, increased light, noise, the introduction of invasive species) could result in direct and/or indirect effects on special-status wildlife species. Direct effects can be temporary (i.e., conditions return to baseline within 1 year of disturbance) or permanent and result in injury or mortality to special-status wildlife species. Indirect effects are reasonably certain to occur from a proposed action later in time; these effects generally alter the behavior patterns and habitat suitability of special-status wildlife species. The types of direct and indirect effects on special-status wildlife resulting from these actions would be similar wherever habitat for a given species or a group of species is present. For the purposes of this discussion, the description of effects on special-status wildlife is based on land cover types or habitat features that support special-status species, including some that support multiple species, and could be affected by construction.

Aquatic Habitat

Seasonal Wetland, Perennial Wetland, and Pond Habitats for Special-Status Invertebrates, Amphibians, Reptiles, and Birds

Construction activities affecting vernal pools and seasonal wetlands could affect the following special-status species: longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Crotch bumble bee, western bumble bee, California tiger salamander, western spadefoot toad, California red-legged frog, western pond turtle, tricolored blackbird, song sparrow, short-eared owl, and yellow-headed blackbird. Potential direct effects include mortality for adults, young, larvae, eggs, or egg masses, as well as cysts occurring in wetland habitat features within footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; permanent habitat loss; and permanent habitat degradation. Potential indirect effects include habitat degradation from invasive plants; loss of underground refuge from ground disturbance; increased light and noise levels, resulting in altered normal behaviors and activity; alteration of hydrology or aquatic thermal regime; sedimentation of aquatic habitat features; habitat fragmentation; and toxic material exposure, such as petroleum and herbicide.

Riverine Habitat for Special-Status Amphibians and Reptiles

Construction activities affecting aquatic riverine habitat (e.g., Paradise Cut, San Joaquin River), as well as smaller creek and stream habitats, could affect the following special-status species: California red-legged frog, foothill yellow-legged frog, western pond turtle, and giant garter snake. Potential direct effects include mortality for adults, larvae, and eggs or egg masses occurring in

aquatic habitat features and within upland estivating (for giant garter snake and California red-legged frog) or egg-laying habitat (for western pond turtle) within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail, as well as permanent habitat loss and permanent habitat degradation and/or fragmentation. Potential indirect effects include habitat degradation from invasive plants; sedimentation and fill; soil compaction and loss of underground refuge; increased light and noise levels, resulting in altered normal behaviors and activity; alteration of hydrology or aquatic thermal regime; and toxic material exposure, such as petroleum and herbicide.

Riparian Habitat for Valley Elderberry Longhorn Beetle and Special-Status Amphibians, Reptiles, Birds, and Mammals

Construction activities affecting riparian habitat could affect the following special-status species: valley elderberry longhorn beetle, foothill yellow-legged frog, California red-legged frog, western pond turtle, Swainson's hawk, tricolored blackbird, white-tailed kite, yellow-headed blackbird, riparian brush rabbit, and mountain lion. Potential direct effects include mortality for adults, young, larvae, nestlings, and eggs occurring in riparian habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; nest loss; burrow collapse; permanent habitat loss; loss of host plants (elderberry shrubs); temporary loss of movement corridor, and permanent habitat degradation or habitat fragmentation through impacts that result in reduced host plant health. Potential indirect effects include habitat degradation from invasive plants and habitat fragmentation; increased light and noise levels, resulting in altered normal behaviors and activity; alteration of vegetation composition or structure through changes to associated hydrology; alteration of sub-canopy thermal regime; and toxic material exposure.

Upland Habitat

Annual Grassland Habitat for Special-Status Amphibians, Reptiles, Birds, and Mammals

Construction activities affecting annual grassland habitat could affect the following special-status species: various species of fairy shrimp,[6] Crotch bumble bee, Western bumble bee, California tiger salamander, California red-legged frog, western spadefoot toad, California legless lizard, California glossy snake, western pond turtle, San Joaquin coachwhip, coast horned lizard, golden eagle, grasshopper sparrow, burrowing owl, Swainson's hawk, northern harrier, white-tailed kite, loggerhead shrike, San Joaquin kit fox, American badger, and mountain lion. Potential direct effects include mortality for adults, young, larvae, and eggs occurring in grassland habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; nest loss; burrow collapse; entrapment; temporary and permanent habitat loss and disruption of movement corridors; and temporary and permanent habitat degradation. Potential indirect effects include habitat degradation from invasive plants; soil compaction, leading to loss of underground burrow/refuge and the reduced availability of prey items thus affecting reproductive efforts; increased predator presence; increased light and noise levels; habitat fragmentation; movement barrier; and toxic material exposure.

Cropland Habitat for Special-Status Invertebrates, Reptiles, and Birds

Construction activities affecting cropland habitat (e.g., row crops, orchards, irrigated and non-irrigated fields, pastures) could affect the following special-status species: Crotch bumble bee,

[6] Where vernal pools occur in annual grassland habitat.

western bumble bee, giant garter snake, tricolored blackbird, grasshopper sparrow, short-eared owl, burrowing owl, Swainson's hawk, northern harrier, white-tailed kite, loggerhead shrike, and song sparrow. Potential direct effects include mortality for adults, young, and eggs, as well as nests occurring in cropland habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; nest abandonment; burrow collapse; entrapment; temporary and permanent foraging and nesting habitat loss; and habitat degradation. Potential indirect effects include loss of suitable agricultural canals for movement corridors and foraging habitat, habitat degradation from invasive species, increased predation pressure, soil compaction, loss of underground refuge, loss of prey base resulting in effects on reproductive success, habitat fragmentation, and toxic material exposure.

Woodland Habitat for Special-Status Amphibians, Reptiles, Birds and Mammals

Construction activities affecting woodland habitat could affect the following special-status species: California tiger salamander, California red-legged frog, California legless lizard, western pond turtle, golden eagle, Swainson's hawk, white-tailed kite, song sparrow, mountain lion, pallid bat, western mastiff bat, and hoary bat. Potential direct effects include mortality for adults and young in woodland habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; overwintering site loss and nest loss; temporary and permanent habitat loss and movement corridor disruption; and temporary and permanent habitat degradation. Potential indirect effects include habitat degradation from increased human activity and invasive plants; habitat fragmentation; barriers to movement; increased light, wind, and noise levels; and toxic material exposure.

Scrub Habitat for Special-Status Reptiles

Construction activities affecting scrub habitat could affect the following special-status species: California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard. Potential direct effects include mortality for adults and eggs occurring in scrub habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; nest loss; burrow collapse; permanent habitat loss; and permanent habitat degradation. Potential indirect effects include habitat degradation from invasive plants, increased light and noise levels, and herbicide exposure.

Nesting Habitat for Special-Status Birds

Construction activities affecting nesting habitat (e.g., wetlands; trees; shrubs; anthropogenic structures such as bridges, towers, wooden poles, and gravel areas; grasslands; undeveloped open areas; river banks; cliffs; rock outcrops) could affect the following special-status species: tricolored blackbird, golden eagle, grasshopper sparrow, short-eared owl, Swainson's hawk, northern harrier, white-tailed kite, loggerhead shrike, bank swallow, song sparrow (Modesto population), and other migratory bird species. Potential direct effects include mortality for adults, juveniles, hatchlings, and eggs, as well as nests occurring in nesting habitat within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; nest loss; temporary and permanent nesting and foraging habitat loss; increased mortality rates from being stuck by trains or vehicles; and permanent habitat degradation. Potential indirect effects include habitat degradation from invasive species, habitat fragmentation, increased predation pressure, loss or decrease of suitable prey base, increased light and noise levels thereby decreasing habitat suitability, and toxic material exposure.

Roosting Habitat for Special-Status Bats

Construction activities affecting roosting habitat (i.e., trees, bridges, rock outcrops, occupied and non-occupied anthropogenic structures with low human disturbance) could affect the following special-status species: pallid bat, Townsend's big-eared bat, hoary bat, western mastiff bat, and other common species of bats. Potential direct effects include mortality for adults and young while roosting within the footprint of the Proposed Project and the alternatives analyzed at an equal level of detail; increased potential for vehicle and train strike, temporary disturbance of roost sites; permanent loss of roosting habitat; permanent foraging habitat loss; and permanent habitat degradation. Potential indirect effects include habitat degradation from invasive species; increased light, wind, and noise levels, thereby reducing habitat suitability; decreased prey abundance through loss of foraging habitat; alteration to roost thermal regime; and toxic material exposure.

Impact Details and Conclusions

Table 3.4-4 identifies the special-status wildlife species that could be affected by construction. The actual area occupied by special-status wildlife species is most likely smaller than the overall area for land cover impacts. The determination of the actual areas that are suitable for special-status wildlife will be based on preconstruction surveys and focused habitat assessment, per mitigation measures (see discussion below).

Proposed Project

As described in further detail below, construction of the Proposed Project could result in impacts on special-status wildlife species because suitable habitat for such species is present in the Proposed Project area. If present within the Proposed Project footprint, special-status wildlife species could be injured or killed, and their habitat could be removed or modified. The proposed railroad alignment would generally occur in linear sections along the existing I-580 ROW, Alameda County Transportation Corridor ROW, and UPRR ROW, which have been previously disturbed. The stations and OMFs would be constructed within the vicinity of the I-580 ROW, Alameda County Transportation Corridor ROW, and UPRR ROW in natural land cover types, outside disturbed/developed areas. Impacts on special-status wildlife species and their habitat from the Proposed Project would be significant.

Tri-Valley Alignment

Disturbance on or above the existing grade for the Tri-Valley Alignment could affect special-status wildlife through the disturbance, modification, or removal of habitat as well as direct and indirect impacts on special-status wildlife individuals. The Tri-Valley Alignment would entail construction of various track designs within the same alignment, from the existing Dublin/Pleasanton BART Station terminus east to Greenville Road.

Construction of the Tri-Valley Alignment could result in the following impacts on special-status species:

- Removal of or disturbance within vernal pool branchiopod and bumble bee habitat in annual grassland.
- Ground disturbance in or near wetland, aquatic, and upland habitats for California tiger salamander and California red-legged frog.
- Ground disturbance in or near aquatic and upland habitats for western pond turtle and riverine habitat for foothill yellow-legged frog.

- Loss of California legless lizard, California glossy snake, and San Joaquin coachwhip habitat, which includes sandy soil, woodlands with a duff layer, annual grassland, and riparian habitat.
- Disturbance of migratory nesting birds, including grasshopper sparrow, white-tailed kite, tricolored blackbird, and song sparrow, and roosting bats as a result of noise, artificial lighting, vibration, and increased human presence near suitable habitat.
- Removal of Swainson's hawk and tricolored blackbird fallow field and cropland habitat as well as burrowing owl and northern harrier annual grassland foraging and nesting habitat.
- Disturbance to tricolored blackbird and song sparrow (Modesto population) from construction in or near riparian and marsh habitat.
- Loss of day, night, and maternal roosting habitat for pallid bat, hoary bat, and other common bats. Abandonment of roosts from noise, light, and vibration as well as the loss of foliage roost habitat from removal of trees.
- Disturbance of San Joaquin kit fox, American badger, and mountain lion grassland habitat as a result of noise, vibration, soil compaction, burrow collapse, mortality from road and vehicle traffic, anthropogenic barriers to dispersal, and habitat fragmentation.

Four temporary construction areas are associated with the Tri-Valley Alignment.

- The westernmost construction area is proposed north of I-580, from east of Campus Drive to Hacienda Drive, within ruderal land cover. Ornamental trees and shrubs are present along Arnold Road. Burrowing owls have been reported within the vicinity of this temporary construction area (California Department of Fish and Wildlife 2019b). Migratory nesting birds and common species of foliage-roosting bats could use the ornamental vegetation as cover as well as nesting and roosting habitat.
- The second temporary construction area is proposed south of I-580, east of Las Colinas Road and north of Las Positas Road, within a previously disturbed gravel lot. Minimal amounts of shrubs and trees are present along the eastern edge of the temporary construction area. Western pond turtle has been reported within the vicinity (California Department of Fish and Wildlife 2019b). Some species of migratory nesting birds, such as killdeer, that use gravel lots for nesting could be affected by construction, if present. Migratory nesting birds and common species of foliage-roosting bats could use the ornamental vegetation as cover as well as nesting and roosting habitat.
- The third temporary construction area is north of I-580, at Northfront Road, within previously disturbed ruderal land cover that is surrounded by urban development. An occurrence of California tiger salamander overlaps with the footprint of this temporary construction area (California Department of Fish and Wildlife 2019b). There is low potential for special-status wildlife species to occur; however, some migratory nesting birds and common bats species use previously disturbed ruderal areas as cover as well as nesting and roosting habitat.
- The fourth temporary construction area is south of the third temporary construction area, east of Southfront Road and west of South Vasco Road, within a ruderal area. Small shrubs and trees are present. Migratory nesting birds and common species of foliage roosting bats could use the ornamental vegetation as cover as well as nesting and roosting habitat.

Table 3.4-4. Special-Status Wildlife Species Potentially Affected by Construction

Proposed or Alternative Facility	Longhorn fairy shrimp	Vernal pool fairy shrimp	Valley elderberry longhorn beetle	Vernal pool tadpole shrimp	Crotch bumble bee	Western bumble bee	California tiger salamander	Foothill yellow-legged frog	California red-legged frog	Western spadefoot toad	California legless lizard	California glossy snake	Western pond turtle	San Joaquin coachwhip	Coast horned lizard	Giant garter snake	Tricolored blackbird	Golden eagle	Grasshopper sparrow	Short-eared owl	Burrowing owl	Swainson's hawk	Northern harrier	White-tailed kite	Loggerhead shrike	Song sparrow, Modesto population	Yellow-headed blackbird	Pallid bat	Townsend's big-eared bat	Western mastiff bat	Hoary bat	Riparian brush rabbit	American badger	San Joaquin kit fox	Mountain lion
Tri-Valley Segment																																			
Tri-Valley Alignment	x	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	x	x	x	x	x	x	x	x	x	—	x	x	x	x	—	x	x	x
Dublin/Pleasanton Station	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	x	—	—	—	—	—
Isabel Station	—	—	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	—	x	—	—	x	x	—	—	x	—	x	x	—	—	—	—
Southfront Road Station Alternative	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	x	—	x	x	—	—	—	—
Greenville Station	—	x	—	x	—	—	x	—	—	—	—	x	—	x	x	—	—	—	—	—	x	—	—	—	—	—	—	x	x	x	—	—	—	—	—
Temporary Construction Areas	—	—	—	—	—	—	x	—	x	—	—	—	x	—	—	—	—	—	—	—	x	—	—	—	x	—	—	x	—	x	—	—	—	—	—
Altamont Segment																																			
Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track	x	x	x	x	x	x	x	x	x	x	x	x	—	x	x	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	—	x	x	x
Stone Cut Alignment Alternative	x	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	x	x	x	x
Mountain House Station	—	—	—	—	x	x	x	—	x	—	x	x	—	x	x	—	x	x	x	x	x	—	x	x	x	x	—	—	—	—	—	—	x	x	x
Mountain House Station Alternative	—	—	—	—	x	x	x	—	x	x	x	x	—	x	x	—	x	x	x	x	x	x	x	x	x	x	—	x	—	x	—	—	x	x	—
West Tracy OMF Alternative	—	—	—	—	x	x	x	—	x	x	x	x	—	x	x	—	—	x	x	x	x	—	x	x	x	x	—	—	—	—	—	—	x	x	x
Tracy OMF	—	—	—	—	x	x	—	—	—	—	x	x	—	x	x	—	x	—	—	—	x	x	—	—	x	—	—	x	—	x	x	—	x	x	—
Interim OMF	—	—	—	—	—	—	x	—	—	x	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x
Tracy to Lathrop Segment																																			
Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track	—	—	x	—	x	x	x	x	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	x	x	—	x	x	—
Downtown Tracy Station, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2	—	—	—	—	—	—	—	—	—	—	x	x	—	x	x	—	—	—	—	—	x	—	—	—	x	—	—	x	—	x	x	—	—	—	—
River Islands Station	—	—	x	—	x	x	—	—	—	—	—	—	—	—	—	—	x	—	—	—	x	x	x	x	x	x	—	x	—	x	x	x	x	x	—
North Lathrop Station	—	—	—	—	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	x	x	x	x	x	—	x	—	x	x	—	x	x	—

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Dublin/Pleasanton Station

The Dublin/Pleasanton Station would be constructed in the median of I-580, adjacent to the existing Dublin/Pleasanton BART Station. The Dublin/Pleasanton Station would be entirely within developed/landscaped areas or previously disturbed ruderal habitat. Construction of the station could require the removal of trees and/or ornamental vegetation, which could affect migratory nesting birds. Although the likelihood is low that special-status bats would roost at the existing BART station, the removal of trees and demolition of existing structures could affect pallid bat or western mastiff bat. No impacts on other special-status wildlife species are anticipated because suitable habitat is absent from the Dublin/Pleasanton Station area.

Isabel Station

The Isabel Station would be constructed in the median of I-580; the associated parking would be constructed south of I-580. Construction of parking would affect developed/landscaped, ruderal, riparian woodland, and cropland natural land cover. Ground disturbance in semi-natural land cover could affect special-status wildlife, if present. Arroyo Las Positas and its associated riparian corridor, on the north side of the proposed Isabel Station, may provide habitat for special-status wildlife species, such as foothill yellow-legged frog, California red-legged frog, western pond turtle, and white-tailed kite. Special-status wildlife species could be affected by construction of the pedestrian overcrossing on Arroyo Las Positas. In addition, depending on the timing, vegetation (i.e., trees, shrubs, ground cover) removal could affect migratory nesting birds, burrowing owls, as well as special-status roosting bats. Improvements to East Airway Boulevard are not likely to affect special-status wildlife species because suitable habitat is absent.

Greenville Station

Greenville Station would be constructed north of I-580, on a previously disturbed/developed site between I-580 and Altamont Pass Road. The majority of the construction area for the station would occur within developed land cover. Developed land cover generally provides low habitat value for special-status wildlife species; however, certain special-status species, such as burrowing owl, that tolerate human disturbance can be found utilizing this habitat type. Trees and other landscaping within the developed land cover type could provide suitable nesting habitat for migratory nesting birds or suitable roosting habitat for some common species of bats. Disturbance of the trees could affect nesting birds and roosting bats.

Construction of Greenville Station would also disturb a small amount of ruderal, alkali seasonal wetland, and annual grassland. Alkali seasonal wetland and California annual grassland can provide suitable habitat for several special-status species, such as vernal branchiopods (fairy shrimp) and California tiger salamander, if certain habitat features (i.e., seasonal pool) are present. Ruderal and grassland areas also provide foraging and nesting habitat for a migratory nesting birds.

Altamont Alignment

The Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track) would affect natural land cover; therefore, construction of the alignment on or above the existing grade could affect special-status wildlife through the disturbance, modification, or removal of habitat as well as direct and indirect impacts on special-status wildlife.

Construction of the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track) could result in the following impacts on special-status wildlife species:

- Removal or disturbance of vernal pool branchiopod habitat in California annual grassland that contains vernal pools, seasonal wetlands, or sandstone outcrops.
- Removal or disturbance of foraging and ground nesting habitat for bumble bees in in annual grassland and ruderal land cover that contain suitable pollen and nectar resources.
- Ground disturbance in or near riverine, pond, seasonal wetland, vernal pool wetland, or upland annual grassland for western spadefoot toad, California red-legged frog, and California tiger salamander.
- Ground disturbance in or near western pond turtle aquatic and upland habitats.
- Loss or disturbance of coast horned lizard, California glossy snake, San Joaquin coachwhip, and California legless lizard in areas with sandy soil, thick leaf litter within grassland, or ruderal land cover.
- Disturbance of both common and special-status migratory nesting birds through ground disturbance in natural or previously disturbed land cover; construction noise, vibration, or light, thereby altering normal behavior and activity; the removal of foraging and nesting habitat; or take of individuals.
- Disturbance of burrowing owl, golden eagle, grasshopper sparrow, Swainson's hawk, and/or northern harrier through ground disturbance in or removal of annual grassland and cropland land cover.
- Removal or disturbance of tricolored blackbird, short-eared owl, northern harrier, white-tailed kite, the Modesto population of song sparrow, and yellow-headed blackbird nesting as well as foraging habitat from construction activities in cropland and grassland or near seasonal and perennial aquatic land cover.
- Disturbance of colonies of bank swallow from construction activities (such as pile driving and pier construction) near streambanks.
- Loss of day, night, and maternal roosting habitat for pallid bat, hoary bat, Townsend's big-eared bat, western mastiff bat, and/or other common bat species as well as foliage roosting habitat from the removal of trees. In addition, bats could be affected, causing them to abandon roosts through noise, light, and vibration generated during construction.
- Disturbance of mountain lion, San Joaquin kit fox, and American badger foraging, dispersing, or denning habitat as a result of noise, vibration, soil compaction, reduction in prey availability, burrow collapse in suitable land cover types, mortality from road and vehicle traffic, anthropogenic barriers to dispersal, and habitat fragmentation.
- Although subsurface tunnel work would not affect natural land cover, the tunnel may provide suitable habitat for special-status bats (e.g., Townsend's big-eared bat). Construction activities that disturb or modify subsurface tunnels could affect common species of crevice roosting bats.

Construction activities for the Owens-Illinois Industrial Lead Variant 1, Single Track, would take place within the UPRR ROW and previously disturbed ruderal land cover adjacent to California annual grassland. Disturbances on or above the existing grade in natural land cover could affect special-status wildlife through habitat modification or removal as well as direct and indirect

impacts. Disturbances in annual grassland could affect upland habitat for burrowing owl, California tiger salamander, California red-legged frog, bumble bee, as well as migratory nesting birds. There would be temporary disturbances in mountain lion, San Joaquin kit fox, and American badger movement habitat. Burrowing owls, which have been documented roosting along active railroad tracks and on the railroad berm, could be affected by noise, vibration, and increased human presence during at-grade crossing upgrades.

The Owens-Illinois Industrial Lead Variant 2, Double Track, would require another track to be constructed parallel to the existing track. Upgrades would be performed at the same at-grade crossing discussed under variant 1. Construction of a new railroad crossing at the California Aqueduct would also be required for variant 2. Construction of a new track for the Owens-Illinois Industrial Lead Variant 2, Double Track, would disturb California annual grassland, seasonal wetland, potential vernal pools, ponds, ruderal areas, agricultural lands (croplands, orchards), and riverine habitat types. Disturbance on and above the existing grade in natural land cover could affect special-status wildlife through disturbance, modification, or the removal of habitat as well as direct and indirect impacts on special-status wildlife, as described above. Construction of a new railroad bridge over the California Aqueduct could provide roosting habitat for bats as well as nesting habitat for swallows and other common migratory nesting birds.

Both alignments have the potential to affect special-status wildlife and wildlife habitat; however, the Owens-Illinois Industrial Lead Variant 1, Single Track would affect less natural land cover compared with the Owens-Illinois Industrial Lead Variant 2, Double Track. Impacts on special-status wildlife under the Owens-Illinois Industrial Lead Variant 2, Double Track would be greater because of the larger footprint.

Interim OMF

The location of the Interim OMF is dominated by developed/landscaped land cover, with a small amount of annual grassland. California tiger salamander and tricolored blackbird have been reported within the immediate vicinity of the Interim OMF (California Department of Fish and Wildlife 2019b). Mountain lion may travel or move through the Altamont Pass within the vicinity of the Interim OMF. Special-status wildlife species have the potential to be affected by construction of the Interim OMF.

Mountain House Station

The Mountain House Station would be constructed southwest of I-580, in the median of the UPRR tracks, on previously disturbed ruderal land cover. The surface parking lot would be constructed on undeveloped California annual grassland, ruderal land cover, and a small amount of developed/landscaped land cover with the potential to support special-status wildlife species. Improvements to the existing at-grade crossing on Via Nicolo Road would also be required; however, no improvements to Via Nicolo Road are proposed. Ground disturbance in natural land cover could affect special-status wildlife, if present. No vernal pool habitat is present within the grassland land cover type; therefore, vernal pool branchiopods and western spadefoot toad would not be affected (ICF 2019). Ground disturbance could affect upland habitat for California red-legged frog and California tiger salamander (U.S. Fish and Wildlife Service 2003, 2005). In addition, California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip could be affected by ground disturbance in sandy soil within annual grassland and ruderal habitat. Likewise, effects on annual grassland and ruderal habitat could affect Crotch and western bumble bee foraging resources and destroy ground nests. Tricolored blackbird are known to occur north of

Via Nicolo Road, and breeding and foraging activity could be affected by construction activities (California Department of Fish and Wildlife 2019b). Golden eagles are known to use the area. Foraging and construction activities could disrupt normal foraging patterns and behavior (ICF 2019). Disturbance in or near grassland could affect ground-nesting birds, including burrowing owl. Mountain lion, San Joaquin kit fox and American badger movement or foraging habitat could be affected from construction of the station and surface parking lot. Improvements to the existing at-grade crossing on Via Nicolo Road would not be likely to affect special-status wildlife because the crossing, which was previously disturbed, does not provide high-quality wildlife habitat; however, ground-nesting birds and burrowing owl may nest near the crossing and therefore could be affected.

Tracy OMF

The Tracy OMF, which would be constructed in agricultural land (row crops, orchards), would affect a small amount of California annual grassland along the UPRR ROW as well as developed/ landscaped and ruderal land covers, with trees and shrubs east of the Delta-Mendota Canal. Burrowing owl is known to occur in the parcel proposed for development (California Department of Fish and Wildlife 2019b) and therefore could be affected by construction of the Tracy OMF through the loss of habitat and/or take of individuals, eggs, and/or nests. Tricolored blackbird, Swainson's hawk, and other species of migratory nesting birds could also be affected through the loss of nesting and/or foraging habitat. Foraging resources and ground nests of Crotch and western bumble bees could also be affected by construction. In addition, trees may provide roosting habitat for bats.

Tracy to Lathrop Alignment

Two variants are proposed for the Tracy to Lathrop Alignment. The majority of both alignment variants, which would occur within the existing railroad ROW, would require the construction of new sidings at three locations, including two UPRR undercrossings. Track work along portions of the Tracy Subdivision ROW would occur within developed and ruderal land cover. Outside the city limits, alignment construction would disturb natural land cover, including cropland (orchards, row crops, fallow lands), creeks, ponds, riverine areas, freshwater marsh wetlands, grassland, and riparian land cover. Both variants would affect natural land cover. Construction of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track could affect special-status wildlife species through disturbances on or above the existing grade crossing in natural land cover; the modification or removal of habitat; or direct or indirect impacts on special-status wildlife.

Construction of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track could result in the following impacts on special-status wildlife species:

- The removal of elderberry shrubs with stems that are 1 inch in diameter (or more) within 165 feet of the construction area, which could affect valley elderberry longhorn beetle (U.S. Fish and Wildlife Service 2017a).
- Ground disturbances in or near freshwater marsh wetlands, seasonal wetlands, or the surrounding upland California annual grassland land cover, which could affect western spadefoot toad, California red-legged frog, and California tiger salamander.
- Bridge construction and pile driving near Paradise Cut and the San Joaquin River, which could affect habitat for riparian brush rabbit and Swainson's hawk.
- Ground disturbance, bridge construction, and pile driving in or near western pond turtle and giant garter snake aquatic and upland habitats.

- Loss or disturbance of coast horned lizard and California legless lizard in sandy soil or thick leaf litter, primarily in ruderal land cover.
- Track work, bridge construction, and pile driving at Paradise Cut and the San Joaquin River, which could affect giant garter snake, riparian brush rabbit, western pond turtle, Swainson's hawk, and bank swallow.
- Disturbance of both common and special-status migratory nesting birds through ground disturbance, noise, vibration, light, the removal of foraging and nesting habitat (removal of trees, shrubs, ground vegetation), and take of individuals.
- Ground disturbance in or removal of cropland and ruderal land cover, could affect nesting burrowing owl and foraging Swainson's hawk and white-tailed kite, as well as Crotch and western bumble bee.
- Disturbance or removal of tricolored blackbird, the Modesto population of song sparrow, and yellow-headed blackbird nesting and foraging habitat from construction activities in or near freshwater marsh and riparian scrub.
- Disturbance near streambanks, which could affect nesting colonies of bank swallows.
- Disturbance or removal of riparian vegetation, which could affect riparian brush rabbit.
- Loss of day, night, or maternal roosting habitat for pallid bat, hoary bat, western mastiff bat, and/or other common bats. Abandonment of roosts from noise, light, and vibration or the loss of foliage-roosting habitat from the removal of trees. Bats could be affected by noise, light, and vibration generated during construction.

Under the Tracy to Lathrop Alignment Variant 1, Single Track, the existing track would be upgraded but continue to be a single-track alignment. Upgrades and modifications would occur at multiple at-grade crossings. Disturbances on or above existing grade crossings in natural land cover could affect special-status wildlife through habitat modification or removal as well as direct and indirect impacts. Under the Tracy to Lathrop Alignment Variant 2, Double Track, the existing railroad would become a double-track alignment. Construction for the Tracy to Lathrop Alignment Variant 2, Double Track would require grading and the installation of new track north of the existing track as well as new signals and control stations. The Tracy to Lathrop Alignment Variant 2, Double Track would also require the construction of new at-grade crossings to accommodate the new track (although the locations would be the same as under variant 1), construction of a new UPRR bridge across Paradise Cut and the San Joaquin River, and widening of a culvert at the Delta-Mendota Canal. Construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in impacts similar to the types under the Tracy to Lathrop Alignment Variant 1, Single Track; however, construction of Tracy to Lathrop Alignment Variant 2, Double Track would result in greater impacts on natural land covers, which may provide habitat for special-status wildlife species, because of the construction of new tracks, signals and control stations, and at-grade crossings. Furthermore, the construction of new bridges over Paradise Cut and the San Joaquin River would also have the potential to affect special-status wildlife species, such as riparian brush rabbit.

Downtown Tracy Station

The Downtown Tracy Station would be constructed at the existing Tracy Transit Center, within previously developed/landscaped and ruderal land cover. Improvements would include construction of the station platform within developed land cover and a parking structure in both developed and ruderal land cover. The station would be constructed within the UPRR ROW. Because

the land cover has been previously disturbed, the likelihood of impacts on special-status wildlife is low. In addition, the proposed construction area is surrounded by residential development, which further decreases the potential for special-status wildlife because of ongoing human disturbance. However, the potential for the presence of special-status wildlife species cannot be ruled out entirely because ruderal land cover and trees in the area have the potential to provide suitable habitat for some species of wildlife. Construction of the Downtown Tracy Station would result in disturbances on and above existing grade crossings in natural land cover, which could affect special-status wildlife through habitat modification or removal as well as direct or indirect impacts.

Construction of the Downtown Tracy Station could result in the following impacts on special-status wildlife species:

- Ground disturbance in upland land cover with sandy, loose soil or leaf litter for special-status reptiles, such as coast horned lizard.
- Disturbances from noise, vibration, lights, and increased human presence during construction of the station and parking structures, which could affect common and special-status migratory nesting bird species through the loss of foraging and nesting habitat.
- Disturbances from modifications to existing human-made structures, which may serve as habitat for nesting birds and roosting bats.

River Islands Station

The River Islands Station would be constructed east of Paradise Cut and west of the San Joaquin River, within developed/landscaped, agricultural (row crops or fallow land), ruderal, and riparian natural land cover types. Mixed riparian forest is also present along the UPRR ROW and would be affected. Two parking lots and a new access road would be constructed within agricultural land cover. The majority of the proposed improvements would occur outside of the UPRR ROW in cropland areas. Trees that provide habitat for migratory nesting birds, such as Swainson's hawk, white-tailed kit, and loggerhead shrike, as well as roosting bats, such as pallid bat and hoary bat, could be disturbed and/or removed. Ground disturbances in agricultural land cover could affect burrowing owl, tricolored blackbird, and northern harrier, as well as foraging Crotch and western bumble bee. Riparian brush rabbit is also known to occur in the mixed riparian forest (California Department of Fish and Wildlife 2019b) at the proposed River Islands Station footprint and therefore could be affected by construction of the station. If elderberry shrubs are present in the riparian forest and the shrubs are modified or removed during construction, valley elderberry longhorn beetle could be affected by construction activities.

North Lathrop Station

The North Lathrop Station would be constructed at the same site as the ACE North Lathrop Station (which is proposed as a part of another project and has not yet been constructed), within ruderal and developed land covers. These land cover types generally provide lower habitat value for special-status wildlife because of their disturbed nature, lack of robust natural vegetation, and degradation by human activity. The potential to affect special-status wildlife would be lower given the lack of suitable habitat. However, the presence of special-status wildlife cannot be ruled out entirely because ruderal habitat can provide foraging opportunities for special-status insects, birds, and bats as well as nesting habitat for burrowing owl. Construction of the North Lathrop Station could affect Crotch and western bumble bee, nesting bird species and roosting bat species, including Swainson's hawk, northern harrier, loggerhead shrike, song sparrow (Modesto population), pallid bat, hoary

bat, and western mastiff bat through noise, vibration, and increased human presence during construction or ground vegetation removal. Ground disturbance and the removal of sparsely vegetated ruderal land cover could directly affect burrowing owl burrows and bumble bee nests, and result in an indirect impact as a consequence of the loss or modification of foraging habitat. Because of the proximity of nearby grasslands, construction could affect San Joaquin kit fox and American badger directly if individuals are present or indirectly through loss of habitat for movement or foraging.

Alternatives Analyzed at an Equal Level of Detail

As described in further details below, construction of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 could result in impacts on special-status wildlife species because suitable habitat for such species is present in these alternatives. If present within the footprint of these alternatives, special-status wildlife species could be injured or killed, and their habitat could be removed or modified. Impacts on special-status wildlife species and their habitat from these alternatives would be significant.

Southfront Road Station Alternative

Southfront Road Station Alternative would be constructed south of I-580, along Southfront Road, adjacent to developed/landscaped (paved industrial areas) and ruderal areas. Widening of the I-580 median would be required for station construction, taking place in previously disturbed/developed land cover. Construction of the surface parking lot would occur within ruderal land cover and developed land cover. Construction of parking lot associated with Southfront Road Station Alternative would remove landscape trees and ground cover, which could affect migratory nesting birds, including burrowing owl. Similarly, the removal of trees and modification of the existing structure could affect pallid bat, hoary bat, or western mastiff bat. No impacts on other special-status wildlife species are anticipated because suitable habitat for additional species is absent.

Stone Cut Alignment Alternative

The Stone Cut Alignment Alternative would affect natural land cover; therefore, construction of the Stone Cut Alignment Alternative could affect special-status wildlife through the disturbance, modification, or removal of habitat as well as direct and indirect impacts on special-status wildlife. Construction of the Stone Cut Alignment Alternative could result in the following potentially significant impacts on special-status wildlife species:

- Removal or disturbance of vernal pool branchiopod habitat in California annual grassland that contains seasonal wetlands or sandstone outcrops.
- Removal or disturbance of habitat for Crotch and western bumble bee in annual grassland and ruderal land cover with suitable foraging and nesting resources.
- Ground disturbance in or near ponds, seasonal wetland, vernal pool wetland, or upland annual grassland for western spadefoot toad, California red-legged frog, and California tiger salamander.
- Ground disturbance in or near western pond turtle aquatic and upland habitats.

- Loss or disturbance of coast horned lizard, California glossy snake, San Joaquin coachwhip, and California legless lizard in areas with sandy soil, thick leaf litter within grassland, or ruderal land cover.
- Disturbance of both common and special-status migratory nesting birds through ground disturbance in natural or previously disturbed land cover; construction noise, vibration, or light, thereby altering normal behavior and activity; the removal of foraging and nesting habitat; or take of individuals.
- Disturbance of burrowing owl, golden eagle, grasshopper sparrow, Swainson's hawk, and/or northern harrier through ground disturbance in or removal of annual grassland land cover and removal of trees.
- Removal or disturbance of tricolored blackbird, short-eared owl, northern harrier, white-tailed kite, the Modesto population of song sparrow, and yellow-headed blackbird nesting as well as foraging habitat from construction activities in grassland or near seasonal and perennial aquatic land cover.
- Loss of day, night, and maternal roosting habitat for pallid bat, hoary bat, Townsend's big-eared bat, western mastiff bat, and/or other common bat species as well as foliage roosting habitat from the removal of trees. In addition, bats could be affected by noise, light and vibration generated during construction, causing them to abandon roosts.
- Disturbance of mountain lion, San Joaquin kit fox, and American badger foraging, dispersing, or denning habitat as a result of noise, vibration, soil compaction, burrow collapse, and human presence in annual grassland.

Mountain House Station Alternative

The Mountain House Station Alternative would be constructed west of Hansen Road, between the railroad tracks and the California Aqueduct. The station parking lot would be constructed within California annual grassland, ruderal land, and a seasonal wetland. The area surrounding the station is developed or agricultural croplands (i.e., row crops). Because the area is surrounded by development and human disturbance is ongoing, the potential for special-status wildlife species to occur is low; however, the presence of special-status wildlife species cannot be ruled out because natural land cover types (annual grassland, seasonal wetlands, and ruderal areas) are present. Ground disturbance within natural land cover could affect special-status wildlife species such as Crotch and western bumble bee, western spadefoot toad, loggerhead shrike, burrowing owl, white-tailed kite, foraging Swainson's hawk, and American badger. San Joaquin kit fox are also known to use the California Aqueduct as a migratory corridor, from the Central Valley to the northern extent of their range. Construction noise, lights, and increased human presence could affect migrating San Joaquin kit fox. Improvements to the existing at-grade crossing would be conducted in the immediate vicinity of seasonal wetlands. In addition, migratory nesting birds and foliage-roosting bats, which may use trees east of Hansen Road, could be affected by construction noise and related activity.

Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2

The Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 would be constructed at the existing Tracy Transit Center, within previously developed/landscaped and ruderal land cover. Improvements would include construction of parking in both developed and ruderal land cover. Because the land cover has been previously disturbed, the likelihood of impacts on

special-status wildlife is low. In addition, the proposed construction area is surrounded by residential development, which further decreases the potential for special-status wildlife because of ongoing human disturbance. However, the potential for the presence of special-status wildlife species cannot be ruled out entirely because ruderal land cover and trees in the area have the potential to provide suitable habitat for some species of wildlife. Construction of Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 would result in disturbances on and above existing grade crossings in natural land cover, which could affect special-status wildlife through habitat modification or removal as well as direct or indirect impacts.

Construction of Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 could result in the following impacts on special-status wildlife species:

- Ground disturbance in upland land cover with sandy, loose soil or leaf litter for special-status reptiles, such as coast horned lizard.
- Disturbances from noise, vibration, lights, and increased human presence during construction of the station and parking structures, which could affect common and special-status migratory nesting bird species through the loss of foraging and nesting habitat.
- Disturbances from modifications to existing human-made structures, which may serve as habitat for nesting birds and roosting bats.

West Tracy OMF Alternative

The West Tracy OMF Alternative would be constructed within California annual grassland and a small amount of ruderal land cover. The grassland habitat is bisected by a drainage with seasonal wetland vegetation. Construction of the West Tracy OMF Alternative would require significant ground disturbance (grading). The grassland habitat and seasonal wetland drainage have the potential to support special-status wildlife species. Ground disturbance in these habitats could affect special-status wildlife species. The wetland could be used as a seasonal movement corridor by special-status amphibians such as western spadefoot toad or California red-legged frog. If present, special-status amphibians could be affected by ground disturbance in the seasonal wetland. The grassland also provides upland habitat for special-status amphibians, foraging and nesting habitat for special-status bumble bees, migratory nesting birds, and foraging and movement habitat for mountain lion, American badger, and San Joaquin kit fox.

Mitigation Measures

Mitigation Measures BIO-2.1 through BIO-2.25 would apply to the Proposed Project to mitigate construction impacts on special-status wildlife species. A description of the above-listed mitigation measures is presented in Section 3.4.4.4, *Mitigation Measures*. Table 3.4-11 identifies which mitigation measures apply to which proposed alignment, station, and OMF.

Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.5, BIO-2.6, BIO-2.7, BIO-2.9 through BIO-2.20, BIO-2.22, and BIO-2.23 would apply to the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2. Mitigation Measures BIO-2.24 and BIO-2.25 would apply to the Southfront Road Station Alternative, Stone Cut Alignment Alternative, West Tracy OMF Alternative, and Mountain House Station Alternative. Table 3.4-11 identifies which mitigation measures apply to which alternative.

Significance with Application of Mitigation

If present within the footprint of the Proposed Project, special-status wildlife species could be killed or injured, and their habitat eliminated or degraded. Implementation of Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.3, BIO-2.4, BIO-2.5, BIO-2.6, BIO-2.7, BIO-2.8, BIO-2.9, BIO-2.10, BIO-2.11, BIO-2.12, BIO-2.13, BIO-2.14, BIO-2.15, BIO-2.16, BIO-2.17, BIO-2.18, BIO-2.19, BIO-2.20, BIO-2.21, BIO-2.22, BIO-2.23, BIO-2.24, and BIO-2.25 would avoid, reduce, and/or compensate for impacts on special-status wildlife through habitat avoidance, a preconstruction survey, no-disturbance buffers, timing restrictions, and compensation for habitat disturbance or loss. With implementation of Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.3, BIO-2.4, BIO-2.5, BIO-2.6, BIO-2.7, BIO-2.8, BIO-2.9, BIO-2.10, BIO-2.11, BIO-2.12, BIO-2.13, BIO-2.14, BIO-2.15, BIO-2.16, BIO-2.17, BIO-2.18, BIO-2.19, BIO-2.20, BIO-2.21, BIO-2.22, BIO-2.23, BIO-2.24, and BIO-2.25 impacts on special-status wildlife species during construction of the Proposed Project would be reduced to less than significant.

For the same reasons above, implementation of Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.5, BIO-2.6, BIO-2.9 through BIO 2.20, BIO-2.22, BIO-2.23, BIO-2.24, and BIO-2.25 would reduce impacts on special-status wildlife species during construction of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) to less than significant. Table 3.4-11 identifies which mitigation measures apply to which alternative.

Comparison of Alternatives

Potential impacts on wildlife species and wildlife habitat from construction of the Southfront Road Station Alternative would be similar to those of the proposed Greenville Station. The Southfront Road Station Alternative would have slightly fewer impacts on natural land cover compared with Greenville Station and therefore slightly less potential for affecting special-status wildlife species (see Table 3.4-1). Nonetheless, implementation of the Southfront Road Station Alternative instead of the proposed Greenville Station would not change the overall impact on special-status wildlife species during construction. Both the Southfront Road Station Alternative and the proposed Greenville Station would result in a less-than-significant impact on special-status wildlife after implementation of mitigation.

Potential impacts on wildlife species and wildlife habitat from construction of the Stone Cut Alignment Alternative would be similar to the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace. As such, both would have the same less-than-significant impact on special-status wildlife after implementation of mitigation.

The Mountain House Station Alternative could result in fewer potential impacts on special-status wildlife and wildlife habitat compared with Mountain House Station because it would be constructed in previously disturbed land cover with less potential for special-status wildlife species to be present (see Table 3.4-1). Nonetheless, implementation of the Mountain House Station Alternative instead of the proposed Mountain House Station would not change the overall impact on special-status wildlife species during construction. Both the Mountain House Station Alternative and the proposed Mountain House Station would result in a less-than-significant impact on special-status wildlife after implementation of mitigation.

Impacts on special-status wildlife from construction of the West Tracy OMF Alternative could be greater than those of the Tracy OMF because the West Tracy OMF Alternative would be constructed in habitat with higher potential for special-status wildlife species. The West Tracy OMF Alternative

would affect a larger amount of natural land cover compared with the Tracy OMF (see Table 3.4-1). The Tracy OMF would affect more agricultural land, which would affect less special-status species than natural land cover. Nonetheless, implementation of the West Tracy OMF Alternative instead of the proposed Tracy OMF would not change the overall impact on special-status wildlife species during construction. Both the West Tracy OMF Alternative and the proposed Tracy OMF would result in a less-than-significant impact on special-status wildlife after implementation of mitigation.

The Downtown Tracy Station Parking Alternative 1, Downtown Tracy Station Parking Alternative 2, and the proposed Downtown Tracy Station would result in the same less-than-significant impact after the implementation of mitigation because they would each affect a similar amount of ruderal land cover, natural land cover, and human-made structures. Therefore, there would be no difference in impacts between the proposed Downtown Tracy Station and the station alternatives (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2).

Impact BIO-3: Construction of the Proposed Project could injure or kill special-status fish and remove or degrade their habitat.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** Proposed Project Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track **No Impact** Proposed Project Tri-Valley Alignment Dublin/Pleasanton Station Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Interim OMF Mountain House Station Tracy OMF Downtown Tracy Station River Islands Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Stone Cut Alignment Alternative Mountain House Station Alternative West Tracy OMF Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible BIO-2.2: Conduct a worker environmental training program for construction personnel BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible BIO-2.4: Implement seasonal restrictions for in-water work as feasible BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish BIO-7.1: Compensate for loss of riparian habitat

Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Construction would mostly occur in previously disturbed areas along the I-580 corridor or the existing railroad ROW. Construction would disturb areas with low-quality habitat for special-status fish species. However, construction would also occur in areas that were not previously disturbed and depending on the stream crossing, this could result in a loss of riparian habitat.

If fish are present, ground disturbance could result in impacts on special-status species through degradation or loss of habitat, along with a reduction in the number of available prey species, such as invertebrates. SRA cover, which is defined as nearshore aquatic habitat and adjacent woody riparian habitat that provides shade and cover in a stream or river, is important habitat for special-status fish species. Riparian vegetation removal along creek and river banks would affect fish habitat. The removal of SRA can increase water temperatures, decrease cover, and decrease the number of available prey species for fish, including invertebrates. Construction noise and vibration from pile driving could be other temporary impacts on special-status fish species. In addition, the potential exists for sediment and contaminants (i.e., oil, grease, concrete) in runoff to enter water bodies adjacent to construction, which would decrease water quality for aquatic species.

Impact Details and Conclusions

Proposed Project

Tri-Valley Segment

As described in detail below, the proposed alignment and stations in the Tri-Valley segment would not affect special-status species because suitable habitat is absent in the footprint within this segment. The majority of direct impacts from the Tri-Valley Alignment would occur within terrestrial habitat (developed or ruderal lands) and have no potential to affect special-status fish species, given the lack of suitable habitat. Small pockets of land that support natural land cover, such as aquatic riverine, riparian forest and woodland, and wetland habitats do exist in areas adjacent to terrestrial habitat along the outer portions of the alignment. Aquatic riverine habitats include Tassajara Creek, where a bridge currently exists, and other creeks along the I-580 corridor, where bridge widening would occur. None of these creeks support special-status fish species because of the ephemeral or intermittent nature of the water bodies, the lack of riparian vegetation, and the narrow channels. Therefore, no impacts on special-status fish species are anticipated because suitable habitat is absent in the Tri-Valley Alignment.

The Dublin/Pleasanton Station, Isabel Station, Greenville Station, and the temporary construction areas would be within developed/ landscaped areas, previously disturbed ruderal land cover, mixed riparian forest and woodland, California annual grassland, alkali seasonal wetland. These land covers do not provide habitat for special-status fish. In addition, Arroyo Las Positas, as well as its associated riparian corridor on the north side of Isabel Station, does not provide habitat for special-status fish species because of its narrow channel. Therefore, the proposed alignment and stations in the Tri-Valley segment would not affect special-status fish species because suitable habitat is absent. No impact would occur, and no mitigation is required.

Altamont Segment

As described in detail below, the proposed alignment, station, and OMFs in the Altamont segment would not affect special-status species because suitable habitat is absent in the footprint within the Altamont segment. The Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would be mainly within the Alameda County Transportation Corridor ROW and previously disturbed ruderal land cover. Furthermore, portions of natural land covers, including California annual grassland, alkali and freshwater wetlands, seasonal wetlands, potential vernal pools, ponds, agricultural areas (croplands, orchards), and riparian scrub, would also be affected. No aquatic habitat for special-status fish species is present in these land covers. Furthermore, the Owens-Illinois Industrial Lead Variant 2, Double Track would include construction of a new railroad bridge, which would cross the California Aqueduct and Delta-Mendota Canal and disturb riverine habitat types. Disturbance in natural lands (i.e., riverine cover types) could affect special-status fish species; however, the aqueduct and canal are human-made concrete-lined channels that do not provide habitat for special-status fish species. In summary, the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would not affect special-status fish species because suitable habitat is absent.

The Interim OMF, Mountain House Station, and Tracy OMF would be located within previously disturbed ruderal land cover, California annual grassland, agricultural croplands (i.e., row crops). These land covers do not provide habitat for special-status fish. Therefore, the proposed alignment, station, and OMFs in the Altamont segment would not affect special-status fish species because suitable habitat is absent. No impact would occur, and no mitigation is required.

Tracy to Lathrop Segment

The Downtown Tracy Station, River Islands Station, and North Lathrop Station would be within previously disturbed/developed cropland (row crops or fallow land) and ruderal land cover. None of these land covers provide suitable habitat for special-status fish. In addition, River Islands Station would also be within mixed riparian forest; however, the area is upland and does not include aquatic habitat. In summary, the Downtown Tracy Station, River Islands Station, and North Lathrop Station would not affect special-status fish species because suitable habitat is absent. No impact would occur, and no mitigation is required.

The majority of the Tracy to Lathrop Alignment would occur within the existing railroad ROW. The alignment would require construction of new sidings at three locations, including two UPRR undercrossings. The alignment would require track work along portions of the Tracy Subdivision ROW, which is dominated by developed and ruderal land cover. Outside the city limits, alignment construction would disturb ruderal lands, cropland (orchards, row crops, fallow land), aquatic ponds, mixed riparian forest and woodland, riverine areas, and freshwater marsh. This alignment would affect natural land covers; therefore, ground disturbances, such as vegetation removal, pile driving noise, and habitat degradation during construction, could affect special-status fish species.

The Tracy to Lathrop Alignment Variant 1, Single Track would require upgrades to existing bridges over Paradise Cut and the San Joaquin River; none of these activities would require work within the channel or the placement of any structures or piles within riverine habitat. However, the Tracy to Lathrop Alignment Variant 2, Double Track would require the installation of two new bridges over Paradise Cut and the San Joaquin River. At Paradise Cut, special-status fish species (Central Valley steelhead, Chinook salmon, green sturgeon, river lamprey, delta smelt, and longfin smelt) could be

present during the fall, winter, and spring months. In the San Joaquin River, hardhead and all of the fish listed above, except for delta smelt and longfin smelt, could be present during the same months. To install these bridges, temporary work trestles would be used, which would require the installation of temporary piles within the water. These piles would be installed using a vibratory hammer. The temporary impact on Paradise Cut and the San Joaquin River is estimated to affect 125 square feet at each location; this assumes forty 2-foot-diameter temporary steel pipe piles would be installed. This would result in a temporary impact on riverine habitat.

Installation of the two bridges would not require any permanent piles within the water. As summarized in Tables 3.4-6 and 3.4-7, the nearest permanent pile would be 10 feet away. Therefore, the Tracy to Lathrop Alignment Variant 2, Double Track would not result in any permanent impacts on riverine habitat, except for additional shading from the new bridges. The shading impact is expected to be less than significant because the additional square footage, approximately 2,000 square feet over Paradise Cut and approximately 5,900 square feet over the San Joaquin River, would not be significant. Furthermore, the heights of the new bridges would allow light to enter channel areas. Both Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track could result in impacts on riparian habitat. Removal of riparian vegetation would reduce SRA cover for steelhead and Chinook salmon. Construction activities would affect water quality if sedimentation or contaminant releases were to enter surface waters. In addition, the reduction in riparian vegetation, which provides habitat for steelhead and Chinook salmon, as well as water quality effects, could be a significant impact for the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track.

Thresholds for Special-Status Fish Noise Impacts Due to Pile Driving

Noise from pile driving could injure or kill fish in Paradise Cut and the San Joaquin River. However, pile driving near Paradise Cut and the San Joaquin River would occur only as a part of the Tracy to Lathrop Alignment Variant 2, Double Track. The assessment of impacts on special-status fish species due to noise from pile driving is based on specific noise thresholds and ambient noise levels.

Noise, vibrations, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. In fish, the hearing structures and swim bladder as well as surrounding tissues are particularly vulnerable to high-pressure sounds (Popper et al. 2009). The type and severity of effect depends on several factors, including the intensity and characteristics of the sound, the distance of the fish from the source, the timing of actions relative to the occurrence of sensitive life stages, and the frequency and duration of the noise-generating activities. The range of effects includes physical injury (including hearing loss), stress, mortality, and behavioral effects. Pile driving could harm fish because of the underwater noise it produces. Sound levels from Project-related impact pile driving in or near open water would often have the intensity to injure or kill fish within a certain radius. These high sound pressure levels can rupture the swim bladder and damage other sensitive tissues and organs. Noise from Project-related pile driving could also damage hearing organs, which could temporarily affect hearing sensitivity, communication, and the ability to detect predators or prey. Pile driving could also produce continuous lower-energy sounds, below the thresholds associated with direct injury, that cause behavioral effects (e.g., startle or avoidance responses) as well as temporary hearing loss or physiological stress, depending on the duration of exposure.

Since 2000, transportation agencies, resource agencies, ports, and other entities have been developing criteria for determining impacts and appropriate mitigation measures to protect fish

from substantial harm due to underwater pile-driving sounds. In 2004, the California Department of Transportation (Caltrans) established a Fisheries Hydroacoustic Working Group (FHWG) to facilitate the development of interim criteria, based on best available scientific information. The FHWG includes participants from Caltrans, the Washington Department of Transportation, Oregon Department of Transportation, NMFS, USFWS, CDFW, and USACE. The FHWG is supported by a panel of hydroacoustic and fisheries experts and overseen by a steering committee composed of managers with decision-making authority from each of the members' organizations.

In June 2008, member agencies of the FHWG agreed in principle to interim criteria for assessing injuries to fish from underwater sound pressure caused by in-water use of an impact hammer. The criteria identified thresholds, both for the peak sound pressure level (i.e., the largest absolute value of instantaneous sound pressure) and the cumulative sound exposure level (SEL) (i.e., the sum of acoustical energy over all pile strikes), for the onset of physical injury to fish. Different cumulative SELs are established for fish that are greater than or equal to 2 grams and fish that are less than 2 grams because smaller fish are more susceptible to injury. Physical injury to fish is expected if either of these thresholds is exceeded. The FHWG thresholds for peak noise levels and accumulated sound levels are identified in Table 3.4-5.

The injury thresholds criteria above are not considered appropriate for assessing the effects of Project-related vibratory pile driving. Vibratory hammers generally produce less sound than impact hammers because they produce continuous and lower-intensity sound that is below the levels known to cause injury in fish. Vibratory drivers are often included in mitigation measures to reduce the adverse effects on fish that result from impact pile driving. There are no established injury criteria for fish related to vibratory pile driving, and resource agencies in general are not concerned about vibratory pile driving resulting in adverse effects on fish (California Department of Transportation 2015).

Table 3.4-5 Summary of Impact Pile Driving Noise Thresholds for Fish

Peak Noise Level Injury Evaluation	
Injury Threshold (dB)	206 dB
Injury Thresholds (Cumulative SEL)	Fish ≥ 2 g (187 dB); Fish < 2 g (183 dB)
NMFS Threshold (RMS)	150 dB
Upper Range of Background levels	160 dB

Source: California Department of Transportation 2015.
dB = decibel; SEL = sound exposure level; RMS = root mean square

Little is known about how pile driving and other sources of human-generated noise actually affect behavior in fish. However, it is thought that underwater noise may disrupt or alter essential behavior or activities (e.g., migration, feeding, sheltering) and affect a fish's ability to grow, survive, or reproduce (California Department of Transportation 2015). NMFS recommends a separate threshold of 150 decibels (dB) root mean square (RMS) for the behavioral effects of listed salmonids when evaluating impact pile driving (California Department of Transportation 2015). However, there is no scientific support for this criterion or evidence to determine its applicability to particular species.

Paradise Cut

Pile driving would be required for the installation of the abutment for the bridge over Paradise Cut. Pile driving is expected to occur on land and entail a total of 73 piles, with 6 to 10 piles installed per day, 50 to 200 strikes per pile, and a 1- to 3-second interval between strikes, depending on the foundation material. The Paradise Cut bridge would require two abutments, which would be

founded on driven piles, with three piers made of 6-foot-diameter reinforced concrete (RC) columns on 8-foot-diameter RC cast-in-drilled-hole (CIDH) piles and 25 piers made of three steel H-piles per pier, as summarized in Table 3.4-6.

Table 3.4-6. Construction Details for the Bridge over Paradise Cut

Abutment or Pier No.	No. Piles	Pile Type	On Land or In Water?	Installation Method	Distance from Water's Edge (feet)	Days of Construction
Abut 1	5	H-pile	Land	Driven	200	1
2	1	CIDH	Land	Drilled	100	5
3	1	CIDH	Water	Drilled	10	5
4	1	CIDH	Water	Drilled	10	5
5–26	63	H-pile	Land	Driven	40 min. to 660 max.	15
Abut 27	5	H-pile	Land	Driven	690	1

Notes: Days of construction refers to days required to install piling for the listed abutment or pier.

The driven piles would be driven on land from approximately 40 to 690 feet away from the water's edge. The rest of the piles needed to construct the bridge would be drilled in place and would not affect special-status fish species. Any piles driven from more than 200 feet away from the water's edge would not have noise effects on special-status fish species.

San Joaquin River Bridge

The San Joaquin River bridge would require two abutments on spread footings or driven piles and two RC piers, each with two 6-foot-diameter RC columns on 8-foot-diameter RC CIDH piles, as summarized in Table 3.4-7. Construction would include installation of a steel casing, extending approximately 20 feet into the ground. The top of the casing would extend above the water surface to isolate the shaft construction. Casings for construction of CIDH piles would be installed using the vibration method, while piles required at the abutments would be installed using impact driving equipment. There may be some local dewatering of the casing prior to drilling; however, the construction method would be slurry displacement, which would eliminate the need for dewatering during construction. This method uses slurry in the hole during drilling and concrete to keep the groundwater out of the excavation. Because concrete is heavier than the slurry, when the final concrete is poured, the slurry is removed at the top of the hole as concrete fills the bottom. The portion of the casing above the top of the CIDH pile is removed once the column is poured.

Table 3.4-7. Construction Details for the Potential Bridge over the San Joaquin River

Abutment or Pier No.	No. Piles	Pile Type	On Land or In Water?	Installation Method	Distance from Water's Edge (feet)	Days of Construction
Abut 1	5	H-pile	Land	Driven	90	5
2	2	CIDH	Water	Drilled	10	10
3	2	CIDH	Water	Drilled	10	10
Abut 27	5	H-pile	Land	Driven	130	5

Ten piles would be driven on land, approximately 90 to 130 feet away from the water's edge. The remaining piles would be drilled in place and would not affect special-status fish species. Also, any

piles driven from more than 100 feet away from the water's edge would not affect special-status fish species.

Installation of a temporary work trestle may be required to minimize/mitigate potential impacts on environmental resources at water crossings. The temporary work trestle would be used to support the equipment required to install piers within the active waterway. Therefore, no equipment would be located within the water itself, and no damming or temporary diversion of the water is anticipated.

A temporary work trestle typically consists of the installation of 18- to 24-inch-diameter steel pipe piles, including some within the water. These piles would be installed using a vibratory hammer. The piles would support steel pile caps as well as steel beams or stringers that would span the space between the caps. Heavy timber crane mats would be used to form the deck of the trestle and support the equipment required to construct the foundations.

There are no established injury criteria for fish related to vibratory pile driving, and resource agencies in general are not concerned about vibratory pile driving resulting in adverse effects on fish (California Department of Transportation 2015). Vibratory driven piles would therefore not affect special-status fish species.

Table 3.4-8 summarizes the distance to the cumulative sound level of 183 dB, which can injure fish weighing less than 2 grams.

Table 3.4-8. Sound Levels of Piles Driven for Paradise Cut and San Joaquin River Bridges

Pile Type	On Land or In Water	Method	Distance from Pile to Injury (meters)	Peak 206 dB	RMS 150 dB	C. SEL
24-inch Steel Pipe Pile	Land Based	Impact	15	197	185	183
24-inch Steel Pipe Pile	Land Based	Impact	35	186	174	183
24-inch Steel Pipe Pile	Land Based	Impact	70	175	163	183
24-inch Steel Pipe Pile	In Water	Vibratory	10	176	163	183
96-inch CIDH	In Water	Vibratory	10	200	185	183
14-inch H-Pile	Land Based	Impact	10	172	160	183

Notes: C. SEL = cumulative sound exposure level

Noise from vibratory pile driving and cast-in place piles, which are drilled, are not expected to result in injury to fish. Noise from impact pile driving due to the installation of the bridge over Paradise Cut and the San Joaquin River for the Tracy to Lathrop Alignment Variant 2, Double Track could however affect special-status fish. Furthermore, riparian vegetation removal along creek banks due to the Tracy to Lathrop Alignment Variant 2, Double Track would decrease the quality of fish habitat. For the bridge over Paradise Cut, H-piles (14 inches) would be installed on land using an impact hammer. The assessment of pile-driving noise from an impact hammer is based on measured sound levels from similar pile-driving projects (California Department of Transportation 2015). The sound analysis considered impact pile driving without the use of an attenuation method to mitigate underwater sound levels because no pile driving would take place in the water. The resultant sound-level estimates for impact hammer pile driving relative to the injury thresholds for fish weighing less than 2 grams is 183 dB; injury would occur within 10 meters of the piles during driving. Noise exceedances within 10 meters of pile driving would be considered a less-than-significant impact. For

the San Joaquin River bridge, the 183 dB level would occur up to 70 meters from the piles driven on land. This could result in a significant impact on Central Valley steelhead, green sturgeon, and Central Valley fall/late fall-run Chinook salmon if they are present during pile driving.

In addition to potential injury effects on fish, impact pile driving may also result in behavioral effects if sound levels exceed the NMFS behavioral threshold (150 dB RMS). The analysis shows that sound levels would exceed 150 dB RMS during all pile-driving activities up to 70 meters from the pile-driving location. Therefore, behavioral effects could occur in proximity to pile driving. However, as noted, behavioral effects on fish are not well understood; therefore, it is difficult to assess the definitive significance of such effects in the limited area in proximity to impact pile driving separate from the injury effects. Given the limited area of effect where sound levels would be above 150 dB, it is not expected that impact pile-driving effects on fish behavior would result in measurable long-term physical effects on listed fish populations, although individual fish may experience temporary stress. Peak sound levels generated by impact pile driving would not exceed the threshold (206 dB) for either of the bridges and therefore would not have an effect on special-status fish species.

It should be noted that special-status fish species in the study area during the time of impact pile driving (June 15 through October 15, as required by Mitigation Measure BIO-2.4, discussed further below) would most likely not be present in Paradise Cut or the San Joaquin River during these months because of elevated water temperatures.

Construction of bridges over Paradise Cut and the San Joaquin River under the Tracy to Lathrop Alignment Variant 2, Double Track would result in less-than-significant impacts on special-status fish species because of noise. Sound levels would not be exceeded for the Paradise Cut bridge (vibratory driving), and special-status fish species are not expected to be in the Project area during pile driving at the San Joaquin River bridge site. However, this impact could still be potentially significant if changes in the Proposed Project design result in pile driving occurring closer to the water.

Alternatives Analyzed at an Equal Level of Detail

The Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would be located within California annual grassland, previously disturbed ruderal land cover, seasonal wetland drainage, and agricultural croplands (i.e., row crops). These land covers do not provide habitat for special-status fish. Therefore, these alternatives would not affect special-status fish species because suitable habitat is absent. No impact would occur, and no mitigation is required.

Mitigation Measures

Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.3, BIO-2.4, BIO-3.1, and BIO-7.1 would apply for the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track. A description of the above-listed mitigation measures is presented in Section 3.4.4.4, *Mitigation Measures*. Table 3.4-11 identifies which mitigation measures apply to which variant.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.3, BIO-2.4, BIO-3.1, and BIO-7.1 would minimize or reduce impacts on special-status fish species and their habitat by reducing the likelihood of fish mortality or injury during construction, ensuring movement through the water

bodies with new bridges and compensating for riparian habitat loss through in-kind habitat preservation, enhancement, and/or creation. In addition, as described in Section 3.10, *Hydrology and Water Quality*, construction contractor(s) would be required to obtain applicable resource agency permits and approvals and comply with permit requirements to prevent impacts on water quality and demonstrate that water quality standards and/or WDRs are not violated. With implementation of Mitigation Measures BIO-2.1, BIO-2.2, BIO-2.3, BIO-2.4, BIO-3.1, and BIO-7.1, impacts on special-status fish species during construction of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track would be less than significant.

Comparison of Alternatives

Like the proposed stations, alignment, and OMF (Greenville Station, Altamont Alignment, Mountain House Station, Tracy OMF, and Downtown Tracy Station), the alternative stations, alignment, and OMF (Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) would not be located on land cover that supports special-status fish species. Therefore, the alternative stations, alignment, and OMF would have the same no impact as the proposed stations, alignment, and OMF.

Impact BIO-4: Operation and maintenance of the Proposed Project could injure or kill special-status wildlife species.

Level of Impact Prior to Mitigation	**Potentially Significant** Proposed Project Tri-Valley Alignment Dublin/Pleasanton Station Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Interim OMF Mountain House Station Tracy OMF Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track Downtown Tracy Station River Islands Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Stone Cut Alignment Alternative Mountain House Station Alternative West Tracy OMF Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	Mitigation Measure BIO-4.1: Protect nesting birds during maintenance activities

	Mitigation Measure BIO-4.2: Protect roosting bats during maintenance activities Mitigation Measure BIO-4.3: Minimize permanent intermittent impacts on avian and bat wildlife species due to the Altamont OCS and aerial structures Mitigation Measure BIO-4.4: Implement removal of carrion that may attract raptors and carnivores Mitigation Measure BIO-4.5: Avoid use of second-generation anticoagulant rodenticides Mitigation Measure BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement Mitigation Measure BIO-8.2: Install station lighting controls and fencing limitations Mitigation Measure BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road Mitigation Measure BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative Mitigation Measure BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment
Level of Impact after Mitigation	**Significant and Unavoidable** Proposed Project Greenville Station (wildlife movement) Mountain House Station (wildlife movement) Alternatives Analyzed at an Equal Level of Detail West Tracy OMF Alternative (wildlife movement) **Less than Significant** Proposed Project All other Proposed Project facilities Alternatives Analyzed at an Equal Level of Detail All other alternatives analyzed at an equal level of detail

Impact Characterization

Operation

No Valley Link trains currently operate in the Altamont Pass area; the Proposed Project would build new tracks on a railbed that was taken out of operation years ago. There is, however, a separate active parallel railroad used by ACE trains and freight trains through the Altamont Pass. Existing freight trains and ACE commuter trains currently operate on the existing UPRR Oakland subdivision in these areas. Currently, four morning inbound ACE commuter trains and four evening outbound ACE commuter trains pass through Altamont Pass, which parallels the Alameda County Transportation Corridor ROW in certain portions of the Altamont Hills. Routine freight trains also pass through the Altamont Pass on the Oakland subdivision. There is existing infrequent freight service on the Owens-Illinois Industrial Lead on the Tracy Subdivision.

Operation would introduce new rail traffic into the eastern foothills west of I-580 where the Alameda County Transportation Corridor diverges from the UPRR Oakland subdivision, including the area of

the proposed Mountain House Station and the West Tracy OMF Alternative. Operation would increase the trains operated over the Altamont Pass and between Tracy and Lathrop. It is estimated that a maximum of 148 Valley Link commuter trains per day could pass through the Altamont Pass.

Operation would increase train traffic substantially and introduce rail traffic to some areas that do not currently experience passenger rail traffic. Large carnivores, such as mountain lion and bobcats, are sensitive to anthropogenic mortality, which increases in human-dominated landscapes (Benson et al. 2020). Additionally, studies have documented that projects associated with human population growth and road and highway projects affect large carnivore (e.g., mountain lion) habitat and movement corridors and contribute to mortality due to vehicle strike (Nguyen et al. 2020; California Department of Fish and Wildlife 2020). Operation could affect special-status wildlife species through increased train traffic, leading to anthropogenic barriers to movement and dispersal, and wildlife/train strikes across all segments of the proposed alignment. Increased train traffic could contribute to the level of noise and ambient light present in areas that currently do not experience passenger rail traffic.

Operation of rail stations and OMFs would increase the exposure of special-status wildlife species to human presence and potential for vehicle strikes along the access roads to rail stations. The additional passenger train traffic generated by operation would be substantially different from existing levels in these areas. Increased train traffic would occur following construction, and operational conditions along the ROW would be expected to be significantly different from existing conditions with respect to special-status wildlife species.

The BEMU technology variant would include an OCS in the Altamont Pass between Greenville Station and the Tracy OMF. The OCS would not be implemented as part of the DMU, HBMU, and DLH technology variants and the OCS would not be required for the remaining Valley Link train route that relies on BEMU technology. Operation of OCS would introduce risk to aerial wildlife (i.e. raptors, birds of prey) through collision with electrical overhead powerlines and/or support poles, traction power station, strain gantry, or other traction power facilities, and wireless communications facilities. The Avian PowerLine Interaction Committee (2006) also notes that small birds such as passerines can also be at risk of electrocution. Most raptors possess keen vision and high flight maneuverability that likely helps to reduce risks of electric line strike, but they could still be vulnerable during times of limited visibility. Carrion-feeding birds (e.g., turkey vulture), if foraging along the guideway, could be at increased risk of electric line strike. Owls may perch on OCS structures and become disoriented by the headlight of oncoming train, resulting in train strike (Santos et al. 2017). Although bats have been found incidentally in bird mortality searches in powerline corridors, systematic studies addressing the risk of electric line strike in bats have not been conducted. The risk of bat strikes is presumed to be low because bats possess excellent echolocation abilities that should allow them to detect and evade wires. The Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track would use the same electrical line design attribute and would have the same potential for electrical line strike.

The BEMU technology would also include four traction power substations (TPSS). The TPSS would be operated at the Greenville Station, Tracy OMF, North Lathrop Station, and one within the Alameda County Transportation Corridor ROW near the intersection of Midway Road and Patterson Pass Road. Operation of the TPSS would not affect special-status wildlife species because the stations would be located in areas that were previously disturbed as a result of construction and would not provide suitable habitat for special-status wildlife species.

Maintenance

Track maintenance activities that would occur as a result of Valley Link service would consist of ongoing maintenance of track, vegetation management (i.e., annual vegetation trimming, herbicide application), and infrastructure maintenance (i.e., bridges, drainage features, signal apparatus, signal infrastructures). Maintenance activities at new stations and OMFs constructed would consist of vegetation maintenance, potential use of pesticides/rodenticides, and, as required, structure maintenance (i.e., minor/major concrete work, platform maintenance, paving/road work, general maintenance). Infrastructure maintenance (e.g., tie back walls, pier protections, railroad tracks, signal lights, track switches) would also be required for a new single-span bridge over eastbound I-580 and for the crossing under westbound I-580 for the Stone Cut Alignment Alternative. Fleet maintenance would occur at select OMFs. Maintenance of Valley Link tracks and stations could affect special-status wildlife species through the disturbance, modification, or removal of habitat as well as direct and indirect impacts on special-status wildlife individuals.

Maintenance of the OCS and TPSS will be required for the operation of Valley Link trains in the Altamont Pass. Maintenance activities would consist of replacing electrical power lines, repair of support poles, and other associated facilities. Maintenance activities would result in temporary disturbance to wildlife through noise and/or the presence of humans. Maintenance activities of OCS and TPSS facilities would not result in any new impacts on wildlife habitat, as all OCS and TPSS facilities would be located within previously disturbed areas and along the train ROW.

Vegetation management and structure maintenance activities required for the operation of railroad tracks are expected to be similar in nature and schedule to those currently practiced by UPRR within the existing ROW. Vegetation management and structure maintenance activities within the ROW and newly constructed stations, additional tracks, and OMFs outside of the existing ROW could affect nesting birds if vegetation management activities are conducted during the nesting season. Impacts on nesting birds could occur within any of the segments, at rail stations, or at OMF locations. Vegetation management and structure maintenance activities within the ROW and expanded areas outside of the ROW could affect roosting bats.

Potential pesticide/rodenticide application may be required at train stations, OMFs, and train yards and could be performed on an as-needed basis. The second most frequent form of human-caused mortality to mountain lion is from rodenticide poisoning (Benson et al. 2020). Anticoagulant rodenticides have also resulted in the mortality of other wildlife species, such as bobcats, coyotes, and burrowing owl (Riley et al. 2007; Poessel et al. 2015; Justice-Allen & Loyd 2017).

Impact Details and Conclusions

Proposed Project

Operation and maintenance of the following proposed alignments, stations, and OMFs could result in potentially significant impacts on special-status wildlife species: Tri-Valley Alignment; Dublin/Pleasanton Station; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station. Impacts could occur because suitable habitat for special-status wildlife is present at these proposed alignments, stations, and OMFs. If present, special-status wildlife species could be injured or killed and their habitat modified or

degraded from increased human presence and increased train traffic. Introduced commuter train traffic (e.g., in the Altamont area) and increased commuter train traffic (e.g., in the Tri-Valley area), would increase the potential for wildlife strikes, and create wildlife dispersal and movement barriers. The OCS in the Altamont Pass (under the BEMU technology variant) would increase the potential for aerial wildlife strikes. Operational and maintenance activities would occur within previously developed and/or disturbed areas, which generally provide lower habitat value for wildlife. However, the presence of wildlife cannot be ruled out. Some special-status wildlife species can occupy human-modified habitat, such as nesting birds and bats. Maintenance activities, such as the application of pesticides and herbicides, within and around train stations, OMFs, and tracks could negatively affect raptors, burrowing owls, and special-status mammals that consume small rodents that are exposed to human-applied chemicals. Impacts on special-status wildlife species and their habitat due to operation and maintenance of the Proposed Project would be significant.

Furthermore, the Owens-Illinois Industrial Lead Variant 2, Double Track would include two new bridge crossings, one over the California Aqueduct and one over the Delta-Mendota Canal. Birds that prey on aquatic special-status wildlife (e.g., crows, ravens, red-tailed hawks, Swainson's hawk) frequently use elevated structures above wetlands, streams, and other aquatic habitat as predator perches. The presence of these bridges could contribute to increased predation on aquatic wildlife, but the replaced bridges are not expected to significantly increase predation on aquatic wildlife above current predation levels occurring at existing bridges. The Delta-Mendota Canal and California Aqueduct are concrete lined and surrounded by fences that provide predator perches. Therefore, the new bridges would not significantly increase predation on aquatic wildlife species beyond existing levels. Trains traveling across the additional bridges for the Delta-Mendota Canal and the California Aqueduct could increase the existing noise level and the potential for wildlife/train strikes from Valley Link services across the segment. Increased noise and potential train strikes from the operation of trains on the new bridge crossings could affect special-status wildlife; these effects are expected to be greater in magnitude compared with the operational noise and train strikes experienced at existing facilities in this area.

The Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would also include an OCS that could also contribute to potential aerial wildlife strike and electrocution. Operation of the railway, the OCS, and associated stations and OMFs in this undisturbed portion of the alignment would increase the exposure of special-status wildlife species to human presence. Therefore, impacts on special-status species proposed within the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would be potentially significant.

The Tracy to Lathrop Alignment Variant 2, Double Track would install two new UPRR crossings, one over Paradise Cut and the other over the San Joaquin River. Birds that prey on aquatic special-status wildlife (e.g., crows, ravens, red-tailed hawks, Swainson's hawk) frequently use elevated structures above wetlands, streams, and other aquatic habitat as predator perches. Raptors that prey upon small mammals, such as riparian brush rabbit, also have the potential to use the crossings as predator perches. The presence of these bridges could contribute to increased predation on aquatic wildlife, but the new bridges are not expected to significantly increase predation on aquatic wildlife above current predation levels occurring at existing bridges.

Trains traveling across the additional bridges for the Paradise Cut and the San Joaquin River would increase the existing noise level and increase the potential for wildlife/train strikes from Valley Link services across the Tracy to Lathrop Alignment Variant 2, Double Track. Increased noise and

occasional train strikes from the operation of trains on the new bridge crossings could affect special-status wildlife; these effects are expected to be greater in magnitude compared with the operational noise and train strikes experienced at existing facilities in this area.

Alternatives Analyzed at an Equal Level of Detail

Operation and maintenance of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tract Station Parking Alternative 1, and Downtown Tract Station Parking Alternative 2 could result in impacts on special-status wildlife species. Impacts could occur because suitable habitat for special-status wildlife is present at these alternative stations, alignment, and OMF, and operation and maintenance of these alternative stations, alignment, and OMF could result in impacts on special-status wildlife species and their habitat, which would be a significant impact. Operation of the new single-span bridge over eastbound I-580 for the Stone Cut Alignment Alternative could increase the potential for train strikes or entrapment of avian species (e.g., red-tailed hawk, turkey vulture), or other common wildlife species (e.g., bobcat, black-tailed deer, coyote, skunk), if the bridge is mistaken as a potential wildlife crossing or a suitable perch site. Operation of a crossing under westbound I-580, which would be wider to accommodate a double-track, could likewise be mistaken by wildlife as a potentially suitable wildlife undercrossing. Wildlife could enter the undercrossing and be struck by an oncoming train.

In addition to potentially affecting the behavior and movement of common wildlife species, operation of the Stone Cut Alignment Alternative and the West Tracy OMF Alternative has the potential to affect the behavior, dispersal abilities, and movement activities of special-status species such as California tiger salamander, mountain lion, American badger, and San Joaquin kit fox. The presence of the Stone Cut Alignment Alternative and West Tracy OMF Alternative, resulting in increased train traffic, noise, light, and human disturbance, may deter normal use of the area and contribute to movement and dispersal barriers. This would be a potentially significant impact.

Mitigation Measures

Mitigation Measures BIO-4.1, BIO-4.2, BIO-4.5, and BIO-8.2 would apply to the following proposed alignments, stations, and OMFs to mitigate the operational and maintenance impacts on special-status wildlife species: Tri-Valley Alignment; Dublin/Pleasanton Station; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station.

Mitigation Measure BIO-8.1 would apply for the Isabel Station; Greenville Station; Mountain House Station; and Interim OMF.

Mitigation Measures BIO-4.3 and BIO-4.4 would apply to the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) if the BEMU technology variant is implemented.

Mitigation Measure BIO-8.3 would apply to Greenville Station.

Mitigation Measure BIO-8.4 would apply to the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track).

Mitigation Measure BIO-8.5 would apply to portions of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track for operational and maintenance impacts on special-status wildlife species. Descriptions of the above-listed mitigation measures are presented in Section 3.4.4.4, *Mitigation Measures*.

In addition, Mitigation Measures BIO-4.1, BIO-4.2, BIO-4.5, and BIO-8.2 would also apply to the Southfront Road Station Alternative; Stone Cut Alignment Alternative; Mountain House Station Alternative; West Tracy OMF Alternative; Downtown Tracy Station Parking Alternative 1; and Downtown Tracy Station Parking Alternative 2. Mitigation Measure BIO-4.4 would apply to the Stone Cut Alignment Alternative if the BEMU technology variant is implemented. Furthermore, Mitigation Measure BIO-8.1 would apply to the Stone Cut Alignment Alternative and the West Tracy OMF Alternative. Lastly, Mitigation Measure BIO-8.4 would apply to the Stone Cut Alignment Alternative for operational and maintenance impacts on special-status wildlife species.

Significance with Application of Mitigation

Implementation of the mitigation measures identified above would reduce potential impacts on special-status wildlife species to a less-than-significant level for the Proposed Project with the exception of the Greenville Station and Mountain House Station, relative to wildlife movement.

At the Greenville Station, the Proposed Project would hinder wildlife movement related to the existing underground rail crossing east of Greenville, even with mitigation. At the Mountain House Station, the Proposed Project would result in a substantial impediment to wildlife movement in the undeveloped foothills, which are an area of key wildlife movement, even with mitigation. Thus, new rail services associated with the Proposed Project would result in significant and unavoidable impact on special-status species relative to the proposed Greenville Station and Mountain House Station, even after implementation of mitigation.

Impacts on wildlife movement are addressed further under Impact BIO-9 below.

Comparison of Alternatives

Implementation of the mitigation measures above would reduce the impacts on special-status wildlife species for operation of the alternatives analyzed at an equal level of detail to a less-than-significant level, except for the West Tracy OMF Alternative, relative to wildlife movement.

Operation and maintenance of the Southfront Road Station Alternative, Mountain House Station Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would result in the same type of less-than-significant impact after mitigation as operation and maintenance of the proposed Greenville Station, Mountain House Station, and Downtown Tracy Station.

The Stone Cut Alignment Alternative would install a new bridge over eastbound I-580 and a new rail crossing under westbound I-580. Potential impacts for wildlife strikes from operation of the Stone Cut Alignment Alternative would be higher when compared to the portion of the Altamont Alignment that the Stone Cut Alignment Alternative would replace, because the Stone Cut Alignment Alternative would be double-tracked, would involve a new bridge over I-580, and a new crossing under I-580. The portion of the Altamont Alignment that the Stone Cut Alignment Alternative would replace does not include a bridge over I-580 or a crossing under I-580 and would instead use an existing tunnel to cross I-580.

The West Tracy OMF Alternative would result in a greater degree of operational and maintenance impacts when compared to the Tracy OMF. The West Tracy OMF Alternative would be significantly larger and located in an area with higher habitat suitability for wildlife than the proposed Tracy OMF. The West Tracy OMF would result in a substantial impediment to wildlife movement in the undeveloped foothills, which are an area of key wildlife movement, even with mitigation. The West Tracy OMF Alternative would result in significant and unavoidable impacts compared to the less-than-significant impact with mitigation for the proposed Tracy OMF.

Impacts on wildlife movement are addressed separately under Impact BIO-9 below.

Impact BIO-5: Operation and maintenance of the Proposed Project would not affect special-status fish species and their associated habitat.

Level of Impact	**Less than significant**
Mitigation Measures	**None Required**

Impact Characterization

Operation and maintenance of the rail lines would include increased operation of trains and maintenance of the tracks. Increased operation of the trains would not affect special-status fish species because trains would run above the waterways. Maintenance activities would include track maintenance, station maintenance, and fleet maintenance. Track maintenance would include work on the track, vegetation trimming, and herbicide application. Track maintenance would be the only activity that could affect special-status fish species if maintenance is performed over waterways. Chemicals used for track maintenance, such as petroleum products or herbicides, could enter waterways and decrease water quality for fish. As discussed under Impact HYD-1b, herbicides would be used (similar to current operations) to maintain and clear vegetation from track areas. The future use of herbicides for vegetation removal near the tracks would be required to comply with California Department of Pesticides Regulation (DPR) protocols, which are intended to protect human health and the environment (see discussion under *California Department of Pesticides Regulation* in Section 3.10.2.2, *State*). DPR puts special controls on herbicides, which can be especially dangerous to human health or the environment if not used correctly, limiting their use to trained individuals and only at times and places approved by a permit from the County Agricultural Commissioners (California Department of Pesticides Regulation 2008).

Impact Details and Conclusions

Proposed Project

Tri-Valley Segment

Operations and maintenance associated with the Tri-Valley Alignment would occur in disturbed areas within the existing I-580 ROW. One bridge over Tassajara Creek would be replaced, and bridge widening would occur over other creeks along I-580. All of these creeks are small ephemeral or intermittent creeks that do not contain special-status fish species because of the lack of suitable habitat in the summer and fall months. Operation and maintenance associated with the Tri-Valley Alignment would not affect special-status fish species because of the lack of habitat and therefore would have no impact.

Furthermore, the following proposed stations would be located in areas that do not provide suitable habitat for special-status fish species and therefore would have no impact on special-status fish species due to operation and maintenance: Dublin/Pleasanton Station, Isabel Station, Greenville Station.

Altamont Segment

Under the Owens-Illinois Industrial Lead Variant 2, Double Track, two new bridge crossings would be constructed, one over the California Aqueduct and the other over the Delta-Mendota Canal. Both of these waterways are human-made conveyances that transport water from the State Water Project down to Southern California. They are concrete-lined channels and do not provide habitat for special-status fish species. Operation and maintenance of the Owens-Illinois Industrial Lead Variant 2, Double Track would not affect special-status fish species because of the lack of suitable habitat and therefore would have no impact.

Furthermore, the following proposed alignments, stations, and OMFs would be located in areas that do not provide suitable habitat for special-status fish species and therefore would have no impact on special-status fish species due to operation and maintenance: Altamont Alignment; Owens-Illinois Industrial Lead Variant 1, Single Track; Interim OMF; Mountain House Station; and Tracy OMF.

Tracy to Lathrop Segment

The Tracy to Lathrop Alignment Variant 2, Double Track would include two new UPRR bridge crossings, one over Paradise Cut and the other over the San Joaquin River. Both of these waterways support special-status fish species (Central Valley steelhead, Chinook salmon, green sturgeon, river lamprey, delta smelt, hardhead, and longfin smelt). Track maintenance, including annual vegetation removal and herbicide application, would continue to occur in accordance with existing UPRR practices. Herbicide applications follow protocols to decrease any spreading of chemicals in or around work areas; therefore, chemicals are unlikely to enter waterways. The use of pesticides for vegetation removal near tracks, in compliance with DPR protocols, would result in a less than significant impact on water quality. Therefore, impacts on special-status fish species due to maintenance of the Tracy to Lathrop Alignment Variant 2, Double Track would be less than significant.

Furthermore, the following proposed alignment and stations would be located in areas that would not provide suitable habitat for special-status fish species and therefore would have no impact on special-status fish species due to operation and maintenance: Tracy to Lathrop Alignment Variant 1, Single Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station.

Alternatives Analyzed at an Equal Level of Detail

The Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would be located in areas that do not provide suitable habitat for special-status fish species and therefore would have no impact on special-status fish species during operation and maintenance.

Comparison of Alternatives

Like the proposed stations, alignment, and OMF (Greenville Station, Altamont Alignment, Mountain House Station, Tracy OMF, and Downtown Tracy Station), the alternative stations, alignment, and

OMF (Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) would not be located on land cover that supports special-status fish species. Therefore, the alternative stations, alignment, and OMF would have the same no impact as the proposed stations, alignment, and OMF.

Impact BIO-6: Construction of the Proposed Project could remove or degrade state or federally regulated wetlands and other aquatic resources.

Level of Impact Prior to Mitigation	**Potentially Significant** Proposed Project Tri-Valley Alignment Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Tracy OMF Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track River Islands Station Alternatives Analyzed at an Equal Level of Detail Stone Cut Alignment Alternative West Tracy OMF Alternative **No Impact** Proposed Project Dublin/Pleasanton Station Interim OMF Mountain House Station Downtown Tracy Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Mountain House Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	BIO-2.5: Protect wetlands during construction BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

The majority of the Proposed Project would be located within the I-580 corridor (Tri-Valley segment); an abandoned railbed (Alameda County Transportation Corridor ROW in the Altamont segment); and the existing railroad ROW (Tracy to Lathrop segment). Therefore, construction of the

majority of the Proposed Project would occur within existing transportation corridors and, for the most part, affect areas of a ruderal and previously disturbed character, the majority of which do not support wetlands or other aquatic resources. Even though the majority of the Proposed Project footprint is disturbed or developed, wetlands occur in limited areas because of the presence of a combination of geophysical factors, including local topography, soils, and hydrologic conditions. Similarly, wetlands and other aquatic resources are present in limited portions of the Proposed Project footprint.

Construction activities involving ground disturbance in or near wetlands or other aquatic resources could result in the following impacts:

- Direct fill
- Restriction of layer perforation
- Grading
- Sedimentation
- Vegetation removal
- Erosion
- Introduction of nonnative or invasive plants
- Alteration of inundation duration
- Degradation or loss of wetlands and other aquatic resources.

Other temporary impacts on wetlands and other aquatic resources resulting from construction include air pollution from dust and the removal of vegetation, which would regenerate within one year. In addition, the potential exists for sediment and contaminants (i.e., oil, grease, concrete) in runoff to enter upland areas, wetlands, and other aquatic resources adjacent to construction, which would decrease the quality of affected wetlands and other aquatic resources.

The majority of wetlands and other waters of the United States are northeast of Livermore, in the Altamont Hills, west of Tracy, or between Tracy and Lathrop. In these areas, seasonal wetlands, vernal pools, and alkali seasonal wetlands are concentrated in the Altamont Hills and areas west of Tracy.

Impact Details and Conclusions

Proposed Project

Table 3.4-9 indicates the proposed alignments, stations, and OMFs that would have the potential to affect federally and state regulated wetlands and other aquatic resources. As shown in Table 3.4-9, the Dublin/Pleasanton Station, Isabel Station,[7] Interim OMF, Mountain House Station, Tracy OMF, Downtown Tracy Station, North Lathrop Station, and the temporary construction areas would not affect any aquatic or wetland habitat and would, therefore, have no impact on regulated federal or state wetlands and other aquatic resources.

[7] A pedestrian bridge over Arroyo Las Positas (which supports regulated waters and associated riparian habitat) is proposed at Isabel Station; however, the pedestrian bridge would not be located within regulated waters.

Table 3.4-9. Area of Wetlands and Aquatic Land Cover Types within the Footprint in acres

	Aquatic			Wetland			
Proposed or Alternative Facility	**Ephemeral Drainage**	**Pond**	**Riverine**	**Alkali Seasonal Wetland**	**Riverine Seasonal Wetland**	**Freshwater Marsh**	**Vernal Pool**
Tri-Valley Segment							
Tri-Valley Alignment	0.03	0.02	1.73	0.11	--	--	--
Temporary Construction Areas	--	--	--	--	--	--	--
Dublin/Pleasanton Station	--	--	--	--	--	--	--
Isabel Station	--	--	--	--	--	--	--
Southfront Road Station Alternative	--	--	--	--	--	--	--
Greenville Station	--	--	--	--	0.29	--	--
Altamont Segment							
Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track	0.02	< 0.01	1.26	23.96	1.90	--	0.04
Temporary Construction Areas	--	0.06	--	--	0.03	--	--
Stone Cut Alignment Alternative	0.06	--	--	--	--	--	0.04
Mountain House Station	--	--	--	--	--	--	--
Mountain House Station Alternative	--	--	--	--	0.74	--	--
West Tracy OMF Alternative	--	--	--	--	0.06	--	--
Tracy OMF	--	--	--	--	--	--	--
Interim OMF	--	0.06	--	--	--	--	--
Tracy to Lathrop Segment							
Tracy to Lathrop Alignment Variant 1, Single Track	--	0.02	1.87	--	--	0.19	--
Tracy to Lathrop Alignment Variant 2, Double Track	--	0.02	3.67	--	--	0.19	--
Downtown Tracy Station, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2	--	--	--	--	--	--	--
River Islands Station	--	--	<0.01	--	--	--	--
North Lathrop Station	--	--	--	--	--	--	--

Tri-Valley Alignment

The Tri-Valley Alignment would entail construction of various track designs within the same alignment of the I-580 median, from the existing Dublin/Pleasanton BART Station to Greenville Road. Improvements in proximity to existing aquatic and wetland resources consist of widening the

westbound I-580 bridge, replacing a recreational bridge, and constructing a new median bridge over Tassajara Creek. Bridge footings are expected to be placed outside of regulated waters and wetlands. Improvements to a box culvert at Cottonwood Creek, highway bridges and ramps over Arroyo Las Positas, and road culverts for draining ephemeral drainages along the alignment are proposed. Therefore, construction of the Tri-Valley Alignment would result in a potentially significant impact on wetlands and other aquatic resources.

Greenville Station

Alkali seasonal wetlands are present where the proposed Altamont Pass Road improvements for Greenville Station would be located. Therefore, construction of the Greenville Station would result in a potentially significant impact on wetlands and other aquatic resources that are regulated by federal and state agencies (see Table 3.4-9).

Altamont Alignment

The Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would bisect several intermittent and ephemeral streams that support natural land cover, including alkali seasonal wetlands, freshwater wetlands, and mixed riparian scrub, woodland, and forest. Therefore, construction would affect regulated wetlands and aquatic resources in the Proposed Project vicinity (see Table 3.4-9). Construction of the Owens-Illinois Industrial Lead Variant 1, Single Track would take place mainly within previously disturbed ruderal land cover. However, sections of natural land cover, including alkali and freshwater seasonal wetlands and riparian scrub and forest, would also be affected. Therefore, construction of the Owens-Illinois Industrial Lead Variant 1, Single Track would result in a potentially significant impact on federal and state-regulated wetlands and other aquatic resources. The Owens-Illinois Industrial Lead Variant 2, Double Track would include construction of a new railroad bridge at the California Aqueduct, in addition to widening a box culvert at the Delta-Mendota Canal. Construction of new railroad track under the Owens-Illinois Industrial Lead Variant 2, Double Track would result in impacts on alkali and freshwater seasonal wetlands, potential vernal pools, aquatic ponds, and riverine scrub habitat types. Therefore, construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would result in a potentially significant impact on federal and state-regulated wetlands and other aquatic resources.

Construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would result in impacts similar to those of the Owens-Illinois Industrial Lead Variant 1, Single Track; however, construction of Owens-Illinois Industrial Lead Variant 2, Double Track would result in additional impacts on regulated wetlands and other aquatic resources in the larger footprint required to construct the double-track alignment.

Tracy to Lathrop Alignment

The majority of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track would occur within an existing railroad ROW. The alignment would require track work along portions of the Tracy Subdivision ROW, within both developed and ruderal land cover, particularly around the town of Tracy. Outside the vicinity of Tracy, alignment construction would disturb ruderal land, cropland (orchards, row crops, fallow land), aquatic ponds, mixed riparian forest and woodland areas, riverine areas, and freshwater marshes associated with existing drainages and streams, including Paradise Cut and the San Joaquin River. Therefore, ground disturbance could affect regulated wetlands and aquatic resources, both federal and state (see Table

3.4-9). Under the Tracy to Lathrop Alignment Variant 1, Single Track, the existing track would be upgraded and continue to be a single-track alignment. Upgrades and modifications would occur at existing at-grade crossings. Disturbances from the Tracy to Lathrop Alignment Variant 1, Single Track could affect aquatic ponds, mixed riparian forest and woodland areas, riverine areas, and freshwater marshes associated with existing drainages and streams. Therefore, construction of the Tracy to Lathrop Alignment Variant 1, Single Track would result in a potentially significant impact on regulated wetlands and aquatic resources, both federal and state.

The Tracy to Lathrop Alignment Variant 2, Double Track would require grading and the installation of new track, construction of new UPRR bridges across Paradise Cut and the San Joaquin River, and culvert widening at the Delta-Mendota Canal. Disturbances from the Tracy to Lathrop Alignment Variant 2, Double Track would affect the same land cover types as those affected by disturbances from the Tracy to Lathrop Alignment Variant 1, Single Track (i.e., existing drainages and streams). Therefore, construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in a potentially significant impact on regulated wetlands and aquatic resources, both federal and state. Construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in impacts similar to those of the Tracy to Lathrop Alignment Variant 1, Single Track; however, construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in additional impacts on regulated wetlands and waters because of the larger footprint required for the double-track alignment.

River Islands Station

The River Islands Station would be constructed east of Paradise Cut and west of the San Joaquin River, within the agricultural land cover type (row crops or fallow land). Mixed riparian forest and a small riverine area is also present along the UPRR ROW and would be affected. Therefore, construction of River Islands Station would result in a potentially significant impact on regulated wetlands and aquatic resources, both federal and state.

Alternatives Analyzed at Equal Level of Detail

As shown in Table 3.4-9, the Southfront Road Station Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would not affect any aquatic or wetland habitat. Therefore, these alternative stations would have no impact on regulated wetlands and aquatic resources, both federal and state.

The Stone Cut Alignment Alternative would be constructed within an area containing ephemeral drainages and a vernal pool, which are considered potential waters of the state (see Table 3.4-9). Construction of the Stone Cut Alignment Alternative would require ground disturbance (i.e., grading). Thus, construction of the Stone Cut Alignment Alternative would result in a potentially significant impact on state-regulated wetlands and aquatic resources.

The Mountain House Station Alternative would be constructed within an area containing seasonal wetland vegetation, which is considered a potential water of the state (see Table 3.4-9). Construction of the Mountain House Station Alternative would require ground disturbance (i.e., grading). Thus, construction of the Mountain House Station Alternative would result in a potentially significant impact on state-regulated wetlands and aquatic resources.

The West Tracy OMF Alternative would be constructed within undeveloped California annual grassland, which is bisected by a drainage feature containing seasonal wetland vegetation, which is

considered a potential water of the state (see Table 3.4-9). Construction of the West Tracy OMF Alternative would require significant ground disturbance (i.e., grading). Thus, construction of the West Tracy OMF Alternative would result in a potentially significant impact on state-regulated wetlands and aquatic resources.

Mitigation Measures

Mitigation Measures BIO-2.5 and BIO-6.1 would be implemented for the Tri-Valley Alignment; Greenville Station; Interim OMF; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Descriptions of Mitigation Measures BIO-2.5 and BIO-6.1 are presented in Section 3.4.4.4, *Mitigation Measures*.

In addition, Mitigation Measures BIO-2.5 and BIO-6.1 would also apply for the Stone Cut Alignment Alternative, West Tracy OMF Alternative, and Mountain House Station Alternative.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-2.5 and BIO-6.1 would avoid, minimize, or compensate for impacts on federally regulated wetlands and other aquatic resources, which would reduce impacts to a less-than-significant level. With implementation of Mitigation Measures BIO-2.5 and BIO-6.1, impacts on regulated wetlands and waters from construction of the Proposed Project due to the following proposed alignments, stations, and OMF would be less than significant: Tri-Valley Alignment; Interim OMF; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station.

For the same reasons listed above, with implementation of Mitigation Measures BIO-2.5 and BIO-6.1, impacts on regulated wetlands and waters from construction of the Stone Cut Alignment Alternative, West Tracy OMF Alternative, and Mountain House Station Alternative would be less than significant.

Comparison of Alternatives

The proposed Greenville Station would affect protected wetlands and waters, whereas the Southfront Road Station Alternative would not affect protected wetlands and waters (see Table 3.4-9). Thus, implementation of the Southfront Road Station Alternative would avoid the impacts associated with proposed Greenville Station (less than significant with mitigation).

The Stone Cut Alignment Alternative and the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace would both affect protected waters and wetlands. Both would result in the same less-than-significant impact on protected wetlands and waters after the implementation of mitigation.

The proposed Mountain House Station would not affect protected wetlands and waters; however, the Mountain House Station Alternative would affect protected wetlands and waters (see Table 3.4-9). Thus, implementation of the Mountain House Station Alternative would have a greater impact (less than significant with mitigation) than with implementation of the proposed Mountain House Station (no impact).

Similarly, neither the proposed Downtown Tracy Station nor the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) would affect protected wetlands and waters. Therefore, there would be no difference between the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) because both would result in no impact on protected wetlands and waters.

Both the proposed Tracy OMF and the West Tracy OMF Alternative would result in impacts on protected wetlands and waters, with the proposed Tracy OMF having a greater impact compared with the West Tracy OMF Alternative (see Table 3.4-9). Therefore, implementation of the West Tracy OMF Alternative would result in fewer impacts than the proposed Tracy OMF. Nonetheless, the impact conclusion (less than significant with mitigation) would be the same for both the proposed Tracy OMF and the West Tracy OMF Alternative.

Impact BIO-7: Construction of the Proposed Project could remove or degrade sensitive natural communities, including riparian habitat, identified in local or regional plans, policies, and regulations or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** Proposed Project Tri-Valley Alignment Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track River Islands Station Alternatives Analyzed at an Equal Level of Detail Stone Cut Alignment Alternative Mountain House Station Alternative West Tracy OMF Alternative **No Impact** Proposed Project Dublin/Pleasanton Station Interim OMF Mountain House Station Tracy OMF Downtown Tracy Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	BIO-2.5: Protect wetlands during construction BIO-2.6: Protect sensitive natural communities, including riparian habitat and salt grass flats, during construction

	BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction BIO-7.1: Compensate for loss of riparian habitat BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

The nature of the impacts that would affect sensitive natural communities is the same as described under Impact BIO-6.

Impact Details and Conclusions

Proposed Project

Sensitive natural communities within the study area include riparian and wetland plant natural communities as well as the pond and salt grass flats land cover types. Table 3.4-10 indicates the proposed alignments, stations, and OMFs that would have the potential to affect riparian habitat and other sensitive natural communities. As shown in Table 3.4-10, the Dublin/Pleasanton Station, Interim OMF, Mountain House Station, Tracy OMF, Downtown Tracy Station, and North Lathrop Station would not affect any sensitive natural communities and would, therefore, have no impacts on sensitive natural communities.

Table 3.4-10. Area of Sensitive Natural Communities within the Footprint in acres

	Grassland	Riparian		Wetlands			
Proposed or Alternative Facility	**Grassland, Salt Grass Flat**	**Mixed Willow Riparian Scrub**	**Mixed Riparian Forest and Woodland**	**Alkali Seasonal Wetland**	**Riverine Seasonal Wetland**	**Freshwater Marsh**	**Vernal Pool**
Tri-Valley Segment							
Tri-Valley Alignment	0.24	0.05	2.98	0.11	--	--	--
Temporary Construction Areas	--	--	--	--	--	--	--
Dublin/Pleasanton Station	--	--	--	--	--	--	--
Isabel Station	--	--	3.46	--	--	--	--
Southfront Road Station Alternative	--	--	--	--	--	--	--
Greenville Station	1.10	--	--	--	0.29	--	--
Altamont Segment							
Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track	1.90	1.74	--	23.96	1.90	--	0.04

Proposed or Alternative Facility	Grassland	Riparian		Wetlands			
	Grassland, Salt Grass Flat	Mixed Willow Riparian Scrub	Mixed Riparian Forest and Woodland	Alkali Seasonal Wetland	Riverine Seasonal Wetland	Freshwater Marsh	Vernal Pool
Temporary Construction Areas	--	--	--	--	0.04	--	--
Stone Cut Alignment Alternative	--	--	--	--	--	--	0.04
Interim OMF	--	--	--	--	--	--	--
Mountain House Station	--	--	--	--	--	--	--
Mountain House Station Alternative	--	--	--	--	0.74	--	--
West Tracy OMF Alternative	--	--	--	--	0.06	--	--
Tracy OMF	--	--	--	--	--	--	--
Tracy to Lathrop Segment							
Tracy to Lathrop Alignment Variant 1, Single Track	--	0.60	24.24	--	--	0.19	--
Tracy to Lathrop Alignment Variant 2, Double Track	--	0.72	24.24	--	--	0.19	--
Downtown Tracy Station, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2	--	--	--	--	--	--	--
River Islands Station	--	--	2.02	--	--	--	--
North Lathrop Station	--	--	--	--	--	--	--

Tri-Valley Alignment

The Tri-Valley Alignment would include constructing a new median bridge over Tassajara Creek, which would affect riparian habitat. Bridge footings are expected to be placed outside the creek, but riparian vegetation removal is anticipated. In addition, salt grass flats and alkali seasonal wetlands would be disturbed. Therefore, construction of the Tri-Valley Alignment would result in a potentially significant impact on sensitive natural communities.

Isabel Station and Greenville Station

A pedestrian bridge over Arroyo Las Positas is proposed at Isabel Station, which supports riparian habitat. In addition, alkali seasonal wetlands are present at the proposed Altamont Pass Road improvements for Greenville Station. Therefore, construction of Isabel Station and Greenville Station would result in a potentially significant impact on sensitive natural communities (see Table 3.4-10).

Altamont Alignment

The Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would bisect several land features that support sensitive natural communities, including salt grass flats, alkali seasonal wetlands, vernal pools, and mixed riparian scrub, woodland, and forest. Therefore, construction of this alignment

would affect sensitive natural communities (see Table 3.4-10). Construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would result in impacts on sensitive natural communities similar to those of Owens-Illinois Industrial Lead Variant 1, Single Track; however, construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would result in additional impacts on sensitive natural communities because of the larger footprint required for construction of the double-track alignment. This would be a potentially significant impact.

Tracy to Lathrop Alignment

The majority of the Tracy to Lathrop Alignment would occur within an existing railroad ROW. Outside the vicinity of Tracy, alignment construction would disturb ruderal land, cropland (orchards, row crops, fallow land), aquatic ponds, mixed riparian forest and woodland, riverine areas, and freshwater marshes associated with existing drainages and streams, including Paradise Cut and the San Joaquin River. Therefore, ground disturbance could affect sensitive natural communities (see Table 3.4-10). Disturbances from the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track could affect aquatic ponds, mixed riparian forest and woodland, riverine areas, and freshwater marshes associated with existing drainages and streams. Therefore, construction of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track would result in a potentially significant impact on sensitive natural communities. Construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in impacts similar to those of the Tracy to Lathrop Alignment Variant 1, Single Track; however, construction of the Tracy to Lathrop Alignment Variant 2, Double Track would result in additional impacts on sensitive natural communities because of the larger footprint required for construction of the double-track alignment.

River Islands Station

The River Islands Station would be constructed east of Paradise Cut and west of the San Joaquin River, within an agricultural land cover type (row crops or fallow land). Mixed riparian forest are also present along the UPRR ROW and would be affected. Therefore, construction of River Islands Station would result in a potentially significant impact on sensitive natural communities.

Alternatives Analyzed at an Equal Level of Detail

As shown in Table 3.4-10 the Southfront Road Station Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would not affect any sensitive natural communities. Therefore, these alternative stations would have no impacts on sensitive natural communities.

The Stone Cut Alignment Alternative would be constructed within an area containing a vernal pool. Therefore, construction of the Stone Cut Alignment Alternative would result in a potentially significant impact on sensitive natural communities.

The Mountain House Station Alternative would be constructed within an area containing seasonal wetland vegetation. Therefore, construction of the Mountain House Station Alternative would result in a potentially significant impact on sensitive natural communities.

The West Tracy OMF Alternative would be constructed within undeveloped California annual grassland, which is bisected by a drainage feature containing seasonal wetland vegetation. Therefore, construction of the West Tracy OMF Alternative would result in a potentially significant impact on sensitive natural communities.

Mitigation Measures

Mitigation Measures BIO-2.5, BIO-2.6, BIO-6.1, BIO-7.1, and BIO-7.2 would be implemented for the Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Table 3.4-11 identifies which mitigation measures apply to which alternative. Descriptions of Mitigation Measures BIO-2.5, BIO-2.6, BIO-6.1, BIO-7.1, and BIO-7.2 are presented in Section 3.4.4.4, *Mitigation Measures*.

In addition, Mitigation Measures BIO-2.5 and BIO-6.1,would apply for the Stone Cut Alignment Alternative, Mountain House Station Alternative, and West Tracy OMF Alternative. Mitigation Measure BIO-2.6 would apply for the Stone Cut Alignment Alternative and the West Tracy OMF Alternative.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-2.5, BIO-2.6, BIO-6.1, BIO-7.1, and BIO-7.2 would avoid, minimize, or compensate for impacts on sensitive natural communities, which would reduce impacts to a less-than-significant level. With implementation of Mitigation Measures BIO-2.5, BIO-2.6, BIO-6.1, BIO-7.1, and BIO-7.2, impacts on sensitive natural communities (salt grass flats, alkali seasonal wetlands, freshwater wetlands, riparian scrub and forest, and vernal pools) from construction of the Proposed Project due to the following proposed alignments, stations, and OMF would be less than significant: Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station.

For the same reasons listed above, with implementation of Mitigation Measures BIO-2.5, BIO-2.6, and BIO-6.1, impacts on sensitive natural communities from construction of the Stone Cut Alignment Alternative, Mountain House Station Alternative, and West Tracy OMF Alternative would be less than significant.

Comparison of Alternatives

The proposed Greenville Station would affect one sensitive natural community: salt grass flats. The Southfront Road Station Alternative would not affect any known sensitive natural communities (see Table 3.4-10). Therefore, implementation of the Southfront Road Station Alternative would avoid the impacts associated with the proposed Greenville Station (less than significant with mitigation).The Stone Cut Alignment Alternative and the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace would both affect protected wetlands, which are considered sensitive natural communities. Both would result in the same less-than-significant impact on sensitive natural communities after the implementation of mitigation.

The Mountain House Station Alternative would affect one sensitive natural community: riverine seasonal wetland. The proposed Mountain House Station would not affect any known sensitive natural communities (see Table 3.4-10). Therefore, implementation of the Mountain House Station Alternative would result in a greater impact (less than significant with mitigation) than the proposed Mountain House Station (no impact).

Neither the proposed Downtown Tracy Station nor the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) would affect sensitive natural communities. Therefore, there would be no difference between the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) because both would result in no impact on sensitive natural communities.

The Tracy OMF would not affect sensitive natural communities; however, the West Tracy OMF Alternative would affect sensitive natural seasonal wetlands within a drainage on the site (see Table 3.4-10). Overall, construction of the West Tracy OMF Alternative would have a greater impact (less than significant with mitigation) compared with the proposed Tracy OMF (no impact).

Impact BIO-8: Construction of the Proposed Project could substantially interfere with the movement of native resident or migratory fish or wildlife species, established migration corridors, or the use of nursery areas.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** Proposed Project Tri-Valley Alignment Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Interim OMF Mountain House Station Tracy OMF Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track River Islands Station Alternatives Analyzed at an Equal Level of Detail Stone Cut Alignment Alternative West Tracy OMF Alternative **Less than Significant/No Impact** Proposed Project Dublin/Pleasanton Station Downtown Tracy Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Mountain House Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2
Mitigation Measures	BIO-2.2: Conduct a worker environmental training program for construction personnel BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible BIO-2.4: Implement seasonal restrictions for in-water work as feasible BIO-2.5: Protect wetlands during construction

	BIO-2.6: Protect sensitive natural communities, including riparian habitat, during construction BIO-2.7: Protect vernal pool–endemic species BIO-2.8: Protect valley elderberry longhorn beetle BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog BIO-2.10: Protect foothill yellow-legged frog BIO-2.11: Protect western pond turtle and giant garter snake BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip BIO-2.14: Protect golden eagle BIO-2.15: Protect Swainson's hawk nests BIO-2.16 Compensate for Swainson's hawk foraging habitat loss BIO-2.17: Protect burrowing owls and burrowing owl habitat BIO-2.18: Compensate for burrowing owl habitat loss BIO-2.19: Protect special-status and non-special-status roosting bats BIO-2.20: Protect riparian brush rabbit BIO-2.21: Compensate for riparian brush rabbit habitat loss BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction BIO-7.1: Compensate for loss of riparian habitat BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat) BIO-8.1: Install curbs to permit California tiger salamander and California red-legged frog movement BIO-8.2: Install station lighting controls and fencing limitations BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Construction could affect native and resident wildlife movement in all land cover types, except developed land cover. Construction could affect the movement of regional wildlife, including special-

status species such as mountain lion, San Joaquin kit fox, American badger, California red-legged frog, and California tiger salamander through grassland, wetland, riparian, aquatic, and cropland (i.e., row crops) land cover types. Construction in grassland, wetland, riparian, aquatic, and cropland land cover types could directly deter or prevent fish or wildlife movement through the area because of habitat removal or disturbance; the presence of physical barriers (e.g., cofferdams, dewatering activities, construction fencing, wildlife exclusionary fencing, roads), construction equipment, or humans; vegetation removal (which provides wildlife with cover during movement and dispersal); and alteration of hydrology. Construction in these habitats could indirectly deter or prevent fish or wildlife movement through vibration, noise, and light generated by construction; vegetation composition alteration; increased road and vehicle traffic, and the introduction of invasive plants. Additionally, construction of the Project would lead to wildlife habitat fragmentation by spread of human development and associated transportation corridors.

Impact Details and Conclusions

Proposed Project

Tri-Valley Alignment

Construction of the Tri-Valley Alignment would occur, for the most part, within the alignment of the I-580 median, from the existing Dublin/Pleasanton BART Station to Greenville Road. The majority of direct impacts would occur within developed or ruderal lands and have little to no potential with respect to affecting native or resident fish and wildlife movement, given the existing disturbance and lack of suitable migration routes. Dense urban and suburban development in Dublin and Livermore restricts east-to-west terrestrial wildlife movement, and only a few stream corridors provide opportunities for north-to-south migration under I-580. Small pockets of natural land cover within the alignment support movement habitat, such as aquatic riverine, riparian forest and woodland, wetland, and California annual grassland areas. These areas are found along Tassajara Creek, Cottonwood Creek, and Arroyo Las Positas. The waterways provide the only movement habitat in the region for safe passage under the I-580 corridor. Therefore, construction activities associated with the proposed bridge widening, culvert improvements, and ramp construction in or adjacent to these three waterways could have the potential to directly and indirectly affect wildlife movement for resident or migratory species present in the region, including California red-legged frog, California tiger salamander, and San Joaquin kit fox. This would be a potentially significant impact. Anadromous fish species are not likely to be present because of the lack of suitable habitat and therefore would not be affected by construction.

Four temporary construction areas are associated with the Tri-Valley segment. All four are within disturbed and/or ruderal upland land cover types adjacent to the I-580 corridor. There is no potential with respect to affecting migratory and resident fish and wildlife movement during the construction period because these areas are entirely within urbanized areas and isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. These areas do not currently provide fish and wildlife movement opportunities; therefore, temporary construction activities would not result in impacts on movement by fish or wildlife species. No impact would occur from the temporary construction areas.

Dublin/Pleasanton Station

Construction associated with Dublin/Pleasanton Station would occur in the median of I-580, adjacent to the existing Dublin/Pleasanton BART Station, which is entirely within developed/ landscaped areas or previously disturbed ruderal land cover. No impacts on native or migratory fish and wildlife movement are anticipated because this station is entirely within an urbanized area that is isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. No impact would occur from construction of the Dublin/Pleasanton Station.

Isabel Station

Construction for the proposed pedestrian bridge at Isabel Station would affect native and migratory wildlife that use the Arroyo Las Positas riparian corridor. This would be a potentially significant impact.

Greenville Station

Construction of Greenville Station would affect native and migratory wildlife that use the existing I-580 underpass east of Greenville Road as a seasonal or annual migration corridor for safe passage to and from the Altamont Hills. This would be a potentially significant impact.

Altamont Alignment

The Altamont Hills support known movement corridors for numerous terrestrial wildlife species, including San Joaquin kit fox and American badger (Penrod et al. 2013). Open land cover types (e.g., undeveloped annual grasslands) in this region are vast and permit wildlife movement but not in a defined corridor because of the abundance of open land cover in the region. This region also includes multiple riverine aquatic habitats and associated riparian habitats that serve as cover and refuge during migration through the greater region. Altamont Creek and its tributaries in the western region as well as Mountain House Creek and its tributaries in the eastern portion of the hills are present within or adjacent to the study area. Although these high-order streams are seasonal and known not to support anadromous or native fish species movement, they do provide high-quality forage and cover for resident and migratory wildlife. There are also human-made movement opportunities (see Section 3.4.3.5, *Wildlife Corridors*) for travel across the I-580 corridor, linking the northern Diablo Range to the southern range, as well as east–west connections to the East Bay and San Joaquin Valley.

The Altamont Alignment would be located in an existing Alameda County Transportation Corridor ROW, which bisects the central region of the Altamont Hills adjacent to suitable movement habitat, including annual grasslands, alkali seasonal wetlands, vernal pools, and riparian woodlands. Construction of the Altamont Alignment would include building the Owens-Illinois Industrial Lead Variant 1, Single Track (with existing track upgrades), or the Owens-Illinois Industrial Lead Variant 2, Double Track (with the addition of a parallel track). Construction would occur primarily in open land cover types that are suitable for wildlife movement. Ground disturbance, the removal of vegetation, and the degradation and/or loss of movement habitat, in addition to noise and lighting effects during construction, could disrupt established wildlife movement corridors in the eastern and western portions of the Altamont Hills as well as suitable movement habitats in the immediate disturbance area. The Central Coast North evolutionarily significant unit (ESU) mountain lion range overlaps the Altamont Alignment. This ESU is a source population with limited gene flow to other

Central Coast populations and struggles due to fragmentation from roads and development (Center for Biological Diversity and the Mountain Lion Foundation 2019). Habitat connectivity is critical to the survival of Central Coast mountain lions and projects that are associated with human population growth and transportation corridors have been shown to contribute to mountain lion mortality and impact movement corridors (California Department of Fish and Wildlife 2020; Benson et al. 2020; Nguyen 2019). Because mountain lions tend to avoid human development, associated roads, and transmission corridors, construction activities in the Altamont Alignment could restrict movement and alter normal behavior patterns. Construction of the Owens-Illinois Industrial Lead Variant 2, Double Track would affect wildlife movement to a greater extent compared with the Owens-Illinois Industrial Lead Variant 1, Single Track because of the construction of a new track and associated crossovers and additional water crossings. Impacts on undeveloped land cover associated with the Altamont Alignment, including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track would have the potential to affect migratory and resident wildlife movement during the construction period. This would be a potentially significant impact.

Interim OMF

The proposed location of the Interim OMF is dominated by salt grass flat surrounded, for the most part, by open, natural land cover types that support wildlife movement. Common and special-status wildlife species have the potential to move through this area and be affected by construction of the Interim OMF. This would be a potentially significant impact.

Mountain House Station

The Mountain House Station is proposed in annual grassland adjacent to the eastern edge of the Altamont Hills, off Via Nicolo Road. The proposed station would affect annual grassland. The area is surrounded, for the most part, by annual grassland, with the exception of lands to the southeast, which include a large commercial development as well as Via Nicolo Road and Patterson Pass Road. Construction could disrupt wildlife movement in the immediate disturbance area and temporarily preclude wildlife migration for species such as mountain lion, San Joaquin kit fox, and American badger in the immediate disturbance area when moving from southwestern San Joaquin County and other areas of the Central Valley to eastern Altamont Hills. Construction could also disrupt the movement and/or dispersal of California red-legged frog between annual grassland habitat and wetland and vernal pool features. This would be a potentially significant impact.

Tracy OMF

The Tracy OMF would be constructed mainly in agricultural land (row crops). It would affect a small amount of California annual grassland along the UPRR ROW. This proposed location could temporarily disrupt wildlife movement in the immediate disturbance area but would not pose a substantial threat to wildlife migration corridors. Nonetheless, this would be a potentially significant impact.

Tracy to Lathrop Alignment

The Altamont Hills west of Tracy support known migration corridors for numerous upland species, including San Joaquin kit fox and American badger. Open land cover types (e.g., cropland [row crops]) from Tracy to Lathrop permit wildlife movement but not in a defined corridor. This segment includes multiple riverine aquatic habitats, including Paradise Cut and the San Joaquin River, as well as associated riparian habitats that serve as important fish and wildlife migration corridors through the

greater region. The San Joaquin Valley has experienced a high degree of urban, suburban, and agricultural development; as a result, the remaining natural land cover is of high importance as fish and wildlife migration or movement corridors. The Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track occurs largely in developed and ruderal land cover; relatively small portions support natural land cover types. The Tracy to Lathrop Alignment Variant 2, Double Track would result in greater impacts on fish and wildlife movement because of the construction on new track crossovers and additional water crossings. Impacts on undeveloped land cover associated with the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track have potential to affect migratory and resident fish and wildlife movement during the construction period. This would be a potentially significant impact.

Downtown Tracy Station and North Lathrop Station

Construction associated with Downtown Tracy Station and North Lathrop Station would be entirely within previously disturbed ruderal land cover and surrounded by urban development. No impacts on native or migratory fish and wildlife movement are anticipated because these stations are entirely within an urbanized area and isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. No impact would occur from construction of the Downtown Tracy Station and North Lathrop Station.

River Islands Station

River Islands Station would be constructed east of Paradise Cut and west of the San Joaquin River, within agricultural land (row crops or fallow land). Mixed riparian forest and an aquatic ditch are also present along the UPRR ROW and would be affected. Construction could temporarily disrupt wildlife movement in the immediate disturbance area and potentially pose a threat to the wildlife migration corridor associated with Paradise Cut. This would be a potentially significant impact.

Alternatives Analyzed at an Equal Level of Detail

Southfront Road Station Alternative

The Southfront Road Station Alternative would be constructed south of I-580, along Southfront Road and adjacent to developed, paved industrial areas. Widening of the I-580 median would be required for station construction and take place in previously disturbed developed land cover. Construction of the surface parking lot would occur, for the most part, within ruderal and developed land cover. Similar to the other stations in ruderal and developed land cover types, there is no potential to affect migratory and resident fish and wildlife movement during the construction period because this station is entirely within an urbanized area and isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. This area does not currently provide fish and wildlife movement opportunities; therefore, temporary construction activities would not result in impacts on movement by fish or wildlife species. No impact would occur from construction of the Southfront Road Station Alternative.

Stone Cut Alignment Alternative

The Altamont Hills support known movement corridors for numerous terrestrial wildlife species, including San Joaquin kit fox and American badger (Penrod et al. 2013). Open land cover types (e.g., undeveloped annual grasslands) in this region are vast and allow wildlife movement but not in a defined corridor because of the abundance of open land cover in the region. This region also

includes multiple riverine aquatic habitats and associated riparian habitats that serve as cover and refuge during migration through the greater region. There are also several human-made movement opportunities (see Section 3.4.3.5, *Wildlife Corridors*) for travel across the I-580 corridor, linking the northern Diablo Range to the southern range, as well as east–west connections to the East Bay and San Joaquin Valley.

The Stone Cut Alignment Alternative would be located near the existing Alameda County Transportation Corridor ROW and UPRR ROW, which bisects the central region of the Altamont Hills adjacent to suitable movement habitat, including annual grasslands, seasonal wetlands, and riparian ephemeral drainages. Construction of the Stone Cut Alignment Alternative would occur primarily in open land cover types that are suitable for wildlife movement. Ground disturbance, the removal of vegetation, and the degradation and/or loss of movement habitat, in addition to noise and lighting effects during construction could disrupt established wildlife movement corridors in the Altamont Hills as well as suitable movement habitats in the immediate disturbance area. Thus, construction of the Stone Cut Alignment Alternative would result in a potentially significant impact.

Mountain House Station Alternative

Construction of the Mountain House Station Alternative would have a less-than-significant impact on wildlife movement for resident or migratory wildlife because it would be entirely surrounded by developed, cropland, or previously disturbed ruderal land cover types. Potential impacts on native or migratory fish and wildlife movement would not be substantial because the Mountain House Station Alternative would be isolated from any large areas of contiguous natural land cover.

West Tracy OMF Alternative

The West Tracy OMF Alternative would be constructed within undeveloped California annual grassland land cover, which is bisected by a seasonal wetland drainage feature. Construction of this facility would require significant ground disturbance (grading). Because of its location within the lower eastern slopes of the Altamont Hills, it could temporarily disrupt wildlife movement in the immediate disturbance area and affect a known wildlife migration corridor in the region that supports California red-legged frog, San Joaquin kit fox, and American badger. This would be a potentially significant impact.

Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2

Construction associated with Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 would be entirely within previously disturbed ruderal land cover and surrounded by urban development. No impacts on native or migratory fish and wildlife movement are anticipated because these station alternatives are entirely within an urbanized area and isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. No impact would occur from construction of the Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2.

Mitigation Measures

Mitigation Measures BIO-2.2, BIO-2.3, BIO-2.4, BIO-2.5, BIO-2.6, BIO-2.7, BIO-2.8, BIO-2.9, BIO-2.10, BIO-2.11, BIO-2.12, BIO-2.13, BIO-2.14, BIO-2.15, BIO-2.16, BIO-2.17, BIO-2.18, BIO-2.19, BIO-2.20, BIO-2.21, BIO-2.22, BIO-2.23, BIO-2.24, BIO-2.25, BIO-3.1, BIO-6.1, BIO-7.1, BIO-7.2, BIO-8.2, BIO-8.3, BIO-8.4, and BIO-8.5 would apply for the following proposed alignments, stations, and OMFs that

could result in a potentially significant impact on resident fish and wildlife movement and wildlife corridors: Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Mitigation Measure BIO-8.1 would apply for the Isabel Station; Greenville Station; Mountain House Station; and Interim OMF. Descriptions of the above-listed mitigation measures are presented in Section 3.4.4.4, *Mitigation Measures*, which also notes which mitigation measures apply to which proposed alignments, stations, and OMFs. In addition, the same mitigation measures for the Proposed Project listed above would apply for the Stone Cut Alignment Alternative and West Tracy OMF Alternative. Section 3.4.4.4, *Mitigation Measures*, notes which mitigation measures apply to the Stone Cut Alignment Alternative and West Tracy OMF Alternative.

Significance with Application of Mitigation

Disturbances from construction-related noise and vibration; the presence of construction vehicles and machinery, as well as humans; and habitat removal or degradation could affect fish and wildlife movement. Impacts on native resident and migratory fish and wildlife corridors from construction of the Proposed Project would be significant. Implementation of Mitigation Measures BIO-2.2, BIO-2.3, BIO-2.4, BIO-2.5, BIO-2.6, BIO-2.7, BIO-2.8, BIO-2.9, BIO-2.10, BIO-2.11, BIO-2.12, BIO-2.13, BIO-2.14, BIO-2.15, BIO-2.16, BIO-2.17, BIO-2.18, BIO-2.19, BIO-2.20, BIO-2.21, BIO-2.22, BIO-2.23, BIO-2.24, BIO-2.25, BIO-3.1, BIO-6.1, BIO-7.1, BIO-7.2, BIO-8.1, BIO-8.2, BIO-8.3, BIO-8.4, and BIO-8.5 would avoid or minimize impacts on native and resident fish and wildlife movement and wildlife corridors, and would reduce impacts to a less-than-significant level for construction of the Proposed Project due to the following alignments, stations, and OMFs: Tri-Valley Alignment; Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station.

For the same reasons listed above, with implementation of mitigation, impacts on native and resident fish and wildlife movement and wildlife corridors would be less than significant for the Stone Cut Alignment Alternative and West Tracy OMF Alternative.

Comparison of Alternatives

Construction of the proposed Greenville Station would affect wildlife movement, while construction of the Southfront Road Station Alternative would not affect wildlife movement. The proposed Greenville Station would affect upland and wetland habitats, which are suitable for wildlife movement. Therefore, implementation of the Southfront Road Station Alternative would avoid the impact (less than significant with mitigation) on wildlife movement that would occur under the proposed Greenville Station.

Construction of the Stone Cut Alignment Alternative and the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace have the potential to affect wildlife movement and support similar land cover types, and would result in similar impediments to wildlife movement (e.g., human presence, noise, lights). The impacts from the Stone Cut Alignment Alternative and the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace would both be reduced to a less-than-significant level after mitigation.

Construction of the Mountain House Station would affect wildlife movement to a greater extent than construction of the Mountain House Station Alternative, which would be closer to the limits of urbanization. The Mountain House Station Alternative would result in a less-than-significant impact and be less severe compared with Mountain House Station, which would require mitigation to reduce the impact to a less-than-significant level.

Construction of the proposed Tracy OMF and West Tracy OMF Alternative would have the potential to affect wildlife movement to an equal degree because they would both be in the same vicinity, support the same land cover types, and be within the city limits. Nonetheless, the impacts from the West Tracy OMF Alternative and the proposed Tracy OMF would both be reduced to a less-than-significant level after mitigation.

Neither the proposed Downtown Tracy Station alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) would affect wildlife movement. Therefore, there would be no difference between the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) because both would result in no impact on wildlife movement.

Impact BIO-9: Operation of the Proposed Project could substantially interfere with the movement of native resident or migratory fish or wildlife species, established migration corridors, or the use of nursery areas.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** Proposed Project Isabel Station Greenville Station Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Interim OMF Mountain House Station Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track River Islands Station Alternatives Analyzed at an Equal Level of Detail Stone Cut Alignment Alternative West Tracy OMF Alternative **Less than Significant/No Impact** Proposed Project Tri-Valley Alignment Dublin/Pleasanton Station Tracy OMF Downtown Tracy Station North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Mountain House Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2

Mitigation Measures	BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement BIO-8.2: Install station lighting controls and fencing limitations BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Altamont Alignment and the Stone Cut Alignment Alternative BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment
Level of Impact after Mitigation	**Significant and Unavoidable** Proposed Project Greenville Station Mountain House Station Alternatives Analyzed at an Equal Level of Detail West Tracy OMF Alternative **Less than Significant** Proposed Project All other Proposed Project facilities Alternatives Analyzed at an Equal Level of Detail All other alternatives analyzed at an equal level of detail

Impact Characterization

Operation

Operation of the Proposed Project would result in increased train traffic, noise, lighting, and the presence of humans. This is expected to have significant effects on wildlife movement in the central portion of the Proposed Project footprint, an area where rail traffic and infrastructure do not currently exist. Operation would alter existing wildlife usage and migration routes in natural and semi-natural habitats in Altamont Pass, Mountain House, and West Tracy. Although this area already has some human activity from prior development, the introduction of new Valley Link passenger rail traffic, as well as vehicles at stations, would result in effects related to human presence, lighting, and noise. These effects would cause the direct loss of species as well as the direct loss of established migration routes. Wildlife movement in the area north and south of I-580 and in the immediate vicinity of the new rail lines could be significantly affected.

Although freight and ACE commuter trains currently operate on the UPRR subdivisions in the area, the additional passenger service generated by operation would result in up to 18 times more rail traffic. Currently, four morning inbound and four evening outbound ACE commuter trains pass through the area. The number and frequency of freight trains are unknown. It is estimated that a maximum of 148 Valley Link commuter trains per day could pass through the Altamont Pass. Therefore, operational conditions along the ROW are expected to be significantly different from existing conditions with respect to the movement of common and special-status wildlife species in the central portion of the Proposed Project area.

Transportation corridors, including roads and highways, pose barriers to wildlife dispersal and migration through aversion effects, direct mortality from traffic, and traffic noise-induced effects (Shilling et al. 2012). Projects associated with human population growth and transportation corridors contribute to mountain lion mortality and affect movement corridors (California

Department of Fish and Wildlife 2020; Benson et al. 2020; Nguyen 2019). Because mountain lions tend to avoid human development, associated roads, and transmission corridors, construction activities in the Altamont Alignment could restrict movement and alter normal behavior patterns. Operation could affect the movement of special-status wildlife species through increased train traffic, leading to increased potential for wildlife/train strikes across all segments of the Proposed Project alignment. Increased train traffic could contribute to the level of noise and ambient light in areas that currently do not have passenger rail traffic. Operation of the rail stations would increase the exposure of special-status wildlife species to humans and increase the potential for wildlife/vehicle strikes along the access roads to rail stations.

Vickers et al. (2015) suggest the most common source of mortality of mountain lion are due to vehicle collision and transportation corridors, and their associated development; transportation corridors have resulted in nearly impermeable barriers to mountain lion movements, resulting in severe genetic restriction and demographic isolation of mountain lion populations (Benson et al. 2020). The Central Coast North ESU of mountain lion experiences population fragmentation from roads, transmission corridors, and human development (Center for Biological Diversity and the Mountain Lion Foundation 2019). Additionally, this population has limited gene flow with other Central Coast populations and habitat connectivity is considered critical to the survival of Central Coast mountain lions(California Department of Fish and Wildlife 2020). Mountain lions tend to avoid urban, agricultural areas and roads and prefer riparian areas and more rugged terrain (Zeller et al. 2017). Operation of Valley Link commuter trains could reduce habitat size and quality, as well as decrease habitat connectivity. Operation of Valley Link commuter trains in an area that currently does not experience significant rail service could further subdivide this already fragmented mountain lion population and could compromise long-term population viability.

I-580 is considered an impassible movement barrier for California tiger salamander (U.S. Fish and Wildlife Service 2017b); it may be a movement barrier for other special-status wildlife species, such as California red-legged frog, American badger, and San Joaquin kit fox. Additional railroad operation and access roads to rail stations and OMFs within 1 mile of the I-580 corridor would create further potential movement barriers for special-status wildlife. Operation would contribute to increased human presence, lighting, and vehicular traffic and could result in reduced habitat suitability for wildlife movement as well as habitat fragmentation.

Maintenance

Track maintenance activities would consist of ongoing maintenance of UPRR track, vegetation management (i.e., annual vegetation trimming, herbicide and pesticide application), and infrastructure maintenance (i.e., bridges, drainage features, signal apparatus, signal infrastructures). Maintenance activities at new stations and OMFs would consist of vegetation maintenance, herbicide and pesticide application and, as required, structure maintenance (i.e., minor/major concrete work, platform maintenance, paving/road work, general maintenance). Maintenance of OCS and associated facilities would also be required (for the BEMU technology variant). Fleet maintenance would occur at select OMFs. Railroad track maintenance, as well as station maintenance, could affect wildlife movement through disturbance, modification, or the removal of habitat and result in direct and indirect impacts on wildlife while dispersing, migrating, or general movements through the Proposed Project area.

Impact Details and Conclusions

Proposed Project

Tri-Valley Alignment

Operations along the Tri-Valley Alignment would occur adjacent to developed or ruderal lands and have little to no potential to affect native or resident fish and wildlife movement, given the existing disturbance and lack of suitable migration routes. Existing waterways, including Tassajara Creek, Cottonwood Creek, and Arroyo Las Positas, provide the only movement habitat in the region that offers safe passage under the I-580 corridor; these waterways would not be affected by operation of the Tri-Valley Alignment. Therefore, operational and maintenance activities associated with the Tri-Valley Alignment in or adjacent to the three waterways would not substantially affect wildlife movement for resident or migratory species present in the region, and the impact would be less than significant.

Dublin/Pleasanton Station

Operations associated with Dublin/Pleasanton Station would occur in the median of I-580, adjacent to the existing Dublin/Pleasanton BART Station, which is entirely within developed/landscaped areas or previously disturbed ruderal land cover and completely surrounded by urban land uses. Impacts on native or migratory fish and wildlife movement are not anticipated because this station is entirely within an urbanized area and no longer connected to large areas of contiguous natural land cover or aquatic features. Therefore, operation of the Dublin/Pleasanton Station would have a less-than-significant impact on fish and wildlife movement.

Isabel Station and Greenville Station

Operational and maintenance activities proposed at Isabel Station would affect native and migratory wildlife that use the Arroyo Las Positas riparian corridor. In addition, operations at Greenville Station would affect native and migratory wildlife movement through the underpass at I-580 east of Greenville Road. The underpass is a seasonal or annual migration corridor to or from the Altamont Hills that provides safe passage under I-580 for wildlife. Therefore, Isabel Station and Greenville Station could affect fish and wildlife movement and the impact would be potentially significant.

Altamont Alignment

The Altamont Hills support known movement corridors for numerous terrestrial wildlife species, including San Joaquin kit fox and American badger (Penrod et al. 2013). Open land cover types (e.g., undeveloped annual grasslands) in this region are vast and permit wildlife movement, but not in a defined corridor due to the abundance of open land cover in the region. The Altamont segment also includes multiple riverine aquatic habitats and associated riparian habitat that serve as cover and refuge during migration through the greater region. Altamont Creek and its tributaries in the western region, as well as Mountain House Creek and its tributaries in the eastern portion of the hills are present within or adjacent to the study area. Although these high-order streams are seasonal and are known not to support anadromous or native fish species movement, they do provide high-quality forage and cover for resident and migratory wildlife. There are also human-made movement opportunities (see Section 3.4.3.5, *Wildlife Corridors*) to travel across the I-580 corridor linking the northern Diablo Range to the southern range as well as east-west connections to the East Bay and San Joaquin Valley.

The proposed Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) would be within the existing Alameda County Transportation Corridor ROW, which bisects the central region of the Altamont Hills and is adjacent to suitable movement habitat, including annual grasslands, alkali seasonal wetlands, vernal pools, and riparian woodlands. The railway in the Alameda County Transportation Corridor ROW is not currently operational, although ACE operates eight daily one-way trains nearby and UPRR has infrequent freight train traffic on the tracks that parallel the Alameda County Transportation Corridor ROW. New train traffic along the proposed Altamont Alignment would occur primarily in open land cover types that are suitable for wildlife movement. Train traffic, in addition to noise and lighting during operation, could disrupt established wildlife movement corridors in the Altamont Hills as well as suitable movement habitats in the immediate footprint. Impacts in undeveloped natural land cover associated with the Altamont Alignment would have potential to affect migratory and resident wildlife movement during the operational period. The impact would be potentially significant.

Interim OMF

The proposed location for the Interim OMF is dominated by salt grass flats, which are surrounded, for the most part, by open natural land cover types that support wildlife movement. Common and special-status wildlife species have the potential to move through this area and be affected by operation and maintenance of the Interim OMF. This would be a potentially significant impact.

Mountain House Station

Mountain House Station would affect annual grassland, which surrounds the area, with the exception of lands to the southeast, which include a large commercial development as well as Via Nicolo Road and Patterson Pass Road. Operation could disrupt wildlife movement in the immediate disturbance area and temporarily preclude migration between southwestern San Joaquin County, as well as other areas of the Central Valley, and the eastern Altamont Hills for species such as mountain lion, San Joaquin kit fox, and American badger in the immediate disturbance area. California red-legged frog movement in the immediate vicinity of the Mountain House Station could also be affected. This would be a potentially significant impact.

Tracy OMF

The Tracy OMF would be constructed mainly in agricultural land (row crops). It would affect a small amount of California annual grassland along the UPRR ROW. Operations could disrupt common wildlife movement in the immediate vicinity but not pose a substantial threat to wildlife migration corridors. The impact would be less than significant.

Tracy to Lathrop Alignment

Open land cover types (e.g., cropland [row crops]) from Tracy to Lathrop permit wildlife movement but not in a defined corridor. The Tracy to Lathrop segment includes several riverine aquatic habitats, including Paradise Cut and the San Joaquin River, as well as associated riparian habitat that provides important fish and wildlife migration corridors through the greater region. The San Joaquin Valley has experienced a high degree of urban, suburban, and agricultural development; as a result, the remaining natural land cover is of high importance as fish and wildlife migration or movement corridors. Portions of the Tracy to Lathrop segment would occur in open areas that are generally surrounded by agriculture but with several riparian corridors, as follows:

- Croplands west of urbanized portions of Tracy near South Lammers Road: Wildlife movement is possible through agricultural fields along a northwest–southeast axis.
- Croplands east of Tracy and Grant Line Road to Paradise Cut: Wildlife movement is possible south and north of the railroad alignment through agricultural fields along a northwest–southeast axis. Wildlife movement is impaired in this area because of I-5, I-205, other roadways, the UPRR ROW, and Tracy Subdivision rail alignments.
- Paradise Cut: Wildlife movement occurs through the riparian corridor along a northwest–southeast axis in the waterway and adjacent lands under the bridge crossings of the UPRR ROW, I-5, I-205, South Manthey Road, and the Tracy Subdivision.
- Croplands west of River Islands: Wildlife movement occurs through the riparian corridor along a northwest–southeast axis in the waterway and adjacent lands under the bridge crossings of the UPRR ROW, I-5, I-205, South Manthey Road, and the Tracy Subdivision.
- San Joaquin River: Wildlife movement occurs along the riverine corridor. The riparian corridor adjacent to the river is narrow in most of the river reach near the Tracy Subdivision.

Operation of the Tracy to Lathrop Alignment Variant 1, Single Track and Tracy to Lathrop Alignment Variant 2, Double Track would result in impacts on fish and wildlife movement because of the increase in train traffic. The Tracy to Lathrop Alignment Variant 2, Double Track would affect fish and wildlife movement to a greater extent because of a larger footprint. Impacts associated with increased train traffic in less urbanized areas of the alignment have the potential to affect migratory and resident fish and wildlife movement during the operational period. This would be a potentially significant impact.

Downtown Tracy Station and North Lathrop Station

Operation and maintenance of Downtown Tracy Station and North Lathrop Station would have a less-than-significant impact on wildlife movement for resident or migratory species because they would be entirely surrounded by developed and previously disturbed ruderal lands. Impacts on native or migratory fish and wildlife movement would not be substantial because the Downtown Tracy Station and North Lathrop Station would be isolated from large areas of contiguous natural land cover. In addition, the area lacks suitable aquatic habitat features.

River Islands Station

The River Islands Station would occur east of Paradise Cut and west of the San Joaquin River, within agricultural land cover types (row crops or fallow land), which may be used as movement corridors for wildlife. Mixed riparian forest and an aquatic ditch are also present along the UPRR ROW. Operation and maintenance activities could disrupt wildlife movement in the general area and potentially pose a threat to an established wildlife migration corridor, which is associated with Paradise Cut. This would be a potentially significant impact.

Alternatives Analyzed at an Equal Level of Detail

Southfront Road Station Alternative

The Southfront Road Station Alternative would be constructed south of I-580, along Southfront Road, adjacent to developed, paved industrial areas. Similar to the other proposed stations in developed and ruderal land cover types, there is no potential for the station to affect migratory or

resident fish and wildlife movement during the operational period because this station would be entirely within an urbanized area and isolated from large areas of contiguous natural land cover. In addition, the area lacks aquatic habitat features. Therefore, operation of the Southfront Road Station Alternative would have a less-than-significant impact on fish and wildlife movement.

Stone Cut Alignment Alternative

The Stone Cut Alignment Alternative would be located in the Altamont Hills, which are known to support movement corridors for numerous terrestrial wildlife species, including San Joaquin kit fox and American badger (Penrod et al. 2013). Undeveloped, open land cover types (e.g., annual grasslands) in this region are vast and allow wildlife movement but not in a defined corridor because of the abundance of undeveloped land cover in the region. This region also includes multiple riverine aquatic habitats and associated riparian habitats that serve as cover and refuge during migration through the greater region. There are also human-made movement opportunities (see Section 3.4.3.5, *Wildlife Corridors*) for travel across the I-580 corridor, linking the northern Diablo Range to the southern range, as well as east–west connections to the East Bay and San Joaquin Valley.

The Stone Cut Alignment Alternative would be located near the existing Alameda County Transportation Corridor ROW and UPRR ROW, which bisect the central region of the Altamont Hills adjacent to suitable movement habitat, including annual grasslands, seasonal wetlands, and ephemeral drainages. Operation of the Stone Cut Alignment Alternative would occur primarily in undeveloped land cover types that are suitable for wildlife movement. Operation of the Stone Cut Alignment Alternative would increase the level of noise, lighting, human presence, and potential for wildlife strike compared to existing conditions. Thus, operation of the Stone Cut Alignment Alternative would result in a potentially significant impact.

Mountain House Station Alternative

Operation and maintenance of the Mountain House Station Alternative would have a less-than-significant impact on wildlife movement for resident or migratory species because it would be entirely surrounded by development, cropland, or previously disturbed ruderal land cover. Impacts on native or migratory fish and wildlife movement would not be substantial because the Mountain House Station Alternative would be isolated from large areas of contiguous natural land cover.

West Tracy OMF Alternative

The West Tracy OMF Alternative would be constructed south of Patterson Pass Road, west of the proposed Mountain House Station, within undeveloped California annual grassland, which is bisected by a seasonal wetland drainage feature. Because of its location within the lower undeveloped slopes of the eastern Altamont Hills, it could significantly disrupt wildlife movement in the general area and affect a known wildlife migration corridor in the region that supports San Joaquin kit fox and American badger. This would be a potentially significant impact.

Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2

Operation and maintenance of the Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternatives 2 would have a less-than-significant impact on wildlife movement for resident or migratory species because they would be entirely surrounded by developed and previously disturbed ruderal lands. Impacts on native or migratory fish and wildlife movement would not be substantial because the Downtown Tracy Station Parking Alternative 1 and

Downtown Tracy Station Parking Alternative 2 would be isolated from large areas of contiguous natural land cover. In addition, the area lacks suitable aquatic habitat features.

Mitigation Measures

Mitigation Measure BIO-8.1 would apply for the Isabel Station; Greenville Station; Mountain House Station; and Interim OMF. Mitigation Measure BIO-8.2 would apply for the following proposed alignments, stations, and OMF that could result in a potentially significant impact on native and resident fish and wildlife movement and wildlife corridors: Isabel Station; Greenville Station; Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Mitigation Measure BIO-8.3 would apply to the Greenville Station. Mitigation Measure BIO-8.4 would apply to the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track) and Mountain House Station. Mitigation Measure BIO-8.5 would apply to the Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; and River Islands Station. Refer to the descriptions of Mitigation Measures BIO-8.1 through BIO-8.5 in Section 3.4.4.4, *Mitigation Measures*, which also notes which mitigation measures apply to which proposed alignment, station, or OMF.

Mitigation Measures BIO-8.1, BIO-8.2, and BIO-8.4 would apply to the Stone Cut Alignment Alternative and West Tracy OMF Alternative.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-8.1 through BIO-8.5 would avoid or minimize impacts on native and resident fish and wildlife movement and wildlife corridors, which would reduce the impacts for operation of the Proposed Project to a less-than-significant level except for the Greenville Station and the Mountain House Station. At the Greenville Station, the project would hinder wildlife movement related to the existing underground rail crossing east of Greenville even with mitigation. At the Mountain House Station, the Proposed Project would result in a substantial impediment to wildlife movement in the undeveloped foothills, which are an area of key wildlife movement, even with mitigation. Thus, new rail services associated with the Proposed Project would result in significant and unavoidable impact relative to the proposed Greenville Station and the Mountain House Station, even after implementation of Mitigation Measures BIO-8.1 through BIO-8.5.

Comparison of Alternatives

Implementation of Mitigation Measures BIO-8.1 through BIO-8.5 would avoid or minimize impacts on native and resident fish and wildlife movement and wildlife corridors, which would reduce the impacts for operation of the alternatives analyzed at an equal levels of detail to a less-than-significant level, except for the West Tracy OMF Alternative.

Operation of the proposed Greenville Station would have a significant unavoidable impact on wildlife movement while the Southfront Road Station Alternative would not affect wildlife movement. Therefore, implementation of the Southfront Road Station Alternative would avoid the impact on wildlife movement that would occur under the proposed Greenville Station.

Operation of the Stone Cut Alignment Alternative would affect wildlife movement to a greater extent compared with the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace. The Stone Cut Alignment Alternative (which would not use a tunnel), compared to the Altamont Alignment (which would use an existing tunnel) would have a larger surface footprint and two active railways in the area parallel to the existing tunnel rather than one, thereby increasing the potential for direct (e.g., increased potential for train strike) and indirect impacts (e.g., reduced habitat suitability) with the area of the Stone Cut Alignment Alternative parallel to the existing tunnel. Implementation of the Stone Cut Alignment Alternative would have a greater impact when compared to the portion of the proposed Altamont Alignment the Stone Cut Alignment Alternative would replace.

The Mountain House Station would affect wildlife movement to a greater extent compared with the Mountain House Station Alternative, which would be closer to the limits of urbanization. Operation of the Mountain House Station Alternative would result in a less-than-significant impact and be less severe compared with operation of the Mountain House Station, which would have a significant unavoidable impact even after mitigation.

Operational activities under the Tracy OMF would have the potential to affect wildlife movement, but to lesser degree than the West Tracy OMF Alternative. The West Tracy OMF Alternative would have higher levels of impact because it would be located in an undisturbed portion of the Altamont Pass, a known wildlife movement corridor. Implementation of the West Tracy OMF Alternative would result in a significant and unavoidable impact and have a greater impact compared with the Tracy OMF, which would have a less-than-significant impact with mitigation.

Neither the proposed Downtown Tracy Station nor alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) would affect wildlife movement. Therefore, there would be no difference between the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) because both would result in no impact on wildlife movement.

Impact BIO-10: Construction of the Proposed Project could conflict with local biological resource policies, including tree preservation policies or ordinances.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)**
	Proposed Project
	Tri-Valley Alignment
	Isabel Station
	Greenville Station
	Interim OMF
	Altamont Alignment
	Owens-Illinois Industrial Lead Variant 1, Single Track
	Owens-Illinois Industrial Lead Variant 2, Double Track
	Mountain House Station
	Tracy OMF
	Tracy to Lathrop Alignment Variant 1, Single Track
	Tracy to Lathrop Alignment Variant 2, Double Track
	Downtown Tracy Station
	River Islands Station
	North Lathrop Station

	Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Stone Cut Alignment Alternative Mountain House Station Alternative West Tracy OMF Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2 **No Impact** Proposed Project Dublin/Pleasanton Station
Mitigation Measures	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible BIO-10.1 Compensate for tree removal during construction
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Construction could conflict with local biological resource policies, including tree preservation policies and ordinances, by removing locally regulated trees during construction. Tree removal is expected during construction as part of ground disturbance. However, construction would avoid tree removal, unless necessary.

Impact Details and Conclusions

Proposed Project

Tri-Valley Segment

Construction of the Tri-Valley Alignment would require widening portions of I-580, which could affect trees at the edges of the highway. These trees are protected by local ordinances. Dublin/ Pleasanton Station would be situated in the middle of the I-580 corridor and therefore would not affect locally protected trees. Isabel Station, Greenville Station, and temporary construction areas would be adjacent to I-580 areas with trees; therefore, these stations and temporary construction areas could affect locally protected trees. Thus, the impacts of the Tri-Valley Alignment, Isabel Station, and Greenville Station would be potentially significant. No impact would occur at the Dublin/Pleasanton Station because there are no trees at the Dublin/Pleasanton Station that could be affected during construction.

Altamont Segment

Construction of the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track) would require ground disturbance that could result in the removal of trees at the edge of the existing trackbed. These trees are protected by local ordinances. The Interim OMF, Mountain House Station, and Tracy OMF would be primarily in areas that are undeveloped or cropland. There are few trees in this area; however, construction of this proposed station and OMFs could affect a small number of locally protected trees. Therefore, the impacts of the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and the Owens-Illinois Industrial Lead Variant 2, Double Track); Interim OMF; Mountain House Station; and Tracy OMF would be potentially significant.

Tracy to Lathrop Segment

Construction of the Tracy to Lathrop Alignment Variant 1, Single Track and the Tracy to Lathrop Alignment Variant 2, Double Track would require ground disturbance that could result in the removal of trees at the edge of the existing tracks. These trees are protected by local ordinances. Downtown Tracy Station is largely situated within a developed area, River Islands Station is largely situated in cropland areas, North Lathrop Station is in a developed area. These stations would affect a small number of locally protected trees. Therefore, the impacts of the Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station would be potentially significant.

Alternatives Analyzed at Equal Level of Detail

The Southfront Road Station Alternative would be adjacent to I-580 areas with trees. The Stone Cut Alignment Alternative would require ground disturbance that could result in the removal of trees at the edge of the existing trackbed. The Mountain House Station Alternative and West Tracy OMF Alternative would be primarily in areas that are undeveloped or cropland. The Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2 are largely situated within a developed area. Construction of these alternative stations, alignment, and OMF could affect a small number of locally protected trees. Therefore, the impacts of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would be potentially significant.

Mitigation Measures

Implementation of Mitigation Measures BIO-2.1 and BIO-10.1 would apply to all of the proposed alignments, stations, and OMFs except for the Dublin/Pleasanton Station. Refer to the description of Mitigation Measures BIO-2.1 and BIO-10.1 in Section 3.4.4.4, *Mitigation Measures*, which also notes which mitigation measures apply to which proposed alignments, stations, and OMFs. In addition, Mitigation Measures BIO-2.1 and BIO-10.1 would apply to the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2.

Significance with Application of Mitigation

Implementation of Mitigation Measures BIO-2.1 and BIO-10.1 would require compensation for removed trees, using ratios derived from applicable local ordinances. This mitigation would require replacement trees and reduce the impact of tree removal from the Proposed Project to a less than significant level. In addition, for the same reasons listed above, implementation of Mitigation Measures BIO-2.1 and BIO-10.1 would reduce the impact from the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 to a less than significant level.

Comparison of Alternatives

Implementation of the alternative stations, alignment, and OMF (Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) instead of the proposed stations, alignment, and OMF (Greenville Station, portion of the Altamont

Alignment, Mountain House Station, Tracy OMF, and Downtown Tracy Station) would affect a similar number of locally protected trees. Therefore, the impact would not be different with the alternative stations, alignment, and OMF instead of the proposed stations, alignment, and OMF. Overall, construction of the alternative stations, alignment, and OMF would result in the same less-than-significant impact after implementation of mitigation as the proposed stations, alignment, and OMF.

Impact BIO-11: Operation of the Proposed Project would not conflict with local biological resource policies, including tree preservation policies or ordinances.

Level of Impact	**Less than Significant**
Mitigation Measures	**None required**

Impact Details and Conclusions

Most tree removal would occur during construction. Routine vegetation management, including tree pruning for ROW clearances associated with operations, would occur entirely within areas that were previously disturbed and cleared during construction. Vegetation management required for ROW clearances would be similar to existing practices. This includes routinely pruning trees in areas that would be considered permanently affected by construction. The impact from routine vegetation management, including tree pruning, for ROW clearances associated with operations would be similar for the three segments. During operation, tree removal is not anticipated to change substantially with respect to existing conditions. This impact would be less than significant for the Proposed Project, and no mitigation is required.

For the same reasons identified above, operation and maintenance of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would result in a less-than-significant impact, and no mitigation is required. Thus, there would be no difference in impact between the implementation of the alternative stations, alignment, and OMF (Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) instead of the proposed stations, alignment, and OMF (Greenville Station, portion of the Altamont Alignment, Mountain House Station, Tracy OMF, and Downtown Tracy Station).

Impact BIO-12: Construction of the Proposed Project could conflict with provisions of adopted habitat conservation plans, natural community conservation plans, or approved local, regional, or state habitat conservation plans.

Level of Impact Prior to Mitigation	**Potentially Significant (mitigation required)** <u>Proposed Project</u> Altamont Alignment Owens-Illinois Industrial Lead Variant 1, Single Track Owens-Illinois Industrial Lead Variant 2, Double Track Mountain House Station Tracy OMF Tracy to Lathrop Alignment Variant 1, Single Track Tracy to Lathrop Alignment Variant 2, Double Track Downtown Tracy Station River Islands Station

	North Lathrop Station Alternatives Analyzed at an Equal Level of Detail Mountain House Station Alternative Downtown Tracy Station Parking Alternative 1 Downtown Tracy Station Parking Alternative 2 West Tracy OMF Alternative **No Impact** Proposed Project Tri-Valley Alignment Dublin/Pleasanton Station Isabel Station Greenville Station Interim OMF Alternatives Analyzed at an Equal Level of Detail Southfront Road Station Alternative Stone Cut Alignment Alternative
Mitigation Measures	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible
Level of Impact after Mitigation	**Less than Significant**

Impact Characterization

Portions of the Proposed Project traverse the SJMSCP, which is an adopted HCP that covers all of San Joaquin County. Construction of the Proposed Project could conflict with this adopted HCP through vegetation removal and ground disturbance, which could affect biological resources (e.g., special-status species, sensitive land cover, wetlands and aquatic resources) that are covered by the plan. Coverage for the Proposed Project under this HCP would be sought; if it cannot be obtained, ESA and CESA coverage, consistent with this HCP, would be obtained through USFWS/NMFS and CDFW consultation and permits.

Portions of the Proposed Project also traverse the EACCS in Alameda County; however, the EACCS is not an adopted HCP or NCCP. The EACCS enables local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives. It enables local projects to be implemented using consistent and standardized mitigation requirements. Project proponents can choose not to follow the guidelines in the EACCS. As with the SJMSCP, coverage under the EACCS would be sought for the Proposed Project. If it cannot be obtained, ESA and CESA coverage, consistent with the EACCS, would be obtained through USFWS/NMFS and CDFW consultation and permits. Because there are no requirements to comply with the EACCS, no impacts are associated with conflicts with the EACCS. This impact is not discussed further.

Impact Details and Conclusions

Proposed Project

Tri-Valley Segment

The Tri-Valley segment is not in an area that is covered by adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. The Tri-Valley Alignment, Dublin/Pleasanton Station, Isabel

Station, and Greenville Station are not in an area that is covered by adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. Therefore, the Tri-Valley Alignment, Dublin/Pleasanton Station, Isabel Station, and Greenville Station would have no impact with respect to conflicts with the provisions in adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions.

Altamont Segment

The Interim OMF would not be in an area covered by adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. Therefore, the Interim OMF would have no impact with respect to conflicts with the provisions in adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions.

The SJMSCP includes all of San Joaquin County, except for federally owned land. Portions of the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); and the entirety of Mountain House Station and Tracy OMF would be in San Joaquin County and, therefore, within the SJMSCP HCP coverage area. Construction of the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Mountain House Station; and Tracy OMF could conflict with the provisions in the approved SJMSCP HCP. This conflict is a potentially significant impact.

Tracy to Lathrop Segment

The SJMSCP includes all of San Joaquin County, except for federally owned land. The SJMSCP covers the entirety of the Tracy to Lathrop segment. The Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station would be in San Joaquin County and, therefore, within the SJMSCP HCP coverage area. Construction of Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station could conflict with the provisions in the approved SJMSCP HCP. This conflict is a potentially significant impact.

Alternatives Analyzed at an Equal Level of Detail

The Southfront Road Station Alternative and Stone Cut Alignment Alternative are not in an area that is covered by adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. Therefore, the Southfront Road Station Alternative and Stone Cut Alignment Alternative would have no impact with respect to conflicts with the provisions in adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions.

The entirety of the Mountain House Station Alternative; West Tracy OMF Alternative; Downtown Tracy Station Parking Alternative 1; and Downtown Tracy Station Parking Alternative 2 would be in San Joaquin County and, therefore, within the SJMSCP HCP coverage area. Construction of the Mountain House Station Alternative; West Tracy OMF Alternative; Downtown Tracy Station Parking Alternative 1; and Downtown Tracy Station Parking Alternative 2 could conflict with the provisions in the approved SJMSCP HCP. This conflict is a potentially significant impact.

Mitigation Measures

Mitigation Measures BIO-2.1 would apply to the Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station for potential conflicts with the provisions in the approved SJMSCP. A description of Mitigation Measure BIO-2.1 is presented in Section 3.4.4.4, *Mitigation Measures*.

Mitigation Measures BIO-2.1 would also apply for the Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2.

Significance with Application of Mitigation

Implementation of Mitigation Measure BIO-2.1 would avoid conflicts with the approved SJMSCP HCP and compensate for impacts, consistent with the SJMSCP HCP. Therefore, impacts from the Proposed Project, due to the following proposed alignments, stations, and OMF would be less than significant with implementation of this mitigation measure: Altamont Alignment (including the Owens-Illinois Industrial Lead Variant 1, Single Track and Owens-Illinois Industrial Lead Variant 2, Double Track); Mountain House Station; Tracy OMF; Tracy to Lathrop Alignment Variant 1, Single Track; Tracy to Lathrop Alignment Variant 2, Double Track; Downtown Tracy Station; River Islands Station; and North Lathrop Station.

For the same reasons, implementation of Mitigation Measure BIO-2.1 would minimize the impacts from the following alternative stations and OMF to a less-than-significant level: Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2.

Comparison of Alternatives

Implementation of the Southfront Road Station Alternative instead of the proposed Greenville Station would not change the impact associated with conflicts with adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. Neither the proposed Greenville Station or the Southfront Road Station Alternative would be within an area covered by an adopted HCP or NCCP. Therefore, implementation of the Southfront Road Station Alternative would result in the same no impact as the proposed Greenville Station.

Implementation of the Stone Cut Alignment Alternative instead of the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace would not change the impact associated with conflicts with adopted HCPs, NCCPs, or approved local, regional, or state HCP provisions. Neither the Stone Cut Alignment Alternative nor the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace would be within an area covered by an adopted HCP or NCCP. Therefore, implementation of the Stone Cut Alignment Alternative would result in the same no impact as the portion of the proposed Altamont Alignment that the Stone Cut Alignment Alternative would replace.

The Mountain House Station Alternative and the proposed Mountain House Station would both be located in the SJMSCP HCP coverage area. Both the Mountain House Station Alternative and the proposed Mountain House Station could affect species covered by the SJMSCP HCP. The Mountain

House Station Alternative would have fewer impacts than Mountain House Station. Nonetheless, the proposed Mountain House Station and the Mountain House Station Alternative would both result in a less-than-significant impact after implementation of Mitigation Measure BIO-2.1.

The West Tracy OMF Alternative and the proposed Tracy OMF would both be located in the SJMSCP HCP coverage area. Both the West Tracy OMF Alternative and the proposed Tracy OMF could affect species covered by the SJMSCP HCP. Therefore, the proposed Tracy OMF and the West Tracy OMF Alternative would both have a less-than-significant impact after implementation of Mitigation Measure BIO-2.1.

The Downtown Tracy Station Parking Alternative 1, Downtown Tracy Station Parking Alternative 2, and the proposed Downtown Tracy Station would be located in the SJMSCP HCP coverage area. Both the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) and the proposed Downtown Tracy Station could affect the same species covered by the SJMSCP HCP, since they are located at the same site. Therefore, the proposed Downtown Tracy Station and the alternative stations (Downtown Tracy Station Parking Alternative 1 and Downtown Tracy Station Parking Alternative 2) would both have a less-than-significant impact after implementation of Mitigation Measure BIO-2.1.

Impact BIO-13: Operation of the Proposed Project would not conflict with provisions of adopted habitat conservation plans, natural community conservation plans, or approved local, regional, or state habitat conservation plans.

Level of Impact	**No impact**
Mitigation Measures	**None required**

Impact Details and Conclusion

Operation of the Proposed Project would result in increased train traffic within the SJMSCP HCP coverage area. Operational impacts from the Proposed Project and the alternatives analyzed at an equal level of detail would be limited to increased train traffic within San Joaquin County. Increased train traffic would not conflict with the provisions in the SJMSCP HCP; therefore, no impact would occur.

For the same reasons identified above, operation of the Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2 would result in no impact. Thus, there would be no difference in impact between the implementation of the alternative stations, alignment, and OMF (Southfront Road Station Alternative, Stone Cut Alignment Alternative, Mountain House Station Alternative, West Tracy OMF Alternative, Downtown Tracy Station Parking Alternative 1, and Downtown Tracy Station Parking Alternative 2) instead of the proposed stations, alignment, and OMF (Greenville Station, portion of the Altamont Alignment, Mountain House Station, Tracy OMF, Downtown Tracy Station).

3.4.4.4 Mitigation Measures

Mitigation measures are identified below. Table 3.4-11 identifies which mitigation measures would apply to which proposed alignment; proposed or alternative stations; and proposed or alternative OMF. Table 3.14-12 specifies when these mitigation measures would be implemented.

Table 3.4-11. Summary of Required Mitigation Measures for Biological Resources

Mitigation Measure	Tri-Valley Alignment	Dublin/Pleasanton Station	Isabel Station	Southfront Road Station Alternative	Greenville Station	Altamont Alignment	Owens-Illinois Industrial Lead variant 1, single track	Owens-Illinois Industrial Lead variant 2, double track	Stone Cut Alignment Alternative	Mountain House Station	Mountain House Station Alternative	West Tracy OMF Alternative	Tracy OMF	Interim OMF	Tracy to Lathrop Alignment Variant 1, Single Track	Tracy to Lathrop Alignment Variant 2, Double Track	Downtown Tracy Station and Parking Alternatives	River Islands Station	North Lathrop Station
BIO-1.1: Conduct preconstruction surveys for special-status plant species	x	—	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	—
BIO-1.2: Prepare a salvage, relocation, or propagation and monitoring plan for special-status plant species	x	—	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	—
BIO-1.3: Document affected special-status plant species	x	—	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	—
BIO-1.4: Prevent introduction or spread of invasive plant species	x	—	x	—	x	x	x	x	x	x	x	x	x	x	x	x	—	x	—
BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-2.2: Conduct a worker environmental training program for construction personnel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible	—	—	—	—	—	x	x	x	—	—	—	—	—	—	x	x	—	—	—
BIO-2.4: Implement seasonal restrictions for in-water work as feasible	—	—	—	—	—	x	x	x	—	—	—	—	—	—	x	x	—	—	—
BIO-2.5: Protect wetlands during construction	x	—	x	—	x	x	x	x	x	—	x	x	x	x	x	x	—	x	—
BIO-2.6: Protect sensitive natural communities, including riparian habitat and salt grass flats, during construction	x	—	x	—	x	x	x	x	x	—	—	x	—	x	x	x	—	x	—
BIO-2.7: Protect vernal pool–endemic species	x	—	—	—	x	x	x	x	x	—	—	—	—	—	—	—	—	—	—
BIO-2.8: Protect valley elderberry longhorn beetle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	x	—	x	—
BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog	x	—	x	—	x	x	x	x	x	x	x	x	—	x	x	x	—	—	—
BIO-2.10- Protect foothill yellow-legged frog	x	—	x	—	—	x	x	x	x	—	—	—	—	—	x	x	—	—	—
BIO-2.11: Protect western pond turtle and giant garter snake	x[a]	—	x[a]	—	x[a]	x[a]	x[a]	x[a]	—	—	—	—	—	—	x	x	—	—	—
BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip	x	—	—	—	x	x	x	x	x	x	x	x	—	—	x	x	x	—	—
BIO-2.13: Protect special-status and non-special-status nesting birds	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-2.14: Protect golden eagles	x	—	—	—	—	x	x	x	x	x	x	x	—	—	x	x	—	—	—
BIO-2.15: Protect Swainson's hawk nests	x	—	—	—	—	x	x	x	x	—	x	—	x	—	x	x	—	x	x
BIO-2.16: Compensate for Swainson's hawk foraging habitat loss	—	—	—	—	—	x	x	x	x	x	x	—	—	—	x	x	—	x	—
BIO-2.17: Protect burrowing owls and burrowing owl habitat	x	—	x	x	x	x	x	x	x	x	x	x	—	—	—	—	x	x	x

Mitigation Measure	Tri-Valley Alignment	Dublin/Pleasanton Station	Isabel Station	Southfront Road Station Alternative	Greenville Station	Altamont Alignment	Owens-Illinois Industrial Lead variant 1, single track	Owens-Illinois Industrial Lead variant 2, double track	Stone Cut Alignment Alternative	Mountain House Station	Mountain House Station Alternative	West Tracy OMF Alternative	Tracy OMF	Interim OMF	Tracy to Lathrop Alignment Variant 1, Single Track	Tracy to Lathrop Alignment Variant 2, Double Track	Downtown Tracy Station and Parking Alternatives	River Islands Station	North Lathrop Station
BIO-2.18: Compensate for burrowing owl habitat loss	x	—	x	x	x	x	x	x	x	x	x	x	x	—	x	x	x	x	x
BIO-2.19: Protect special-status and non-special-status roosting bats	x	x	x	x	x	x	x	x	x	—	x	—	x	—	x	x	x	x	x
BIO-2.20: Protect riparian brush rabbit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—
BIO-2.21: Compensate for riparian brush rabbit habitat loss	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—
BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat	x	—	—	—	—	x	x	x	x	x	x[b]	x	x[b]	—	x[b]	x[b]	—	x[b]	x[b]
BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss	x	—	—	—	—	x	x	x	x	x	x	x	x	—	x	x	—	x	x
BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources	x	—	—	—	—	x	x	x	x	x	x	x	x	—	x	x	—	x	x
BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss	x	—	—	—	—	x	x	x	x	x	x	x	x	—	x	x	—	x	x
BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—
BIO-4.1: Protect nesting birds during maintenance activities	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-4.2: Protect roosting bats during maintenance activities	—	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-4.3: Minimize permanent intermittent impacts on avian and bat wildlife species due to the Altamont OCS and aerial structures	—	—	—	—	—	x	x	x	x	—	—	—	—	—	—	—	—	—	—
BIO-4.4: Implement removal of carrion that may attract raptors and carnivores	—	—	—	—	—	x	x	x	x	—	—	—	—	—	—	—	—	—	—
BIO-4.5: Avoid use of second-generation anticoagulant rodenticides	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction	x	—	—	—	x	x	x	x	x	—	x	x	—	x	x	x	—	x	—
BIO-7.1: Compensate for loss of riparian habitat	x	—	x	—	—	x	x	x	—	—	—	—	—	—	x	x	—	x	—
BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)	x	—	—	—	x	x	x	x	—	—	—	—	—	—	—	—	—	—	—
BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement	—	—	x	—	x	—	—	—	x	x	—	x	—	x	—	—	—	—	—
BIO-8.2: Install station lighting controls and fencing limitations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mitigation Measure	Tri-Valley Alignment	Dublin/Pleasanton Station	Isabel Station	Southfront Road Station Alternative	Greenville Station	Altamont Alignment	Owens-Illinois Industrial Lead variant 1, single track	Owens-Illinois Industrial Lead variant 2, double track	Stone Cut Alignment Alternative	Mountain House Station	Mountain House Station Alternative	West Tracy OMF Alternative	Tracy OMF	Interim OMF	Tracy to Lathrop Alignment Variant 1, Single Track	Tracy to Lathrop Alignment Variant 2, Double Track	Downtown Tracy Station and Parking Alternatives	River Islands Station	North Lathrop Station
BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative	—	—	—	—	—	x	x	x	x	x	x	x	—	—	—	—	—	—	—
BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	x	—	—	—
BIO-10.1 Compensate for tree removal during construction	x	—	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

[a] Only the portion of this mitigation measure that relates to western pond turtle applies at these proposed or alternative facilities.
[b] Only the portion of this mitigation measure that relates to American badger and San Joaquin kit fox applies at these proposed or alternative facilities.

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Table 3.4-12. Timing for Mitigation Measures

Mitigation Measure	Timing	Notes
BIO-1.1: Conduct preconstruction surveys for special-status plant species	Preconstruction	Complete surveys at least 1 to 2 years (minimum 1 year) before construction
BIO-1.2: Prepare a salvage, relocation, or propagation and monitoring plan for special-status plant species	Preconstruction	Prepare Plan at least 1 year prior to construction
	During construction	Salvage, relocate and propagate during construction
	Post-construction	Monitor for at least 5 years after construction
BIO-1.3: Document affected special-status plant species	Preconstruction	Document condition prior to construction
	During construction	Document effects during construction
BIO-1.4: Prevent introduction or spread of invasive plant species	During construction	Implement controls during construction
	Post-construction	Conduct post-construction monitoring within 1 year after construction and remediate if necessary
BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible	Preconstruction (permitting phase)	Obtain coverage from HCP/NCCP or other plans prior to construction and arrange for compensatory mitigation prior to construction
BIO-2.2: Conduct a worker environmental training program for construction personnel	Preconstruction	Develop training program prior to construction
	During construction	Implement training during construction
BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible	Preconstruction	Include pile driving specifications in contracts
	During construction	Implement during construction
BIO-2.4: Implement seasonal restrictions for in-water work as feasible	During construction	Apply seasonal work windows
BIO-2.5: Protect wetlands during construction	Preconstruction (permitting phase)	Complete verified delineation prior to permitting
	During construction	Fence/mark avoidable sensitive areas and protect during construction
BIO-2.6: Protect sensitive natural communities, including riparian habitat and salt grass flats, during construction	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction
BIO-2.7: Protect vernal pool–endemic species	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction

Mitigation Measure	Timing	Notes
BIO-2.8: Protect valley elderberry longhorn beetle	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction
BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction; apply seasonal restrictions
BIO-2.10- Protect foothill yellow-legged frog	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction; apply seasonal restrictions
BIO-2.11: Protect western pond turtle and giant garter snake	During construction	Immediately prior to construction in sensitive areas, identify/fence/mark avoidable sensitive areas and protect during construction; apply seasonal restrictions
BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip	During construction	Fence around avoidable sensitive areas and protect during construction by specific measures in this mitigation measure
BIO-2.13: Protect special-status and non-special-status nesting birds	During construction	Survey for nests prior to proposed disturbance; Implement buffers around nests; seasonal restrictions around nests
BIO-2.14: Protect golden eagles	During construction	Survey for nests prior to proposed disturbance; Implement buffers around nests; seasonal restrictions around nests.
BIO-2.15: Protect Swainson's hawk nests	During construction	Survey for nests prior to proposed disturbance; Implement buffers around nests; seasonal restrictions around nests.
BIO-2.16: Compensate for Swainson's hawk foraging habitat loss	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
BIO-2.17: Protect burrowing owls and burrowing owl habitat	During construction	Survey for nests in the year prior to construction, 14 days prior and 24 hours prior to proposed disturbance; Implement buffers around nests; apply seasonal restrictions
BIO-2.18: Compensate for burrowing owl habitat loss	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	For preservation areas, monitoring for at least 5 years after establishment
BIO-2.19: Protect special-status and non-special-status roosting bats	During construction	Survey for bats prior to proposed disturbance; Implement buffers around nests; apply seasonal restrictions
BIO-2.20: Protect riparian brush rabbit	During construction	Survey for rabbits prior to proposed disturbance; Implement buffers around nests; apply seasonal restrictions

Mitigation Measure	Timing	Notes
BIO-2.21: Compensate for riparian brush rabbit habitat loss	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	For preservation areas, monitoring for at least 10 years after establishment
BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat	Preconstruction	Within no more than 1 year, but at least 3 months prior to construction, survey for dens, survey dens again between 14 and 30 days before construction in each environmental footprint and survey buffer.
	During construction	Apply exclusion fencing
BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-Construction	For preservation areas monitoring for at least 5 years after establishment
BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources	Preconstruction	Surveys for bumble bee prior to proposed disturbance; implement buffers around nests
	During construction	Apply no disturbance buffers
BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	For preservation areas monitoring for at least 3 years after establishment
BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish	Preconstruction	Plan must be developed before construction and approved by agencies
	During construction	Implemented during construction
BIO-4.1: Protect nesting birds during maintenance activities	Operation	Survey for bats prior to proposed disturbance; implement buffers around nests; apply seasonal restrictions
BIO-4.2: Protect roosting bats during maintenance activities	Operation	Survey for bats prior to proposed disturbance; implement buffers around nests; apply seasonal restrictions
BIO-4.3: Minimize permanent intermittent impacts on avian and bat wildlife species due to the Altamont OCS and aerial structures	Preconstruction	Include in design requirements
BIO-4.4: Implement removal of carrion that may attract raptors and carnivores	Operation	Survey for and remove carcass (carrion) within the right-of-way
	Pre-construction	Include in design requirements

Mitigation Measure	Timing	Notes
BIO-4.5: Avoid use of second-generation anticoagulant rodenticides	Operations	Implement after construction
BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	If restoration, monitor for success for up to 5 years
BIO-7.1: Compensate for loss of riparian habitat	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	If restoration, monitor for success for up to 5 years
BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)	Preconstruction (permitting phase)	Arrange for compensatory mitigation prior to construction
	Post-construction	If restoration, monitor for success for up to 5 years
BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement	Preconstruction	Include in design requirements
BIO-8.2: Install station lighting controls and fencing limitations	Preconstruction	Include in design requirements
BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road	Preconstruction	Surveys for at least 2 years prior to construction, design improvements, and obtain agency approval prior to construction
	During construction	Implement during construction
BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative	Preconstruction	Design improvements and obtain agency approval prior to construction
	During construction	Implement during construction
BIO-10.1 Compensate for tree removal during construction	Preconstruction	Survey for individual trees and prepare replacement plan prior to construction
	During construction	Implement replacement during construction
	Post-construction	Implement replacement after construction and monitor for at least 2 to 3 years (depending on the jurisdiction)

Mitigation Measure BIO-1.1: Conduct preconstruction surveys for special-status plant species

The Authority will retain a qualified botanist to conduct preconstruction surveys for special-status plant species specified in Table 3.4-2. During appropriate species-specific identification periods at least 1 year prior to the initiation of construction, the qualified botanist will survey suitable habitat in the work areas for the species, in accordance with CDFW protocols (California Department of Fish and Wildlife 2018b). The results of the surveys, which will require multiple visits because of varying blooming periods and differences in work area construction initiation, will be documented in brief reports or technical memoranda. If the survey demonstrates the absence of special-status plant species in the improvements area, no further actions will be required.

Mitigation Measure BIO-1.2: Prepare a salvage, relocation, or propagation and monitoring plan for special-status plant species

If the protocol-level botanical survey reveals the presence of special-status plant species in the study area, the Authority will notify USFWS and/or CDFW. A qualified botanist or restoration ecologist will prepare a salvage, relocation, or propagation and monitoring plan in coordination with USFWS and/or CDFW prior to construction to address affected special-status plant species. The plan will include provisions to address the techniques, locations, and procedures required for successful establishment of plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and annual reporting requirements. The performance standards below will apply.

Monitoring and success criteria applicable to special-status plant salvage, relocation, or propagation will require the following:

- At least two surveys must be conducted by a qualified botanist or ecologist per monitoring year.
- At least 80 percent of the planted area must support a vegetation composition and density consistent with reference population conditions.
- At least 80 percent of the planted area must support target species amounts similar to reference feature conditions.
- A minimum of 5 consecutive years of monitoring must be completed to ensure that the success criteria are met.
- Remedial actions must be completed to restore the intended ecological function of planted areas that fail to meet the success criteria for 3 consecutive years.

Mitigation Measure BIO-1.3: Document affected special-status plant species

All directly affected areas with special-status plants will be documented by a qualified botanist or ecologist who will be retained by the Authority prior to impacts. Documentation will include density and percent cover; key habitat characteristics, including soil type, associated species, hydrology, and topography; and photographs of preconstruction conditions.

Mitigation Measure BIO-1.4: Prevent introduction or spread of invasive plant species

The Authority will implement the following actions to avoid and minimize the spread or introduction of invasive plant species:

- Clean construction equipment and vehicles in a designated wash area prior to entering and exiting the construction site.
- Educate construction supervisors and managers about invasive plant identification and the importance of controlling and preventing the spread of invasive plant infestations.
- Treat small, isolated infestations with eradication methods that have been approved by or developed in conjunction with CDFW and USFWS to prevent or destroy viable plant parts or seeds.
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use native, noninvasive species or nonpersistent hybrids in erosion-control plantings to stabilize site conditions and prevent invasive plant species from colonizing.
- Use weed-free imported erosion-control materials (or rice straw) in upland areas.

One year after construction, conduct a monitoring visit to each active or previously active (within 1 year) improvement footprint to ensure that no new occurrences of invasive plant species not previously present have become established.

Mitigation Measure BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible

The Authority will either obtain coverage through the applicable HCP, NCCP, or other biological conservation plan, where applicable, or follow the guidance in these conservation plans and strategies in developing compensatory mitigation strategies. Construction activities within Alameda County will either obtain compensatory habitat mitigation through the EACCS or use the mitigation prescribed in the EACCS as a basis for mitigation and obtain coverage under separate applicable state and federal permits from CDFW and USFWS. Similarly, construction within San Joaquin County will either obtain compensatory habitat mitigation through the SJMSCP or use the mitigation prescribed in the SJMSCP as a basis for mitigation and obtain coverage under separate applicable state and federal permits from CDFW and USFWS. The Authority will be responsible for acquiring, funding, monitoring, restoring, enhancing, reporting, and implementing compensatory habitat mitigation and contingency actions per the applicable state and federal permits.

The Authority will implement compensatory mitigation for impacts on habitat for the species listed below, under or consistent with the region-specific plan, at the corresponding mitigation ratios, if impacts occur outside of the plan coverage areas. Impacts that occur within the region-specific plan coverage areas will be mitigated at amounts consistent with the respective plan.

- Longhorn fairy shrimp and vernal pool fairy shrimp—10:1 ratio (mitigation area to impact area)
- Valley elderberry longhorn beetle—3:1
- California tiger salamander and California red-legged frog—3:1
- Giant garter snake—3:1

- Swainson's hawk (includes foraging habitat in the San Joaquin Valley)—1:1 to 0.25:1, (dependent on nest location)
- Burrowing owl—3:1
- Riparian brush rabbit—3:1
- San Joaquin kit fox and American badger—3:1

Mitigation Measure BIO-2.2: Conduct a worker environmental training program for construction personnel

Before any equipment staging, grading, or vegetation removal in areas supporting or potentially supporting sensitive biological resources (e.g., aquatic, riparian, and wetlands habitat; habitat for special-status wildlife species; active bird nests, active bat roosts), the Authority will prepare and implement a worker environmental awareness training program. The training program will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid effects on sensitive biological resources and penalties for not complying with applicable state and federal laws and permit requirements. The training program will be delivered by a biologist and include information on the life history and habitat requirements of special-status species potentially occurring in or adjacent to the improvements footprint, the importance of protecting habitat, and the terms and conditions of the BOs and other applicable permits. The training program will also cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during construction.

Mitigation Measure BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible

Potential injury and mortality associated with pile driving, which may be required for the pile installation for the new and replacement bridges, will be minimized by implementing the measures listed below.

The contractor will be required to implement the following measures, developed in coordination with the design engineers, to minimize the exposure of special-status fish and aquatic wildlife species to potentially harmful underwater sounds:

- If feasible, the contractor will vibrate all piles to the maximum depth possible before using an impact hammer.
- During impact driving, the contractor will limit the number of strikes per day to the minimum necessary to complete the work.
- The smallest pile driver and minimum force necessary will be used to complete the work.
- During impact driving, the contractor will be required to use a bubble ring or similar device to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded.
- Pile driving activity will not occur at night.
- If feasible, in-water work will occur behind a dewatered cofferdam. A biologist will be present at initial dewatering to salvage and rescue any stranded fish and/or wildlife.

Mitigation Measure BIO-2.4: Implement seasonal restrictions for in-water work as feasible

There will be a construction work window of June 15 to October 15 for all work within creek and river channels. This time period will minimize impacts on migrating special-status fish species, such as adult steelhead and Chinook salmon. In-water work within flowing streams will dewater only up to half of the wetted stream at any time to allow fish passage.

Seasonal restrictions for in-water work are also applicable to special-status aquatic wildlife species.

Mitigation Measure BIO-2.5: Protect wetlands during construction

The Authority will ensure that a qualified resource specialist (i.e., wetland biologist, ecologist, soil scientist) will clearly identify wetland areas to be preserved abutting construction areas and wetland areas outside of the direct construction area, with high-visibility construction fencing or markers (e.g., lathe or pin flags) before site preparation. Construction will not encroach upon jurisdictional wetlands to be preserved that are identified by the resource specialist. The resource specialist will use the Project's verified wetland delineation to confirm the location of wetland boundaries, based on existing conditions at the time of the avoidance marking. Exclusion fencing or markers will be installed before construction activities are initiated, and the fencing will be maintained throughout the construction period. No construction activity, traffic, equipment, or materials will be permitted in fenced wetland areas to be preserved. Exclusion fencing and markers will be removed following the completion of construction activities.

All conditions imposed by the state and federal permits will be implemented. The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.

Mitigation Measure BIO-2.6: Protect sensitive natural communities, including riparian habitat, during construction

The Authority will ensure that a qualified resource specialist (i.e., biologist, botanist, ecologist, soil scientist) will clearly identify sensitive natural communities, including riparian habitat, to be preserved abutting the construction areas and outside of the direct construction area with high-visibility construction fencing or markers (e.g., lathe or pin flags) before site preparation. Construction will not encroach upon sensitive natural communities identified by the resource specialist to be preserved. The resource specialist will use the verified wetland delineation, soils data, and land cover data to confirm the location of sensitive natural community boundaries, based on existing conditions at the time of the avoidance marking. Exclusion fencing or markers will be installed before construction activities are initiated, and the fencing will be maintained throughout the construction period within the segment. No construction activity, traffic, equipment, or materials will be permitted in fenced sensitive natural community areas to be preserved. Exclusion fencing and markers will be removed following completion of construction activities.

All conditions imposed by the state and federal permits will be implemented. The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.

Mitigation Measure BIO-2.7: Protect vernal pool–endemic species

If any work remains to be completed after the start of the rainy season (October 15 to June 1), the Authority or its contractor will install exclusion fencing and erosion control measures prior to any ground disturbance within 50 feet of wetlands and vernal pools under the guidance of an agency-approved biologist. The fencing will be installed around the perimeter of vernal pools and other seasonal wetlands. The contractor, under the supervision of the biologist, will erect and maintain the exclusion fencing.

Mitigation Measure BIO-2.8: Protect valley elderberry longhorn beetle

Before ground disturbance within 165 feet of any elderberry shrubs (U.S. Fish and Wildlife Service 2017a) to be preserved, a biologist will identify any shrubs in and along improvement areas with potential to support valley elderberry longhorn beetle, and the Authority or its contractor will establish a 20-foot buffer between shrubs and the environmental footprints by installing concrete barriers (K-rails) at locations where daily construction activities will persist for more than 4 weeks or temporary orange construction fencing (4-foot-high commercial-quality woven polypropylene). Within buffer areas, signs will be posted along fencing for the duration of construction. The signs will contain the following text:

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

Buffers around elderberry shrubs or clusters of shrubs will be inspected weekly by the qualified biologist during ground-disturbing activities and monthly after ground-disturbing activities until construction is complete or until the fences are removed, as approved by the biologist and the resident engineer. The biologist will be responsible for ensuring that the contractor maintains the buffer area fences around elderberry shrubs throughout construction. The monitor will provide monthly biological inspection reports to the Authority and USFWS.

The Authority will ensure that the construction area is watered down as necessary to prevent fugitive dust from becoming airborne and accumulating on elderberry shrubs in environmental footprints and adjacent to construction areas activities (including unpaved access routes).

Mitigation Measure BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog

The Authority will retain a USFWS- and/or CDFW-approved biologist (as appropriate) to identify and flag (pin flags or 4-foot lath) all suitable aquatic habitat to be preserved for California tiger salamander, western spadefoot toad, and California red-legged frog outside of, but adjacent to, environmental footprints and ground-disturbance areas prior to staging, vegetation clearing, grading, or other construction activities. The Authority or its contractor will protect habitat areas by installing orange exclusion and erosion control fencing at the maximum practicable distance from the work site or, if feasible, at least 500 feet from the aquatic habitat edge, wet or dry, to make it easily visible by construction crews.

A qualified biologist will conduct a preconstruction survey each morning before construction activities begin and continue to monitor ground-disturbing construction activities where suitable habitat occurs during all phases of construction to remove any California tiger salamander, western spadefoot toads, and California red-legged frogs found in the

environmental footprint. Individual salamanders, toads, and frogs will be moved immediately to a relocation site, a minimum of 300 feet from the construction boundary. The relocation site will be determined in coordination with USFWS and/or CDFW prior to the commencement of construction activities.

Construction activities near drainages and wetland complexes identified as potential movement corridors will take place between July 1 and October 1 when the California tiger salamander, western spadefoot toad, and California red-legged frog are least likely to be present in the construction area.

To discourage California tiger salamander, western spadefoot toad, and California red-legged frogs from entering the construction areas from ditches, ditches will be equipped with lightweight one-way flow gates. These will be designed so that water can easily pass from the construction site to the ditches, but small vertebrates, such as the salamander, toad, or frog, cannot move upstream from ditches to the construction area.

Mitigation Measure BIO-2.10: Protect foothill yellow-legged frog

Within 3 to 5 days prior to entering or working near stream/riparian habitat within foothill yellow-legged frog range, a biologist will survey the construction site for frogs (adults, subadults, tadpoles, or egg masses) and at least 500 feet upstream and downstream (California Department of Fish and Wildlife 2018b). If construction activities are expected to result in effects beyond 500 feet downstream, the CDFW recommends the survey area be extended. If no foothill yellow-legged frogs are found during the survey and no surface water is present in the construction area, work may commence without further surveys. If frogs are detected, individual frogs will be moved immediately to a relocation site that is a minimum of 300 feet from the construction boundary. The relocation site will be determined in coordination with CDFW prior to the commencement of construction activities.

If feasible, construction activities within the stream and riparian habitat will avoid the foothill yellow-legged frog breeding season; the Authority will ensure that activities involving construction and heavy equipment use (e.g., excavation, grading, contouring) that are conducted in streams, ponds, and riparian areas are limited generally to July 15 to October 15, unless otherwise approved by CDFW. Impacts on oviposition sites will be avoided when possible; if avoidance is not possible and surveys confirm egg masses occur in high numbers (e.g., more than 100 eggs masses/kilometer), CDFW will be immediately contacted for further guidance.

Where appropriate, exclusion fencing, as described in the CDFW (2018c) *Considerations for Conserving the Foothill Yellow-legged Frog*, will be installed to prevent frogs from entering the work area.

A qualified biologist will conduct a preconstruction survey each morning before construction activities begin and continue to monitor ground-disturbing construction activities where suitable habitat occurs during all phases of construction to remove any foothill-yellow legged frog found within the active construction work area. Individual yellow-legged frog will be moved immediately to a relocation site that is outside of the construction boundary. The relocation site will be determined in coordination with CDFW prior to the commencement of construction activities.

Mitigation Measure BIO-2.11: Protect western pond turtle and giant garter snake

The Authority will implement the measures listed below to protect western pond turtle and giant garter snake during construction.

Giant garter snake

- Where feasible, construction activities involving construction with heavy equipment use (e.g., excavation, grading, contouring) within suitable giant garter snake habitat will avoid the snake's inactive/dormant period (generally October 2 to April 30).
- To the maximum extent possible, all construction activities within giant garter snake habitat will be conducted during the snake's active period (May 1 to October 1).
- To reduce the likelihood of snakes entering the active construction areas that include or are adjacent to freshwater wetlands, slow-moving riverine aquatic habitat, marshes, ditches, and canals in the Central Valley during construction activities, the Authority or its contractor will install exclusion fencing along the freshwater marsh, aquatic riverine features, and open water areas outside of the environmental footprint (areas within 200 feet of suitable habitat). The exclusion fencing will be installed and maintained for the duration of construction within or adjacent to these features. The fencing will consist of 3- to 4-foot-tall erosion fencing buried at least 6 to 8 inches below the ground. To ensure that construction equipment and personnel do not affect aquatic habitat for giant garter snake outside the construction corridor, a combination of orange barrier fencing will be erected (in addition to the exclusion fencing) to clearly define the aquatic habitat to be avoided.
- A qualified biologist will conduct a preconstruction survey in suitable habitat no more than 24 hours before construction. Prior to construction each morning, construction personnel will inspect exclusion and orange barrier fencing to ensure they are in good condition. Observations of snakes within the environmental footprint and access routes will be immediately reported to the biologist, and all activities will cease until appropriate corrective measures have been completed, the snake leaves the construction site under its own volition, or the biologist determines that the snake will not be harmed. The area undergoing construction will be re-inspected and surveyed by the biologist whenever a lapse in construction activity of 2 weeks or more occurs.
- Any ground-disturbing activities within 200 feet of giant garter snake habitat that occur after October 1 will be monitored by a USFWS- and a CDFW-approved biologist for the duration of the work.
- Vegetation clearing within 200 feet of the banks of potential giant garter snake aquatic habitat will be limited to the minimum area necessary. Giant garter snake habitat outside of but adjacent to the construction areas will be flagged and designated as an environmentally sensitive area to be avoided by all construction personnel.
- The movement of heavy equipment within 200 feet of the banks of potential giant garter snake aquatic habitat will be confined to designated access and haul routes to minimize habitat disturbance.
- Staging areas will be located at least 200 feet from suitable giant garter snake aquatic habitat.

Western pond turtle

- Where feasible, construction activities involving construction with heavy equipment (e.g., excavation, grading, contouring) within suitable western pond turtle upland habitat will avoid the western pond turtle egg laying period (generally mid-May to early July).
- Prior to the start of construction within western pond turtle habitat (i.e., any undeveloped areas within 400 feet of riverine aquatic habitat, ponds, seasonal wetlands), the Authority will retain a biologist approved by the CDFW to survey and handle western pond turtles and conduct preconstruction surveys. Surveys will be conducted at each habitat area no more than 7 days prior to the initiation of ground disturbance at that location.
- If ground-disturbing activities occur during the nesting or overwintering seasons, 1 week before and within 24 hours of beginning work in suitable aquatic habitat, a qualified biologist will conduct surveys for western pond turtle. The surveys will be timed to coincide with the time of day when turtles are most likely to be active (the cooler part of the day between 8:00 a.m. and 12:00 p.m. during spring and summer). Prior to conducting the surveys, the biologist will locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles. Each survey will include a 30-minute wait time after arriving on the site to allow startled turtles to return to open basking areas. The survey will consist of a minimum 15-minute observation time per area where turtles could be observed. If western pond turtles are observed during either survey, a biological monitor will be present during construction activities in the aquatic habitat where the turtle was observed and capture and relocate, if possible, any entrapped turtle. The biological monitor also will be mindful of suitable nesting and overwintering areas in proximity to suitable aquatic habitat and periodically inspect these areas for nests and turtles.

Mitigation Measure BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip

The Authority will implement the measures listed below to protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip during construction.

A qualified biologist will conduct preconstruction surveys and construction monitoring in suitable habitat (i.e., open grassland and scrub with sandy, friable soils) to protect special-status lizards. Prior to construction or restoration activities in California annual grassland, riparian habitat, and California scrub with sandy soils or dense leaf litter, the biologist will conduct a preconstruction survey for special-status reptiles. This survey will include the following steps:

- Ensuring that all motorized vehicles and equipment observe a 5 mph speed limit during construction activities while not on existing rails within the environmental footprints.
- Conducting systematic subsurface searching by raking leaf litter and sandy soil.
- Staking the limits of the construction work areas and fencing them with small-mesh construction fencing, buried to a minimum depth of 6 to 10 inches below the ground, to reduce the likelihood of lizards reentering the active construction area.
- Capturing and releasing special-status lizards into similar nearby habitat areas, as designated by the biologist.
- Removing lizard exclusionary fence following completion of construction.

During construction in special-status lizard habitat, a qualified biologist will be present and have the authority to temporarily stop construction activities if he or she finds California legless lizard, California glossy snake, coast horned lizard, or San Joaquin coachwhip in the environmental footprint. Work will not resume until the biologist has successfully relocated the animals and determined that they would not be harmed by construction.

Mitigation Measure BIO-2.13: Protect special-status and non-special-status nesting birds

To the maximum extent feasible, the Authority will schedule vegetation removal (e.g., tree removal, herbaceous plant removal, mowing, control burn) during the nonbreeding season of birds (September 1–January 31). If vegetation removal cannot be removed in accordance with this timeframe, preconstruction surveys for nesting birds and additional protective measures will be implemented, as described below.

Authority or its contractor will conduct construction activities outside the bird nesting season (February 1 to August 31) to the extent feasible. If construction activities are unavoidable, Authority or its contractor will retain a qualified wildlife biologist with demonstrated nest-searching experience to conduct preconstruction surveys for nesting birds (including raptors but excluding golden eagle, Swainson's hawk, and burrowing owl, which have separate mitigation measures below) within 300 feet of the active construction work area. A 300-foot survey buffer will be used for raptors and a 100-foot radius for passerines. Adjacent lands outside the active construction work area will be scanned with binoculars from the limit of ground disturbance, the UPRR ROW, and publicly accessible areas. Preconstruction surveys will occur no more than 7 days prior to the onset of ground-disturbing activities (including clearing, grubbing, and staging) at each construction area. If active nests are found in the active construction work area, the biologist will establish a no-disturbance buffer around the nest and mark the buffer perimeter with high-visibility fencing, flagging, or wood stakes. The size of the buffer will be based on the species' sensitivity to disturbance and planned work activities in the vicinity; typical buffer sizes are 250 feet for raptors and 50 feet for other birds. The buffer will remain in place until the nest is no longer active, as determined by the biologist. Buffers for any nests found outside but within 300 feet of the construction area will be established, based on the biologist's best professional judgment as to whether the work would result in nest abandonment. If a lapse in construction activities of 15 days or longer at a previously surveyed environmental footprint occurs, another preconstruction survey will be conducted.

If construction activities in or within 300 feet of freshwater marsh or streambank habitat occur during the breeding season (February 1 through August 31), and active nesting colonies of tricolored blackbird, yellow-headed blackbird, or bank swallow are observed by the qualified biologist, then a no-disturbance buffer of 300 feet will be established until the end of the breeding season or until the nesting colony or nest is determined inactive by the biologist (Bank Swallow Technical Advisory Committee 2013; California Department of Fish and Wildlife 2015). Nest buffers may be reduced if site-specific conditions reduce the possibility of construction activity disturbance, as determined by the qualified biologist in coordination with CDFW.

To the extent possible, the Authority or its contractor will initiate structure demolition/ modification outside of the nesting season to avoid impacts on active nests affixed to structures before they become active during the nesting season (February 1 to August 31). If structure demolition activities cannot occur outside of the nesting season, the Authority or its contractor

will remove inactive nests from the structure to be demolished and install nest exclusion measures (e.g., fine mesh netting, panels, metal projectors) outside the nesting season. All exclusionary devices will be monitored and maintained throughout the breeding season to ensure that they are successful in preventing the birds from accessing the cavities or nest sites. No more than 7 days prior to structure demolition activities, a qualified biologist will conduct a preconstruction survey of all potential nesting habitat on the structures to be demolished/ modified and the surrounding areas for the presence of active nests. If active nests are found on the structures or in the affected area, then demolition/modification activities will not proceed until the biologist verifies that all nests on the structures are inactive.

After all surveys and/or nest deterrence activities are completed at each improvement environmental footprint within a given segment (e.g., Tri-Valley, Altamont, Tracy to Lathrop), the biologist will complete a memorandum detailing the survey effort and results and submit the memorandum to the Authority within 7 days of survey completion.

Mitigation Measure BIO-2.14: Protect golden eagles

Prior to construction activities between February 1 and August 31, surveys for golden eagles will be conducted within 0.5 mile of, and inclusive of, the construction areas in the Tri-Valley, Altamont, and Tracy to Lathrop segments. Surveys will be conducted consistent with the guidance of the *Protocol for Evaluating Bald Eagle Habitat and Populations in California* (Garcia and Associates & Pacific Gas and Electric Company 2004) and *Interim Golden Eagle Inventory and Monitoring Protocols and Other Recommendations* (U.S. Fish and Wildlife Service 2010). The size of the buffer area surveyed will be based on the type of habitat present and line of sight from each improvement environmental footprint by segment to surrounding suitable breeding habitat. Buffer areas containing unsuitable nesting habitat or with an obstructed line of sight to the respective location of construction activity will not be surveyed. Biologists will focus on suitable nest trees within and immediately adjacent to construction areas that have the highest likelihood for disturbance. The number of surveys needed to determine the status of nesting will be dependent on the conditions during the surveys and behavior of the eagles. If needed, biologists will coordinate with USFWS regarding the extent and number of surveys. Surveys would generally be conducted between January and July. Survey methods and results will be reported to USFWS.

If active nests are found, the Authority or its contractor will maintain a 0.5-mile buffer, or other distance determined appropriate through consultation with USFWS, between construction activities and the active nest(s) until it has been determined that young have fledged.

Mitigation Measure BIO-2.15: Protect Swainson's hawk nests

Prior to construction activities occurring between March 1 and August 31, focused surveys for nesting Swainson's hawks will be conducted within 0.5 mile of, and inclusive of, the construction areas located in the Central Valley. The survey buffer may be smaller in areas where topography (e.g., hills) obstructs the line of sight from the Project footprint. Survey buffer areas lacking suitable nest trees or with an obstructed line of sight will not be surveyed. Biologists will focus on suitable nest trees within and immediately adjacent to the construction areas that have the highest likelihood for disturbance. The number of surveys needed to determine the status of nesting will be dependent on the conditions during the surveys and observed Swainson's hawk behavior. Survey methods will follow those prescribed in *Recommended Timing and*

Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000) and generally be conducted between February and July. Survey methods and results will be reported to CDFW.

If active nests are found, the Authority or its contractor will maintain a 0.25-mile buffer between construction activities and the active nest(s) until it has been determined that young have fledged. The buffer may be reduced in consultation with CDFW if the biologist demonstrates through daily observations (minimum of 2 hours before and during construction activity) that adults tending the nest (on eggs or feeding nestlings) are not disturbed by construction noise. If the biologist observes signs of adult agitation or stress from construction (e.g., alarm calling, flying away from nest when construction starts), construction activities will cease until the qualified biologist, in consultation with CDFW, determines that young have fledged.

Mitigation Measure BIO-2.16: Compensate for Swainson's hawk foraging habitat loss

The Authority will provide compensatory mitigation for Swainson's hawk foraging habitat loss (i.e., replacement of existing grassland or agricultural field with new structures) in the Central Valley through or in an amount consistent with the SJMSCP.

To compensate for impacts on Swainson's hawk foraging habitat outside of the HCP coverage area, the Authority or its contractor will preserve offsite habitat management lands, as described in California Department of Fish and Game's (now CDFW) *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California* (California Department of Fish and Game 1994) at a 1:1 to 0.25:1 ratio (acreage preserved: acreage affected), depending on the distance between the affected areas and the nearest active nest. The location of the closest nest to a given segment in which impacts will occur will be identified during Swainson's hawk surveys conducted under Mitigation Measure BIO-2.15. If acceptable to CDFW, the Authority may alternatively or additionally purchase mitigation credits for Swainson's hawk foraging habitat from a CDFW-approved mitigation or conservation bank that offers service coverage for the impact location. If no active nests are found during the surveys, a search of the CNDDB will be conducted, and CDFW will be contacted to determine the nearest active nest in relation to each construction site by segment.

Mitigation Measure BIO-2.17: Protect burrowing owls and burrowing owl habitat

Prior to any construction activity in burrowing owl nesting (February 1 through August 31) or wintering habitat, the Authority will retain a qualified wildlife biologist to conduct a preconstruction survey for burrowing owls.

Burrowing owl take avoidance surveys will be conducted no less than 14 days prior to and 24 hours before initiating ground disturbance, pursuant to the California Department of Fish and Game's *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012). The survey will encompass construction areas with suitable burrowing owl habitat. The survey will include a search of all suitable nesting habitat (trees, shrubs, scrub, grassland). If any burrowing owls are found within the disturbance area, the Authority will notify CDFW and proceed under CDFW direction.

If burrows occupied by western burrowing owl are found in a survey area that would be directly affected by vegetation removal or any other ground-disturbing activities, no-disturbance buffers will be established by a qualified biologist (experienced with avian nesting behavior) around the

sites to avoid disturbance or destruction of the occupied burrows or active nests. The biologist, in coordination with the Authority, will consult with CDFW about the appropriate size of no-disturbance buffers. If disturbance cannot be avoided with implementing buffers, other appropriate avoidance and minimization measures will be discussed with CDFW. The methods and results of the surveys will be submitted to CDFW prior to the start of work.

If active nests or burrows are not detected during the surveys, additional measures will not be required and construction will proceed.

If construction is planned to occur during the nesting season (February 1 through August 31), Authority will retain a qualified wildlife biologist to conduct a breeding season burrowing owl survey in the year prior to construction. The survey will be conducted to determine if there is a breeding pair within approximately 500 feet of the environmental footprint, unless the biologist determines that a smaller survey buffer around the Project footprint is warranted, based on pre-existing background disturbance and conditions. Survey visits will be timed in accordance with CDFW guidelines (California Department of Fish and Game 2012). This will provide the Project team advance notice of nesting owls in the construction area and allow ample time to discuss appropriate avoidance measures with CDFW.

Mitigation Measure BIO-2.18: Compensate for burrowing owl habitat loss

The Authority will provide compensatory mitigation for burrowing owl habitat loss through, or in amounts consistent with, either the SJMSCP or the EACCS, depending on the impact locality, or as agreed upon with CDFW.

For impacts on burrowing owl habitat that occur outside of the SJMSCP and EACCS coverage areas (i.e., western Alameda County), the Authority will provide compensatory mitigation for the loss of occupied owl habitat before construction impacts occur. Occupancy of owl habitat will be determined during implementation of Mitigation Measure BIO-2.17, in the area that will be permanently affected.

Compensatory mitigation may occur in the form of mitigation credit purchase from a CDFW-approved bank with burrowing owl habitat credits and/or preservation of suitable habitat. Mitigation credit purchase or habitat preservation will occur at a 3:1 ratio (compensation area to habitat loss area).

Habitat preservation will require the development and implementation of a management plan with the following success criteria to ensure the preserved area is managed as suitable burrowing owl habitat in perpetuity:

- Perform routine mowing or grazing to maintain vegetation height consistent with burrowing owl habitat requirements.
- Conduct biological monitoring surveys to confirm suitable owl habitat conditions and document ground squirrel and burrowing owl presence for a minimum of 5 years.
- Restrict deeds to maintain and manage the preserve for burrowing owl in perpetuity, with the ability to grant the preserve to the EACCS Conservancy or to the SJMSCP Joint Powers Authority.
- Preserve maintenance and funding reserves.

Mitigation Measure BIO-2.19: Protect special-status and non-special-status roosting bats

Where feasible, construction activities that have potential to affect bats with potential to occur within the construction site (i.e., pallid bat, Townsend's big-eared bat, western mastiff bat, hoary bat, other common species of bats) will be conducted outside of the maternity season of bats (April 1 to September 15) and prior to the beginning of the hibernation period (November 1).

Measures to avoid and minimize impacts on sensitive bats species will be determined in coordination with CDFW and may include the following:

Trees

- To avoid and minimize impacts on maternity roosts and hibernating bat species, trees will be removed or trimmed between September 1 and October 30.
- A qualified biologist (i.e., a biologist with experience with tree-roosting habitats and life histories of local bats) will examine trees for suitable bat roosting habitat (e.g., large tree cavities, loose or peeling bark, basal hollows, large snags) 7 to 14 days before tree removal or trimming. Trees will also be evaluated to determine if they provide suitable habitat for foliage-roosting bats.
- If the biologist determines that trees to be removed or trimmed provide suitable bat roosting habitat, the biologist will monitor tree removal/trimming. The biologist will make recommendations to implement measures to avoid and minimize disturbance or mortality of bats, such as conducting trimming and removal in the late afternoon or evening when it is closer to the time that bats would normally arouse, removing the tree in pieces rather than felling an entire tree, and gently shaking each tree with construction equipment and waiting several minutes before felling trees or removing limbs to allow bats time to arouse and leave the tree. The biologist will search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided to the Project lead and CDFW.

Human-made Structure and Natural Structures

- At least 30 days prior to structure removal or disturbance, a bat biologist will conduct an initial daytime survey to assess the structure for potential bat roosting habitat and look for bat sign (e.g., guano, urine staining). The biologist will examine the entire structure (i.e., inside and outside for human-made structure and all cracks, seams, and fissures for natural structures) for potential roosting habitat as well as routes of entry to the structure.
- If no habitat or limited habitat for roosting bats is present and no signs of bat use are present, a preconstruction survey of the entire structure by qualified biologists will be conducted within 24 hours of demolition.
- If signs of bat use are found or if all areas of the structure cannot be examined and the structure provides moderate or high potential habitat, the bat biologist will prepare a memo with recommended measures to exclude bats from using the structure as a roost site. The memo will include recommendations for excluding bats from using the structure to roost, such as sealing off entry points or using lights and other means to deter bats. The memo will include specifications on when and how exclusion measures should be implemented and will be provided to the Project lead and CDFW.

Mitigation Measure BIO-2.20: Protect riparian brush rabbit

The Authority will retain a USFWS- and CDFW-approved biologist to conduct surveys of riparian habitat in and within 250 feet of the Tracy to Lathrop (Paradise Cut to the San Joaquin River) segment to determine presence or absence of riparian brush rabbit no more than 5 days before construction. The biologist will identify and flag nest locations during this initial survey. Five days will allow time for the biologist to inform the Authority and its contractor where construction would occur within or near occupied habitat and develop a schedule for the biologist to monitor construction activities in these areas. To the extent feasible, a 250-foot no-disturbance buffer will be established around habitat determined to be occupied by either species. If occupied habitat is determined to be present within the construction area, and will be affected by construction or vegetation removal activities, then the approved biologist will monitor all unavoidable construction activities within occupied habitat to avoid injuring or killing any individuals present or destroying any nests. If occupied nests are located within the Project footprint, CDFW and USFWS will be consulted to determine nest relocation or other alternatives to avoid mortality or active nest destruction. The biologist will prepare a report documenting the results of construction monitoring, which will be provided to the Authority, CDFW, and USFWS.

Mitigation Measure BIO-2.21: Compensate for riparian brush rabbit habitat loss

The Authority will provide compensatory mitigation for riparian brush rabbit habitat loss through or in an amount consistent with the Authority for impacts within San Joaquin County.

For impacts on riparian brush rabbit habitat that occur outside of the SJMSCP coverage area, the Authority will provide compensatory mitigation for the loss of occupied riparian brush rabbit habitat, as agreed upon with USFWS and CDFW, before construction impacts occur. The occupancy of suitable habitat will be determined during implementation of Mitigation Measure BIO-2.20. Compensatory mitigation may occur in the form of mitigation credit purchase from a USFWS- and CDFW-approved bank with riparian brush rabbit and riparian woodrat habitat credits or preservation and enhancement of suitable habitat. Mitigation credit purchase or habitat preservation and enhancement will occur at a 3:1 ratio (compensation area to habitat loss area).

Habitat preservation and enhancement will require the development and implementation of a management plan with the success criteria listed below to ensure that the preserved area is managed as suitable riparian brush rabbit habitat in perpetuity. Compensatory riparian habitat mitigation is inclusive of other riparian habitat mitigation described below, including the following measures:

- Perform routine eradication of invasive species to maintain the intended vegetation diversity and structural strata consistent with riparian brush rabbit habitat requirements.
- Conduct biological monitoring surveys to confirm suitable riparian brush rabbit habitat conditions and document riparian vegetation presence and maturity for a minimum of 10 years.
- Restrict deeds to maintain and manage the preserve for riparian brush rabbit in perpetuity, with the ability to grant the preserve to a habitat conservancy, public agency, or other local habitat management entity.
- Preserve maintenance and funding reserves.

Mitigation Measure BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat.

American badger and San Joaquin kit fox

Within 1 year but no less than 3 months prior to initiating construction at the Altamont and Tracy to Lathrop segments, the Authority will retain a qualified biologists to identify potential San Joaquin kit fox dens in the Project footprint and surrounding 200 feet in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (2011 USFWS Standard Recommendations) (U.S. Fish and Wildlife Service 2011). USFWS and CDFW will be consulted in the final survey design and will be given the environmental footprints. This survey will also identify potential American badger dens. The biologists will prepare a report summarizing the survey observations and results, including maps depicting the locations of potential kit fox dens and badger dens and, if possible, occupancy. The report will be submitted to the Authority, USFWS, and CDFW.

Different San Joaquin kit fox den types will be defined, per the 2011 USFWS guidance:

- **Known Den**—Any existing natural den or human-made structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records; past or current radio telemetry or spotlighting data; kit fox sign, such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a kit fox. The [U.S. Fish and Wildlife] Service discourages use of the terms ”active” and “inactive” when referring to any kit fox den because a great percentage of occupied dens show no evidence of use and kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.
- **Potential Den**—Any subterranean hole within the species’ range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens will include the following: (1) any suitable subterranean hole or (2) any den or burrow of another species (e.g., coyote, badger, red fox, ground squirrel) that otherwise has appropriate characteristics for kit fox use.
- **Natal or Pupping Den**—Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger, with more numerous entrances, than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two; therefore, for purposes of this definition, either term applies.

Prior to construction, the Authority will retain qualified biologists to implement preconstruction surveys of previously identified potential kit fox dens to determine if they are known dens, natal or pupping kit fox dens, or American badger dens. As per the 2011 USFWS Standard Recommendations, preconstruction surveys are to be conducted no less than 14 days and no more than 30 days before the initiation of construction at each environmental footprint (e.g., 1 week ahead of the construction crew for linear components). Construction activities will not occur within 100 feet of a potential den during the natal period (February 1 to September 30). If a known den or natal or pupping den is present and located 100 feet outside of the permanent Project footprint, then a 200-foot no-disturbance exclusion zone during the natal

period (100-foot buffer during the non-natal period) will be established around the den, with orange construction fence at the edge of the disturbance limits nearest the den. If a known den or natal or pupping den is present within the permanent Project footprint or within 200 feet of the Project footprint during the natal period (100-foot buffer during the non-natal period), the foxes or badger(s) will be excluded outside of the natal period (from November 1 to January 31). A summary report will be prepared by the biologists and submitted to the Authority, CDFW, and USFWS following completion of all fox and badger avoidance and exclusion activities.

Mountain lion

Implementation of some of these measures may require that the Authority obtain an ITP from CDFW if mountain lion remains a candidate or is formally listed under CESA before construction begins. Additional conservation measures or conditions of approval may be required in applicable project permits (e.g., CESA ITP).

Within 1 year but no less than 3 months prior to initiating construction, the Authority will retain a qualified biologist to identify known and potential wildlife corridors, wildlife crossings, and known mountain lion movement data in the Project footprint and surrounding 5 miles. Qualified biologist(s) will identify potential mountain lion movement areas, potential denning areas, and compile mountain lion movement and territory data from mountain lion telemetry and other studies, followed by camera and track surveys to determine the location of transit areas, communication posts, and potential denning areas. Based on research documenting mountain lion avoidance behavior of human disturbance and roads, camera and track surveys would be conducted within 2,000 feet of the Project footprint (Wilmers et al. 2013). CDFW will be consulted in the final survey design and will be given the environmental footprints. The biologists will prepare a report summarizing the survey observations and results, including maps depicting the locations of potential mountain lion use area and den sites and, if possible, occupancy. The report will be submitted to the Authority and CDFW.

Mountain lion den types will be defined as follows (terminology generally consistent with the 2011 USFWS guidance for San Joaquin kit fox),

- **Known Den—**Any existing natural den or human-made structure that is used or has been used at any time in the past by a mountain lion. Evidence of use may include historical records; past or current radio telemetry or tracking study data; mountain lion sign, such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a mountain lion. USFWS discourages use of the terms ”active” and “inactive” with other species when referring to any den because denning animals may change dens often, with the result that the status of a given den may change frequently and abruptly. Mountain lions may move the litter to one or more additional den sites throughout her home range by the time kittens are weaned at 2 to 3 months (Pierce and Bleich 2003).
- **Potential Den—**Any thick vegetation, boulder piles, rocky outcrops or undercut cliffs within the species’ range for which available evidence is insufficient to conclude that it is being used or has been used by a mountain lion (Logan and Sweanor 2001). Potential dens will include the following characteristics: (1) refuge from predators (e.g., coyotes, golden eagles, other cougars) or (2) shielding of litter from heavy rain and hot sun.

Prior to construction, the Authority will retain qualified biologists to implement preconstruction surveys of previously identified potential mountain lion dens to determine if mountain lion sign is in the vicinity. Preconstruction surveys are to be conducted no less than 14 days and no more

than 30 days before the initiation of construction at each environmental footprint (e.g., 2 weeks ahead of the construction crew for linear components). Construction activities will not occur within 2,000 feet of a potential den during the breeding and natal period (February 1 to September 30). If a known den is present within the permanent Project footprint or within 2,000 feet of the Project footprint, consultation with CDFW will occur. A summary report will be prepared by the biologist(s) and submitted to the Authority and CDFW following completion of all mountain lion avoidance and minimization activities.

If special-status mammal species are determined to not be present in the Project area or a qualified biologist (experienced with predatory mammals) concludes that there is a very low likelihood that the special-status mammal species is present, then no additional mitigation is required. If special-status mammal species are determined to be present in the Project area, then the Project proponent will implement Mitigation Measure BIO-2.23.

Mitigation Measure BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss.

If it is determined through preconstruction surveys conducted pursuant to Mitigation Measure BIO-2.22 that special-status mammal species (i.e., American badger, San Joaquin kit fox, and/or mountain lion) are present within the Project area, the following measures will be implemented to ensure that the Proposed Project does not have a significant impact on American badger, San Joaquin kit fox, and/or mountain lion.

American badger and San Joaquin kit fox

The Authority will provide compensatory mitigation for San Joaquin kit fox and American badger habitat loss through, or in an amount consistent with, either the EACCS or SJMSCP for impacts within Alameda County and San Joaquin County (see Mitigation Measure BIO-2.1).

For impacts on San Joaquin kit fox and American badger habitat that occur outside of the EACCS or SJMSCP coverage area, the Authority will provide compensatory mitigation for the loss of occupied San Joaquin kit fox and American badger habitat as agreed upon with USFWS and CDFW before construction impacts occur. The occupancy of suitable habitat will be determined during implementation of Mitigation Measure BIO-2.22. Compensatory mitigation may occur in the form of mitigation credit purchase from a USFWS- and CDFW-approved bank with San Joaquin kit fox habitat credits or preservation and enhancement of suitable habitat. Mitigation credit purchase or habitat preservation and enhancement will occur at a 3:1 ratio (compensation area to habitat loss area).

Habitat preservation and enhancement will require the development and implementation of a management plan with the following success criteria to ensure the preserved area is managed as suitable San Joaquin kit fox and American badger habitat in perpetuity:

- Conduct routine eradication of invasive species to maintain the intended vegetation diversity, density, and height consistent with San Joaquin kit fox and American badger habitat requirements for a minimum of 5 years.
- Conduct biological monitoring surveys to confirm suitable San Joaquin kit fox and American badger habitat conditions and document ground squirrel presence.

- Restrict deeds to maintain and manage the preserve for San Joaquin kit fox and American badger in perpetuity, with the ability to grant the preserve to a habitat conservancy, public agency, or other local habitat management entity.
- Preserve maintenance and funding reserves.

Mountain lion

The Authority will provide compensatory mitigation for mountain lion habitat loss as agreed upon with CDFW before construction impacts occur. Compensatory mitigation may be in the form of mitigation credit purchase from a CDFW-approved bank, preservation and enhancement of suitable habitat, or other agreed-upon form of mitigation.

Habitat preservation and enhancement will require the development and implementation of a management plan with the following success criteria to ensure the preserved area is managed as suitable mountain lion habitat in perpetuity.

- Conduct routine inspection and maintenance of existing wildlife crossings and new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative and portions of the Tracy to Lathrop Alignment.
- Conduct routine eradication of invasive plant species to maintain the intended vegetation diversity, density, and height consistent with maintaining native faunal population habitat requirements for a minimum of 5 years.
- Conduct biological monitoring surveys of habitat preserved and/or enhanced to confirm suitability for mountain lion habitat conditions.
- Document species presence and use of preserved habitat.
- Restrict deeds to maintain and manage the preserve for mountain lion in perpetuity, with the ability to grant the preserve to a habitat conservancy, public agency, or other local habitat management entity.
- Preserve maintenance and funding reserves.

Mitigation Measure BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources

Implementation of some of these measures may require that the Authority obtain an ITP from CDFW if Crotch bumble bee and western bumble bee remain candidates or are formally listed under CESA before construction begins.

Prior to the start of construction, qualified biologist(s) will conduct botanical surveys in late spring/early summer to identify and map concentrations of flowering plants that provide food resources for special-status bumble bees. The areas containing higher densities and varieties of flowering plants will be evaluated by a qualified invertebrate biologist to determine if these areas provide suitable foraging habitat for special-status bumble bees. The habitat evaluation surveys would follow recommendations in the Rusty Patched Bumble Bee Habitat Assessment Form and Guide (Xerces Society for Invertebrate Conservation 2017).

If moderate to high quality foraging habitat for Crotch and/or western bumble bee is identified in the Project area based on the habitat evaluation, these areas will be surveyed by a qualified invertebrate biologist(s) (with experience conducting bumble bee surveys) within 1 year prior

to the start of construction. Surveys would be conducted during four evenly spaced sampling periods during the flight season (March through September) (Thorp et al. 1983). For each sampling event, the biologist(s) would survey suitable habitat using nonlethal netting methods for 1 person-hour per 3 acres of the highest quality habitat or until 150 bumble bees are sighted, whichever comes first. If initial sampling of a given habitat area indicates that the habitat is of low quality or nonexistent, no further sampling of that area would be required. General guidelines and best practices for bumble bee surveys would follow USFWS' Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*) (U.S. Fish and Wildlife Service 2019c), which are consistent with other bumble bee survey protocols used by The Xerces Society (Hatfield et al. 2017; Washington Department of Fish and Wildlife et al. 2019).

If special-status bumble bee is determined to not be present in the Project area or a qualified invertebrate biologist (experienced with bumble bees) concludes that there is a very low likelihood that the species is present, then no additional mitigation is required.

If surveys identify occupied Crotch and western bumble bee habitat within the project footprint, the project biologist would then conduct additional preconstruction surveys of such habitat for active bee nest colonies and associated floral resources (i.e., flowering vegetation on which bees from the colony are observed foraging) no more than 30 days prior to any ground disturbance between March and September. The purpose of this preconstruction survey would be to identify active nest colonies and associated floral resources outside of permanent impact areas that could be avoided by construction personnel. The project biologist would establish, monitor, and maintain no-work buffers around nest colonies and floral resources identified during surveys. The size and configuration of the no-work buffer would be based on best professional judgment of the project biologist. At a minimum, the buffer would provide at least 20 feet of clearance around nest entrances and maintain disturbance-free airspace between the nest and nearby floral resources. Construction activities would not occur within the no-work buffers until the colony is no longer active (i.e., no bees are seen flying in or out of the nest for three consecutive days indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony).

Mitigation Measure BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss

The Authority will provide compensatory mitigation for impacts on occupied habitat for Crotch bumble bee and western bumble bee as agreed upon with CDFW before construction impacts occur. Compensatory mitigation may include the following activities and would be determined during consultation with CDFW.

- To encourage growth of additional nectar and pollen producing plants within the Project area, disturbed grasslands that are revegetated in accordance with Mitigation Measure BIO-7.2 will use a seed mix combination that includes nectar and pollen producing plants commonly used as a food source by Crotch and western bumble bee. Plants of the following genus are appropriate: *Cirsium* sp., *Erigonum* sp., *Solidago* sp., *Aster* sp., *Centaurea* sp., and *Penstemon* sp. These annual plants will be incorporated into the seed mix, as applicable for the existing habitat conditions.
- To minimize impacts on bees from herbicide drift, herbicide application around stations and rail facilities will be performed using handheld equipment and will be restricted to a 20-foot buffer around facility structures. The contractor will use an herbicide that has been shown

to be less toxic to amphibians and invertebrates such as 2, 4 D. Herbicides containing the surfactant POEA, considered toxic to aquatic and terrestrial wildlife (Relyea 2011), will not be used in the Project area. The most current information on herbicide toxicity on wildlife will be used to inform future decisions about herbicide use during operations.

- Impacts on occupied habitat (confirmed through surveys as described in Mitigation Measure BIO-2.24) would be compensated for at a ratio of 3:1, unless a higher ratio is required pursuant to an authorization issued under CESA, through the purchase of CDFW-approved bank credits or through preservation of habitat in perpetuity, including suitable habitat currently preserved by the Authority.

Mitigation Measure BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish

The contractor will develop and implement a hydroacoustic monitoring plan. The monitoring plan will be submitted to the resource agencies (i.e., CDFW, NMFS, USFWS) for approval at least 60 days before the start of construction activities. The plan will include the following requirements:

- The contractor will monitor underwater noise levels during all impact pile-driving activities on land and in water to ensure that that peak and cumulative SELs do not exceed estimated values.
- The monitoring plan will describe the methods and equipment that will be used to document the extent of underwater sounds produced by pile driving, including the number, location, distances, and depths of the hydrophones and associated monitoring equipment.
- The monitoring plan will include a reporting schedule that includes provision of daily summaries of the hydroacoustic monitoring results to the resource agencies and more comprehensive reports on a monthly basis during the pile-driving season.
- The reports will include the number of piles installed per day, the number of strikes per pile, the interval between strikes, the peak sound pressure level, SEL, root mean square per strike, and accumulated SEL per day at each monitoring station.

Mitigation Measure BIO-4.1: Protect nesting birds during maintenance activities

The Authority or its contractor will conduct vegetation and structural maintenance activities associated with the operation of Valley Link outside of the bird nesting season (February 1 to August 31) to the extent feasible. If vegetation and structural maintenance during the nesting season is unavoidable, the Authority or its contractor will retain a qualified wildlife biologist with demonstrated nest-searching experience to conduct preconstruction surveys for nesting birds within 300 feet of the vegetation and structural maintenance locations. Adjacent lands outside the ROW will be scanned with binoculars, including any Project operations areas, the ROW, and/or publicly accessible areas. The preconstruction surveys will occur no more than 7 days prior to maintenance activities (including removing or trimming vegetation, modifying structures that provide nesting habitat, clearing ground, grubbing, staging) at each contiguous maintenance area.

If active nests are found in the area to undergo maintenance activities, no-disturbance species-specific buffer zones will be established by the biologist and marked with high-visibility fencing, flagging, or pin flags. No maintenance activities will be allowed within the buffer zones. The size of the buffer will be based on the species' sensitivity to disturbance and planned work activities in the vicinity; typical buffer sizes are 250 feet for raptors and 50 feet for other birds

(i.e., passerines). The buffer will remain in effect until the nest is no longer active, as determined by the biologist. Buffers for any nests found outside of the area to undergo maintenance activities, but within 250 feet of the maintenance location, will be established, based on the biologist's best professional judgment as to whether the work would result in nest disturbance and/or abandonment. If a lapse in maintenance activities of 7 days or longer at a previously surveyed area occurs, another preconstruction survey will be conducted.

After all surveys activities are completed at each continuous maintenance activity area within a given segment (e.g., Tri-Valley, Altamont, Tracy to Lathrop), the biologist will complete a memorandum detailing the survey effort and results and submit the memorandum to the Authority within 7 days of survey completion.

Mitigation Measure BIO-4.2: Protect roosting bats during maintenance activities

The Authority or its contractor will conduct maintenance activities (e.g., operational tree removal and trimming, structure modification or removal) in roosting bat habitat from September 15 to October 30 to the extent feasible to avoid maternity bat roosts, roosting bats in torpor (reduced metabolic function, similar to hibernation), or nonvolant (flightless) young. If operational maintenance activities cannot be conducted between September 15 and October 30, the Authority or its contractor will retain qualified biologists who will examine structures to be removed or modified and trees to be removed or trimmed for suitable bat roosting habitat no more than 2 weeks before conducting the maintenance activity. High-quality habitat features (large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch, seams, weep holes, crevices on sides of buildings) will be identified and the area around these features searched for bats and bat signs (e.g., guano, culled insect parts, urine staining). Riparian woodland, orchards, and stands of mature broadleaf trees should be considered potential habitat for solitary foliage-roosting bat species. Passive monitoring using full spectrum bat detectors may be needed if identification of bat species is required. Survey methods will be discussed with CDFW prior to the start of surveys.

Measures to avoid and minimize impacts on sensitive bats species will be determined in coordination with CDFW and may include the following:

- Tree removal, tree trimming, structure modification, or removal of trees that provide suitable habitat for bats will be avoided between April 1 and September 15 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary).
- Tree removal, tree trimming, structure modification, or removal of trees that provide suitable habitat for bats will be conducted between September 15 and October 30, which corresponds to a time period when bats have not yet entered torpor or caring for nonvolant young.
- Trees that provide suitable habitat for bats will be removed in pieces rather than felling the entire tree.
- Trees and tree limbs that do not provide habitat will be removed prior to removing trees and limbs that do provide roosting habitat.
- If possible, tree trimming and removal should occur in the late afternoon or evening when it is closer to the time that bats would normally arouse. Prior to removal and trimming, each

tree will be shaken gently and several minutes will pass before felling trees or limbs to allow bats time to arouse and leave the tree.

- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined the roost is no longer active.
- If avoidance of a non-maternity roost site is not possible, and the maintenance activity must occur between October 30 and September 15, qualified biologists will monitor the maintenance activity that has the potential to affect roosting bat habitat. The biologists will search downed vegetation and debris for dead and injured bats. The presence of dead or injured bats that are species of special concern, or candidate threatened or endangered species, will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided to the Authority and CDFW no more than 30 days following the completion of all bat surveys.

Mitigation Measure BIO-4.3: Minimize permanent intermittent impacts on avian and bat wildlife species due to the Altamont OCS and aerial structures

The Authority will 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 the Altamont OCS poles.
- Modify Altamont OCS poles to preclude bird and/or bat entrapment in hollow poles and at the top of poles (e.g., avoid the use of tubular poles or cap openings in all poles)
- Design aerial structures to discourage bats from roosting in expansion joints or other crevices.

Mitigation Measure BIO-4.4: Implement removal of carrion that may attract raptors and carnivores

During operations in raptor foraging areas, the Authority or its contractor will implement a program of track inspections and reporting to detect the presence of a carcass (carrion) within the ROW that could be an attractant to raptors and other carrion eating birds. Dead and injured wildlife found in the ROW will be removed as soon as safely feasible. This measure would apply to the Altamont Pass.

Mitigation Measure BIO-4.5: Avoid use of second-generation anticoagulant rodenticides

During operations, the Authority or its contractor will avoid the use of second-generation anticoagulant rodenticides, such as brodifacoum, bromadiolone, difenacoum, and difethialone in Central Coast mountain lion, San Joaquin kit fox, American badger, and burrowing owl habitat areas. The Authority will limit the use of other pesticides and herbicides that may have negative effects on special-status wildlife species.

Mitigation Measure BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction

The Authority will develop an aquatic resource (wetlands and non-wetland waters of the United States) mitigation plan, subject to approval by the resource agencies, which will ensure no net loss of wetlands. The plan will detail the amount and type of wetlands that will be compensated for impacts on existing wetlands and non-wetland waters of the United States. The plan will also outline the monitoring and success criteria for the compensation wetlands and non-wetland waters of the United States. Additional enhancement options include fish barrier removal, riparian restoration, floodplain restoration, and streambank layback to improve overall ecologic function and connectivity of wetland and non-wetland waters. Enhancement sites will be located as near to the impact location as possible but, in the event that local enhancement opportunities are not available, such activities will occur within the same stream system or watershed to provide improved ecologic function and connectivity for wetlands and non-wetland waters affected by the Proposed Project, alternative stations, or alternative OMF.

Monitoring and success criteria applicable to created or restored wetlands will require the following:

- At least two surveys by a qualified wetland biologist, botanist, or ecologist per monitoring year.
- At least 80 percent of the created or restored features support vegetation, consistent with reference feature conditions.
- At least 80 percent of the created or restored features support hydrologic regimes, similar to reference feature conditions.
- A minimum of 5 consecutive years of monitoring to ensure success criteria are met.
- Remedial actions to restore intended ecological function of created or restored features that fail to meet the success criteria for 3 consecutive years.

Once the plan is approved, the Authority will implement the aquatic resource compensation measures prior to the initiation of construction. The Authority will be responsible for funding compensatory mitigation, monitoring of the created or restored features per the mitigation plan, and any remedial actions necessary. All conditions that are attached to the state and federal permits will be implemented. The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.

Mitigation Measure BIO-7.1: Compensate for loss of riparian habitat

For direct effects on woody riparian trees that cannot be avoided, the Authority will compensate for the loss of riparian habitat to ensure no net loss of habitat functions and values. Compensation ratios will be based on site-specific information and determined through coordination with the appropriate state and federal agencies during the permitting process. At a minimum, the compensation ratio will be 2:1 (e.g., 2 acres restored/created/enhanced or credits purchased for every 1 acre removed) for permanent impacts and 1:1 for temporary impacts (where riparian habitat will regenerate to pre-activity character within 1 year). Compensation may be a combination of offsite restoration or mitigation credits. The Authority or its contractor will develop a restoration and monitoring plan that describes how riparian habitat will be

enhanced or recreated and monitored over at least 5 years, or as determined by the appropriate state and federal agencies.

If the Authority identifies suitable onsite areas (adjacent to the permanent Project footprint) that are outside the ROW vegetation management zone and chooses to compensate onsite or in the Project vicinity, a revegetation plan will be prepared. The revegetation plan will be developed prior to the removal of existing riparian vegetation and conducted onsite or in the Project vicinity to the extent feasible. The revegetation plan will be prepared by a qualified botanist or restoration specialist with experience in riparian restoration and reviewed by the appropriate agencies. The revegetation plan will specify the planting stock appropriate for each riparian land cover type and each mitigation site, ensuring the use of genetic stock from the corresponding Project area by segment. The plan will employ the most successful techniques available at the time of planting. Success criteria will be established as part of the plan and will include a minimum of 70 percent revegetation success after 3 years, 80 percent revegetation success at the end of 5 years, and 75 percent vegetative coverage after 5 years.

The Authority or its contractor will retain a qualified botanist, restoration ecologist, or biologist with experience in riparian restoration to monitor the plantings as necessary for 5 years. The Authority or its contractor will be responsible for maintaining the plantings, including managing invasive plants (as defined by the California Invasive Plant Council) and other weeds and implementing irrigation and plant protection if necessary. The Authority or its contractor will submit annual monitoring reports to the regulatory agencies issuing permits related to habitat effects, including CDFW, USACE, NMFS, and USFWS. Replanting will be necessary if success criteria are not met, and replacement plants will be monitored and maintained subsequently to meet the success criteria. The riparian habitat mitigation will be considered successful when the sapling trees established meet the success criteria, the habitat no longer requires substantial active management, and vegetation is arranged in groups that, when mature, replicate the area, natural structure, stratification, and species composition of similar riparian habitats in the region.

Mitigation Measure BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)

For direct effects on non-riparian sensitive natural communities (e.g., salt grass flats) that cannot be avoided, the Authority will compensate for the loss of these communities to restore habitat functions and values. Compensation ratios will be based on site-specific information and determined through coordination with the appropriate state and federal agencies during the permitting process. Compensation will be based on the ratio determined in coordination with appropriate state and federal agencies. At a minimum, the compensation ratio for affected sensitive natural communities will be 2:1 (e.g., 2 acres restored/created/enhanced or credits purchased for every 1 acre removed) for permanent impacts and 1:1 for temporary impacts (where a sensitive natural community will regenerate to pre-activity character within 1 year). Compensation may be a combination of offsite restoration or mitigation credits. The Authority or its contractor will develop a restoration and monitoring plan that describes how affected sensitive natural communities will be enhanced or recreated and monitored over at least 5 years, as determined by the appropriate state and federal agencies.

If the Authority identifies suitable onsite areas (adjacent to the permanent Project footprint) that are outside the ROW vegetation management zone and chooses to compensate onsite or in the Project vicinity, a revegetation plan will be prepared. The revegetation plan will be

developed prior to the removal of existing vegetation within the sensitive natural community and conducted onsite or in the Project vicinity to the extent feasible. The revegetation plan will be prepared by a qualified botanist or restoration specialist with experience in corresponding sensitive natural communities and reviewed by the appropriate agencies. The revegetation plan will specify the seed or seedbank harvest prior to construction impacts; reference site selection for each sensitive natural community to be affected; propagation methods or seed application, depending on the target species' requirements; and replanting methods appropriate for each sensitive natural community affected and each mitigation site, ensuring the use of genetic stock from the corresponding Project area by segment. The plan will employ the most successful techniques available at the time of planting. Success criteria will be established as part of the plan and include a minimum of 70 percent revegetation success after 3 years, 80 percent revegetation success at the end of 5 years, and 75 percent vegetative coverage consistent with appropriate reference conditions after 5 years.

The Authority or its contractor will retain a qualified botanist, restoration ecologist, or biologist with experience in corresponding sensitive natural communities to monitor the plantings or vegetation growth as necessary for 5 years. The Authority or its contractor will be responsible for maintaining the sensitive natural community and associated plantings, including managing invasive plants (as defined by the California Invasive Plant Council) and other weeds and implementing irrigation and plant protection if necessary. The Authority or its contractor will submit annual monitoring reports to the regulatory agencies with jurisdiction of such sensitive natural communities, including CDFW, USACE, and USFWS. Replanting or reseeding will be necessary if success criteria are not met, and replacement plant growth will be monitored and maintained subsequently to meet the success criteria. Each area and type of sensitive natural community mitigation will be considered successful when the vegetation established meets the success criteria, the habitat no longer requires substantial active management, and vegetation grows such that, when mature, it replicates the natural structure, stratification, and species composition of appropriate reference sites in the region.

Mitigation Measure BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement

The Authority will design all curbs associated with the Isabel Station, Greenville Station, Mountain House Station, Interim OMF, and West Tracy OMF Alternative to be rounded, with no vertical component exceeding 1 inch tall, to permit salamander movement between habitat areas.

Mitigation Measure BIO-8.2: Install station lighting controls and fencing limitations

This mitigation measure applies to the following stations, which are in or adjacent to sensitive habitat: parking lot of Greenville Station, parking lot of Isabel Station, Interim OMF, Mountain House Station, Mountain House Station Alternative, Tracy OMF, West Tracy OMF Alternative, River Islands Station, and North Lathrop Station.

Lighting will be designed to have controls that limit nighttime lighting to the minimum necessary. All lighting will be focused and downward facing to limit illuminated areas to only the platforms and parking lot. All lighting will shut off during periods of non-use (defined as more than 30 minutes before or after scheduled trains).

If fencing is required, wildlife-safe fencing will be used and installed in such a manner so as not to entrap wildlife species at fence lines. Wildlife crossings will be installed along the fence line

and designed to facilitate movement by common and special-status species (including San Joaquin kit fox, American badger, California tiger salamander, California red-legged frog, and riparian brush rabbit where suitable habitat is present for these species). Wildlife crossings will be designed in consultation with and approved by USFWS and CDFW.

Mitigation Measure BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road

If the Greenville Station is included in the approved Project, the Authority will evaluate wildlife movement conditions in the area east of Greenville Road to the eastern extent of the existing railroad undercrossing and consult with USFWS and CDFW in the wildlife crossing study and design. The Authority will investigate current utilization of the existing wildlife crossing east of Greenville Road using remote cameras and pitfall traps (as permitted by CDFW and USFWS) for at least 2 calendar years prior to construction in order to inform wildlife crossing improvements.

If Greenville Station is advanced, the design will be modified as follows in areas north of I-580:

- The northeast part of the station will be modified to avoid any encroachment within 50 feet of Altamont Creek in order to maintain wildlife movement along the creek and adjacent areas. Areas within 50 feet of Altamont Creek previously disturbed by the existing motocross track will be restored to natural cover. To fulfill this requirement, some parking areas and the entrance from Altamont Pass Road on the northeast edge of the station must be eliminated or redesigned.

The Authority will improve the existing wildlife crossing corridor east of Greenville Road as follows:

- Wildlife crossing improvements will be designed to facilitate movement by both common and special-status species, including San Joaquin kit fox, California tiger salamander, and California red-legged frog.
- Wildlife crossing improvements at the existing undercrossing east of Greenville Road may include, but are not limited to, the following:
- Fencing of parking areas and platforms to direct wildlife toward retained movement areas. Fencing locations will be based on the wildlife movement study and consultation with USFWS and CDFW.
- Installation of new culverted crossings to allow wildlife to access under active railroads to reach habitat areas north and south of I-580. Concepts for crossings. Actual crossings will be based on the wildlife movement study and consultation with USFWS and CDFW.
- Wildlife crossing improvements will be constructed prior to construction of Greenville Station to allow for wildlife movement during construction.
- Wildlife crossing improvements will be designed in consultation with and be approved by USFWS and CDFW prior to construction of Greenville Station.

Mitigation Measure BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative

The Authority will evaluate wildlife movement conditions along the new rail lines in these areas and consult with USFWS and CDFW in the wildlife crossing study and design. If feasible wildlife crossings are identified, the Authority will implement these crossings concurrent with the development of new rail facilities in the Altamont Alignment (and in the development of the Stone Cut Alignment Alternative, if advanced).

Wildlife crossings will be designed to facilitate movement by common and special-status species, including mountain lion, San Joaquin kit fox, California tiger salamander, and California red-legged frog, across the Altamont Alignment and the Stone Cut Alignment Alternative.

The Authority will implement the following wildlife movement improvements between Greenville Station and I-580 west of Tracy as follows, unless the Authority, USFWS, and CDFW mutually agree to alternative measures:

- The Authority will install culverts along drainages and streams and periodically in upland areas along the Altamont Alignment between Greenville Station and I-580 west of Tracy to allow for wildlife passage through grassland and other habitats in the Altamont Hills as determined in consultation with USFWS and CDFW.
- At the Altamont Alignment I-580 crossing between Flynn Road and North Grant Line Road, the Authority will install directional fencing to assist wildlife wayfinding. The intent of the fencing will be to direct wildlife to the Altamont undercrossing of I-580 eastbound and the UPRR undercrossing of I-580 westbound. Actual locations of fencing will be based on consultation with USFWS, CDFW, Caltrans, and UPRR.
- The Authority will also fund a study of improvement of existing crossings and/or potential new wildlife crossings under or over I-580 between Greenville Road and North Grant Line Road. The study will include a particular focus on a potential new wildlife overcrossing between the CCWD Habitat Management Units located west of North Grant Line. The study will include the participation of CDFW, USFWS, and the Alameda County Resource Conservation District, and CCWD. The Authority is not obligated to implement any recommended improvements as part of this measure.

In lieu of improvements along the specific Altamont Alignment improvements described above, the Authority may place a contribution in escrow for the use in implementing one or more other improvements to existing wildlife crossings of I-580 or a new wildlife crossing of I-580. As described earlier in this section, I-580 has a substantial existing effect on north–south wildlife movement in the Altamont Hills. The Project does not change that existing effect and would not physically block wildlife movement along the Altamont Alignment but would introduce impediments to wildlife movement in certain areas. The Authority will make such a contribution only if feasible plans to implement such other improvements are being advanced by parties other than the Authority that will be completed within 10 years of the commencement of construction of the Altamont Alignment. The Authority will also make such a contribution only if the Authority, USFWS, and CDFW can mutually agree on a contribution amount by the Authority, based on an estimate of the Project's fair-share of impacts on wildlife movement in the Altamont Hills, taking into account other existing wildlife movement impediments (most prominently I-580, Altamont Pass Road, as well as Patterson Pass Road).

Wildlife crossings will be approved by USFWS and CDFW prior to implementation.

Mitigation Measure BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment

The Authority will evaluate wildlife movement conditions along the new rail lines in the areas described below and will consult with USFWS and CDFW in the wildlife crossing study and design. If feasible and effective wildlife crossings are identified, the Authority will implement them at the same time as development of new rail facilities in the Tracy to Lathrop area.

- *Croplands west of urbanized portions of Tracy near South Lammers Road*: The Authority will study the potential for periodic wildlife crossings under the railroad alignment between a point approximately 3,300 feet west of South Lammers Road to South Lammers Road to facilitate movement by common and special-status species, including San Joaquin kit fox, California tiger salamander, and California red-legged frog. If feasible and effective, the Authority will include wildlife crossings in construction contracts.
- *Croplands east of Tracy east of Grant Line Road (east of Banta) to Paradise Cut*: The Authority will study the potential for periodic wildlife crossings under the railroad alignment between Grant Line Road to the farm access road west of Paradise Cut to facilitate movement by common and special-status species, including California tiger salamander, California red-legged frog, and riparian brush rabbit, under the Tracy Subdivision. If feasible and effective, the Authority will include wildlife crossings in construction contracts.
- *Paradise Cut*: In addition to expanding the Paradise Cut bridge, without any new piles placed in the waterway, the Tracy to Lathrop Alignment will also be elevated on columns west of the Paradise Cut bridge for approximately 300 feet (to the farm access road west of Paradise Cut) and east of the bridge for approximately 700 feet (to the farm access road east of Paradise Cut) to improve wildlife movement opportunity and riparian habitat colonization and restoration along the banks of the riparian corridor.

Wildlife crossings will be approved by USFWS and CDFW prior to implementation.

Mitigation Measure BIO-10.1: Compensate for tree removal during construction

A tree avoidance, minimization, and replacement plan will be developed in consultation with a certified arborist and in consultation with cities, counties, and affected property owners.

The plan will contain the following provisions:

- The definition of what is and is not a tree for the purposes of this mitigation will be the same as the tree definition used in each municipality (Table 3.4-13).
- Prior to the construction phase, the Authority will assess the potential to modify the construction methods and access of alignment alternatives, station alternatives, and other facilities to avoid or minimize the amount of tree removal or pruning necessary to be consistent with maintenance, operational, and safety requirements. The Authority or its contractor will consult with each jurisdiction along the route to identify where tree removals can and cannot be avoided with near-term and longer-term design measures.
- Tree pruning during construction will be done in accordance with arboricultural industry–recommended practices.

- If pruning will result in the loss of 25 percent or more of an individual tree's canopy, then the Authority will consider the tree removed, and it will be replaced in a manner consistent with the following replacement requirements:
    - For trees removed outside of the UPRR ROW, the following requirements will apply:
        - Where specific replacement ratios or specifications are provided in the local tree ordinance or guidance (e.g., City of Tracy, City of Lathrop, San Joaquin County), the Authority will replace protected trees using the local requirements (as specifically described in Table 3.4-13).
        - Where specific replacement ratios or specifications are not provided in local tree ordinances (City of Pleasanton, City of Dublin, City of Livermore, and Alameda County, as specifically described in Table 3.4-13), the Authority will replace protected trees on a 2:1 basis using 15-gallon trees (i.e., two 15-gallon trees would be planted for each protected tree removed).
        - For unprotected trees in all locations outside the ROW, the Authority will replace trees on a 1:1 basis using 15-gallon trees (i.e., one 15-gallon tree would be planted for each unprotected tree removed).
    - For trees within the UPRR ROW, the following requirements will apply:
        - Protected trees will be replaced on a 1:1 basis using 15-gallon trees (i.e., one 15-gallon tree will be planted for every tree removed), where feasible. Unprotected trees will be replaced on the same basis, where feasible, in nonindustrial areas. Unprotected trees in industrial areas will not be replaced.
        - Trees will be replaced with a tree of the same species wherever possible, unless that species is a nonnative, invasive, or an undesirable species (see discussion below). Alternative species to the tree removed may be planted with concurrence from the landowner and local municipality.
        - If onsite tree replacement cannot occur on the UPRR ROW (where trees are removed from the ROW) or on adjacent property (where trees are removed outside of the ROW), then tree replacement may occur on other parts of the affected property (with concurrence from the landowner) or other parts of the local area (with concurrence from the local municipality). Alternatively, the Authority may pay into a local urban forestry fund to support local tree planting programs, provided the Authority and local municipalities can agree on the appropriate fund and amount. The replacement requirements described above will apply in determining the equivalent funding amount.

Consistent with Executive Order 13112 on invasive species, when the Authority or its contractor replaces trees, the Authority will use native tree species insofar as it is practicable. Within the UPRR ROW, the Authority will not plant invasive tree species, as defined by the California Invasive Plant Council. For replacement of trees outside the UPRR ROW, the Authority will replant (or pay for others to replant) trees that are desired by the landowner or local municipality. Landowners may prefer that replacement trees be nonnative trees to match nonnative trees that were removed or to match surrounding vegetation.

Table 3.4-13. Regulated Trees, Relevant Activities, Replacement Requirements, and Recommended Tree Replacement Ratios

Jurisdiction	Definition of Protected Trees	Removal Permit Needed?	Pruning Permit Needed?	Replacement Requirement	Recommended Replacement Ratios
Alameda County (no date)	• Any woody perennial plant with a single or multi-trunk structure at least 10 feet high and a major trunk 2 inches in diameter or larger at 54 inches above grade in county rights-of-way	Yes, for protected trees	Yes, for protected trees; tree topping is not permitted	Replacement ratio determined by the county arborist	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 2:1 for protected trees 1:1 for unprotected trees
City of Dublin Heritage Tree Ordinance (1999)	• Any oak, bay, cypress, maple, redwood, buck-eye and sycamore tree having a trunk or main stem of 24 inches or more in diameter measured at 4.5 feet above natural grade	Yes, for protected trees	No, but must follow International Society of Arboriculture guidelines for pruning	Replacement ratio determined by the city arborist	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 2:1 for protected trees 1:1 for unprotected trees
City of Livermore Street Trees and Tree Preservation Ordinance, Chapter 12.20 (2016)	• Trees in Livermore with single trunks and a circumference at breast height (CBH) of 60 inches or more, multi-trunk trees, or trees in a stand that depend on each other for survival located on private property occupied by single-family residential development • California native trees having a circumference of 24 inches or more (California native trees include white alder, bay, buckeye, madrone, big-leaf maps, oaks, gray pine, sycamore, California black walnut) • Trees located on private property occupied by commercial, industrial, institutional, mixed-use, or multi-family residential uses with a CBH of 24 inches	Yes, for protected trees	Yes, for street trees and, during project development (construction), protected trees	Replacement ratio determined by the public works department	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: Two 15-gallon trees for each protected tree on single-family property Three 15-gallon or two 24-inch box trees for each protected tree on multi-family residential, commercial, industrial, institutional, mixed-use, open space,

Jurisdiction	Definition of Protected Trees	Removal Permit Needed?	Pruning Permit Needed?	Replacement Requirement	Recommended Replacement Ratios
	or more • Trees on undeveloped property with a CBH of 18 inches or more • Trees located in open space or a riparian habitat area with a CBH of 18 inches or more • Trees approved as part of site plant approval or a condition of approval for a development project or trees required to be planted as mitigation • Street trees and trees designated as "ancestral trees" by the Livermore Beautification Committee				riparian, or habitat property 1:1 for unprotected trees
City of Pleasanton Tree Preservation Ordinance (2015)	• Single-trunk trees with a 55-inch or larger CBH or multi-trunk trees with a 55-inch or larger CBH for the largest trunks • Trees 35 feet or more tall • Any tree of particular historical significance specifically designated by official action • A stand of trees, the nature of which makes each dependent upon the other for survival or the area's natural beauty	Yes, for protected trees	Yes. Pruning by contractor familiar with International Society of Arboriculture guidelines for protected trees	Replacement ratio determined by the community development director	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 2:1 for protected trees 1:1 for unprotected trees
San Joaquin County Tree Ordinance (1995)	• Native oaks are defined as valley oaks with stem diameters of 15.2–81.3 centimeters (6–32 inches) for single-trunk trees and a minimum combined trunk diameter of 20.3 centimeters (8 inches) for multi-trunk trees. Interior live oaks or blue oaks have stem diameters of 10.2–81.3 centimeters (4–32 inches) for single-trunk trees and a minimum combined diameter of 15.2 centimeters (6 inches) for multi-trunk	Yes, for protected trees	Not stated	Native oak (3:1) or heritage oak trees (5:1) will be replaced in kind with nursery stock or acorns between October 1 and December 31 and monitored for 3 years to ensure survival	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 5:1 for heritage oak and historical trees 3:1 for native oak 2:1 for protected trees 1:1 for unprotected trees

Jurisdiction	Definition of Protected Trees	Removal Permit Needed?	Pruning Permit Needed?	Replacement Requirement	Recommended Replacement Ratios
	trees • Heritage oaks are defined as native oaks with a single-trunk diameter of 81.3 centimeters (32 inches) or more. (All stem diameters are measured 1.4 meters [4.5 feet] above the average ground elevation of the tree) • Historical trees are defined as any trees or groups of trees given special recognition by the county planning commission because of size, age, location, or history				
City of Tracy Code of Ordinances, Chapter 7.08 (2016)	• Street tree: Any tree with the center of its trunk in the right-of-way or planting easement • Private tree: Any tree with the center of its trunk on private property	Yes for protected trees	Yes for street trees	Replacement trees, replaced at a 1:1 ratio, must be maintained in good condition for 2 years	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 1:1 for protected trees 1:1 for unprotected trees
City of Lathrop Municipal Code, Chapter 12 (2016)	• Any tree upon the public streets of the city or right-of-way	Yes for protected (street) trees	Yes for protected (street) trees	Replacement trees at a 1:1 ratio	Inside UPRR ROW: 1:1 for all trees Outside UPRR ROW: 1:1 for protected trees 1:1 for unprotected trees