

I. BIOLOGICAL RESOURCES

1. Introduction

This section describes the biological resources setting and existing conditions as they relate to the BART to Livermore Extension Project, discusses the applicable regulations, and assesses the potential impacts to biological resources from construction and operation of the Proposed Project and Alternatives.

For the purpose of this analysis, the study area for potential direct impacts includes the collective footprint—the combined footprints of the Proposed Project, Diesel Multiple Unit (DMU) Alternative, and Express Bus/Bus Rapid Transit (BRT) Alternative. In addition, the bus routes and bus infrastructure improvements for the Enhanced Bus Alternative, as well as for the feeder buses for the Proposed Project and other Build Alternatives, which are anticipated to extend along existing streets and within the street rights-of-way (ROWs), are addressed programmatically in this analysis, as described in Chapter 2, Project Description. To produce a comprehensive species list for the study area, the analysis considered sensitive wildlife and plant resources that are documented within 5 miles of the collective footprint.

The analysis presented in this section is based on a review of existing information and results from site surveys, which include the following:

- Focused and reconnaissance-level wildlife, botanical, and wetland surveys performed by Environmental Science Associates (ESA) from 2013 to 2016^{1, 2, 3, 4, 5}
- City of Dublin General Plan⁶

¹ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

² Environmental Science Associates, 2013b. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 2 [Isabel North], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District, October.

³ Environmental Science Associates, 2013c. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 1 [Isabel South], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District. November.

⁴ Environmental Science Associates, 2013d. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 3 [Laughlin Road Area], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District, October.

⁵ Environmental Science Associates (ESA), 2014. BART to Livermore Extension Project, Rare Plant Survey Report, Prepared for the San Francisco Bay Area Rapid Transit District. June.

⁶ City of Dublin, 2013a. City of Dublin General Plan

- City of Dublin, Eastern Dublin Specific Plan⁷
- City of Dublin, Dublin Crossing Specific Plan EIR⁸
- City of Livermore, El Charro Specific Plan Final EIR⁹
- City of Pleasanton, Stoneridge Drive Specific Plan/Staples Ranch Final EIR¹⁰
- California Department of Transportation (Caltrans), Environmental Assessment/Initial Study Interstate Highway (I-) 580 Eastbound HOV Lane Project from East of Greenville Road to Hacienda Drive¹¹
- The 2010 East Alameda County Conservation Strategy (EACCS)¹²
- U.S. Fish and Wildlife Service (USFWS), Programmatic Biological Opinion for U.S. Army Corps of Engineers (USACE) Permitted Projects Utilizing the EACCS that May Affect Federally Listed Species in East Alameda County, California¹³
- USFWS, Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon¹⁴
- USFWS, Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants; Final Rule¹⁵
- California Department of Fish and Wildlife (CDFW), Biogeographic Data Branch, California Natural Diversity Database (CNDDDB), Rarefind 5¹⁶

⁷ City of Dublin, 1994. Eastern Dublin Specific Plan. Available at: <http://dublinca.gov/DocumentCenter/View/7776>.

⁸ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>.

⁹ City of Livermore, 2007. Final Environmental Impact Report for the El Charro Specific Plan. April. Available at: <http://www.cityoflivermore.net/citygov/cedd/planning/charro.htm>, accessed April, 2016.

¹⁰ City of Pleasanton, 2008. Stoneridge Drive Specific Plan/Staples Ranch Final Environmental Impact Report. Available at: <http://www.cityofpleasantonca.gov/gov/depts/cd/planning/specific/stoneridge.asp>.

¹¹ California Department of Transportation (Caltrans), 2006. Environmental Assessment/Initial Study I 580 Eastbound HOV Lane Project from East of Greenville Road to Hacienda Drive. September.

¹² ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

¹³ United States Fish and Wildlife Service (USFWS), 2012. Programmatic Biological Opinion for U.S. Army Corps of Engineers Permitted Projects Utilizing the East Alameda County Conservation Strategy that May Affect Federally Listed Species in East Alameda County, California (Corps File Number 2011 00230S). May 31.

¹⁴ United States Fish and Wildlife Service (USFWS), 2005a. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon, Portland, Oregon, xxvi+ 606 pages.

¹⁵ United States Fish and Wildlife Service (USFWS), 2006. Federal Register Final Rule; Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants. Federal Register 71(28):7118 7316.

¹⁶ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

- USFWS, Species List of Federal Endangered and Threatened Species¹⁷
- California Native Plant Society (CNPS), Electronic Inventory of Rare and Endangered Vascular Plants of California¹⁸
- USFWS, Endangered and Threatened Wildlife and Plants: Revised Designation of Critical Habitat for California Red-Legged Frog; Final Rule¹⁹

No scoping comments pertaining to biological resources were received in response to the Notice of Preparation for this EIR or during the public scoping meeting held for the EIR.

2. Existing Conditions

This subsection describes the existing conditions for biological resources, including the regional context, the local setting and survey methods, vegetation communities, special-status plant and wildlife species, accounts of species occurrence, wetlands and other waters, critical habitats, and wildlife corridors.

a. Regional Overview

The study area is located within eastern Alameda County within the Dublin, Livermore, and Altamont United States (U.S.) Geological Survey 7.5-minute quadrangles. Topographically, the study area includes a range of elevations, including approximately 330 feet above mean sea level at the Dublin/Pleasanton BART Station (Dublin/Pleasanton Station) and approximately 510 feet above mean sea level at the Cayetano Creek Area. The overall slope and aspect of the study area falls in an east-to-west direction.

The study area generally runs parallel to I-580, within highly urbanized landscapes in the cities of Dublin, Pleasanton, and Livermore. However, the study area also extends through agricultural and grazing lands in the vicinity of Isabel South Area and the Cayetano Creek Area. The study area encompasses a variety of land uses that include the existing I-580 transportation corridor and residential, commercial, and industrial uses. Undeveloped areas both north and south of I-580 support agriculture and open space land uses, with annual grassland and ruderal habitats as the most common habitat types north of I-580 in

¹⁷ United States. Fish and Wildlife Service (USFWS), 2016. Species List of Federal Endangered and Threatened Species. Available at: www.fws.gov/sacramento/es/spp_lists/auto_list.cfm, accessed August 5, 2016.

¹⁸ California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.45). Available at: <http://www.rareplants.cnps.org>, accessed 10 July 2017.

¹⁹ United States Fish and Wildlife Service (USFWS), 2010. Federal Register Final Rule; Endangered and Threatened Wildlife and Plants: Revised Designation of Critical Habitat for California Red Legged Frog. Federal Register 50(17): 12816-12959.

undeveloped areas. South of I-580, non-urbanized areas support recreation (e.g., Las Positas Golf Course), limited agriculture, and open space. Approved and planned urban development in the cities of Dublin and Pleasanton has reduced much of the remaining open space in the western portion of the study area.

Drainages that extend through the study area include Line G-1-1, Chabot Canal, Line G-2 (Hewlett Canal), Tassajara Creek, Line G-3, Cottonwood Creek, Collier Canyon Creek, Isabel Creek, Arroyo las Positas, and Cayetano Creek, as well as several smaller aquatic features. With the exception of Arroyo las Positas, these watercourses have been channelized and culverted where they intersect the I-580 corridor (see Section 3.H, Hydrology and Water Quality).

b. Local Setting and Survey Methodology

Focused and reconnaissance-level botanical, wildlife, and wetland surveys were performed within the collective footprint at the Dublin/Pleasanton Station Area, I-580 Corridor Area, Isabel North and South Areas, and at the Laughlin Road Area between 2013 and 2016 by ESA biologists. A list of focused field surveys, including survey dates and findings is presented in Table 3.I-1. Areas where surveys were not completed due to access limitations to private property are also listed in Table 3.I-1 and described below.

- **Rare Plant/Botanical Surveys.** Focused botanical surveys were performed in 2013 and 2014 to identify the potential distribution of special-status plants in the study area. Botanical surveys included all accessible portions of the study area. Botanical surveys remain outstanding in some portions of the study area, as listed in Table 3.I-1 below. Prior to performing surveys, a list of target plant species was identified based on the data searches above. Botanical surveys were performed by ESA on July 1, 2, 8, 9, 10, 15, 16, and 17, 2013; October 10, 2013; and April 14–15, 2014. Upon reviewing known rare plant reference sites, the July 2013 survey period was determined to be appropriate for observing summer-blooming alkali-dependent special-status plant species. Nearby botanical reference sites at the Springtown Preserve in the city of Livermore were conducted on July 1, 2013, to verify that target alkali species were blooming and identifiable in the region.²⁰ These botanical surveys are considered to provide a comprehensive assessment of rare plant resources within these areas.

²⁰ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

TABLE 3.I-1 COMPLETED AND PENDING SURVEYS FOR THE PROPOSED PROJECT AND BUILD ALTERNATIVES

Geographic Subarea	Completed Surveys	Pending Surveys
Dublin/Pleasanton Station Area	Rare plants: July and October 2013 and April 2014 Wildlife: July 2013 and February 2016 Wetland assessment: July 2013	Rare plants surveys pending in portions of the Arnold Road Staging Area
I-580 Corridor Area	Rare plants: July and October 2013 and April 2014 Wildlife: July 2013 Wetland assessment: July 2013	Rare plants surveys pending at the North Canyons Parkway Staging Area and grasslands north of Croak Road
Isabel North Area	Rare plants: July and October 2013 and April 2014 Wildlife: July 2013 Wetland assessment: July 2013	--
Isabel South Area	Rare plants: July and October 2013 and April 2014 Wildlife: July 2013 Wetland assessment: July 2013	--
Cayetano Creek Area	--	Rare plants, wildlife, wetland assessment
Laughlin Road Area	Rare plants: July and October 2013 and April 2014 Wildlife: July 2013 Wetland assessment: July 8 and 9, 2013	--

Notes: -- = None.

Source: ESA, 2013a,b,c,d; Arup, 2017.

- Wildlife Surveys and Wetlands Assessments.** Wildlife surveys were performed by ESA biologists on July 8, 12, and 18, 2013.²¹ A routine delineation of waters of the U.S. and State was performed within the study area on July 1 and 18, 2013 and August 1, 2013. Follow-up surveys on February 9, 2016 and August 18, 2016 confirmed prior survey findings and considered the potential presence of sensitive resources in the study area. Prior to surveys, ESA biologists queried the CDFW, CNDDDB, CNPS Online Electronic Inventory of Rare and Endangered Vascular Plants of California, and the USFWS Online Species List of Federal Endangered and Threatened Species to identify known biological resources within the study area. Based on these surveys and database searches, habitat suitability for special-status species was determined, as well as the presence of any sensitive natural communities or potential waters of the U.S. and/or State, as described below.

²¹ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

Biological surveys were unable to be completed in portions of the collective footprint due to lack of access to private property. As listed in Table 3.1-1, biological surveys could not be performed for the following areas: (1) construction staging areas—Arnold Road Staging Area, North Canyons Parkway Staging Area, Storage and Maintenance Facility Staging Areas (in Cayetano Creek Area); (2) collective footprint (permanent areas)—portion of I-580 Corridor Area (grasslands north of Croak Road) and the Cayetano Creek Area. Therefore, the assessment of biological resources described herein for these areas is based on available scientific data, the EACCS habitat and species modeling, and analysis of aerial photos by plant, wildlife, and wetland specialists.

c. Vegetation Communities

The major vegetation communities and habitat types within the study area consist of urban/developed, agricultural, grasslands, riparian, ruderal, and mesic herbaceous (wetland) plant communities. The communities of plant and wildlife species likely to occur in these areas are described below. The vegetation communities in the study area are shown in Table 3.1-2 and in Figures 3.1-1a and 3.1-1b.

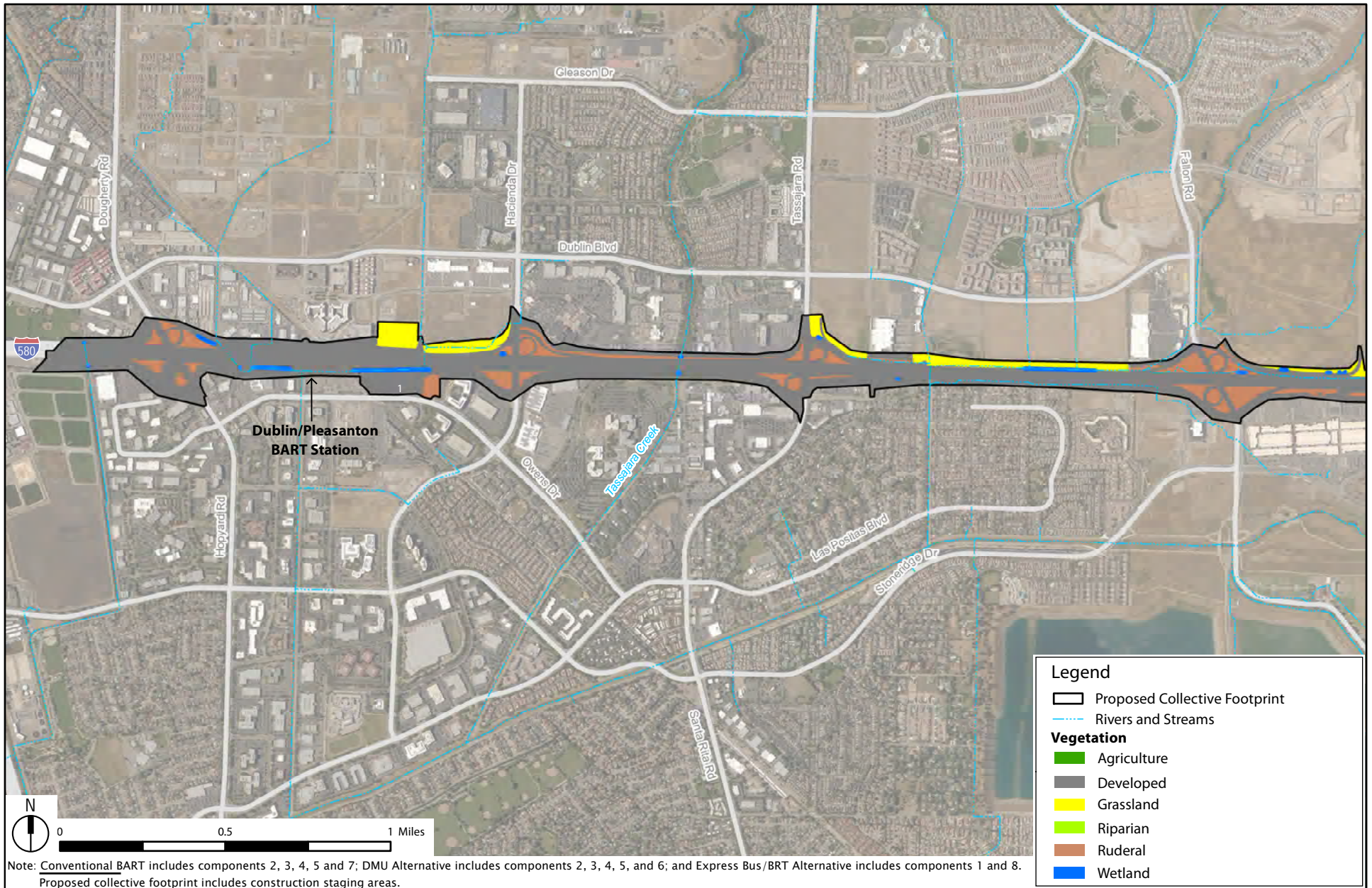
TABLE 3.1-2 VEGETATION COMMUNITIES IN THE STUDY AREA

	Conventional BART Project	DMU Alternative (with EMU Option)	Express Bus/BRT Alternative	Enhanced Bus Alternative
Urban/Developed	✓	✓	✓	✓
Ruderal	✓	✓	✓	--
Grassland	✓	✓	✓	--
Agricultural	✓	✓	--	--
Riparian	✓	✓	✓	--
Wetland/Aquatic	✓	✓	✓	--

Notes: ✓ = present; -- = not present; DMU = diesel multiple unit; EMU = electric multiple unit; BRT = bus rapid transit. The bus infrastructure improvements under the Enhanced Bus Alternative, as well as the Proposed Project and other Build Alternatives, are anticipated to be constructed within existing street ROW. Source: ESA, 2013a,b,c,d; Arup, 2017.

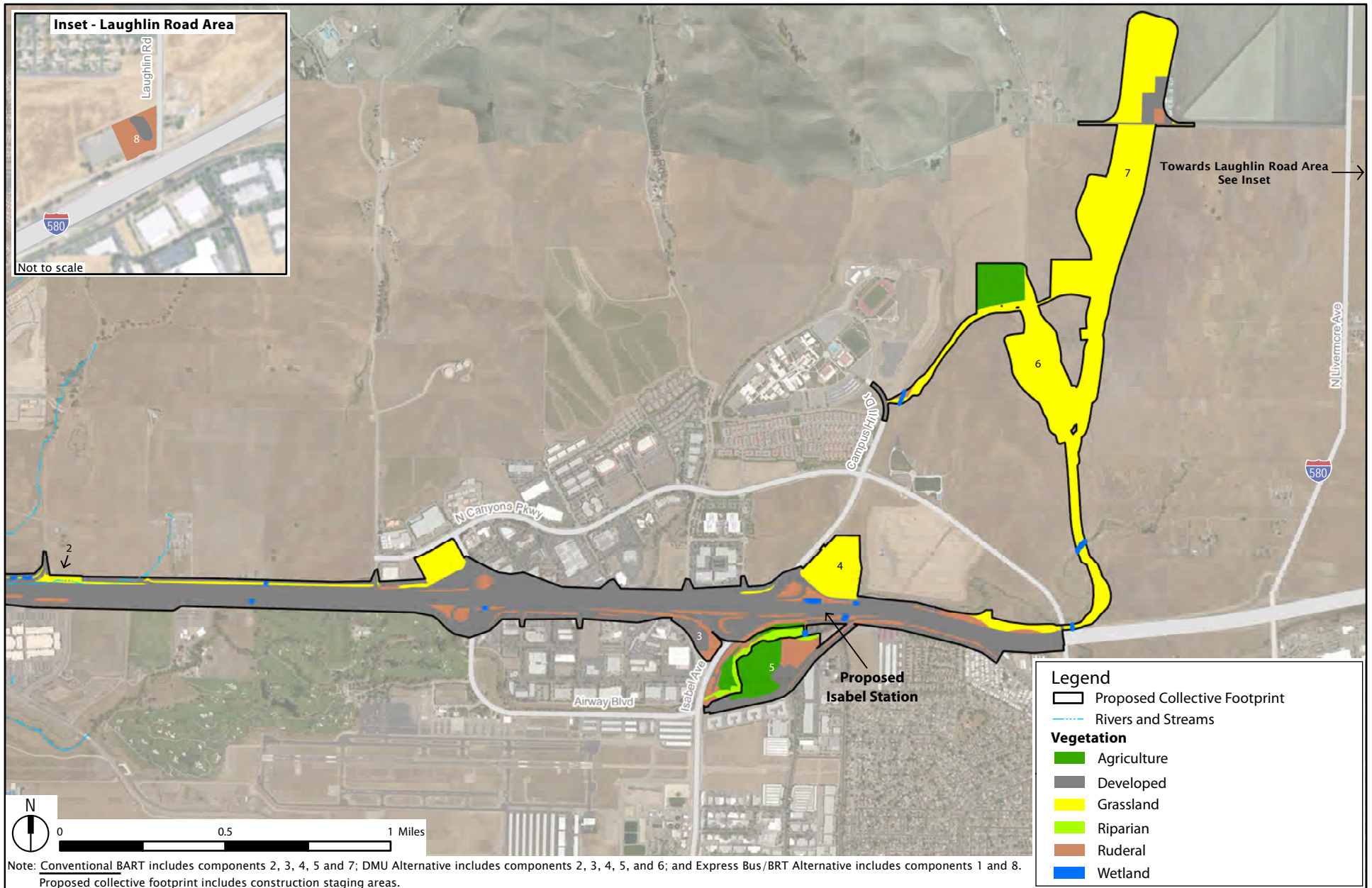
(1) Urban/Developed Areas

Urban and developed land uses are the predominant habitat type within the study area. Generally, such areas support structures or developed landscapes with extensive asphalt and concrete. Ornamental landscaping is sometimes present and includes non-native decorative plants and a limited number of native plant species. Many common wildlife species use urban areas for foraging, roosting, and/or nesting. These include native



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.

Figure 3.I-1a
Biological Resources



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.

Figure 3.I-1b
Biological Resources
Vegetation Communities in the Study Area – Eastern Project Corridor

animals that have adapted well to living in close proximity to human populations, such as Sierran treefrog (*Pseudacris sierra*), western fence lizard (*Sceloporus occidentalis*), barn swallow (*Hirundo rustica*), and raccoon (*Procyon lotor*), among others, as well as non-native species that include Virginia opossum (*Didelphis virginiana*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*). In addition, urban and developed areas in the study area may support common bats such as the Mexican free-tailed bat (*Tadarida brasiliensis*).

(2) Ruderal

Ruderal vegetation consists of non-native species of plants that occur in disturbed areas such as construction materials staging areas, roadsides, and other regularly disturbed sites. Such habitat was identified throughout the study area where the most common ruderal species detected were bristly ox-tongue (*Helminthotheca echioides*), yellow star-thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), and short-pod mustard (*Hirschfeldia incana*), though many grassland species also occur in this habitat type. Ruderal habitat was identified generally along I-580 and at the I-580 interchanges, including at the Dublin/Pleasanton Station Area, I-580 Corridor Area along the roadway shoulder, Isabel South Area, a small portion of the Cayetano Creek Area, and at the Laughlin Road Area, among other locations.

(3) Grassland Areas

Annual grassland habitat occurs in many of the undeveloped portions of the study area. This vegetation community occurs in fields located north and south of the I-580 Corridor Area and is mainly dominated by introduced grasses and forbs. In the Dublin/Pleasanton Station Area, the Arnold Road Staging Area supports grasslands. Such habitat was also noted in the I-580 Corridor Area within the North Canyons Parkway Staging Area, and at the Isabel North Area. Grasslands are the dominant habitat at the Cayetano Creek Area and surround the Laughlin Road Area, although this vegetation community does not occur within the footprint in this area. Within the study area, grasslands are dominated by common weedy species such as wild oat (*Avena barbata*), rip-gut brome (*Bromus diandrus*), and summer mustard (*Hirschfeldia incana*), Smilo grass (*Oryzopsis miliacea* var. *miliacea*), wild radish (*Raphanus sativus*), and Italian thistle (*Carduus pycnocephalus*) also occur within grasslands. Other identified species include soft chess (*Bromus hordaceus*), red-stemmed filaree (*Erodium cicutarium*), vetch (*Vicia* spp.), and yellow star-thistle (*Centaurea solstitialis*), with vegetative associates that include Mediterranean linseed (*Bellardia trixago*), field bindweed (*Convolvulus arvensis*), fiddleneck (*Amsinckia menziesii*), and prickly lettuce (*Lactuca serriola*), and an occasional coyote brush (*Baccharis pilularis*).

Alkali meadow is a perennial grassland community that occurs in limited portions of the study area. This community, which totals about 0.18 acre in areas north of I-580 at Croak

Road, is regulated as a sensitive natural community by the CDFW. In addition, this community may occur on lands in the Cayetano Creek Area. Dominant vegetation species in alkali meadows include saltgrass (*Distichlis spicata*), with lesser amount of alkali mallow (*Malvella leprosa*), and alkali heath (*Frankenia salina*).

Many of the annual grassland areas are grazed; grazing lands typically support a greater diversity of wildlife species in comparison to cultivated agricultural fields. Reptiles commonly found in local grasslands include western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus viridis*). Bird species that breed in grasslands include northern harrier (*Circus cyaneus*), burrowing owl (*Athene cunicularia*), western meadowlark (*Sturnella neglecta*), and California horned lark (*Eremophila alpestris*). Birds that commonly forage in grasslands include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and golden eagle (*Aquila chrysaetos*). Several mammal species use grasslands, including western harvest mouse (*Reithrodontomys megalotis*), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), black-tailed deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), and red fox (*Vulpes vulpes*). Undeveloped grasslands north of I-580 in the Livermore area are additionally considered to support San Joaquin kit fox (*Vulpes macrotis mutica*), though this species has not been detected within 5 miles of the study area since 1989.²²

(4) Agricultural

Agricultural land uses within the study area are limited to a portion of the Isabel South Area that is used for corn and melon production and areas that are subject to dry land farming in a portion of the Cayetano Creek Area. Agricultural land varies in the degree to which it supports native plant and animal species; generally, intensively farmed areas provide very limited habitat for wildlife. Currently, the portion of the Isabel South Area that is under active agriculture does not support native plant communities. However, wildlife species, particularly migrating waterfowl and raptors, may use these areas for foraging and/or roosting. The edges of agricultural fields and rubble piles, where disturbance is minimized, may also provide opportunities for burrowing animals, such as California ground squirrel. The Isabel South Area is traversed by Arroyo las Positas, a creek that supports various species of reptiles and amphibians, as discussed below.

²² California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

(5) Riparian

Riparian vegetation generally refers to shrubby or woody vegetation occurring along streams and riverbanks, and is considered here separately from freshwater emergent wetlands. Riparian areas comprise one of the most biologically diverse habitats in the region, providing important avian nesting habitat and foraging habitat as well as cover for many amphibians, reptiles, birds, and mammals, including special-status species such as the California red-legged frog (*Rana draytonii*). These areas may also function as dispersal corridors, allowing animals to move between upland and aquatic habitats.

Existing drainage features that support woody riparian vegetation within the study area include Tassajara Creek, Cottonwood Creek, and Arroyo las Positas.²³ These drainage features support an assemblage of riparian vegetation, including various arroyo willow (*Salix lasiolepis*), narrow-leaf willow (*Salix exigua*), valley oak (*Quercus lobata*), California walnut (*Juglans californica*), and cottonwood (*Populus fremontii*).^{24, 25} These drainages are considered fairly low quality habitat, having undergone modification through channelization, resulting in steep channel banks, and also as a result of a predominance of non-native invasive species. Mature arroyo willow stands occur below the ordinary high water mark of these drainage features, forming a dense overstory above each channel.

Drainages within the study area have been largely modified for flood control purposes and portions have been impacted by grazing. As a result, riparian vegetation is sparse and has been replaced in some areas by freshwater emergent vegetation such as cattails and rushes, as well as exotic species from the surrounding grasslands and urban areas.²⁶

(6) Wetland

Wetlands are natural communities that depend on year-round or seasonally dependable sources of water. There are several different types of jurisdictional wetlands within the study area: riparian, freshwater emergent, and seasonal. As discussed in the Regulatory Framework subsection below, the USACE is the lead federal agency charged with protecting federally jurisdictional wetlands. The distribution of aquatic features in the study area under the jurisdiction of the USACE was estimated through ground surveys of

²³ Note that woody riparian vegetation was not identified in Cayetano Creek.

²⁴ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

²⁵ Environmental Science Associates, 2013c. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 1 [Isabel South], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District. November.

²⁶ City of Livermore, 2004. City of Livermore General Plan: 2003-2025, Open Space and Conservation Element.

accessible parcels and a review of aerial imagery for parcels where ground surveys have yet to be undertaken. Based on this assessment, the distribution of potential jurisdictional features in the study area is shown in Table 3.I-3 and in Figure 3.I-2a and Figure 3.I-2b. A formal delineation of wetlands, waters of the U.S., and/or waters of the State has yet to be performed.

Within the study area, freshwater emergent wetlands occur in perennial creeks and semi-permanent intermittent drainages, including Chabot Canal, Line G-2, Tassajara Creek, Line G-3, Cottonwood Creek, Collier Canyon Creek, Arroyo las Positas, and Cayetano Creek, among other locations.²⁷ A list of the freshwater emergent wetlands is provided in Table 3.I-3 and in Figures 3.I-2a and 3.I-2b. Freshwater emergent wetlands within the study area contain obligate²⁸ wetland species, including bulrush (*Schoenoplectus acutus*), watercress (*Rorippa officinale*), yerba mansa (*Anemopsis californica*), broadleaved pepperweed (*Lepidium latifolium*), and nutsedge (*Cyperus eragrostis*). Additional species within freshwater emergent wetlands can include Mexican rush (*Juncus mexicanus*), salt grass (*Distichlis spicata*), cutweed (*Gnaphalium palustre*), Dalis grass (*Paspalum dilatatum*), watergrass (*Echinochloa crus-gali*), bird's foot trefoil (*Lotus corniculatus*), rabbit's foot grass (*Polypogon monspeliensis*), and fog fruit (*Phyla nodiflora*). Some perennial creeks within the study area support small stands of cattails (*Typha latifolia*).

The seasonal wetland features within the study area are vegetated with annual herbaceous species typically found with ephemeral depressions in California. Combinations of Mediterranean barley (*Hordeum marinum* var. *gussoneanum*), woolly heads (*Psilocarpus oregonus*), Italian rye grass (*Festuca perenne*), loosestrife (*Lythrum hyssopifolia*), rabbit's foot grass, fiddle dock (*Rumex pulcher*), woolly marbles (*Psilocarpus brevissimus*), popcorn flower (*Plagiobothrys* sp.), and purselane speedwell (*Veronica peregrina* var. *xalapense*) were observed in the numerous topographic depressions within the annual grasslands and along roadsides of the study area where soils have been compacted to a point where water ponds above the soil surface.^{29, 30}

²⁷ Freshwater emergent wetlands are freshwater shallow water habitats that commonly support emergent plants (erect, rooted, and non-woody plants that are mostly above water).

²⁸ An obligate wetland plant species is one that almost always occurs in wetlands.

²⁹ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

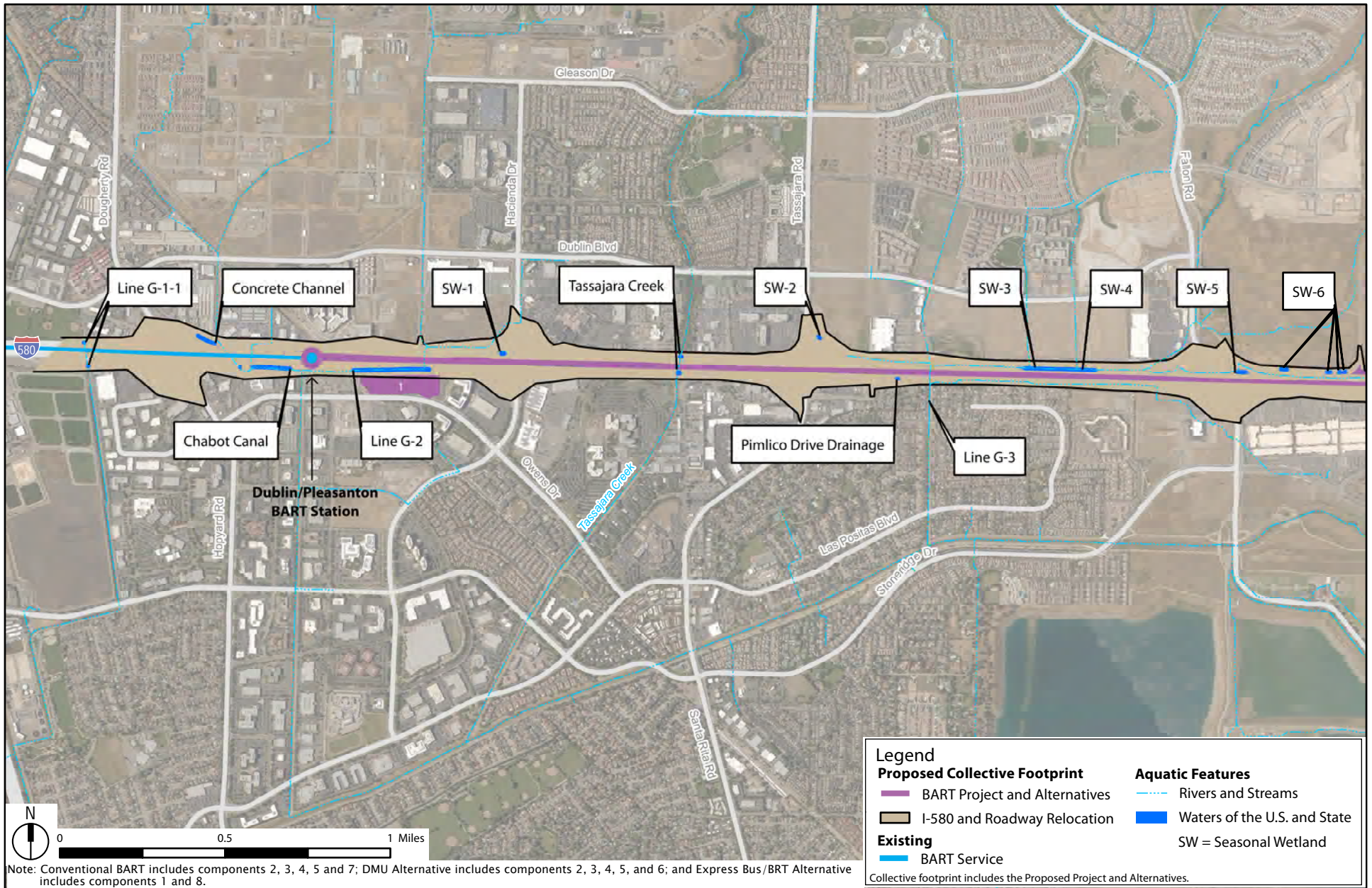
³⁰ Environmental Science Associates, 2013c. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 1 [Isabel South], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District. November.

TABLE 3.I-3 DRAINAGES AND AQUATIC FEATURES IN THE STUDY AREA

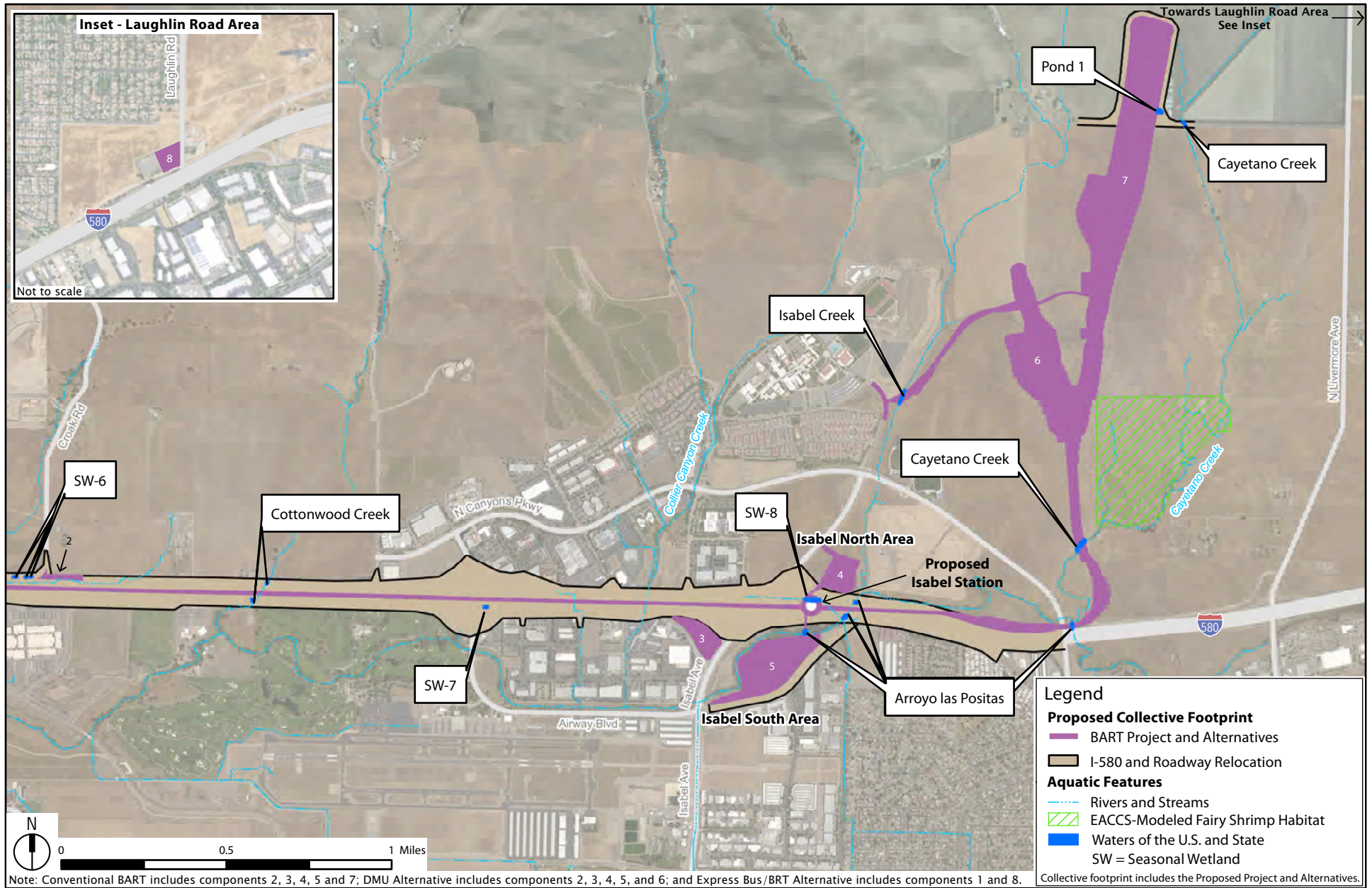
	Conventional BART Project	DMU Alternative (with EMU Option)	Express Bus/ BRT Alternative	Enhanced Bus Alternative
Dublin/Pleasanton Station Area				
Line G-1-1 (IC)	--	✓	✓	--
Concrete Channel (FEW)	--	✓	✓	--
Chabot Canal (PC/FEW)	--	✓	✓	--
Line G-2 (PC)	--	--	✓	--
I-580 Corridor Area				
SW-1 (FEW)	-	✓	--	--
Tassajara Creek (IC/FEW)	✓	✓	✓	--
Pimlico Drive Drainage (FEW)	✓	✓	--	--
Line G-3 (FEW)	✓	✓	--	--
SW-2 (FEW)	✓	✓	--	--
SW-3 (FEW)	✓	✓	--	--
SW-4 (FEW)	✓	✓	--	--
SW-5 (FEW)	✓	✓	--	--
SW-6 (FEW)	✓	✓	--	--
Cottonwood Creek (IC)	✓	✓	--	--
SW-7 (FEW)	✓	✓	--	--
Collier Canyon Creek (culverted) (IC)	✓	✓	--	--
SW-8 (FEW)	✓	✓	--	--
Isabel North Area				
None	--	--	--	--
Isabel South Area				
Arroyo las Positas (PC)	✓	✓	--	--
Cayetano Creek Area				
Isabel Creek (IC)	✓	✓	--	--
Arroyo las Positas (PC/FEW)	✓	✓	--	--
Cayetano Creek (IC and PC/FEW)	✓	✓	--	--
Pond-1	✓	--	--	--
Laughlin Road Area				
None	--	--	--	--

Notes: PC = perennial creek; IC = intermittent creek; SW = seasonal wetland; FEW = freshwater emergent wetland; DMU = diesel multiple unit; BRT = bus rapid transit; EMU = electric multiple unit. -- = not within footprint. The Enhanced Bus Alternative, as well as the bus improvements under the Proposed Project and other Build Alternatives, would be located within the existing street ROWs.

Source: ESA, 2013a,b,c,d; Arup, 2017.



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.

Figure 3.I-2b
Biological Resources
Waters of the U.S. and State in the Study Area – Eastern Project Corridor

Vernal pools are seasonal wetlands that occur in grasslands and support a unique assemblage of plants and amphibians. They are formed in slight depressions over bedrock or hardpan soils that allow water to pool during the winter and spring rains. Because vernal pools are a unique habitat and tend to be isolated from each other, they often support species that are endemic (i.e., restricted) to vernal pools or even to pools in that particular region. As a result of this endemism and the dramatic decline in the number and extent of vernal pools due to agriculture and development, vernal pools are identified as a Sensitive Natural Community by the CDFW and many vernal pool-dependent plants and animals are special-status species protected by the State of California (State) or federal government. Several seasonal pools were identified during field surveys in the area located north of Croak Road (identified as SW-6 in Figure 3.I-2a). Vernal pool areas that were modeled in the EACCS in the Cayetano Creek Area were avoided by project design (see EACCS-modeled fairy shrimp habitat, Figure 3.I-2b).

Special-status species associated with these aquatic features are discussed in the following subsection, Special-Status Species.

d. Special-Status Species

Several species known to occur in the study area are considered special-status because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some of these species receive specific protection from federal or State endangered species legislation. Other species have been designated as sensitive based on the following: adopted policies and expertise of State resource agencies; organizations with acknowledged expertise; or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are collectively referred to herein as special-status species.

Special-status species include the following:

- Species listed, proposed, or candidate for listing as Threatened or Endangered by the USFWS pursuant to the federal Endangered Species Act (FESA) of 1969, as amended
- Species listed as Rare, Threatened, or Endangered by the CDFW pursuant to the California Endangered Species Act (CESA) of 1970, as amended
- Species designated as Fully Protected under Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code
- Species designated by the CDFW as Species of Special Concern

- Plant species identified as CNPS Rank 1B and 2B³¹
- Species not currently protected by statute or regulation, but considered rare, threatened, or endangered under CEQA

A list of special-status plant and animal species occurring within the study area was compiled based on data in the CNDDDB and California CNPS literature, review of the USFWS species list generated for the study area, and biological literature for the region. Special-status species with the potential for occurrence within the study area are described below. The reported occurrences of special-status species in the region are shown on Figure 3.I-3; Table 3.I-4 shows the potential species and habitats likely to occur in the study area.

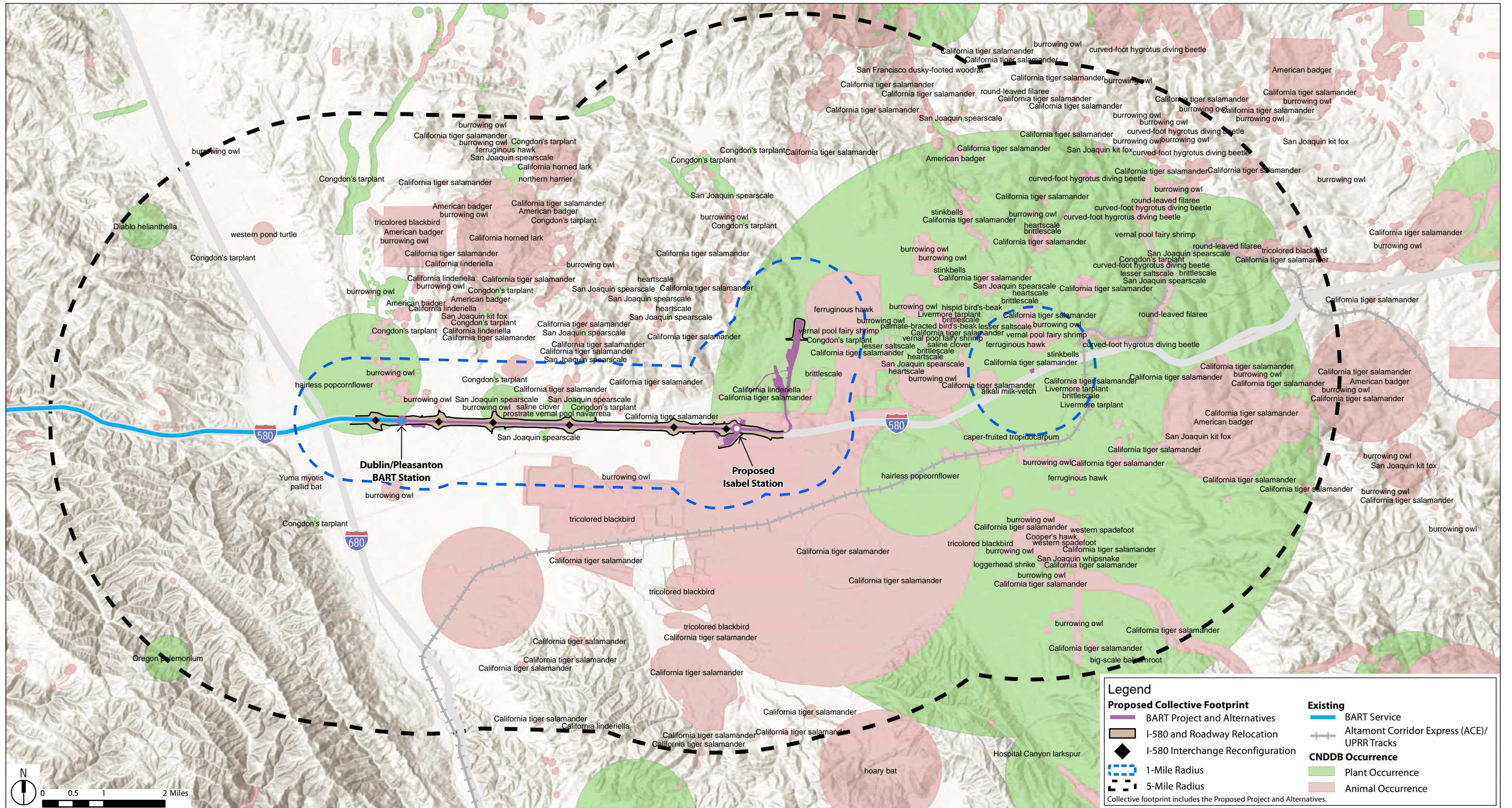
The special-status species identified as potentially occurring in the study area include longhorn fairy shrimp (LHFS); vernal pool fairy shrimp (VPFS); California tiger salamander (CTS); California red-legged frog (CRLF); western pond turtle (WPT); burrowing owl (BUOW); American badger; San Joaquin kit fox (SJKF); and nesting birds and raptors that include the golden eagle, loggerhead shrike, tricolored blackbird, California horned lark, and northern harrier.

In addition, several locally occurring rare plants are considered to have a moderate potential to occur in portions of the collective footprint where botanical surveys have not been conducted, as noted in the Local Setting and Survey Methodology subsection above, including the Cayetano Creek Area.

The discussion of plant and wildlife species in this section is focused on those species for which suitable habitat is present and that have been known to occur in the study area. Special-status species confined to special habitat types (e.g., chaparral or sand dunes), suitable soil substrates (e.g., serpentine soils), and/or suitable elevation clines that do not occur in the study area are not expected to be present, and therefore are not included in the detailed accounts below.

³¹ Recent modifications to the CNPS Ranking System include a new Threat Code extension to listed species (e.g., List 1B.1, List 2.2 etc.). A Threat Code extension of .1 signifies that a species is seriously endangered in California; .2 is fairly endangered in California; and .3 is not very endangered in California.

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Source: ARUP, 2017; CDFG, 2016; CDFW, 2017a.

Figure 3.I-3
 Biological Resources
 Sensitive Species Occurrences

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TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
WILDLIFE				
Invertebrates				
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	Fed: FE CA: none	General: Locally endemic to rock outcrop pools in the Altamont Hills. Micro: Inhabit small, clear-water depressions in sandstone pools.	Low: Suitable habitat (rock outcrop pools) does not occur in the project corridor. Seasonal wetlands north of Croak Road provide low-quality habitat, with no LHFS occurrences documented from the region in comparable habitat.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Fed: FT CA: none	General: Endemic to the grasslands of the Central Valley, Central Coast mountains and South Coast mountains, in rain-filled pools. Micro: Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Moderate-High: VPFS are reported from the Livermore area, with modelled near the collective footprint in the Cayetano Creek Area. Vernal pools and grassland swales north of I-580 at Croak Road provide potential habitat for this species.
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	Fed: FE CA: none	General: Found in grazed and ungrazed grasslands where its larval food plant, <i>Viola pedunculata</i> , grows. Micro: Occurs in hilly terrain with a mixture of topographic relief, often near their preferred nectar plants, which include mints, thistles, and California buckeye.	Low: There are no occurrences reported in the region and the collective footprint is not modeled as habitat by the EACCS.
Fish				
Central California coastal steelhead Distinct Population Segment	<i>Oncorhynchus mykiss</i>	Fed: FT (NOAA Fisheries) CA: none	Includes <i>O. mykiss</i> populations below natural and manmade impassable barriers in streams from the Russian River to Aptos Creek, and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers.	Low: Efforts to bring steelhead into the Alameda Creek Watershed are ongoing; steelhead spawning in Alameda Creek tributaries has been reported. Resident trout in upper Arroyo Mocho may be protected as Central California coast steelhead; however, steelhead would not occur in the study area due to lack of access and unsuitable habitat.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Reptiles				
Western pond turtle	<i>Actinemys marmorata</i>	Fed: none CA: SSC	General: A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Micro: Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	Present: Though not observed in the study area, WPTs are known from Arroyo las Positas, Tassajara Creek, and Chabot Canal, and additionally expected in Cayetano Creek. This species may be identified in drainages along the I-580 Corridor Area, grasslands north of Croak Road, and in the Cayetano Creek Area.
Amphibians				
California tiger salamander (central population)	<i>Ambystoma californiense</i>	Fed: FT CA: ST	General: Central Valley DPS listed as threatened. Santa Barbara and Sonoma counties DPS listed as endangered. Micro: Need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources, for breeding.	Present: Potential CTS breeding sites occur in stream habitats north of I-580 at Cayetano Creek in vernal pools and ponds within 0.5 mile of the Cayetano Creek Area. Species may be encountered in upland areas north of Croak Road, in the Cayetano Creek Area. CTS could additionally stray into the developed Laughlin Road Area; however, upland habitat is not present on site.
California red-legged frog	<i>Rana draytonii</i>	Fed: FT CA: SSC	General: lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Micro: Requires 11-20 weeks of permanent water for larval development. Must have access to aestivation habitat.	Present: Potential CRLF breeding and non-breeding aquatic refugia sites occur in stream habitats north of I-580 at Cayetano Creek and Arroyo las Positas near the Cayetano Creek Area; also potentially in the later stream at the Isabel South Area. Non-breeding upland habitat occurs north of Croak Road and in the Cayetano Creek Area. CRLF could stray into the developed Laughlin Road Area; though, upland habitat is not present on site.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Western spadefoot	<i>Spea hammondi</i>	Fed: none CA: SC	General: breeds in ephemeral pools in open grassland habitat; remain underground for much of the year. Micro: requires 2 to 18 weeks of standing water for larval development.	Low to Moderate: Occurrences are reported from the U.S. Department of Energy Sandia National Laboratories area approximately 5 miles southeast of the Cayetano Creek Area. This species is not known from habitat north of I-580. Vernal pools in the Cayetano Creek watershed may provide potential breeding.
Birds				
Cooper's hawk	<i>Accipiter cooperi</i>	Fed: none CA: WL	Nests in dense oak and riparian woodland	Moderate to High: Potential nesting habitat is available in riparian habitats bordering the I-580 Corridor Area and in association with riparian habitat at the Isabel South Area.
Sharp-shinned hawk	<i>Accipiter striatus</i>	Fed: none CA: WL	Nests in dense oak and riparian woodland	Moderate to High: Potential nesting habitat is available in riparian habitats bordering the I-580 Corridor Area and in association with riparian habitat at the Isabel South Area.
Tricolored blackbird	<i>Agelaius tricolor</i>	Fed: none CA: SC	General: highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Micro: requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	Moderate (nesting). Suitable nesting habitat may potentially occur in the Cayetano Creek corridor in the Cayetano Creek Area, though nesting has not been reported in this area. Habitat otherwise does not occur in the study area.
Golden eagle	<i>Aquila chrysaetos</i>	Fed: BGEPA CA: SFP	General: Nests on cliffs or tall trees, breeding from late Jan-Aug. with a peak from Mar-July. Preferred foraging habitat is annual grasslands that support small mammals such as rabbits and ground squirrels.	Low (nesting)/High (foraging): Potential foraging habitat for golden eagle occurs in annual grasslands located north of I-580 between Pleasanton and Livermore, and in the Cayetano Creek Area. Nesting habitat is not available in the study area.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Western burrowing owl	<i>Athene cunicularia hypugea</i>	Fed: none CA: SSC	General: Open, dry, annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Micro: Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	High: This species is not reported in the study area, and evidence of presence was not noted during reconnaissance-level surveys. A stable BUOW population occurs locally at Camp Parks. Annual grasslands located north of I-580, at the Isabel North and South Areas, in staging areas, and at the Cayetano Creek Area provide potential habitat for this species.
Swainson's hawk	<i>Buteo swainsoni</i>	Fed: none CA: ST	General: Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch. Micro: Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Low (nesting): Swainson's hawk nesting has not been documented on the study area or within the greater Livermore-Amador Valley. The nearest nest site to the study area is in Byron in the vicinity of Bethany Reservoir, 7.5 miles east of the developed Laughlin Road Area and 10.5 miles east of the Cayetano Creek Area. The study area does not have foraging habitat within 10 miles of an active nest, or active Swainson's hawk foraging areas.
Northern harrier	<i>Circus cyaneus</i>	Fed: none CA: SSC	General: Coastal salt and fresh-water marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Micro: nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Moderate (nesting): One nesting occurrence was identified within 5 miles of the study area. Suitable nesting habitat is present north of I-580 and in the Cayetano Creek Area.
White-tailed kite	<i>Elanus leucurus</i>	Fed: none CA: SFP	General: Rolling foothills and valley margins with scattered oaks, and river bottomlands or marshes next to deciduous woodland. Micro: Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Moderate: Nesting occurrences are reported at Camp Parks about 1.5 miles from the Dublin/Pleasanton Station Area and Lawrence Livermore National Labs 1.5 miles south of the Laughlin Road Area. Potential nesting sites are available at the Isabel South Area and Laughlin Road Area.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
California horned lark	<i>Eremophila alpestris actica</i>	Fed: none CA: SSC	General: Nests and forages in short-grass prairie, mountain meadow, coastal plain, fallow fields, and alkali flats.	High: Potential nesting areas occur in and near grasslands bordering the I-580 Corridor Area, the Isabel North and South Areas, the Cayetano Creek Area, staging areas, and grasslands bordering the Laughlin Road Area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	Fed: none CA: SSC	General: Breeds mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. Micro: Require tall shrubs or trees (also use fences or power lines) for hunting perches, territorial advertisement, and pair maintenance; open areas with short grasses, forbs, or bare ground for hunting.	High: Species is generally known from grasslands with shrub cover in the region. Potential nesting areas occur in and near grasslands bordering the I-580 Corridor Area, the Cayetano Creek Area, staging areas, and grasslands bordering the Laughlin Road Area.
Mammals				
Pallid bat	<i>Antrozous pallidus</i>	Fed: none CA: SSC	General: A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. Micro: Roosts in buildings, caves, tree hollows, crevices, mines, and bridges.	Moderate: There are no occurrences reported within 5 miles of the study area. It is possible that this species could roost in highway bridge structures within the I-580 Corridor Area.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Fed: none CA: SC	General: Found in all habitats except subalpine and alpine habitats, and may be found at any season throughout its range. Micro: Roost in caves, mines, and tunnels with minimal disturbance but can also be found in abandoned open buildings or other human-made structures. Recently detected in hollowed trees. Conspicuous rooster, sensitive to disturbance.	Low: There are no CNDDB occurrences reported within 5 miles of the study area. No suitable habitat was detected in the study area.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
American badger	<i>Taxidea taxus</i>	Fed: none CA: SSC	General: Dry, open grasslands with friable soil for dens.	Moderate: Potential habitat is available in and near grasslands bordering the I-580 Corridor Area, the Cayetano Creek Area, and grasslands surrounding the Laughlin Road Area.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	Fed: FE CA: ST	General: Arid grasslands and open scrubland, where friable soils are present. Historically, habitat included native alkali marsh and saltbrush scrub. Micro: Grasslands with friable soils are principal habitat for denning and foraging; SJKFs will dig own dens, use banks in sumps or roadbeds, or use existing dens, use human-made culverts and abandoned pipes.	Moderate: Only historical records document SJKF presence within 5 miles of the study area; however, habitat suitability is presumed in annual grasslands in the Cayetano Creek Area and some grasslands north of I-580. Isolation of the Isabel North Area and Isabel South Area from surrounding urbanization limits SJKF access.
PLANTS				
Alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	Fed: none CA: none CRPR: 1B.2	General: Valley grassland, alkali sink, freshwater wetlands, wetland-riparian. Micro: Often found in large vernal pools. Blooming May-June.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Surveys have yet to be undertaken at the Cayetano Creek Area, and some grasslands north of I-580 where potential is considered low to moderate. Suitable alkali habitat near the Cayetano Creek Area is primarily beyond the Proposed Project and DMU footprints.
Heartscale	<i>Atriplex cordulata</i> var. <i>cordulata</i>	Fed: none CA: none CRPR: 1B.2	General: Chenopod scrub, meadows and seeps, valley and foothill grassland, sandy; saline or alkaline. Micro: Found at elevations between 0 and 1,230 feet. Blooming Apr-Oct.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Surveys have yet to be undertaken at the Cayetano Creek Area, and some grasslands north of I-580 where potential is considered low to moderate. Alkali habitat near the Cayetano Creek Area is primarily beyond the Proposed Project and DMU footprints.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Brittlescale	<i>Atriplex depressa</i>	Fed: none CA: none CRPR: 1B.2	General: Chenopod scrub, meadows, seeps, playas, valley and foothill grassland, vernal pools, clay; alkaline habitats. Micro: Found at elevations ranging from 0 to 1,050 feet. Blooming Apr-Oct.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat in some grasslands north of I-580 and in grasslands and alkali habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.
San Joaquin spearscale	<i>Etriplex joaquiniana</i>	Fed: none CA: none CRPR: 1B.2	General: Chenopod scrub, alkali meadow, and valley and foothill grassland. Micro: In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis</i> , <i>Spicata</i> , <i>Frankenia</i> , etc. 0 to 984 feet. Blooming Apr-Oct.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. About ten plants were detected during surveys in 2016; about 100 feet from the Access Roadway area near Campus Hill Drive. Potential habitat in some grasslands north of I-580 and in grasslands and alkali habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.
Lesser saltscale	<i>Atriplex minuscula</i>	Fed: none CA: none CRPR: 1B.1	General: Shadscale Scrub, Valley Grassland, and Alkali Sink Micro: usually occurs in non-wetlands, but occasionally found in wetlands; Blooming: May-Oct.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat in some grasslands north of I-580 and in grasslands and alkali habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.
Round-leaved filaree	<i>California macrophylla</i>	Fed: none CA: none CRPR: 1B.1	General: Cismontane woodland; valley and foothill grassland Micro: clay soils; Blooming: Mar-May	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat in some grasslands north of I-580 and in grasslands near the Cayetano Creek Area where botanical surveys have yet to be undertaken.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Congdon's tarplant	<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Fed: none CA: none CRPR: 1B.1	General: Valley and foothill grassland. Micro: Alkaline soils; sometimes described as heavy white clay. 0 to 750 feet. Blooming May-Nov.	Low-Moderate: Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat in some grasslands north of I-580 and in grasslands and alkali habitat near the Cayetano Creek Area areas where botanical surveys have yet to be undertaken.
Hispid salty bird's-beak	<i>Chloropyron molle</i> ssp. <i>hispidum</i>	Fed: none CA: none CRPR: 1B.1	General: Meadows and seeps, playas, valley and foothill grassland, alkaline habitats. Micro: Found at elevations ranging from 1 to 500 feet. Blooming Jun-Sep.	Low: CNPS and CNDDB have recorded occurrences of this species within the Springtown area of Livermore. Not observed during focused surveys and not expected due to the avoidance of alkali scald habitat by project design.
Palmete-bracted salty bird's-beak	<i>Chloropyron palmatum</i>	Fed: FE CA: SE CRPR: 1B.1	General: Chenopod scrub, Valley and foothill grassland, and alkaline habitats. Micro: Found at elevations ranging from 164 to 1,295 feet. Blooming May-Oct.	Low: CNPS and CNDDB have recorded occurrences of this species within the Springtown area of Livermore. Not observed during focused surveys and not expected due to the avoidance of alkali scald habitat by project design.
Livermore tarplant	<i>Deinandra bacigalupii</i>	Fed: none CA: SC CRPR: 1B.2	General: Meadows and seeps. Micro: Alkaline soils; found at elevations ranging from 492 to 607 feet. Blooming Jun-Oct.	Low-Moderate. Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat is available in some grasslands north of I-580 and in grassland habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.
Recurved larkspur	<i>Delphinium recurvatum</i>	Fed: none CA: none CRPR: 1B.2	General: Shadscale Scrub, Valley Grassland, Foothill Woodland. Micro: Usually occurs in non-wetlands, but occasionally found in wetlands. Blooming Mar-Jun.	Low-Moderate. Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat is available in some grasslands north of I-580 and in grassland habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.

TABLE 3.I-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Diamond-petaled poppy	<i>Eschscholzia rhombipetala</i>	Fed: none CA: none CRPR: 1B.1	General: Valley Grassland Micro: unknown Blooming: Mar-Apr	Low-Moderate. Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat is available in some grasslands north of I-580 and in grassland habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.
Saline clover	<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	Fed: none CA: none CRPR: 1B.2	General: Marshes and swamps, valley and foothill grassland, and vernal pools. Micro: Mesic, alkaline sites, 0 to 984 feet. Blooming Apr-Jun.	Low-Moderate: CNDDB and CNPS have recorded occurrences of this species within the Greenville Road area. Not identified during focused surveys of the I-580 Corridor Area, Isabel North and South Areas, or staging areas. Potential habitat is available in some grasslands north of I-580 and in grassland habitat near the Cayetano Creek Area where botanical surveys have yet to be undertaken.

Critical Habitat

Vernal pool fairy shrimp critical habitat	n/a	Fed: critical habitat	n/a	None: Critical habitat for this species does not occur in the study area.
California red-legged frog critical habitat	n/a	Fed: critical habitat	n/a	None: Critical habitat for this species does not occur in the study area.

Notes: n/a = not applicable; DPS = distinct population segment; CRPR = California Rare Plant Rank; NOAA Fisheries = National Oceanic and Atmospheric Administration Fisheries Service.

Special-status Plant and Wildlife Species: Plant and Wildlife that were included in this table generally have a CRPR of 1 or 2, and were either observed within the study area by a ESA biologist, or contained within the query of the (1) CNDDB; (2) USFWS Endangered Species List; and/or (3) CNPS Online Inventory.

Status Codes:

Federal (USFWS or NOAA Fisheries):

- BGEPA = Bald and Golden Eagle Protection Act
- FE = Listed as Endangered by the Federal Government
- FT = Listed as Threatened by the Federal Government
- FPE = Proposed for Listing as Endangered
- FPT = Proposed for Listing as Threatened
- FSC = Former Federal Species of Special Concern (list is no longer maintained)
- FD = Federal Delisted Species
- FC = Candidate for Federal listing

State (CDFW):

- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- SR = Listed as Rare by the State of California (plants only)
- SSC = California species of special concern
- SC = California Candidate for listing as Endangered
- SFP = California fully protected species
- WL = Watch list
- CNPS: California Rare Plant Rank: Rank 1A = Plants believed extinct; Rank 1B = Plants rare, threatened, or endangered in California and elsewhere; List 2 = Plants rare, threatened, or endangered in California but more common elsewhere

TABLE 3.1-4 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status	Habitat and Seasonal Distribution in California	Likelihood of Occurrence
Unless otherwise noted, Habitat and Seasonal Distribution in California is derived from habitat requirements provided by the CNDDDB. Blooming period for plant species is derived from the CNPS Online Inventory. Likelihood of occurrence evaluations: A rating of “present” indicates that the species has been observed in the study area; “high” potential indicates that this species is expected to occur on site or occurs locally to the area; “moderate” indicates that suitable habitat exists in the study area; “low” potential indicates that the study area is outside of the species’ described range or suitable habitat is absent. Source: CDFW, 2016.				

e. Accounts of Species Occurrence

A brief description of those special-status plant and wildlife species that have been identified or are expected to occur in the study area is provided below. Table 3.1-5 summarizes the potential distribution of special-status species in the study area based on the data presented in Table 3.1-4.

TABLE 3.1-5 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR – SUMMARY BY GEOGRAPHIC SUBAREA

	Dublin/ Pleasanton Station Area	I-580 Corridor Area	Isabel North Area	Isabel South Area	Cayetano Creek Area	Laughlin Road Area
WILDLIFE						
Longhorn fairy shrimp		✓			✓	
Vernal pool fairy shrimp		✓			✓	
Callippe silverspot butterfly	Low likelihood to occur					
Central California coastal steelhead	Low likelihood to occur					
Western pond turtle	✓	✓		✓	✓	
California tiger salamander		✓			✓	✓
California red-legged frog		✓	✓	✓	✓	✓
Western spadefoot					✓	
Cooper’s hawk		✓		✓		
Sharp-shinned hawk		✓		✓		
Tricolored blackbird (nesting)			✓		✓	
Golden eagle (nesting)	Low likelihood to occur					

TABLE 3.I-5 SPECIAL-STATUS WILDLIFE AND PLANT SPECIES WITH POTENTIAL TO OCCUR – SUMMARY BY GEOGRAPHIC SUBAREA

	Dublin/ Pleasanton Station Area	I-580 Corridor Area	Isabel North Area	Isabel South Area	Cayetano Creek Area	Laughlin Road Area
Western burrowing owl (nesting)	✓	✓	✓	✓	✓	✓
Swainson’s hawk (nesting)	Low likelihood to occur					
Northern harrier (nesting)		✓			✓	
White-tailed kite (nesting)				✓		✓
California horned lark		✓	✓	✓	✓	✓
Loggerhead shrike (nesting)	✓	✓	✓	✓	✓	✓
Pallid bat		✓		✓		
Townsend’s big-eared bat	Low likelihood to occur					
American badger		✓			✓	✓
San Joaquin kit fox		✓			✓	✓
PLANTS						
Alkali milk-vetch		✓			✓	
Heartscale		✓			✓	
Brittlescale		✓			✓	
San Joaquin spearscale		✓			✓	
Lesser saltscale		✓			✓	
Round-leaved filaree		✓			✓	
Congdon’s tarplant		✓			✓	
Hispid salty bird’s-beak	Low likelihood to occur					
Palmate-bracted salty bird’s beak	Low likelihood to occur					
Livermore tarplant		✓			✓	
Recurved larkspur		✓			✓	
Diamond-petaled poppy		✓			✓	
Saline clover		✓			✓	

Notes: ✓ = present or potentially present (i.e., either high – is expected to occur on site or occurs locally to the area or moderate – suitable habitat exists in the study area); for species with low potential to occur, the study area is outside of the species’ described range or suitable habitat is absent.
 Sources: ESA, 2013a,b,c,d; Arup, 2017.

(1) Wildlife

Longhorn Fairy Shrimp (*Branchinecta longiantenna*). LHFS are described from several vernal pool habitat types in California, ranging from small, clear, sandstone outcrop pools to large, turbid, alkaline, grassland pools; however, in Alameda and Contra Costa Counties

this species is only described from a small series of sandstone outcrop pools.³² The two isolated Bay Area populations of this species are located just over 2 miles northeast of the Laughlin Road Area, at Souza Ranch in the Brushy Peak Preserve and the Vasco Caves Preserve.³³ Both of these locations are shallow sandstone rock-outcrop pools. Designated critical habitat for this species does not occur within the study area.

The potential for this species to occur in the collective footprint is described below from west to east along the project corridor.

- In the I-580 Corridor Area, several seasonal pools north of Croak Road, collectively referred to as SW-6, provide potential low quality habitat for this species (see Figure 3.1-2a); together, these pools are approximately 0.025 acre. Repeated livestock movement in the adjoining pasture created a few shallow depressions just north of the fenceline; hence, any widening of Croak Road to the north would impact a portion of these features. Portions of these features are within the collective footprint.
- Potential habitat for special-status vernal pool invertebrates described in the BART to Livermore Extension Program EIR (PEIR)³⁴ at the Isabel North Area is outside of the collective footprint. Changes to the project configuration have avoided the seasonal wetland area identified north of I-580 and west of Isabel Avenue (see Draft PEIR, Figure 3.9-2b, page 3.9-6). Hence, the Program EIR statement that “0.5 and 2 acres of wetlands could be filled” that provide vernal pool invertebrate habitat does not apply to the Proposed Project and Build Alternatives.
- Within the Cayetano Creek Area, a large vernal pool complex that may support LHFS (and VPFS, discussed below) was identified by modeling and remote sensing techniques. As shown in Figure 3-1-2b, this area is adjacent to the collective footprint.³⁵ While preliminary findings suggest the absence of seasonal pools and LHFS habitat in the collective footprint in the Cayetano Creek Area due to sloping topography, this species or its potential habitat could be present at these locations as surveys have yet to be completed due to access limitations to the private property.

³² Eng, L.L., D. Belk, and C.H. Erikson, 1990. California Anostraca: Distribution, Habitat, and Status. *Journal of Crustacean Biology* Vol. 10 No. 2.

³³ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

³⁴ San Francisco Bay Area Rapid Transit District (BART), 2010. BART to Livermore Extension Final Program Environmental Impact Report. Available at: https://bart.gov/sites/default/files/docs/Bart-to-Livermore-EIR-WEB_0.pdf, accessed April 26, 2017.

³⁵ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

- Habitat for this species does not occur in the already developed portions of the Laughlin Road Area or other geographic subareas along the project corridor.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*). VPFS occur in a variety of vernal pool habitats, ranging from small, clear, sandstone rock pools to large, turbid, alkaline, and grassland valley floor pools. Although the species has been collected from large vernal pools, it tends to occur in smaller ones. Most commonly they occur in grass- or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands.³⁶ The CNDDDB reports VPFS in seasonal wetland habitat in and near the Springtown Preserve, approximately 1 mile from the Cayetano Creek Area. Designated critical habitat for this species does not occur in the study area.

The potential for this species to occur in the collective footprint is described below from west to east along the project corridor.

- Seasonal pools in the I-580 Corridor Area, totaling approximately 0.025 acre, were identified north of Croak Road that may support this species (see feature SW-6 on Figure 3.I-2a).
- Seasonal pools that support this species are not located at the Isabel North and Isabel South areas, based on field surveys. As described for LHFS, changes to the project configuration have avoided the seasonal wetland area identified north of I-580 and west of Isabel Avenue.
- As described for LHFS above, based on a review of aerial photos and the EACCS model, vernal pool habitat is anticipated in the Cayetano Creek Area. As shown in Figure 3-I-2b, this area is adjacent to the collective footprint.³⁷ While preliminary findings suggest the absence of seasonal pools and VPFS habitat in the collective footprint in the Cayetano Creek Area due to sloping topography, this species or its potential habitat could be present at these locations as protocol-level surveys have yet to be completed due to access limitations to the private property.
- Comments received on the PEIR discussed the unique character and sensitivity of vernal pools on BART's Greenville/Laughlin Road properties, which are adjacent to the Laughlin Road Area (see Regional Water Quality Control Board [RWQCB] comment 8.9

³⁶ United States Fish and Wildlife Service (USFWS), 2005b. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Evaluation of Economic Exclusions From August 2003 Final Designation, Final Rule 70:154 FR, U.S. Department of the Interior, Fish and Wildlife Service. August 11.

³⁷ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

in the Final PEIR (pg. 4-59).³⁸ The location of the Laughlin Road Area, which is the footprint for the remote parking lot in the Express Bus/BRT Alternative, was selected to avoid the sensitive vernal pool complexes.³⁹ (The footprints of the Proposed Project and other Build Alternatives do not include the Laughlin Road Area or extend as far to the east.)

Callippe silverspot butterfly (*Speyeria callippe callippe*). The Callippe silverspot butterfly generally occurs in grazed and ungrazed grasslands where its larval food plant, Johnny jump-up (*Viola pedunculata*), is available. The three primary habitat requirements of the Callippe silverspot butterfly are characterized as grasslands that support Johnny jump-ups, hilltops near suitable habitat for mate location, and availability of nectar plants.⁴⁰ Adult Callippe silverspot butterflies may forage for nectar from mints, thistles, and California buckeye. Callippe silverspot butterflies may also forage for nectar in other habitats as well, sometimes visiting disturbed areas and the margins of riparian areas and oak woodlands. This species seems to prefer topographically diverse areas, with adults gathering on hilltops during the May to July flight season as they search for mates. There are no Callippe silverspot butterfly occurrences reported from the Livermore-Amador Valley and the EACCS modeling did not identify suitable annual grasslands in the study area that would support Callippe silverspot butterfly. This species is not expected in the study area based on published species range descriptions, including the description provided in the EACCS.⁴¹

Central California coast steelhead (*Oncorhynchus mykiss*). Adult steelhead spend 2 to 3 years in the open ocean before returning to their natal streams to spawn. Juveniles spend 1 to 2 years in freshwater before migrating to the ocean. Landlocked central California coast steelhead are known to occur in Alameda Creek and its tributary, Arroyo Mocho upstream from the city of Livermore. The only creek near the study area that could support steelhead is the Arroyo Mocho, more than 0.5 mile south of the collective footprint. The BART weir and associated rubber dams on lower Alameda Creek in the city of Fremont impede the passage of steelhead into the upper Alameda Creek watershed and the Livermore-Amador Valley; hence, due to instream impediments, this species is not

³⁸ San Francisco Bay Area Rapid Transit District (BART), 2010. BART to Livermore Extension Final Program Environmental Impact Report. Available at: https://bart.gov/sites/default/files/docs/Bart-to-Livermore-EIR-WEB_0.pdf, accessed April 26, 2017.

³⁹ Environmental Science Associates, 2013d. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 3 [Laughlin Road Area], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District, October.

⁴⁰ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

⁴¹ Ibid.

expected in the study area.⁴² The Arroyo las Positas and other drainages that traverse the I-580 corridor do not provide habitat for this species.

Western pond turtle (*Actinemys marmorata*). This aquatic turtle ranges throughout much of California, from the Sierra Nevada foothills to the coast and in coastal drainages from the Oregon border to the Mexican border. They typically inhabit ponds, slow-moving streams and rivers, irrigation ditches, and reservoirs with abundant emergent and/or riparian vegetation. The WPT requires adjacent uplands (i.e., within 656 to 1,300 feet [200 to 400 meters] of water) for nesting and egg laying, typically in soils with high clay or silt component on unshaded, south-facing slopes. In colder climates, they may spend the winters hibernating in these upland habitats. WPT are presumed present within all perennial and intermittent drainages located along or adjacent to the study area, and may be encountered in association with drainages in the Dublin/Pleasanton Station Area, along the I-580 Corridor Area (grasslands north of Croak Road), the Isabel South Area, and in the Cayetano Creek Area.

California tiger salamander (*Ambystoma californiense*). CTS is principally an upland species found in annual grasslands and in the grassy understory of valley-foothill hardwood habitats in Central and Northern California. They require underground refuges (usually ground squirrel or other small mammal burrows), where they spend the majority of their annual cycle. Between December and February, when seasonal ponds begin to fill, adult CTS engage in mass migrations to aquatic sites during a few rainy nights and are explosive breeders.⁴³

During drought years when ponds do not form, adults may spend the entire year in upland environments, while juveniles may spend 4 to 5 years in their upland burrows before reaching sexual maturity and breeding for the first time.^{44, 45} Adult CTS swiftly disperse after breeding and have been documented to travel up to 423 feet (129 meters)

⁴² A weir is a structure designed to alter the characteristics of the river or creek flows.

⁴³ Barry, S.J. and H.B. Shafer, 1994. The Status of the California Tiger Salamander (*Ambystoma californiense*) at Lagunita: a 50 year update. *Copeia* 1994:159-164.

⁴⁴ Petranka, James W., 1998. Salamanders of the United States and Canada. Smithsonian Institution Press.

⁴⁵ Trenham, P., H.B. Shaffer, W.D. Koenig, and M.R. Stromberg, 2000. Life History and Demographic Variation of the California tiger Salamander (*Ambystoma californiense*), (2):365-377, *Copeia*.

the first night after leaving a breeding pond.⁴⁶ Adult CTS readily aestivate⁴⁷ in grasslands near ponds and at great distances from breeding ponds. Adults are routinely known to travel distances greater than 0.62 mile (1 kilometer) from breeding ponds and have been documented at distances of 1.2 miles (2 kilometers) or more from breeding sites.⁴⁸ Typical aestivation sites include the burrows of California ground squirrel and valley pocket gopher (*Thomomys bottae*).

CTS occur in the foothill grasslands of the Mount Diablo Range and throughout undeveloped grasslands generally located north of I-580 and the city of Livermore. As shown on Figure 3.I-3, the CNDDDB documents greater than five CTS breeding occurrences in grasslands located approximately 0.5 mile north of the I-580 Corridor Area and Cayetano Creek Area.

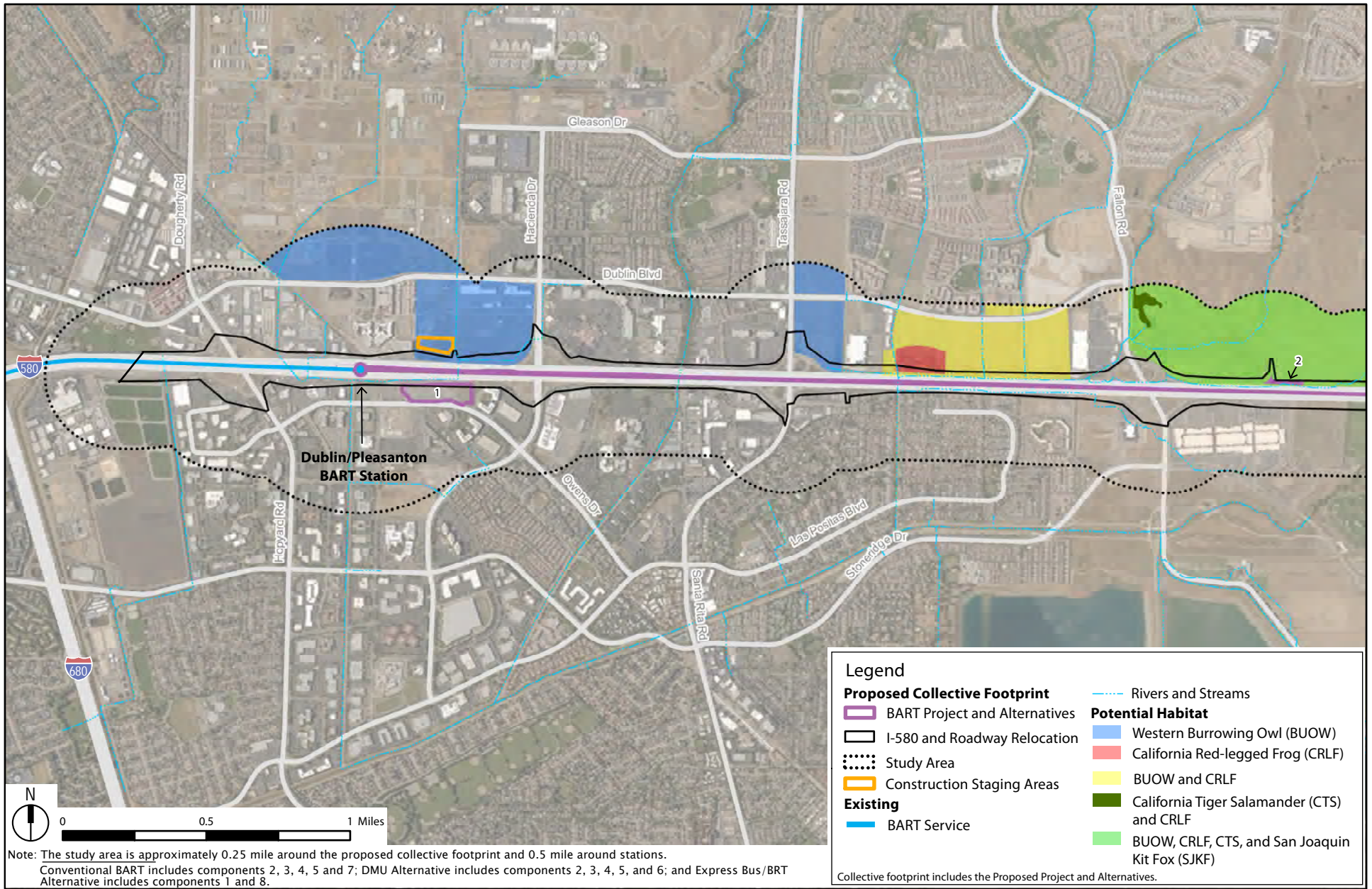
CTS may be encountered in select grasslands, ruderal habitat, and some developed areas that occur north of I-580. Upland areas where CTS are expected to occur within the collective footprint are within the I-580 Corridor Area and the Cayetano Creek Area (see Figures 3.I-4a and 3.I-4b). These areas may be used for aestivation, foraging, and dispersal. The developed portions of Laughlin Road Area may additionally provide CTS dispersal habitat, as potential breeding sites occur in grasslands surrounding the site. Typical CTS breeding habitat in seasonal wetlands and stock ponds was not identified in the immediate collective footprint; however, portions of Cayetano Creek could sporadically support instream breeding. Breeding has been observed in calm pools that form in lower order intermittent streams in the Altamont Hills, such as Cayetano Creek. Designated critical habitat for this species does not occur in the study area.

California red-legged frog (*Rana draytonii*). CRLFs are largely aquatic frogs found at ponds and slow-moving streams with permanent or semi-permanent water. This species opportunistically migrates into upland habitats due to normal dispersal behavior. This species may aestivate in upland environments when aquatic sites are unavailable or environmental conditions are inhospitable. If water is unavailable, they shelter from dehydration in a variety of refuges, including boulders, downed wood, moist leaf litter, and small mammal burrows. Adult, sub-adult, and juvenile frogs actively disperse from aquatic breeding sites, using annual grasslands, ruderal areas, and woodlands as cover.

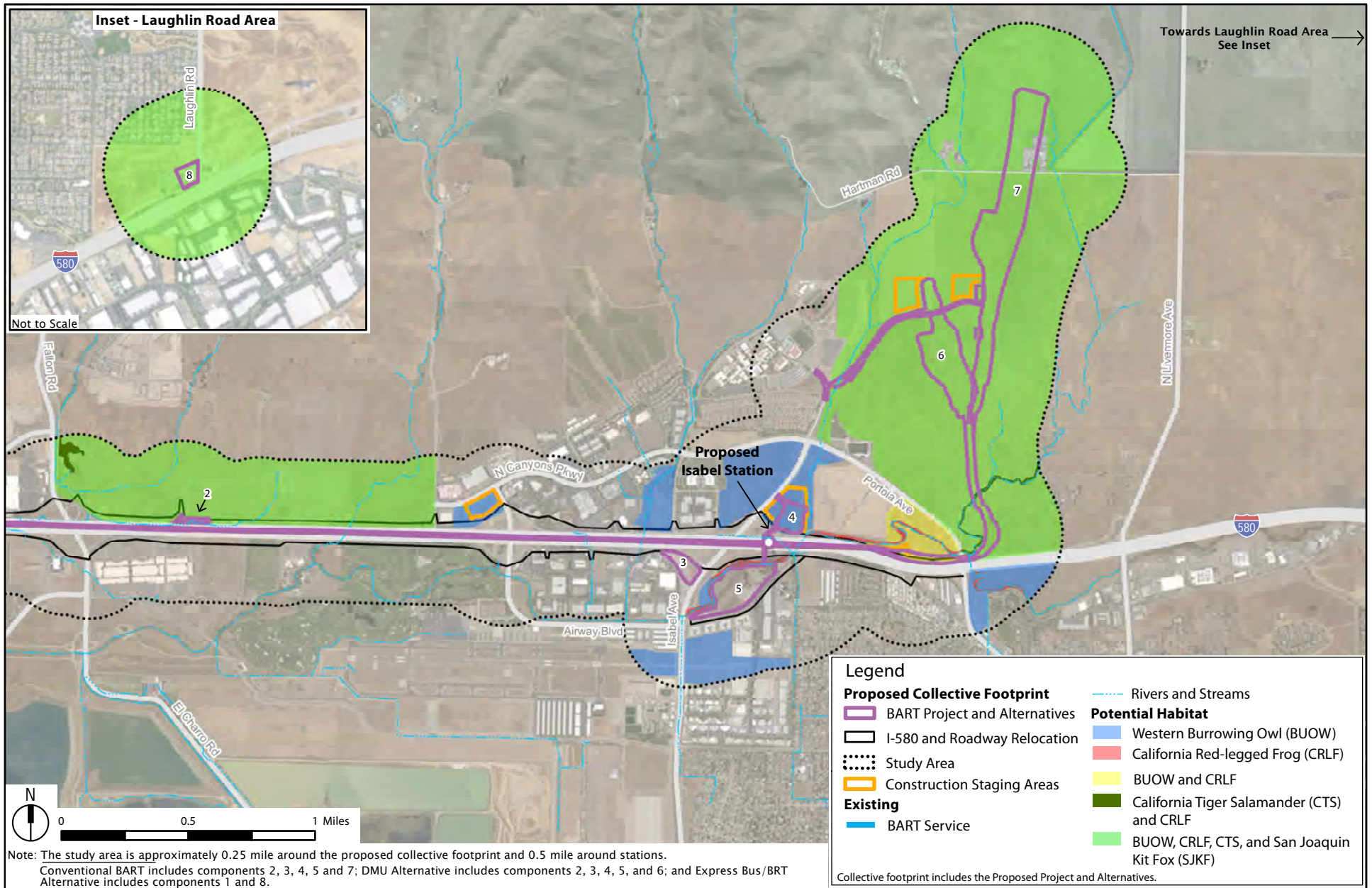
⁴⁶ Loredó, I., D. Van Vuren, and M.L. Morrison, 1996. Habitat use and migration behavior of the California tiger salamander. *Copeia* 1996:895-901.

⁴⁷ Aestivation is a state of animal dormancy, similar to hibernation, characterized by inactivity and a lowered metabolic rate that is entered in response to high temperatures and arid conditions.

⁴⁸ Orloff, S., 2007. Migratory Movements of California Tiger Salamander in Upland Habitat - A Five Year Study, Pittsburg, California. Prepared for Bailey Estates, LLC. May.



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.



Source: Microsoft, 2017; Arup, 2017; ESA, 2013a,b,c,d.

Historically, CRLF occurred along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from Redding, Shasta County, southward to northwestern Baja California, Mexico.⁴⁹ The majority of CRLF occurrences in the San Francisco Bay Area are from Contra Costa and Alameda Counties.

As shown on Figure 3.1-3, there are numerous CRLF occurrences documented in annual grasslands north of the I-580 Corridor Area and near the Cayetano Creek Area.⁵⁰ Based on these survey findings, CNDDDB-reported occurrences, and a review of potentially suitable upland and aquatic habitat, areas within the study area where CRLF may occur are shown in Figures 3.1-4a and 3.1-4b.^{51, 52, 53, 54}

This species is documented in Cayetano Creek within the Cayetano Creek Area, and adult and juvenile frogs may be encountered in upland habitats throughout the Cayetano Creek Area. Both breeding and non-breeding aquatic habitat that may support this species is present in Arroyo las Positas, and the Isabel North Area and Isabel South Areas. Near the Isabel North and South Areas, instream and upland habitat is better suited for this species north of I-580, though CRLFs may be encountered within the Arroyo las Positas riparian corridor at the Isabel South Area as well. Habitat for CRLF does not occur in the developed Laughlin Road Area; however, there are no impediments to this species potentially wandering onto the site from grassland habitat east of Laughlin Road.

Ongoing focused CRLF surveys performed by the Zone 7 Water Agency in Chabot Canal, Line G-2, and Tassajara Creek between 2001 and 2016 have not identified CRLF in these

⁴⁹ Jennings, M. R., and M. P. Hayes, 1994. Amphibian and reptile species of special concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. pp. 225.

⁵⁰ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

⁵¹ Environmental Science Associates, 2013a. BART to Livermore Extension (BLVX) Project Consolidated Biological Resources Report, Site 7 [I-580 Corridor Area], Alameda County, California. Prepared for the San Francisco Bay Area Rapid Transit District. October.

⁵² Environmental Science Associates, 2013b. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 2 [Isabel North], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District, October.

⁵³ Environmental Science Associates, 2013c. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 1 [Isabel South], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District. November.

⁵⁴ Environmental Science Associates, 2013d. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 3 [Laughlin Road Area], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District, October.

drainages, as shown in Figure 3.I-5. Based on these findings, CRLF is not anticipated at the Dublin/Pleasanton Station Area.⁵⁵

Western spadefoot (*Spea hammondi*). The western spadefoot uncommonly occurs in association with ephemeral pools in open grassland habitats. There are two known occurrences documented in the Livermore-Amador Valley; both from the U.S. Department of Energy Sandia National Laboratories area, approximately 5 miles southeast of the study area. This species remains underground for much of the year, emerging to breed in seasonal wetland pools during the rainy season. Though not documented within the study area, potential breeding habitat may be present in the large vernal pool complex located in the Cayetano Creek watershed in the Cayetano Creek Area.

Cooper's hawk (*Accipiter cooperii*). Cooper's hawks nest in dense forested habitats near freshwater and forage mostly on small birds and mammals, although they will take reptiles and amphibians. Their peak nesting season is May through July, but can occur anywhere from March to August.⁵⁶ Cooper's hawk nesting is not documented in the study area. Potential nesting habitat is available in association with riparian corridors that occur on the I-580 Corridor Area and at the Isabel South Area.

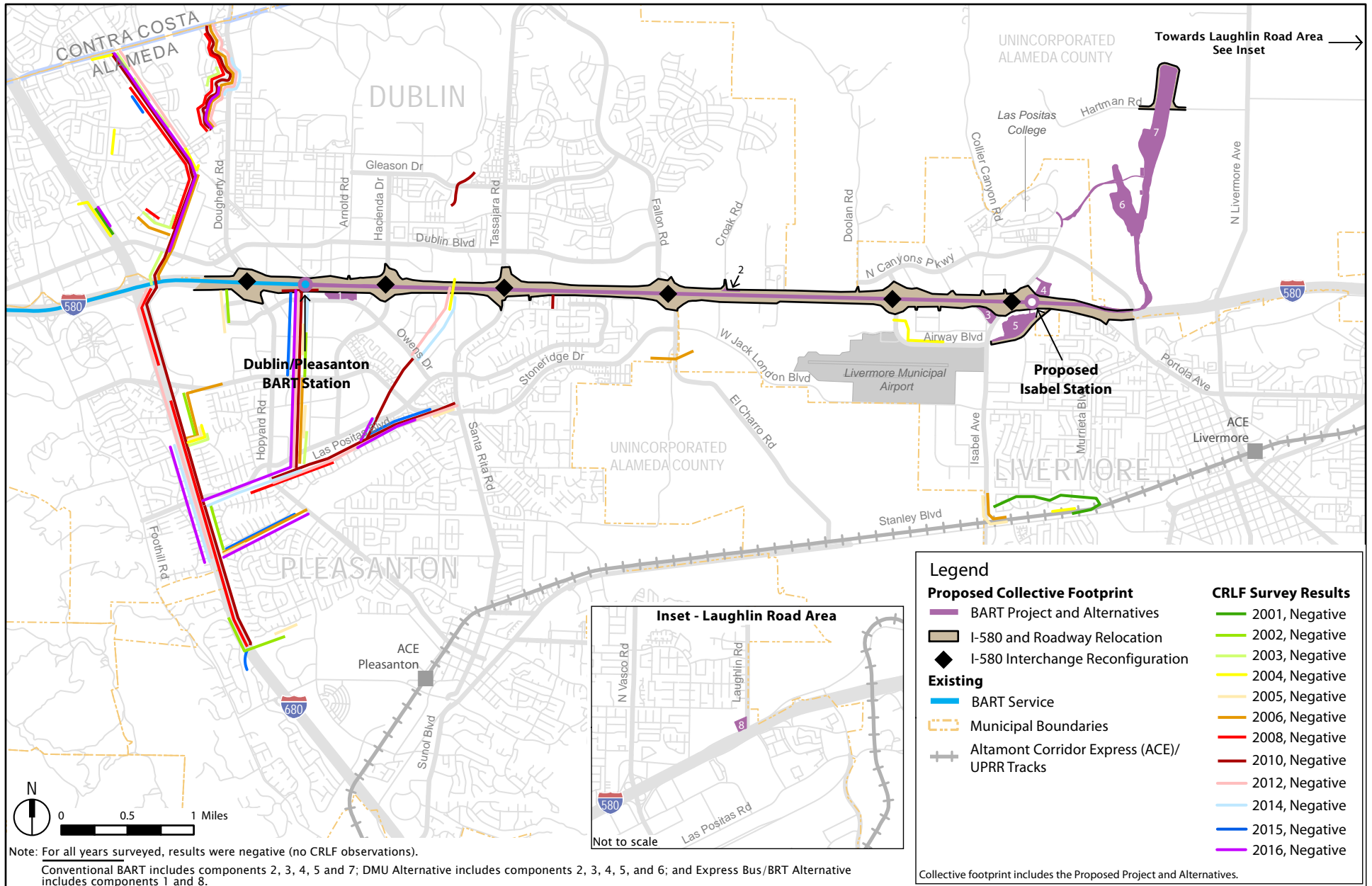
Sharp-shinned hawk (*Accipiter striatus*). The sharp-shinned hawk occupies a wide variety of forests and woodland habitats, ranging from mixed deciduous forests, riparian woodlands, to oak woodlands, among others. Like the Cooper's hawk, this species forages in dense forested habitats near freshwater and forages mostly on small birds, though they will take small mammals, frogs, lizards, and insects. This species is not documented to nest in the study area. Potential nesting habitat is available in association with riparian corridors that occur at the I-580 Corridor Area and at the Isabel South Area.

Tricolored blackbird (*Agelaius tricolor*). Tricolored blackbirds are a colonial species that nest in dense vegetation in and around freshwater wetlands. When nesting, tricolored blackbirds generally require freshwater wetland areas large enough to support colonies of 50 pairs or more. They prefer freshwater emergent wetlands with tall, dense cattails or tules for nesting, but will also breed in thickets of willow, blackberry, wild rose, or tall herbs. During the nonbreeding season, flocks are highly mobile and forage in grasslands, croplands, and wetlands.⁵⁷ Nesting is not documented from the study area and during

⁵⁵ Pittman, B., 2001 to 2016. Protocol level survey findings for California red legged frog in Chabot Canal (for years 2001, 2002, 2003, 2004, 2005, 2006, 2008, 2010, 2012, 2014, 2015, and 2016).

⁵⁶ Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer, 1988. California's Wildlife, Vol. I III, California Department of Fish and Game.

⁵⁷ Ibid.



Source: Arup, 2017; Zone 7, 2016.

reconnaissance surveys, no nesting colonies were detected. Tricolored blackbirds may sporadically breed in the study area where suitable habitat is available. Such habitat is potentially available in emergent wetland vegetation present in Arroyo las Positas within the Isabel North Area, and along Cayetano Creek in Cayetano Creek Area.

Golden eagle (*Aquila chrysaetos*). Golden eagles occur throughout California from sea level, to approximately 11,500 feet. They feed mostly on rodents and rabbits but will take other mammals, birds, reptiles, and some carrion. Golden eagles require open woodland or grassland for foraging and tall trees or steep cliffs for breeding. They can also be found in open, rolling country grasslands or savannahs, farms, chaparral, and at the desert edge. Golden eagle nesting habitat does not generally occur within the study area; however, foraging habitat is potentially present at the Cayetano Creek Area.

Western Burrowing owl (*Athene cunicularia*). BUOW are year-long residents in generally flat, open dry grasslands, pastures, deserts, and shrub lands, and in grass, forbs, and open shrub stages of pinyon-juniper and ponderosa pine habitats. This species uses communal ground squirrel and other small mammal burrow colonies for nesting and cover, as well as artificial structures such as roadside embankments, levees, berms, and rubble piles, and have been observed within railroad ROWs. They prefer open, dry, nearly level grassland or prairie habitat and can exhibit high site fidelity, often reusing burrows year after year.

Occupancy of suitable BUOW habitat can be verified at a site by observation of a pair of BUOW during their breeding season (March to August) or, alternatively, by the presence of molted feathers, cast pellets, prey remains (rodents, small reptiles, and large insects), eggshell fragments, or excrement (guano or must), near or at a burrow. There are several historic BUOW occurrences reported within 0.5 mile of the study area, though no known extant occurrences within or adjacent to study area. The distribution of potential habitat for BUOW is based on the known or suspected presence of California ground squirrels within grasslands and ruderal habitats, as shown in Figures 3.1-4a and 3.1-4b. Potential nesting habitat was identified in grasslands near the Dublin/Pleasanton Station Area, in grasslands both north and south of the I-580 Corridor Area, at the Isabel North and South areas, at the Cayetano Creek Area, and grasslands surrounding the Laughlin Road Area.

Swainson's hawk (*Buteo swainsoni*). Swainson's hawks are large migratory hawks that nest in North America and winter in southern South America. Swainson's hawks begin arriving in California in late February and depart for their wintering grounds in early

September.⁵⁸ Nests are typically constructed in sturdy trees within or near agricultural lands, riparian corridors, and roadside trees. Nests are composed of a platform of sticks, bark, and fresh leaves. Swainson's hawks reside in the Central Valley from March through October, with eggs typically laid in April and early May (peaking in late April). Swainson's hawks are not known to nest in the Livermore area and the nearest described nesting site is greater than 7.5 miles east of the Laughlin Road Area. For these reasons, this species is not expected in the study area.

Northern harrier (*Circus cyaneus*). Northern harriers breed and forage in a variety of open (treeless) habitats (freshwater marsh, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands, including those with vernal pools, weed fields, ungrazed or lightly grazed pastures) that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. Harriers nest on the ground, mostly in undisturbed areas within patches of dense, tall vegetation. Harriers feed on a broad variety of small- to medium-size vertebrates, primarily rodents and passerines (small birds). Northern harriers could nest within annual grasslands north of the I-580 Corridor Area and the Cayetano Creek Area.

White-tailed kite (*Elanus leucurus*). The white-tailed kite breeds between February and October and feeds on rodents, small reptiles, and large insects in fresh emergent wetlands, annual grasslands, pastures, and ruderal vegetation. Unlike other raptors, kites often roost and occasionally nest communally; therefore, disturbance of a relatively small roost or nesting area could affect a large number of birds. Suitable foraging habitat occurs within the study area. Suitable nesting habitat exists in mature eucalyptus and other trees located at the Isabel South Area and potentially in and near the Laughlin Road Area.

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike prefers open country with short vegetation: pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. They feed primarily on insects or small rodents in grasslands adjacent to woodland areas. During the breeding season the loggerhead shrike can nest near isolated trees or large shrubs with thorns; when trees or shrubs are lacking, birds will also build in brush piles, tumbleweeds, or hardwood debris.⁵⁹ Suitable nesting sites in the form of shrubs within

⁵⁸ Woodbridge, B., 1998. Swainson's Hawk (*Buteo swainsoni*), in *The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian associated birds in California*. California Partners in Flight.

⁵⁹ Yosef, R., 1996. Loggerhead Shrike (*Lanius ludovicianus*). In *Birds of North America*, No. 231 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.

annual grasslands were noted near the Dublin/Pleasanton Station Area, I-580 Corridor Area, Isabel North and South Areas, Cayetano Creek Area, and at the Laughlin Road Area.

Pallid bat (*Antrozous pallidus*). The pallid bat is common in arid regions with rocky outcroppings, particularly near water. This gregarious species usually roosts in small colonies of 20 or more individuals in rock crevices and buildings but occasionally roosts in caves, mines, rock piles, highway structures (i.e., box culverts, overpasses), and tree cavities. This species chiefly feeds on the ground although it occasionally takes prey in flight within approximately 3 to 10 feet of the ground or from the surfaces of vegetation. Prey items include scorpions, crickets, centipedes, beetles, grasshoppers, cicadas, and katydids, as well as lizards and rodents. This bat could roost in bridges along the I-580 Corridor Area in association with I-580 underpasses or box culverts and the Isabel South Area due to the presence of mature trees and access to water.

Townsend's big-eared bat (*Corynorhinus townsendi*). The Townsend's big-eared bat is reported from a variety of habitat types, including coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat, ranging from sea level to 10,826 feet.⁶⁰ Their typical habitat is arid western desert scrub and pine forest regions. The CNDDDB does not report any locations for this species within 10 miles of the study area.⁶¹

Townsend's big-eared bats occur throughout the Western U.S. with their distribution strongly correlated with the availability of caves and cave-like roosting habitat, including abandoned mines. Cave-type habitat is absent from the study area and the few eucalyptus trees in these areas do not provide habitat for this species.

American badger (*Taxidea taxus*). In California, American badgers occupy a diversity of habitats. Grasslands, savannas, and mountain meadows near the timberline are preferred, though they can be found in deserts as well. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground.

Badgers range throughout California, except for the humid coastal forests of northwestern California in Del Norte County and the northwestern portion of Humboldt County.⁶² This species occurs in low densities in grassland habitats surrounding the Livermore-Amador

⁶⁰ Western Bat Working Group, 2005. Online species accounts, Western Bat Working Group, 2005. Website: http://wbwg.org/western_bat_species/.

⁶¹ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

⁶² Williams, D.F., 1986. Mammalian Species of Special Concern in California. Wildlife Management Division Administrative Report 86 1. California Department of Fish and Game. Sacramento, California. June.

Valley with potentially suitable habitat in in grasslands that occur north of the I-580 Corridor Area, the Cayetano Creek Area, and surrounding the Laughlin Road Area.

San Joaquin kit fox (*Vulpes macrotis mutica*). The SJKF is a permanent resident of arid grasslands and open scrubland where friable (easily crumbled) soils are present. Dens are required year-round for reproduction, shelter, temperature regulation, and protection from predators. Historically, habitat for this species included native alkali marsh and saltbush scrub of the valley floor, but the availability of such habitats has diminished markedly due to agricultural conversion. Grasslands with friable soils are considered the principal habitat for denning, foraging, and dispersal, while open oak woodlands provide lower quality foraging and dispersal habitat. SJKF will use habitats that have been extensively modified by humans, including grasslands and scrublands with active oil fields, wind turbines, and agricultural matrices.⁶³ In the northern portion of its range, California ground squirrels are a chief component of the SJKF diet.⁶⁴

SJKF occur only in and around the Central Valley, inhabiting open habitat in the San Joaquin Valley and surrounding foothills. SJKF population densities are greatest in the southern portion of their range. SJKF populations in the northern portion of their range are highly fragmented and sparsely distributed.⁶⁵ Only historical records document SJKF presence within 5 miles of the study area; however, habitat suitability is presumed in annual grasslands in the Cayetano Creek Area and some grasslands north of I-580. The potential distribution of habitat that may support SJKF is shown in Figures 3.I-4a and 3.I-4b. The Isabel North and South areas are surrounded by urban development, which limits SJKF access; therefore, this species is not anticipated in these areas. In addition, this species is not expected within the developed Laughlin Road Area; however, potentially suitable habitat is available in grasslands that surround this area.

(2) Rare Plants

Protocol-level rare plant surveys were completed in July 2013, October 2013, and April 2014 for the accessible portions of the study area as described in Table 3.I-1. While no rare plants were identified in the collective footprint, one species was detected about 100 feet outside of the collective footprint, as discussed below.

⁶³ United States Fish and Wildlife Service (USFWS), 1998. Recovery plan for upland species of the San Joaquin Valley, California, U.S. Department of the Interior, Fish and Wildlife Service, Region 1, Portland, OR.

⁶⁴ Hall, Jr., F.A., 1983. Status of the San Joaquin kit fox, *Vulpes macrotis mutica*, at the Bethany Wind Turbine Generating Project site, Alameda County, California, California Department of Fish and Game.

⁶⁵ Orloff, S., F. Hall, and L. Speigel, 1986. Distribution and Habitat Requirements of the San Joaquin Kit Fox in the Northern Extreme of Their Range. Transactions of the Western Section of the Wildlife Society, 22: 60-70.

None of the species listed below were identified during focused surveys of the following areas: the I-580 Corridor Area, the Isabel North and Isabel South areas, or construction staging areas. However, as noted in the Local Setting and Survey Methodology subsection above, several large grassland areas that provide potential habitat remain to be surveyed due to access limitations to private property. Within these areas, potential habitat is considered limited in the Arnold Road Staging Area (within the Dublin/Pleasanton Station Area) and at the North Canyons Parkway Staging Area (within the I-580 Corridor Area). In addition, for areas where these species could be present in the Cayetano Creek Area (i.e., in alkali habitat), the design of the Proposed Project and DMU Alternative was modified to avoid sensitive alkali areas where rare plants are most likely to occur.

The following species were detected during surveys near the study area (but not within the collective footprint).

- **San Joaquin spearscale (*Etriplex joaquiniana*).** San Joaquin spearscale is a member of the goosefoot (Chenopodiaceae) family that occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland habitats at elevations ranging from 1 to 984 feet. The flowering period for this species is April through October. Potential habitat is present in some grasslands north of the I-580 Corridor Area and in grasslands and alkali habitat near the Cayetano Creek Area. This species was not identified during focused surveys of the I-580 Corridor Area or Isabel North and South Areas. However, about 10 San Joaquin spearscale plants were detected during surveys in 2016 about 100 feet outside of the collective footprint (for the proposed access road from Campus Hill Drive). In addition, potential habitat is considered limited in the Arnold Road Staging Area and at the North Canyons Parkway Staging Area, where botanical surveys have not been finalized.

The following species were not detected during surveys.

- **Alkali milk-vetch (*Astragalus tener* var. *tener*).** Alkali milk-vetch is a member of the Fabacea family that occurs in valley grassland, alkali sink, freshwater wetland, and riparian-wetland communities and alkali playa and vernal pool habitats at elevations of 0 to 60 feet. The flowering period for this species is March to June. This species has been recorded in the east Livermore area both north and south of I-580. Potential occurrence for this species is considered low to moderate in the Arnold Road Staging Area, North Canyons Parkway Staging Area, and Cayetano Creek Area.
- **Heartscale (*Atriplex cordulata*).** Heartscale is a member of the goosefoot (Chenopodiaceae) family that occurs in saline or alkaline habitats, including chenopod scrub, meadows and seeps, and valley and foothill grasslands, at elevations ranging from 1 to 1,230 feet. The flowering period of this species is April to October. Grasslands north of the I-580 Corridor Area and in the Cayetano Creek Area are considered low to moderate habitat for this species.

- **Brittlescale (*Atriplex depressa*).** Brittlescale is a member of the goosefoot (Chenopodiaceae) family that occurs in chenopod scrub, meadows and seeps, alkaline/clay vernal pools, and alkaline valley and foothill grasslands at elevations ranging from 1 to 1,050 feet. The flowering period of this species is May to October. Grasslands north of the I-580 Corridor Area and in the Cayetano Creek Area are considered low to moderate habitat for this species.
- **Lesser saltscare (*Atriplex minuscula*).** Lesser saltscare is an annual herb of the Chenopodiaceae family that is endemic to California. This species is reported from shadscale scrub, valley grassland, and alkali sink habitats. Grasslands north of the I-580 Corridor Area and in the Cayetano Creek Area are considered low to moderate habitat for this species.
- **Round-leaved filaree (*California macrophylla*).** Round-leaved filaree is an annual herb in the geranium family (Geraniaceae) that occurs in association with clay soils in annual grasslands and foothill woodlands. This species blooms from March to May. Potential habitat is available in some grasslands north of the I-580 Corridor Area and in grasslands and alkali habitat near the Cayetano Creek Area.
- **Congdon's tarplant (*Centromadia parryi* var. *congdonii*).** Congdon's tarplant is a member of the sunflower (Asteraceae) family and occurs in valley and grassland habitats with alkaline soil substrates. The flowering period for this species is May to October, and occurs at elevations ranging from 1 to 750 feet. Potential habitat is available in some grasslands north of the I-580 Corridor Area and in grasslands and alkali habitat near the Cayetano Creek Area. This species is reported near the Dublin/Pleasanton Station (Figure 3.I-3).
- **Livermore tarplant (*Deinandra bacigalupi*).** The Livermore tarplant is a member of the sunflower (Asteraceae) family and blooms from June to October. It is an annual herb occurring in meadows and seeps with alkaline soil substrates at elevations ranging from 492 to 607 feet. This species has been previously recorded south of the I-580 Corridor Area and within the vicinity of Greenville Road (Figure 3.I-3). Potential habitat is available in some grasslands north of the I-580 Corridor Area and in grassland habitat near the Cayetano Creek Area.

The following species were not detected during surveys. Potential habitat is considered limited in the Arnold Road Staging Area and at the North Canyons Parkway Staging Area, where botanical surveys have not been finalized. Potential habitat is available in some grasslands north of the I-580 Corridor Area and in grassland habitat near the Cayetano Creek Area.

- **Recurved larkspur (*Delphinium recurvatum*).** Recurved larkspur is a perennial herb of the Ranunculaceae family that occurs in poorly drained, alkali grasslands, shadscale scrub, or foothill woodlands at elevations below 2,400 feet. This species blooms from

March to May, and therefore was not covered by focused botanical surveys in 2013. No occurrences are reported near the study area.

- **Diamond-petaled poppy (*Eschscholzia rhombipetala*).** The diamond-petaled poppy is a member of the poppy family (Papaveraceae) that was historically known from seven sites in the inner Coast Ranges. It now exists as two extant populations in the northern Carrizo Plain in San Luis Obispo County and on Lawrence Livermore National Laboratory property in Alameda County, where it was discovered in 1997. It has been described from areas of nearly barren clay soils and from fallow grasslands. This species blooms from March to April.
- **Saline clover (*Trifolium depauperatum* var. *hydrophilum*).** Saline clover is a member of the legume (Fabaceae) family and blooms from April to June. It is found in marshes and swamps, valley and foothill grasslands in alkaline soil substrates, and vernal pools at elevations ranging from 0 to 984 feet. It is threatened by development, trampling, road construction, and vehicles. Occurrences are reported north of the I-580 Corridor Area, just west of El Charro Road (Figure 3.1-3).⁶⁶

The following species were not observed during focused botanical surveys and are not expected in the study area because the design of the Proposed Project and DMU Alternative would avoid alkali scald habitat. In addition, potential habitat is not present at the Arnold Road Staging Area or at the North Canyons Parkway Staging Area.

- **Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*).** Hispid salty bird's-beak is a member of the figwort (Scrophulariaceae) family and blooms from June to September. It is a bristly, much-branched annual, green-root parasitic species, and 4 to 16 inches tall. It occurs in meadows, seeps, playas, and valley and foothill grassland with alkali soil substrates at elevations ranging from 1 to 155 feet.
- **Palmate-bracted salty bird's beak (*Chloropyron palmatum*).** It is a hemiparasitic member of the figwort (Scrophulariaceae) family and blooms from May to October. This annual herb occurs in chenopod scrub, valley and foothill grasslands with alkaline soil substrates at elevations ranging from 164 to 1,295 feet.

f. Wetlands and Other Waters of the U.S. and/or Waters of the State

Wetlands, waters of the U.S., and/or waters of the State within the study area include but are not limited to seasonal wetlands, riparian scrub, and freshwater marsh habitats. As explained in the Regulatory Framework subsection below, the State considers wetland features that may not be jurisdictional "waters of the U.S." under federal law to be

⁶⁶ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

protected “waters of the State” under California law. Streams and surface waters that extend through the collective footprint include the following (from west to east): Line G-1-1, Chabot Canal, Line G-2, Tassajara Creek, Line G-3, Cottonwood Creek, Collier Canyon Creek, Isabel Creek, Arroyo las Positas, Cayetano Creek, and other unnamed surface water features and drainages. In addition, several seasonal wetlands are present in the study area and several drainages pass beneath the I-580 corridor in culverts.

Some of these watercourses have been historically channelized and altered for storm drainage management or for agricultural purposes. The distribution of observed wetlands within the study area corresponds to subtle differences in topography, soils, and land use. Creeks are found throughout the study area, while most of the wetlands are found in the non-urban areas of Pleasanton and Livermore, north of I-580, in the Cayetano Creek Area, and near, but not within the Laughlin Road Area.

g. Critical Habitat

Although federally designated critical habitat does occur in the study area, it is not present within the collective footprint. Designated critical habitat for the CTS and CRLF occurs approximately 0.3 mile north and west of the proposed tail tracks and storage and maintenance facility within the Cayetano Creek Area. Designated critical habitat for the VPFS and CRLF occurs approximately 0.1 mile northeast of the Laughlin Road Area.

h. Wildlife Corridors

Wildlife corridors are areas of generally linear habitat that connect areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated islands of wildlife habitat. The study area is not part of major recognized wildlife corridors or travel routes, as much of it is urbanized and movement corridors are fragmented by I-580. Hence, wildlife may encounter existing substantial barriers when attempting to move through the study area.

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, or individuals extending range distributions); (2) seasonal migration; and (3) local movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). Several terms have been used in various wildlife movement studies, such as wildlife corridor, travel route, habitat linkage, and wildlife crossing, to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion of wildlife movement in this analysis, these terms are defined as follows:

- **Travel Route** – A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and provides a relatively direct link between target habitat areas.
- **Wildlife Corridor** – A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as habitat or landscape linkages) can provide both transitory and resident habitat for a variety of species.
- **Wildlife Crossing** – A small narrow area, relatively short and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent choke points along a movement corridor.

The California Wilderness Coalition report *Missing Linkages: Restoring Connectivity to the California Landscape* refers to the Altamont Hills area as a connectivity choke-point based on the fact that grassland areas north and south of I-580 are divided by the freeway.⁶⁷ The Altamont Hills were identified as a connectivity choke point for movements of SJKF, golden eagle, BUOW, California condor, and CTS. Numerous barriers were mentioned for the Altamont Hills linkage: I-580; Altamont Hills wind turbine development; development and expansion of Los Vaqueros Reservoir; the California Aqueduct; and loss of habitat from development in the cities of Brentwood, Antioch, and Tracy. Maintaining adequate habitat cover at the Greenville Road crossing within the Altamont Corridor Express train corridor was identified as a restoration priority. This crossing area is located 0.8 mile east of the Laughlin Road Area.

Urbanized areas in the cities of Dublin, Livermore, and Pleasanton were not described in the *Missing Linkages* report because wildlife travel routes and wildlife corridors have been confined to stream corridors by urbanization.

⁶⁷ California Wilderness Coalition, 2000. *Missing Linkages: Restoring Connectivity to the California Landscape*. November.

Portions of the study area that could serve as wildlife crossings, as defined above, include the creeks that cross I-580. Creek crossings along I-580 in the project corridor include Chabot Canal, Tassajara Creek, Cottonwood Creek, Collier Canyon Creek, and Arroyo las Positas. The animals that currently use these areas are habituated to the lighting, noise, and vibration from I-580 traffic.

Several creeks and arroyos in the study area serve as active movement corridors for large mammals, evidenced by considerable tracks and wildlife observations during 2013 to 2016 surveys. For example, during ESA’s reconnaissance-level wildlife surveys on July 7, 2013, two black-tailed deer (a female and fawn) were observed at the Isabel South Area, while three mature bucks were observed beneath tree cover approximately 0.25 mile to the northeast, across I-580. Wildlife tracks beneath the freeway showed substantial movement of deer and raccoon beneath the freeway along Arroyo las Positas. Similarly, on July 18, 2013, three deer were observed in the box culvert beneath I-580 at Cottonwood Creek. Based on observed wildlife use, the Arroyo las Positas and Cottonwood Creek riparian corridors offer wildlife crossing opportunities at I-580.

ESA biologists identified a potential local wildlife travel route near Cayetano Creek within the Cayetano Creek Area where CTS and CRLF could disperse back and forth from aquatic breeding habitat in the creek to upland refugia habitat further west.

A summary of known and potential wildlife corridors as they occur within the study area is included in Table 3.I-6.

TABLE 3.I-6 WILDLIFE CORRIDORS IN THE STUDY AREA

	Dublin/ Pleasanton Study Area	I-580 Corridor Area	Isabel North Area	Isabel South Area	Cayetano Creek Area	Laughlin Road Area
Wildlife Corridor		✓		✓	✓	

Notes: ✓ = potentially present
 Source: ESA, 2013a,b,c,d; Arup, 2017.

3. Regulatory Framework

This subsection describes the federal, State, and local environmental laws and policies relevant to biological resources.

(1) Federal Regulations

This section describes federal regulations pertaining to special-status species and wetlands. The USFWS administers the FESA (16 United States Code [U.S.C.] 153 et seq.), Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-711), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668) as described below. The USACE administers Section 404 of the Clean Water Act (CWA) as described below.

(a) Federal Endangered Species Act

Federal Endangered Species Act Section 7 and Section 10

Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 U.S.C. 1533[c]). Two federal agencies oversee FESA. The USFWS has jurisdiction over plants, wildlife, and resident fish, and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) has jurisdiction over anadromous fish and marine fish and mammals. The FESA Section 7 mandates that all federal agencies consult with the USFWS and NOAA Fisheries to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species (see the discussion below under Critical Habitat). The FESA prohibits the unauthorized take of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

FESA Section 10 requires the issuance of an incidental take permit before any public or private action may be taken that would harm, harass, injure, kill, capture, collect, or otherwise hurt any individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan that provides specific measures to avoid, offset, or minimize impacts on endangered or threatened species.

Critical Habitat

The USFWS designates critical habitat for listed species under the FESA. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with the FESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not negatively affect the critical habitat to the extent that it impedes the recovery of the species. Designated critical habitat is not within the collective footprint.

(b) Protection of Nesting Birds – Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703, Supp. I, 1989) prohibits the killing, possessing, or trading of migratory birds, bird parts, eggs, and nests, except in accordance with regulations prescribed by the Secretary of the Interior. The MBTA prohibits direct and indirect acts, though harassment and habitat modification are not included unless they result in direct loss of birds, eggs, or nests. The list of birds covered by the MBTA essentially includes all native birds.

(c) Bald and Golden Eagle Protection Act

Under the Bald and Golden Eagle Protection Act, it is illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof.

(d) Clean Water Act

The USACE administers Section 404 of the CWA. Section 404 regulates activities in wetlands and other waters of the U.S. Wetlands are a subset of waters of the U.S. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) (33 CFR 328.3[a]; 40 CFR 230.3[s]) as follows:

1. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide.
2. All interstate waters, including interstate wetlands. (Wetlands are defined by the federal government [33 CFR 328.3(b), 1991] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions.)
3. All other waters—such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds—the use, degradation, or destruction of which could affect interstate or foreign commerce. This includes any waters with the following current or potential uses:
 - a. That are or could be used by interstate or foreign travelers for recreational or other purposes
 - b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce
 - c. That are used or could be used for industrial purposes by industries in interstate commerce

4. All impoundments of waters otherwise defined as waters of the U.S. under the definition.
5. Tributaries of waters identified in paragraphs (1) through (4).
6. Territorial seas.
7. Wetlands next to waters identified in paragraphs (1) through (6).
8. Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding the CWA jurisdiction remains with the U.S. Environmental Protection Agency (328.3[a][8] added 58 CFR 45035, August 25, 1993).

(2) State Regulations

This section describes State regulations pertaining to special-status species and wetlands. The CDFW administers several laws and programs designed to protect fish and wildlife resources, as discussed below.

(a) California Endangered Species Act

The CESA protects plant and wildlife species that have been designated by the CDFW as threatened or endangered. The CESA prohibits the take of endangered and threatened species. Under the CESA, take is defined as "hunt, pursue, catch, capture, or kill" or attempt to do so. The definition of take does not include harm or harassment of State-listed species or the destruction of their habitat. In accordance with the CESA, the CDFW has jurisdiction over State-listed species (California Fish and Game Code 2070). Additionally, the CDFW maintains lists of species of special concern that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, or continuing threats.

(b) Fully Protected Species – Fish and Game Code Sections 3511, 4700, 5050, and 5515

Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take, except for collecting these species for necessary scientific research, relocation of bird species for the protection of livestock, or pursuant to a natural community conservation plan. Many fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations; however, because the original statutes have not been repealed or amended, the legal protection of "no take" is still applicable.

(c) Protection of Nesting Birds – Fish and Game Code Sections 3503 and 3513

Section 3503.5 states that it is “unlawful to take, possess, or destroy the nests or eggs of any such bird of prey (i.e., species in the orders falconiformes and strigiformes) except as otherwise provided by this code or any other regulation adopted hereto.” Section 3513 states that it is also unlawful to take or possess any migratory non-game bird (or part of such migratory non-game bird) as designated in the MBTA. Disturbance that causes nest abandonment and/or reproductive failure is considered a take by the CDFW. This statute does not provide for the issuance of an incidental take permit.

(d) Species of Special Concern

The CDFW maintains a list of candidate-endangered species and candidate-threatened species. California candidate species are afforded the same level of protection as listed species. California also designates species of special concern, which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or fully protected species, but may be added to official lists in the future. The CDFW intends the species of special concern list to be a management tool for consideration in future land use decisions, including CEQA reviews.

(e) California Native Plant Protection Act

California Fish and Game Code Section 1900–1913, also known as the Native Plant Protection Act, is intended to preserve, protect, and enhance endangered or rare native plants in California. The act directs CDFW to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. The act also directs the California Fish and Game Commission to adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

Vascular plants identified as rare or endangered by the CNPS, but which may have no designated status or protection under federal or State endangered species legislation, are defined with the following California Rare Plant Ranks:

1. Rank 1A: Plants presumed extinct
2. Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
3. Rank 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere

4. Rank 3: Plants about which more information is needed (a review list)
5. Rank 4: Plants of limited distribution (a watch list)

In general, plants appearing on CNPS Lists 1A, 1B, or 2 are considered to meet the criteria of endangered, rare, or threatened under CEQA Guidelines Section 15380. Additionally, plants identified on CNPS Lists 1A, 1B, or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code as rare or endangered species.

(f) Lake and Streambed Alterations

Under Sections 1600–1607 of the California Fish and Game Code, the CDFW has jurisdictional authority over rivers, streams, and lakes from which fish and wildlife derive benefit. Under Section 1602, the CDFW regulates projects that will (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit; (2) use material from the streambeds designated by the department; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department. A proponent of a project that has the potential to affect a stream or lakebed is required to notify the CDFW of the proposed activity.

The ephemeral drainages within the study area are likely to meet the California Fish and Game Code’s definition of a stream and would be subject to CDFW regulation, and the CDFW would need to be notified before undertaking activities in the ephemeral drainages. It is likely that the CDFW would require a lake or streambed alteration agreement for construction across these drainages.

(g) Porter-Cologne Water Quality Control Act

The State’s authority in regulating activities in wetlands and waters in the Plan Area resides primarily with the State Water Resources Control Board, acting through its nine RWQCBs. The Porter-Cologne Water Quality Control Act prohibits unpermitted discharges of waste, including discharges of dredged or fill material, to waters of the State. The State Water Resources Control Board considers “waters of the State” to include all surface and subsurface waters, including waters that do not meet the jurisdictional criteria for “waters of the U.S.” under the federal CWA. All of the wetlands and waterways in the study area are waters of the State, which are protected under the Porter-Cologne Act.

In addition, under the CWA, the State must certify that each USACE permit action meets State water quality objectives (CWA Section 401). Water quality certifications are issued by

the RWQCBs. Any condition of water quality certification is then incorporated into the USACE Section 404 permit authorized for the project.

(3) Local Regulations

(a) East Alameda County Conservation Strategy

The EACCS, finalized in October 2010, is a regional conservation strategy that is intended to provide an effective framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The Conservation Strategy focuses on impacts on biological resources such as endangered and other special-status species as well as sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The study area for the Conservation Strategy encompasses 271,485 acres, or approximately 52 percent of Alameda County. The EACCS study area completely covers the study area for the BART to Livermore Extension Project, including the cities of Dublin, Livermore, Pleasanton and the unincorporated Alameda County.

The EACCS is not a formal Habitat Conservation Plan under federal law or Natural Community Conservation Plan under State law that authorizes incidental take of listed species. Instead, the EACCS's purpose is to provide a baseline inventory of biological resources and conservation priorities that will be utilized by local agencies and regulatory agencies during project-level planning and environmental permitting. To this end, the EACCS describes how to avoid, minimize, and mitigate impacts on selected special-status species and sensitive habitats. By implementing the Conservation Strategy, local agencies can more easily address the legal requirements relevant to these species. Projects and activities that will benefit from this Conservation Strategy include urban and suburban growth and a variety of road, water, and other needed infrastructure construction and maintenance activities.⁶⁸ BART intends for the BART to Livermore Extension Project to be consistent with the conservation strategies and mitigation guidance established by EACCS.

(b) Local Tree Protection Ordinances

Although BART is exempt from compliance with local land use ordinances under California Government Code Sections 53090 and 53091, BART acknowledges that trees can be considered local resources and local tree ordinances are used to identify protected trees.

⁶⁸ East Alameda County Conservation Strategy, 2017. East Alameda County Conservation Strategy Document (Working Draft). Available at: www.eastalco-conservation.org/documents/031809-ch1-introduction.doc, accessed March 26.

Alameda County Regulation of Trees in County Right-of-Way

Chapter 12.11 of the Alameda County General Ordinance Code contains the Regulation of Trees in County ROW, which requires approval for the removal of any tree within the County ROW that meet the following criteria: any woody perennial plant characterized by having a single trunk or multi-trunk structure at least 10 feet high and having a major trunk that is at least 2 inches in diameter taken at breast height and 4.5 feet from the ground. The criteria also includes species of plants that are generally designated as trees, any trees that have been planted as replacement trees under the county tree ordinance, or any trees planted by the county.

City of Dublin Heritage Tree Ordinance

Chapter 5.60 of the City of Dublin Municipal Code contains the Heritage Tree Ordinance which establishes regulations controlling the removal of and the preservation of heritage trees within all properties within the city. Section 5.60.040 defines heritage trees as follows:

1. Any oak, bay, cypress, maple, redwood, buckeye, and sycamore tree having a trunk or main stem of 24 inches or more in diameter measured at 4 feet, 6 inches above natural grade
2. A tree required to be preserved as part of an approved development plan, zoning permit, use permit, site development review, or subdivision map
3. A tree required to be planted as a replacement for an unlawfully removed tree

City of Pleasanton Tree Preservation Ordinance

Chapter 17.16 of the City of Pleasanton Municipal Code contains the Tree Preservation Ordinance, which promotes and protects the public health, safety, and general welfare by providing for the regulation of planting, maintenance and removal of heritage trees within the city. Section 17.16.006 defines heritage tree as follows:

1. Any single-trunked tree with a circumference of 55 inches or more measured 4.5 feet above ground level
2. Any multi-trunked tree of which the two largest trunks have a circumference of 55 inches or more measured 4.5 feet above ground level
3. Any tree 35 feet or more in height
4. Any tree of particular historical significance specifically designated by official action
5. A stand of trees, the nature of which makes each dependent upon the other for survival or the area's natural beauty

City of Livermore Street Trees and Tree Preservation

Chapter 12.20 of the City of Livermore Municipal Code contains the Street Trees and Tree Preservation Ordinance. The Ordinance is divided into two articles, Article I: Street Trees and Article II: Preservation of Trees. Section 12.20.160 defines protected tree as a tree that meets the following criteria:

1. Any tree located on private property occupied by single-family residential development that meets the following criteria:
 - a. Any tree with a circumference at breast height of 60 inches or more
 - b. Any California native (see Table 3.I-7) tree having a circumference at breast height of 24 inches or more

TABLE 3.I-7 NATIVE TREES IN THE CITY OF LIVERMORE

Scientific Name	Common Name
<i>Acer macrophyllum</i>	Big leaf maple
<i>Aesculus californica</i>	California buckeye
<i>Alnus rhombifolia</i>	Alder
<i>Arbutus menziesii</i>	Madrone
<i>Juglans hindsii californica</i>	California black walnut
<i>Pinus sabiniana</i>	Grey pine
<i>Platanus racemosa</i>	California sycamore
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus berberidifolia</i>	Scrub oak
<i>Quercus chrysolepis</i>	Canyon live oak
<i>Quercus douglasii</i>	Blue oak
<i>Quercus kelloggii</i>	California black oak
<i>Quercus lobata</i>	Valley oak
<i>Quercus wislizenii</i>	Interior live oak
<i>Umbellularia californica</i>	California bay

Source: City of Livermore Municipal Code, Title 12, Chapter 12, Article 20.

2. Any tree located on private property occupied by commercial, industrial, institutional (i.e., religious, public agency, hospital, care facilities, etc.), mixed-use or multifamily residential (two or more units) development with a circumference at breast height of 24 inches or more
3. Any tree located on an undeveloped or underdeveloped property, regardless of zoning district, use, or development status, for which new development is proposed, with a circumference at breast height of 18 inches or more

4. Any tree located in an open space, riparian, or habitat area with a circumference at breast height of 18 inches or more
5. Any tree approved as part of a site plan approval, or required as a condition of approval for a development project, zoning use permit, use permit or other site development review
6. Any tree designated by the city council as determined to be an ancestral tree
7. Any tree listed on the city's ancestral tree inventory
8. Any tree required to be planted as mitigation for unlawfully removed trees

4. Impacts and Mitigation Measures

This subsection lists the standards of significance used to assess impacts, discusses the methodology used in the analysis, summarizes the impacts, and then provides an in-depth analysis of the impacts with mitigation measures identified as appropriate.

a. Standards of Significance

For the purposes of this EIR, impacts on biological resources are considered significant if the Proposed Project or one of the Alternatives would result in any of the following:

- 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 State or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) or waters through direct removal, filling, hydrological interruption, or other means
- 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
- 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 the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan
- Result in loss of protected trees as identified in a local tree preservation policy or ordinance

b. Impact Methodology

The methodology used to evaluate the significance of biological resource impacts is described below. The Electric Multiple Unit (EMU) Option would have the same impacts as the DMU Alternative; therefore, the analysis and conclusions for the DMU Alternative also apply to the EMU Option.

The analysis of the Enhanced Bus Alternative, which addresses the potential impacts of construction of the bus infrastructure improvements and operation of the bus routes at a programmatic level, would also apply to the bus improvements and feeder bus service under the Proposed Project and other Build Alternatives. Therefore, the analyses and conclusions for the Enhanced Bus Alternative also apply to the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, and are not repeated in the analysis of the Proposed Project and other Build Alternatives.

Project components will be evaluated using the above significance criteria. Three principal components of the guidelines outlined above will be considered:

- Magnitude of the impact (e.g., substantial/not substantial)
- Uniqueness of the affected resource (rarity)
- Susceptibility of the affected resource to perturbation (sensitivity)

The evaluation of significance must consider the interrelationship of these three components. For example, a relatively small magnitude impact to a State or federally listed species would be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact. Impacts are generally considered less than significant if the habitats and species affected are common and widespread in the region and the State. Impacts are considered beneficial if the action causes no detrimental impacts and results in an increase of habitat quantity and quality.

The analysis of potential impacts of the Proposed Project and Alternatives to biological resources relies on a literature review, biological reconnaissance surveys, focused wildlife surveys, and coordination with appropriate permitting agencies, including the USFWS and CDFW. The literature review was conducted to determine the federal and State-listed endangered, threatened, and special-status wildlife species that have the potential to occur within the study area. The assessment considered the survey findings and impact

analyses of the program-level EIR prepared for the BART to Livermore Extension Project⁶⁹ as well as the Environmental Assessment and permitting documents for the Caltrans I-580 Westbound High Occupancy Vehicle Lane Project, which traverses the study area.⁷⁰ Additional sources used in the analysis are presented in the Introduction subsection above. The review also included a search of the CNDDDB Electronic Inventory for the nine U.S. Geological Survey 7.5' topographic quadrangles that surround the collective footprint.

As discussed in the Local Setting and Survey Methodology subsection above, focused botanical surveys and reconnaissance-level wildlife surveys were conducted for the study area. However, due to access limitations to private property, biological surveys could not be performed for the following areas: (1) construction staging areas – Arnold Road Staging Area, North Canyons Parkway Staging Area, Storage and Maintenance Facility Staging Areas (in Cayetano Creek Area); (2) collective footprint (permanent areas) – portion of I-580 Corridor Area (grasslands north of Croak Road) and the Cayetano Creek Area. In these areas, the analysis relied upon modeled habitat suitability in the EACCS⁷¹ to estimate potential impacts to plant and wildlife resources.

⁶⁹ San Francisco Bay Area Rapid Transit District (BART), 2010. BART to Livermore Extension Final Program Environmental Impact Report. Available at: https://bart.gov/sites/default/files/docs/Bart-to-Livermore-EIR-WEB_0.pdf, accessed April 26, 2017.

⁷⁰ California Department of Transportation (Caltrans), 2006. Environmental Assessment/Initial Study I 580 Eastbound HOV Lane Project from East of Greenville Road to Hacienda Drive. September.

⁷¹ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

c. Summary of Impacts

Table 3.I-8 summarizes the impacts of the Proposed Project and Alternatives described in the analysis below.

TABLE 3.I-8 SUMMARY OF BIOLOGICAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Construction					
Project Analysis					
Impact BIO-1. Adversely affect special-status plants, either directly or through habitat modifications during construction	NI	LSM	LSM	LSM	NI
Impact BIO-2. Adversely affect vernal pool fairy shrimp and longhorn fairy shrimp during construction	NI	LSM	LSM	NI	NI
Impact BIO-3. Adversely affect California tiger salamander and California red-legged frog during construction	NI	LSM	LSM	LSM	NI
Impact BIO-4. Adversely affect western spadefoot during construction	NI	LSM	LSM	NI	NI
Impact BIO-5. Adversely affect western pond turtle during construction	NI	LSM	LSM	LSM	NI
Impact BIO-6. Adversely affect western burrowing owl during construction	NI	LSM	LSM	LSM	NI
Impact BIO-7. Adversely affect nesting raptors and other nesting birds during construction	NI	LSM	LSM	LSM	LSM
Impact BIO-8. Adversely affect special-status bats during construction	NI	LSM	LSM	LSM	NI
Impact BIO-9. Adversely affect American badger during construction	NI	LSM	LSM	NI	NI

TABLE 3.I-8 SUMMARY OF BIOLOGICAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Impact BIO-10: Adversely affect San Joaquin kit fox during construction	NI	LSM	LSM	LSM	NI
Impact BIO-11: Have a substantial adverse effect on State or federally protected wetlands or waters during construction	NI	LSM	LSM	LSM	NI
Impact BIO-12: Have a substantial adverse effect on riparian habitat or sensitive natural communities during construction	NI	LSM	LSM	LSM	NI
Impact BIO-13: Interfere with the movement of 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 during construction	NI	LS	LS	NI	NI
Impact BIO-14: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan during construction	NI	NI	NI	NI	NI
Impact BIO-15: Result in loss of protected trees identified in local policies or ordinances	NI	LSM	LSM	LSM	NI
Cumulative Analysis					
Impact BIO-16(CU): Adversely affect, species identified as a candidate, sensitive, or special-status, during construction under Cumulative Conditions	NI	SU	SU	LS	LS

TABLE 3.I-8 SUMMARY OF BIOLOGICAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Impact BIO-17(CU): Have a substantial adverse effect on State or federally protected wetlands or waters during construction under Cumulative Conditions	NI	LS	LS	LS	NI
Impact BIO-18(CU): Have a substantial adverse effect on riparian habitat or sensitive natural communities during construction under Cumulative Conditions	NI	LS	LS	LS	NI
Impact BIO-19(CU): Interfere with the movement of 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 during construction under Cumulative Conditions	NI	LS	LS	NI	NI
Impact BIO-20(CU): Result in loss of protected trees identified in local policies or ordinances under Cumulative Conditions	NI	LS	LS	LS	NI
Operational					
Project Analysis					
Impact BIO-21: Have a substantial adverse effect on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations	NI	LS	LS	NI	NI

TABLE 3.I-8 SUMMARY OF BIOLOGICAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Cumulative Analysis					
Impact BIO-22(CU): Have a substantial adverse effect on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations under Cumulative Conditions	NI	LS	LS	NI	NI

Notes: NI=No impact; LS=Less-than-Significant impact, no mitigation required; LSM=Less-than-Significant impact with mitigation; SU=Significant and unavoidable, even with mitigation or no feasible mitigation available.

^a All significance determinations listed in the table assume incorporation of applicable mitigation measures.

^b The analysis of the Enhanced Bus Alternative also applies to the feeder bus service and bus improvements under the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, as described in the Impact Methodology.

d. Environmental Analysis

Impacts pertaining to project construction are described below, followed by operations-related impacts.

(1) Construction Impacts

Potential impacts related to project construction are described below, followed by cumulative construction impacts.

Construction associated with the Proposed Project and Build Alternatives would permanently affect potential biological resources through ground disturbing activities. Therefore, many of the construction impacts described below are considered to be permanent (rather than temporary). Short-term construction impacts such as temporary use of construction laydown areas, outside the permanent project footprint, are also considered. Such laydown and staging areas will be restored following use, and therefore are temporary impacts.

(a) Construction – Project Analysis

The majority of the collective footprint is in developed/urbanized areas, including within the I-580 freeway median, and would not result in direct impacts to special-status plant or wildlife species. However, as described in the Existing Conditions subsection above, several special-status plants, invertebrates, amphibians, reptiles, birds, and mammals are known to occur or have the potential to occur within the study area and could be impacted during construction of the Proposed Project or Build Alternatives. These species include one State candidate rare plant (Livermore tarplant) and several non-listed rare plants that are generally associated with grasslands or alkali soil conditions. In addition, special-status animal species with potential to occur in the study area include VPFS, CTS, CRLF, WPT, loggerhead shrike, tricolored blackbird, golden eagle and other nesting birds, pallid bat, American badger, and SJKF.

Within the Alameda Creek watershed, potential steelhead habitat occurs in Alameda Creek and upper Arroyo Mocho, which are outside of the project area. Steelhead seasonal fish passage would not occur through the study area as: (1) this species does not have access to the Livermore Valley; (2) the watercourses that extend through the study area are either intermittent (i.e., seasonally dry) or have warm water that would not support steelhead; and (3) the headwaters of drainages in the study area do not provide steelhead habitat. Presently, the BART weir and associated rubber dams on lower Alameda Creek in the city of Fremont impede the passage of steelhead into the upper Alameda Creek watershed and the Livermore-Amador Valley; hence, due to instream impediments and lack of habitat, this species is not expected in the project area. Therefore, the Proposed Project and Build Alternatives would have no impact to steelhead.

Potential impacts to plants are described below, followed by a discussion of potential impacts to wildlife.

Impact BIO-1: Adversely affect special-status plants, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the Livermore-Amador Valley Transit Authority (LAVTA) would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development,

including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of special-status plants. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to special-status plants during construction. **(NI)**

Conventional BART Project. Based on the findings of focused and reconnaissance-level botanical surveys, several special-status plants are known to occur in the study area that could be impacted by construction of the Proposed Project. While no known rare plant populations occur in the footprint of the Proposed Project, for the purposes of this EIR, it was conservatively assumed that the special-status plants that occur regionally within similar grasslands or alkali habitats that are found within the Proposed Project footprint could be encountered in areas that have not been surveyed, listed in Table 3.I-1 (Arnold Road Staging Area, grasslands north of Croak Road, North Canyons Parkway Staging Area, and in the Cayetano Creek Area). As described in the Existing Conditions subsection above, the following non-listed rare plant species could occur in these areas: Alkali milk-vetch; Heartscale; Brittscale; San Joaquin spearscale; Lesser saltscale; Round-leaved filaree; Congdon's tarplant; Livermore tarplant; Recurved larkspur; Diamond-petaled poppy; and Saline clover.

The distribution of potential habitat for these rare plants (seasonal wetland and alkali habitat) was considered during the design and siting of the proposed storage and maintenance facility and tail tracks in the Cayetano Creek Area, to reduce potential habitat impacts. In addition, as described in Chapter 2, Project Description, the project design would maintain the hydrologic connectivity of seasonal wetlands within Cayetano Creek Area, to minimize and/or avoid potential indirect impacts to seasonal wetland and alkali habitat. Culverts would be placed at regular intervals under the BART tail tracks to maintain an even surface flow from the higher elevations to the shallow valley floor, replicating the existing hydrologic situation.

However, as special-status plant surveys have not been finalized due to access limitations to private property within the Arnold Road Staging Area, grasslands north of Croak Road, North Canyons Parkway Staging Area, and in the Cayetano Creek Area, impacts to special-status plants could be potentially significant—if such plants are present—due to the potential for take of individual plants. Therefore, the Proposed Project could have potentially significant direct impacts to currently unidentified populations of special-status plants. This impact would be reduced with implementation of **Mitigation Measure BIO-1.A**, which requires the completion of protocol-level botanical surveys at the Arnold Road Staging Area, grasslands north of Croak Road, North Canyons Parkway Staging Area,

and in the Cayetano Creek Area to verify the presence or absence of rare plants in the footprint. In addition, if rare plants are identified within the Proposed Project footprint, potential direct impacts would be reduced with implementation of **Mitigation Measure BIO-1.A**, which would ensure impacts were minimized and/or prevented via avoidance strategies and protective measures where feasible, and **Mitigation Measure BIO-1.B**, which provides compensation for impacts to rare plant populations through plant salvage, restoration and habitat enhancement where avoidance is infeasible. General measures provided in **Mitigation Measure BIO-3.C** would additionally protect rare plant populations, if present. With implementation of these mitigation measures, potential impacts would be reduced to a less-than-significant level. (LSM)

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with additional improvements at the Dublin/Pleasanton Station Area and a different footprint for the storage and maintenance facility in the Cayetano Creek Area. Thus, the DMU Alternative would have the similar potential to result in significant impacts to rare plant species. As described above, botanical surveys have yet to be finalized for the Arnold Road Staging Area, grasslands north of Croak Road, North Canyons Parkway Staging Area, and Cayetano Creek Area. Potential impacts to rare plant species in these areas would be reduced to a less-than-significant level with implementation of **Mitigation Measures BIO-1.A** and **BIO-1.B**, which provide focused surveys for rare plants, avoidance of plant species, and compensation for impacts to rare plant populations through plant salvage, restoration, and habitat enhancement. General measures provided in **Mitigation Measure BIO-3.C** would additionally protect rare plant populations, if present. (LSM)

Express Bus/BRT Alternative. No rare plant resources were identified within the Express Bus/BRT Alternative footprint during focused botanical surveys within the Dublin/Pleasanton Station Area and the Laughlin Road Area. However, botanical surveys remain to be finalized within the Arnold Road Staging Area, so rare plants could be detected within this area. Potential impacts to rare plant species would be reduced to a less-than-significant level with implementation of **Mitigation Measures BIO-1.A** and **BIO-1.B**, which provide focused surveys for rare plants, avoidance of plant species, and compensation for impacts to rare plant populations through plant salvage, restoration, and habitat enhancement. General measures provided in **Mitigation Measure BIO-3.C** would additionally protect rare plant populations, if present. (LSM)

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs east of the Dublin/Pleasanton Station. Areas where bus improvements would be constructed would be within urban/developed land, which does not support rare plants. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements, including bus bulb-outs, bus shelters, and signage, would result in a minor amount of ground disturbance within

developed areas. Therefore, the Enhanced Bus Alternative would have no impacts to rare plants, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative could have potentially significant impacts on special-status plants. The following mitigation measures would reduce potential impacts: **Mitigation Measure BIO-1.A**, which would require botanical surveys in areas that have not been surveyed and avoidance of plant species where feasible; **Mitigation Measure BIO-1.B**, which would compensate for impacts to rare plants that cannot be avoided; and general measures provided in **Mitigation Measure BIO-3.C** (see **Impact BIO-3** below), which would additionally protect rare plant populations, if present. With implementation of these mitigation measures, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant impacts; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-1.A: Botanical Surveys for Areas Not Previously Surveyed and Refinement of Project Design (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

Focused botanical surveys shall be conducted in areas of the footprint for the adopted project, which have not been surveyed (i.e., portions of the Arnold Road Staging Area, grasslands north of Croak Road, North Canyons Parkway Staging Area, and Cayetano Creek Area) using the most recent CFDW special-status plant survey guidelines to identify the presence and distribution of rare plants. Currently, the most recent rare survey protocol is the 2009 guidance.⁷² Botanical surveys shall document the location, extent, and size of rare plant populations, if present, and shall be used to inform the planned avoidance of rare plant populations whenever possible.

To the extent feasible, based on the survey results and consistent with site constraints, the final project design shall avoid and minimize impacts on identified special-status plant populations located within and adjacent to the adopted project footprint and construction staging areas. During construction, BART and its contractors shall locate facilities to avoid sensitive plant populations and shall install exclusion fencing and/or silt fencing around sensitive plant populations with as buffer of at least 25 feet between the fence and the nearest plants to minimize the potential for direct and indirect impacts, such as fugitive dust and accidental intrusion into sensitive areas.

⁷² California Department of Fish and Game (CDFG), 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities, State of California, California Natural Resources Agency. November 24.

Mitigation Measure BIO-1.B: Salvage and Relocation of Rare Plants that Cannot be Avoided (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

In areas where avoidance of rare plants is not feasible, BART shall salvage and relocate special-status plants through the following steps. A qualified botanist shall develop and implement a Restoration and Mitigation Plan in accordance with CDFW guidelines and in coordination with the CDFW. At a minimum, the plan shall include the following elements:

1. Collection of reproductive structures from affected plants
2. A description of micro-habitat conditions necessary for each affected target species
3. Seed germination requirements (e.g., 70 percent germination)
4. Restoration techniques for temporarily disturbed occurrences, if applicable
5. An assessment of the selected transplant and enhancement site (e.g., grasslands and seasonal wetlands habitat owned by BART in the Cayetano Creek watershed, grasslands on BART properties near Laughlin Road, or other available transplant locations)
6. Success and performance criteria (i.e., 70 percent survival of annual species, no woody invasive species shall be present, and herbaceous invasive species shall not exceed 5 percent cover)
7. A 5-year monitoring program to characterize long-term success of the planting/transplanting program.

Impact BIO-2: Adversely affect vernal pool fairy shrimp and longhorn fairy shrimp, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

Most of the potential habitat for special-status vernal pool invertebrates described in the alignment alternatives previously studied by BART in the PEIR at the Isabel/I-580 Station, Greenville Yard, and Vasco Yard tail tracks (up to 10 and 15 acres of potential habitat, depending upon alternatives) is not within the collective footprint of the Proposed Project

and Build Alternatives in this EIR and would not be impacted.⁷³ The RWQCB commented on the Final PEIR (RWQCB comment letter, Comment 13; FEIR comment 8.13 on page 4-61) that the Draft PEIR did not demonstrate that impacts to such resources could be mitigated to less-than-significant levels, and that the described impacts at the Greenville Yard may not be mitigatable; the RWQCB suggested removal of the Greenville area from alternatives that are carried forward. In response, BART removed the alternative from subsequent consideration. The Proposed Project, DMU Alternative/EMU Option, and Enhanced Bus Alternative avoid any use of the Greenville site. The current Express Bus/BRT Alternative's remote parking facility only includes developed portions of the Greenville site (within the Laughlin Road Area) that do not support vernal pool habitat. Potential impacts to vernal pool habitat have been avoided or substantially reduced compared to prior designs and are described below.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of VPFS and LHFS. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to VPFS and LHFS during construction. **(NI)**

Conventional BART Project. The LHFS has very limited distribution in rock outcrop pools in the Altamont Hills that are several miles from the Proposed Project. While there is a low likelihood that LHFS may be found in the pools within the footprint of the Proposed Project, this analysis conservatively assumes that LHFS may occur in all potentially suitable habitat that has not been surveyed to determine species' presence or absence.

Potential habitat for VPFS includes three seasonal features in the I-580 Corridor Area, north of Croak Road, totaling approximately 0.025 acre (see SW-6 on Figure 3.I-2a). In

⁷³ San Francisco Bay Area Rapid Transit District (BART), 2010. BART to Livermore Extension Final Program Environmental Impact Report. Available at: https://bart.gov/sites/default/files/docs/Bart-to-Livermore-EIR-WEB_0.pdf, accessed April 26, 2017.

addition, habitat for VPFS may occur within a modeled seasonal wetland complex located in the Cayetano Creek Area (see EACCS-modeled fairy shrimp habitat on Figure 3.1-2b). Focused surveys could not be performed in this area to verify the occurrence of habitat or determine species' presence due to lack of access to private property. Because this area is outside of the Proposed Project footprint, no direct impacts to VPFS are anticipated in the Cayetano Creek Area; LHFS is not expected to occur at this location. There are no other locations within the Proposed Project footprint that contain seasonal wetlands that could support VPFS or LHFS.

Therefore, it is anticipated that Proposed Project would result in direct impacts to approximately 0.025 acre of potentially occupied VPFS and possibly LHFS habitat just north of Croak Road. These construction-related impacts would be potentially significant. However, these impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-2**, which requires focused surveys for vernal pool invertebrates, provides avoidance measures for known and potential vernal pool invertebrate habitat, and requires compensation for impacts to occupied habitat, as well as **Mitigation Measure BIO-3.C**, which would provide general protection measures for special-status species. **(LSM)**

DMU Alternative. The DMU Alternative would have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and a different footprint for the storage and maintenance facility in the Cayetano Creek Area. Potential habitat for VPFS and LHFS does not occur in the Dublin/Pleasanton Station Area, and thus, the DMU Alternative would have similar impacts as the Proposed Project in the I-580 Corridor Area, north of Croak Road, totaling approximately 0.025 acre (see SW-6 on Figure 3.1-2a). In addition, habitat for VPFS may occur within a modeled seasonal wetland complex located north of Cayetano Creek in the Cayetano Creek Area (see EACCS-modeled fairy shrimp habitat on Figure 3.1-2b). These construction-related impacts would be potentially significant. However, as described above for the Proposed Project, these impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-2**, which requires focused surveys for vernal pool invertebrates, provides avoidance measures for known and potential vernal pool invertebrate habitat, and requires compensation for impacts to occupied habitat, as well as **Mitigation Measure BIO-3.C**, which would provide general protection measures for special-status species. **(LSM)**

Express Bus/BRT Alternative. There is no potential habitat for VPFS or LHFS in the Express Bus/BRT Alternative footprint—in the Dublin/Pleasanton Station Area, along the portion of the I-580 Corridor Area within the footprint (Hacienda Drive to Tassajara Road/Santa Rita Road), or the Laughlin Road Area. Therefore, construction of the Express Bus/BRT Alternative would have no direct or indirect impact to VPFS or LHFS, and no mitigation measures are required. **(NI)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support VPFS or LHFS, or their habitat. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements, including bus bulb-outs, bus shelters, and signage, would result in a minor amount of ground disturbance within developed areas. Therefore, the Enhanced Bus Alternative would have no direct or indirect impacts to VPFS or LHFS, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and DMU Alternative would have potentially significant impacts to the federally listed VPFS and LHFS. However, with implementation of **Mitigation Measure BIO-2**, which requires focused surveys to identify potential or occupied habitat in I-580 Corridor Area (north of Croak Road) and Cayetano Creek Area, provides vernal pool invertebrate habitat avoidance measures, and requires compensatory mitigation for habitat losses, as well as **Mitigation Measure BIO-3.C** (see **Impact BIO-3** below), which provides general protection measures for special-status species, potential impacts would be reduced to a less-than-significant level.

As described above, the Express Bus/BRT Alternative and Enhanced Bus Alternative would not have significant construction-related impacts to fairy shrimp species; therefore, no mitigation measures are required for these alternatives.

Mitigation Measure BIO-2: Consult with USFWS and Reduce Impacts on Vernal Pool Invertebrates and Their Habitat in the I-580 Corridor Area – north of Croak Road and Cayetano Creek Area (Conventional BART Project and DMU Alternative/EMU Option).

1. BART, in consultation with the USFWS, shall either (1) conduct a protocol-level survey for VPFS and LHFS, or (2) assume presence of VPFS and LHFS in areas of potential habitat. Surveys shall be conducted by qualified biologists in accordance with the most recent USFWS guidelines or protocols to determine the time of year and survey methodology (survey timing for these species is dependent on yearly rainfall patterns and seasonal occurrences, and is determined on a case-by-case basis). The surveys may be done as part of the 404 permit process, if a 404 permit is required.
2. If surveys reveal no occurrences of federally listed vernal pool invertebrates, no further mitigation would be required.
3. If surveys determine the occurrence of one or more special-status vernal pool invertebrate species, or if BART, in consultation with the USFWS, assumes presence of federally listed vernal pool invertebrates in all affected habitats, no net loss of

habitat shall be achieved through avoidance, preservation, creation and/or purchase of credits. The selected measures may be part of the permitting process.

4. Where feasible, all vernal pool invertebrate habitat shall be avoided. If habitat that can be avoided is identified within 250 feet of construction activities, a USFWS-approved biologist (monitor) shall inspect any construction-related activities to ensure that no unnecessary take of listed species or destruction of their habitat occurs. In addition, a qualified biologist shall delineate the boundary of the Cayetano Creek vernal pool complex modelled in the EACCS and shall be present during any construction activities that occur within 250 feet of the vernal pool complex (see Figure 3.I-2b; also shown in Figures D-5 and D-6 of EACCS' Appendix D).
5. BART shall ensure that an appropriate number of acres, as approved by USFWS during consultation, are created and preserved to mitigate for direct or indirect impacts on vernal pool invertebrate habitat. In accordance with compensatory guidance provided in the EACCS Biological Opinion, BART will provide compensatory mitigation for the permanent loss of occupied or presumed occupied listed invertebrate habitat at a 3-to-1 ratio or other ratio approved by the USFWS. Compensatory mitigation would be provided by one or a combination of the following mechanisms:
 - a. Establishment of a conservation easement on lands owned or acquired by BART (preferably on lands within the Cayetano Creek watershed, if available) where seasonal pools can be created and protected to compensate for habitat losses. At a 3-to-1 ratio, compensatory mitigation needs would be approximately 0.075 acre of created pool habitat. Lands would be set aside and managed through a permanent conservation easement to be owned and managed by BART or a third-party easement holder. The perpetual management and monitoring of the conservation lands shall be funded by an endowment fund that is tied to the easement manager and the conservation easement.
 - b. Participation in a USFWS-approved vernal pool invertebrate mitigation bank program such as the Mountain House Conservation Bank with purchase of appropriate vernal pool creation and preservation credits to mitigate for anticipated vernal pool habitat losses.

Impact BIO-3: Adversely affect California tiger salamander and California red-legged frog, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

Areas of potential direct impacts to CTS and CRLF upland habitat are shown in Table 3.I-9 for the Proposed Project and DMU Alternative footprints. There is no wetland or upland habitat within the Express Bus/BRT Alternative footprint and no such habitat would be affected by the Enhanced Bus Alternative, or the feeder bus improvements under the Proposed Project or other Build Alternatives, which would be located within the existing street ROWs. Potential impacts are described below.

TABLE 3.I-9 POTENTIAL DIRECT IMPACTS TO CTS AND CRLF HABITAT

Potential Habitat by Geographic Subarea	CTS Habitat (Acres)		CRLF Habitat (Acres)	
	Conventional BART Project	DMU Alternative (with EMU Option)	Conventional BART Project	DMU Alternative (with EMU Option)
Potential Upland Habitat				
Dublin/Pleasanton Station Area	--	--	--	--
I-580 Corridor Area	11.39	11.43	19.72	19.76
Isabel North Area	--	--	0.024	0.024
Isabel South Area	--	--	0.183	0.183
Cayetano Creek Area	110.88	63.18	110.88	63.18
Total Upland Area	122.27	74.61	130.79	83.12
Potential Aquatic Habitat				
I-580 Corridor Area (SW-6)	0.025	0.025	--	--
Isabel South Area (Arroyo las Positas)	--	--	0.045	0.045
Cayetano Creek Area (Arroyo las Positas)	--	--	0.083	0.083
Cayetano Creek Area (Cayetano Creek, lower)	0.137	0.142	0.137	0.142
Cayetano Creek Area (Pond-1 at Hartman Road)	0.061	--	0.061	--
Total Aquatic Area	0.223	0.167	0.326	0.270

Note: -- = none or not applicable.

There is no wetland or upland habitat within the Express Bus/BRT Alternative footprint and no such habitat would be affected by the Enhanced Bus Alternative, or the feeder bus improvements under the Proposed Project or other Build Alternatives, which would be located within the existing street ROWs.

Source: ESA, 2013a,b,c,d; Arup, 2017.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build

Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of CTS and CRLF. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to CTS and CRLF during construction. **(NI)**

Conventional BART Project. As shown in Table 3.1-9 and Figures 3.1-4a and 3.1-4b, the Proposed Project would result in the permanent loss of approximately 122.27 acres of potential upland aestivation and dispersal habitat for CTS and approximately 130.79 acres for CRLF. For both species, these areas principally occur in annual grasslands north of the I-580 Corridor Area near Croak Road and in the Cayetano Creek Area. In addition, habitat for CRLF occurs in the Isabel North Area and Isabel South Area.

Additionally, the Proposed Project would result in the loss of approximately 0.223 acre of aquatic breeding for CTS and approximately 0.326 acre for the CRLF. Aquatic breeding habitat for CTS is potentially located as follows: approximately 0.025 acre at SW-6 in the I-580 Corridor Area; and approximately 0.137 acre in Cayetano Creek and approximately 0.061 acre at Pond-1 in the Cayetano Creek Area. Aquatic habitat for the CRLF includes the following areas: non-breeding CRLF aquatic refugia habitat of approximately 0.045 acre in Arroyo las Positas at the Isabel South Area; and approximately 0.083 acre in Arroyo las Positas, approximately 0.137 acre at Cayetano Creek, and approximately 0.61 acre Pond-1 at the Cayetano Creek Area. An unknown number of CTS and CRLF could be subject to take during construction as a result of ground disturbance within upland habitat and aquatic habitat areas, resulting in a potentially significant impact to CTS and CRLF.

These impacts would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-3.A**, which includes a survey of potential habitat to determine presence of species and measures to avoid and minimize the direct take of individual CTS and CRLF, **Mitigation Measure BIO-3.B**, which provides for habitat compensation and enhancement consistent with USFWS guidance under the EACCS Biological Opinion, and **Mitigation Measure BIO-3.C**, which provides general protection measures for special-status species. **(LSM)**

DMU Alternative. Potential direct habitat impacts to CTS and CRLF are presented in Table 3.1-9 and areas of potential species habitat are shown in Figures 3.1-4a and 3.1-4b. The DMU Alternative would include many of the same areas within the Proposed Project footprint, with the addition of improvements in the Dublin/Pleasanton Station and a different footprint for the storage and maintenance facility in the Cayetano Creek Area. Within the Dublin/Pleasanton Station Area, construction of the DMU Alternative would affect portions of Line G-1-1, a concrete channel, Chabot Canal and Line G-2 (Hewlett Canal). The Dublin/Pleasanton Station Area does not provide upland or aquatic habitat for CRLF or CTS. Therefore, no impacts would occur to CTS or CRLF in this area.

The DMU Alternative would result in the permanent loss of approximately 74.61 acres of potential upland aestivation and dispersal habitat for CTS and approximately 83.12 acres for CRLF. Habitat for both species principally occurs in annual grasslands north of the I-580 Corridor Area near Croak Road and in the Cayetano Creek Area. In addition, habitat for CRLF occurs in the Isabel North Area and Isabel South Area. Additionally, the DMU Alternative would result in the loss of approximately 0.167 acre of aquatic breeding for CTS and approximately 0.270 acre for the CRLF. Aquatic breeding habitat would be similar to the Proposed Project, with the exception that areas affected within the Cayetano Creek Area would differ in some areas due to the different footprint for the DMU Alternative, as shown in Table 3.1-9.

Within disturbance areas, an unknown number of CTS and CRLF could be subject to take during construction as a result of ground disturbance within upland habitat and aquatic habitat areas, resulting in a potentially significant impact to CTS and CRLF. However, as described above for the Proposed Project, these impacts would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-3.A**, which includes a survey of potential habitat to determine presence of species and measures to avoid and minimize the direct take of individual CTS and CRLF, **Mitigation Measure BIO-3.B**, which provides for habitat compensation and enhancement consistent with USFWS guidance under the EACCS Biological Opinion, and **Mitigation Measure BIO-3.C**, which provides general protection measures for special-status species. (LSM)

Express Bus/BRT Alternative. Construction of the Express Bus/BRT Alternative would affect portions of Line G-1-1, an unnamed concrete channel, Chabot Canal, and Line G-2 within the Dublin/Pleasanton Station Area (see Figure 3.1-2a). However, the Dublin/Pleasanton Station Area does not provide upland or aquatic habitat for CRLF or CTS, nor does the portion of the I-580 Corridor Area within the footprint of the Express Bus/BRT Alternative. Therefore, no impacts would occur to CTS or CRLF at these locations. Construction of the remote parking lot at the Laughlin Road Area would occur within developed and disturbed areas that do not provide habitat for CTS or CRLF. However, while the Laughlin Road Area does not provide upland or aquatic habitat for CTS or CRLF, based on the proximity of this area to potential CTS breeding sites and CRLF habitat in

Altamont Creek, CTS or CRLF may seasonally enter the site and could be subject to mortality during construction. Therefore, impacts to CTS and CRLF habitat would be potentially significant under the Express Bus/BRT Alternative.

These impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.A**, which provides a survey of potential habitat to determine presence of species and protection measures for CTS and CRLF during construction; **Mitigation Measure BIO-3.B**, which provides compensatory habitat to mitigate for the loss and disturbance of CTS and CRLF habitat; and **Mitigation Measure BIO-3.C**, which would provide general protection measures for special-status species. (LSM)

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed are within urban/developed land that does not support CTS or CRLF, or their habitat. In addition, the limited amount of construction anticipated for installation of the infrastructure improvements would result in a minor amount of ground disturbance, which would occur within developed areas. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to CTS and CRLF, and no mitigation measures are required. (NI)

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts to CTS and CRLF habitats. However, with implementation of **Mitigation Measure BIO-3.A**, which includes a survey of potential habitat to determine presence of species and measures to avoid and minimize the direct take of individual CTS and CRLF; **Mitigation Measure BIO-3.B**, which provides for habitat compensation and enhancement consistent with USFWS guidance under the EACCS Biological Opinion; and **Mitigation Measure BIO-3.C**, which would provide general protection measures for special-status species, potential impacts would be reduced to a less-than-significant level. In addition, BART will obtain take authorization from the USFWS and CDFW to address the anticipated take of CTS and authorization from the USFWS for take of CRLF, which may result in additional protective measures beyond those described herein.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-3.A: Consult with USFWS, Survey Potential Habitat, and Reduce Impacts on Special-status Amphibians during Construction (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

The following actions shall be implemented prior to and during construction:

1. BART shall assign a Designated Biologist approved by the USFWS and CDFW to monitor construction activities within potential CTS and CRLF habitat. General minimum qualifications are a 4-year degree in biological sciences or other appropriate training and/or direct experience in surveying, identifying, and handling CTS and CRLF. Resumes for USFWS-approved Designated Biologists shall be provided to the USFWS no later than 30 days prior to construction for approval.
2. A detailed amphibian relocation plan shall be prepared at least 3 weeks before the start of groundbreaking, and submitted to USFWS for review. The purpose of the plan is to standardize amphibian relocation methods and relocation sites.
3. The Designated Biologist shall survey the work sites that provide potential CTS or CRLF habitat, as identified in Figures 3.I-4a and 3.I-4b, within 2 weeks prior to construction. If these species are not identified, construction can proceed at these sites. If CTS or CRLF (or their tadpoles or eggs) are found, the biologist shall contact USFWS to coordinate animal relocation consistent with agency requirements. The USFWS-approved Designated Biologist shall be allowed sufficient time to move frogs and/or salamanders from work sites before work begins. The biologist shall use professional judgment to determine whether (and if so, when) the CTS and/or CRLF are to be moved.
4. BART and its contractors shall install amphibian-exclusion fencing (e.g., silt fence or ERTEC brand fence) around the entire construction zone for construction activity in the Cayetano Creek and Croak Road areas.
5. Areas that provide potential habitat will be monitored during construction to identify, capture, and relocate sensitive amphibians, if present.
6. A Designated Biologist shall be present at the active work sites until CTS and CRLF have been removed, and habitat disturbance has been completed. Thereafter, the Designated Biologist shall perform regular spot checks to ensure compliance with permits; or if allowed by permits, the contractor or BART shall designate a person to monitor on-site compliance with all minimization measures. A Designated Biologist shall ensure that this individual receives training consistent with USFWS and/or CDFW requirements.

Mitigation Measure BIO-3.B: Provide Compensatory Habitat to Mitigate for the Loss and Disturbance of CTS and CRLF Habitat (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

BART shall provide USFWS- and CDFW-approved off-site compensatory habitat mitigation consistent with USFWS and/or CDFW permit requirements to compensate for impacts to upland and aquatic habitat that is occupied by CTS and CRLF, or presumed occupied by resource agencies. The EACCS Biological Opinion, which sets the standard for Livermore Valley habitat compensation requirements, determines the amount of required mitigation lands based on the relative habitat values of impacted lands and mitigation lands. The amount of mitigation land will be determined by the USFWS and CDFW using standards and procedures defined in the EACCS, which calculates a ratio based on habitat quality and the location of the impact site, and the relative quality and location of mitigation lands. Based on the relatively high habitat values for CTS and CRLF in the footprint and the use of local, high-value mitigation lands it is estimated that the adopted project will require compensatory mitigation for upland habitats at a ratio between 2.5-to-1 and 3-to-1 for areas that are permanently impacted, and between 1:1 and 1.5-to-1 ratio for areas that are temporarily disturbed.⁷⁴ The final replacement ratios and related amount of mitigation land determined by the USFWS and CDFW during the FESA and CESA permitting processes shall be based on the assessed functions and values of agency-approved mitigation lands such as the Ohlone West Conservation Bank in southern Alameda County, or a comparable bank.

Mitigation Measure BIO-3.C: General Measures for Biological Resources Protection during Construction (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

The following measures shall be implemented at all construction sites to avoid and minimize direct and indirect impacts to special-status species and their habitat:

1. A qualified biologist shall conduct a training session for all construction personnel working within sensitive species habitat. At a minimum, the training shall include a description of special-status species and their habitat, federal and/or State penalties for harming sensitive species or their habitat, general measures that are being implemented to conserve these species as they relate to the adopted project, and the boundaries within which construction shall occur, when work occurs near sensitive habitats.

⁷⁴ For permitting purposes, the CDFW and USFWS often define “temporary” impacts as those that are minimally impacting and have a duration of 3 months or shorter.

2. During work activities, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. The contractor shall remove all trash and construction debris from work areas on a daily basis.
3. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 65 feet from any riparian habitat or water body.
4. To minimize the possibility of inadvertent special-status species mortality, construction vehicles shall observe a maximum 20-miles-per-hour speed limit within the construction site and on private roads.
5. To prevent accidental entrapment of special-status wildlife species during construction, all excavated holes or trenches greater than 2 feet deep shall be covered at the end of each work day by suitable materials, or escape routes shall be installed (such as earthen materials or wooden planks). Before filling holes or trenches, they shall be thoroughly inspected for trapped animals. Exclusion fencing shall be used around the entire construction zone for construction activity in the Cayetano Creek and Croak Road areas.
6. All food-related trash items (such as wrappers, cans, bottles, and food scraps) shall be disposed of in closed containers and removed daily from the construction site.
7. To prevent harassment and mortality of special-status wildlife or destruction of their dens, no pets shall be allowed in the construction area.

Impact BIO-4: Adversely affect western spadefoot, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of western spadefoot. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of

Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to western spadefoot during construction. **(NI)**

Conventional BART Project. Although the Proposed Project may remove potential non-breeding upland dispersal habitat for the western spadefoot, the Proposed Project would not impact potential aquatic breeding habitat, which occurs outside the Proposed Project footprint. The footprint in the Cayetano Creek Area would be located outside of the vernal pool complex in the Cayetano Creek watershed that could support western spadefoot breeding (see EACCS-modeled fairy shrimp habitat on Figure 3.1-2b). Due to lack of access to private property, this complex has not been surveyed for western spadefoot presence. The Proposed Project is located approximately 5 miles from the nearest CNDDDB-reported western spadefoot observation; hence, the likelihood of species presence is considered low. However, because of the presence of potential aquatic breeding habitat in seasonal wetlands in the Cayetano Creek watershed, there is the potential that adult or juvenile western spadefoot may be encountered during construction and subject to mortality.⁷⁵

Therefore, impacts to western spadefoot could be potentially significant in the Cayetano Creek Area due to construction-related direct mortality of individuals, if present. These potential impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.A**, which requires wildlife exclusion fencing to protect CTS and CRLF and would also provide protection for the western spadefoot, **Mitigation Measure BIO-3.C**, which provides general protection measures for special-status species, and **Mitigation Measure BIO-4**, which provides preconstruction surveys to identify this species in the footprint and relocation of species if encountered. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and a different footprint for the storage and maintenance facility in the Cayetano Creek Area. Potential habitat for western spadefoot does not occur in the Dublin/Pleasanton Station Area, and thus, the DMU Alternative would have similar impacts as the Proposed Project. These construction-related impacts would be potentially significant. However, as described above for the Proposed Project, these potential impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.A**, which requires wildlife exclusion fencing to protect CTS and CRLF and would also provide protection for the western spadefoot, **Mitigation Measure BIO-3.C**, which provides general protection measures for special-status species, and **Mitigation**

⁷⁵ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

Measure BIO-4, which provides preconstruction surveys to identify this species in the footprint and relocation of species if encountered. **(LSM)**

Express Bus/BRT Alternative. Habitat for western spadefoot does not occur within the Express Bus/BRT Alternative footprint. Therefore, construction of the Express Bus/BRT Alternative would have no direct or indirect construction-related impacts to western spadefoot, and no mitigation measures are required. **(NI)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support western spadefoot. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to western spadefoot, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and DMU Alternative would have potentially significant impacts on western spadefoot. However, with implementation **Mitigation Measure BIO-3.A** above, which requires wildlife exclusion fencing to protect CTS and CRLF and would also provide protection for the western spadefoot, **Mitigation Measure BIO-3.C** above, which provides general protection measures for special-status species, and **Mitigation Measure BIO-4**, which provides preconstruction surveys to identify this species in the footprint and relocation of species if encountered, potential impacts to individuals would be reduced to a less-than-significant level.

As described above, the Express Bus/BRT Alternative and Enhanced Bus Alternative would not have significant construction-related impacts on this species; therefore, no mitigation measures are required for these alternatives.

Mitigation Measure BIO-4: Preconstruction Survey and Avoidance Measures for the Western Spadefoot (Conventional BART Project and DMU Alternative/EMU Option).

Within 24 hours of the start of construction activities within approximately 0.25 mile of upland areas with potential western spadefoot habitat (i.e., the vernal pool complex at Cayetano Creek (see EACCS-modeled fairy shrimp habitat on Figure 3.1-2b), a qualified biologist shall survey upland areas to determine the presence of the western spadefoot. The qualified biologist shall be responsible for the survey and for the relocation of western spadefoot consistent with CFDW requirements. Spadefoot surveys can be performed concurrently with other special-status wildlife surveys.

Impact BIO-5: Adversely affect western pond turtle, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of WPT. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to WPT during construction. **(NI)**

Conventional BART Project. WPT have the potential to regularly or seasonally occur in all drainages and canals located within the footprint of the Proposed Project, and within some adjoining upland areas. High-quality habitat for this species was identified in Arroyo las Positas and Tassajara Creek. This species is additionally expected to seasonally use portions of Cayetano Creek, Cottonwood Creek, and other drainages that traverse the Proposed Project footprint along the I-580 corridor. Upland areas where this species may be encountered include grasslands north of Croak Road and in the Cayetano Creek Area.

Temporary impacts to WPT would occur during construction activities in or around habitat supporting WPT. Individual mortality could result from heavy equipment or other construction activities within or adjacent to WPT habitat. Therefore, impacts to WPT would be potentially significant. This impact would be reduced to a less-than-significant level through the implementation **Mitigation Measure BIO-3.C**, which provides general protection measures that would protect WPT, and **Mitigation Measure BIO-5**, which would require focused surveys for WPT and measures to avoid and minimize impacts to individual turtles. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with additional impacts to Line G-1-1, concrete channel, Chabot Canal, and Line G-2. Therefore, construction of the DMU Alternative could occur in areas with

WPT and would result in potentially significant impacts to this species. This impact would be reduced to a less-than-significant level through the implementation **Mitigation Measure BIO-3.C**, which provides general protection measures that would protect WPT, and **Mitigation Measure BIO-5**, which would require focused surveys for WPT and measures to avoid and minimize impacts to individual turtles. **(LSM)**

Express Bus/BRT Alternative. During habitat assessment surveys, potential habitat for WPT was identified in Line G-2 within the Express Bus/BRT Alternative footprint in the Dublin/Pleasanton Station Area. Line G-2 does not provide perennial habitat that would support turtles on a continued basis, but turtles that occur intermittently in this drainage could be subject to mortality during construction. WPT habitat is not present within the Laughlin Road Area. Due to the potential for WPT to intermittently occur in Line G-2, impacts to WPT would be potentially significant. This impact would be reduced to a less-than-significant level through the implementation **Mitigation Measure BIO-3.C**, which provides general protection measures that would protect WPT, and **Mitigation Measure BIO-5**, which would require focused surveys for WPT and measures to avoid and minimize impacts to individual turtles. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support WPT. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements, including bus bulb-outs, bus shelters, and signage, would result in a minor amount of ground disturbance, which would all be within developed areas. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to WPT, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts on WPT habitat. However, with implementation of **Mitigation Measure BIO-3.C** above, which provides general protection measures that would protect WPT, and **Mitigation Measure BIO-5**, which would require focused surveys for WPT and measures to avoid and minimize impacts to individual turtles, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts on this species; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-5: Preconstruction Surveys and Relocation of Western Pond Turtle (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

Within 24 hours of commencement of construction activities in undeveloped areas within 0.25 mile of streams and drainages (i.e., within potential WPT habitat), a qualified biologist shall survey upland areas, creeks and other ponded areas to determine species' presence. Upland areas shall be examined for evidence of nests as well as individual turtles. The qualified biologist shall be responsible for the survey and for the relocation of WPT consistent with CDFW requirements. Construction shall not proceed until all WPT observed in the construction area have been captured and relocated. If a WPT nest is observed, with approval from the CDFW, the biologist shall move eggs to a suitable location or facility for incubation (e.g., the Sonoma State University Biology Department) and release hatchlings into the same creek system the following autumn. This mitigation measure does not apply at any construction activity at the Laughlin remote parking site.

Impact BIO-6: Adversely affect western burrowing owl, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

Areas of potential direct impacts to BUOW upland habitat are shown in Table 3.I-10 for the Proposed Project and Build Alternatives. Potential impacts are described below.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of western BUOW. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to western BUOW during construction. **(NI)**

TABLE 3.I-10 POTENTIAL DIRECT IMPACTS TO BUOW UPLAND HABITAT

Potential Habitat by Geographic Subarea	DMU Alternative			
	Conventional BART Project	(with EMU Option)	Express Bus/BRT Alternative	Enhanced Bus Alternative
Dublin/Pleasanton Station Area	6.18 ^a	9.71	6.96	--
I-580 Corridor Area	29.50	29.64	--	--
Isabel North Area	15.70	15.70	--	--
Isabel South Area	--	--	--	--
Cayetano Creek Area	109.78	62.89	--	--
Laughlin Road Area	--	--	--	--
Total Area	161.98	117.94	6.96	0

Notes: -- = none or not applicable.

^a At the Dublin/Pleasanton Station Area, the area within the within the Proposed Project footprint consists of the Arnold Road Staging Area only. The Enhanced Bus Alternative, as well as the bus improvements under the Proposed Project or other Build Alternatives, would be located within the existing street ROWs and would not affect BUOW upland habitat.

Source: ESA, 2013a,b,c,d; Arup, 2017.

Conventional BART Project. Annual grasslands in the Proposed Project footprint provide potential BUOW breeding and foraging habitat. Grasslands within the footprint provide varying degrees of habitat quality for this species. Potential habitat for BUOW occurs within each of the geographic subareas within the Proposed Project footprint. Potential habitat includes the annual grassland areas identified in Figure 3.I-4a and Figure 3.I-4b, and lands adjacent to the Arnold Road Staging Area and north of Arroyo las Positas, just beyond the Isabel South Area, where BUOW, if present, could be subject to indirect project impacts such as harassment or increased stress on owls, reduced reproduction, or increased predation. These areas and surrounding annual grasslands, ruderal (disturbed) areas, and agricultural lands provide potential breeding and foraging habitat for BUOW.

The habitat assessment survey completed for the Proposed Project identified potential habitat for BUOW within the Arnold Road Staging Area. While this area is not known to support BUOW, the presence of California ground squirrel burrows in annual grasslands and ruderal areas on the western portion of the staging area presents the potential for BUOW habitation. Inspection of the approximately 10 ground squirrel burrows identified on site did not yield evidence of BUOW presence, such as pellets, prey remains, white wash, feathers, or nest ornamentation.⁷⁶ The Camp Parks Reserve Forces Training Area

⁷⁶ City of Dublin, 2001. Dublin Transit Center Draft Environmental Impact Report. July.

located about 2 miles away is known to support a robust population of BUOW, and another recorded observation detected owls within 1 mile of the study area.⁷⁷

No records from the CNDDDB or other sources identify BUOW colonies or aggregations in or adjacent to the Proposed Project footprint, and BUOW has not been recently documented within the footprint. However, focused BUOW surveys have not been conducted to verify the local distribution of this species. If present, BUOW could be exposed to direct impacts such as mortality and habitat loss and indirect impacts such as harassment or increased stress on owls, reduced reproduction, increased predation, and risks posed by the need to find and compete for available burrows.

The Proposed Project would result in the direct loss of up to approximately 161.98 acres of grassland habitat that could support BUOW nesting or foraging habitat, as shown in Table 3.I-10. As shown in Figures 3.I-4a and 3.I-4b, much of the potential BUOW habitat is located on the northern edge of I-580 in annual grasslands; however, these areas are unlikely to support the species because they are subject to dry land farming, or are undergoing development. It is anticipated that Cayetano Creek Area has the highest quality habitat for BUOW, and thus, BUOW is assumed to be potentially present. This area has potential to support BUOW because it supports grasslands and is assumed to have California ground squirrel burrows.

If present, BUOW in grasslands and ruderal habitat could be exposed to direct and indirect project impacts. Direct impacts to BUOW related to construction and earthmoving activities could affect BUOW through direct mortality of adults or nestlings if nest burrows are present in areas where the soil is disturbed. Construction of the Proposed Project would indirectly affect BUOW through the loss of habitat (foraging, roosting, and wintering habitat) and/or by disrupting adult reproductive behavior if owl pairs are nesting within 500 feet of construction during the nesting season (March to June). Therefore, impacts to BUOW would be potentially significant.

This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to protect BUOW, **Mitigation Measure BIO-6.A**, which provides for a survey of potential habitat areas and measures to avoid and minimize the take of BUOW during construction, and **Mitigation Measure BIO-6.B**, which provides for habitat compensation and enhancement consistent with CDFW guidance under the EACCS. (LSM)

⁷⁷ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, and would also include the Dublin/Pleasanton Station Area, which provides habitat for the species. In total, the DMU Alternative would affect up to approximately 117.94 acres of potential BUOW habitat (see Table 3.I-10). Therefore, construction of the DMU Alternative would result in potentially significant impacts to BUOW. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to protect BUOW, **Mitigation Measure BIO-6.A**, which provides for a survey of potential habitat areas and measures to avoid and minimize the take of BUOW during construction, and **Mitigation Measure BIO-6.B**, which provides for habitat compensation and enhancement consistent with CDFW guidance under the EACCS. **(LSM)**

Express Bus/BRT Alternative. Potential habitat for BUOW is located in the Dublin/Pleasanton Station Area and Laughlin Road Area, but not within the portion of the I-580 Corridor Area in the footprint (Hacienda Drive to Tassajara Road/Santa Rita Road). In total, the Express Bus/BRT Alternative would affect up to approximately 6.96 acres of potential BUOW habitat (see Table 3.I-10). If BUOW are present on site at the time of construction, the Express Bus/BRT Alternative could have a significant impact on the BUOW. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to protect BUOW, **Mitigation Measure BIO-6.A**, which provides for a survey of potential habitat areas and measures to avoid and minimize the take of BUOW during construction, and **Mitigation Measure BIO-6.B**, which provides for habitat compensation and enhancement consistent with CDFW guidance under the EACCS. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs in urban/developed land that does not support BUOW or their habitat. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to BUOW, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts on BUOW habitat. However, with implementation of **Mitigation Measure BIO-3.C** above, which provides general protection measures that would apply to protect BUOW, **Mitigation Measure BIO-6.A**, which provides for a survey of potential habitat areas and measures to avoid and minimize the take of BUOW during construction, and **Mitigation Measure BIO-6.B**, which provides for habitat compensation and enhancement consistent with CDFW guidance under the EACCS, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts on this species; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-6.A: Preconstruction Surveys for Burrowing Owl (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

BART shall implement the measures identified below within suitable BUOW habitats identified in Figures 3.1-4a and 3.1-4b, to reduce potential impacts and avoid and minimize the direct and indirect impacts to BUOW. In advance of construction and consistent with the 2012 CDFW Staff Report on Burrowing Owl Mitigation, BART shall complete BUOW Take Avoidance Surveys within the adopted project footprint and adjacent accessible areas within 500 feet of the footprint using CDFW's 2012 survey methodology.⁷⁸ Under this protocol, at least four survey visits shall be performed by a qualified biologist within 14 days of ground disturbance following CDFW's 2012 Staff Report guidance for take avoidance surveys. The final survey shall be conducted within 24 hours prior to ground disturbance to verify that owls are absent and would not be directly impacted.

Additional surveys may be required when the initial disturbance is followed by extended periods of inactivity. Up to four or more survey visits performed on separate days may be required to assure with a high degree of certainty that site modification and grading will not take owls. The full extent of the preconstruction survey effort shall be described and mapped in detail (e.g., dates, time periods, area[s] covered, and methods employed) in a biological report that will be provided for review to the CDFW.

In addition to the above survey requirements, the following measures shall be implemented to reduce impacts to BUOW:

1. Exclusion areas and fencing. Construction exclusion areas (e.g., orange exclusion fence or signage) shall be established around occupied BUOW burrows, where no disturbance shall be allowed. During the nonbreeding season (September 1 through January 31), the exclusion zone shall extend at least 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas shall extend 250 feet around occupied burrows (or farther if warranted to avoid nest abandonment).

⁷⁸ California Department of Fish and Game (CDFG), 2012. Staff Report on Burrowing Owl Mitigation, State of California, Natural Resources Agency, Department of Fish and Game. March 7.

2. If BUOW are detected during surveys, a Burrowing Owl Exclusion Plan shall be prepared consistent with CDFW guidance to confirm the methodology used to identify and close active and potential BUOW burrows within the work area.⁷⁹ Upon completion, the Burrowing Owl Exclusion Plan shall be submitted for review to the CDFW. The Burrowing Owl Exclusion Plan shall address the following components:
 - a. Confirmation by site surveillance that the burrow(s) are empty of BUOWs and other species prior to use of a fiberoptic endoscope (scoping)
 - b. The type of burrow scope and appropriate timing of scoping to avoid impacts
 - c. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure BUOWs have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape, i.e., look for sign immediately inside the door)
 - d. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow)
 - e. Removal of other potential owl burrow surrogates or refugia on site
 - f. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency
 - g. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take
 - h. How the impacted site will continually be made inhospitable to BUOWs and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete
3. Artificial burrow creation. If an occupied BUOW burrow is confirmed on the project footprint, one or more artificial burrow locations shall be appropriately located and installed to facilitate BUOW relocation, consistent with the 2012 CDFW Staff Report on Burrowing Owl Mitigation. The number of artificial burrows shall be proportionate to the number of occupied burrows that are directly impacted by the project. If owls are present, the Burrowing Owl Exclusion Plan shall discuss artificial burrow creation and shall include the following:
 - a. A brief description of the project and preconstruction activities

⁷⁹ Ibid.

- b. The mitigation measures that will be implemented for BUOW
- c. A description of potential conflicting site uses or encumbrances
- d. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features)
- e. Artificial burrow(s) proximity to the project activities, roads, and drainages
- f. Artificial burrow(s) proximity to other burrows and entrance exposure
- g. Photographs of the site of the occupied burrow(s) and the artificial burrows
- h. A map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows
- i. A brief description of the artificial burrow design
- j. Description of the monitoring that will take place during and after project implementation, including information that will be provided in a monitoring report
- k. A description of the frequency and type of burrow maintenance, as applicable

Mitigation Measure BIO-6.B: Off-site Compensatory Habitat for Burrowing Owl (Conventional BART Project and DMU Alternative/EMU Option).

BART shall compensate for permanent losses to potential BUOW foraging habitat at a minimum 1-to-1 ratio. Mitigation may be provided concurrent with other mitigation commitments, such as requirement to protect upland habitat for CTS, CRLF, or SJKF, provided that potential foraging habitat is available for BUOW on mitigation lands.

Impact BIO-7: Adversely affect nesting raptors and other nesting birds, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: LSM)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could

adversely affect habitat of nesting raptors and other nesting birds. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to nesting raptors and other nesting birds during construction. **(NI)**

Conventional BART Project. Several common and special-status avian species may forage and/or nest within habitats that would be directly or indirectly impacted by the Proposed Project during construction. It is possible that riparian, grassland, and agricultural areas, among others, could support nesting by Cooper's hawk, sharp-shinned hawk, red-tailed hawk, red-shouldered hawk, white-tailed kite, northern harrier, and other raptors, as well as California horned lark, loggerhead shrike, and tricolored blackbird, among other special-status birds. Undeveloped grasslands north of the I-580 Corridor Area and in the Isabel North Area may also support nesting by the BUOW, as described in **Impact BIO-6** above. Grassland areas serve as potential foraging areas for golden eagle. Golden eagle nesting is not expected in grassland areas within the study area, as these areas are devoid of suitable nesting trees. The above-mentioned species are protected as California Species of Special Concern and/or under Fish and Game Code. Other native birds, including nests and eggs, are also protected during nesting by the Fish and Game Code.

Construction activities, including grading and removal of trees, shrubs, and other nesting habitat during the breeding season, could result in significant direct mortality of protected birds. Human disturbances and construction noise could cause nest abandonment, death of young, or loss of reproductive potential at active nests located near project activities. For these reasons, direct and indirect impacts to nesting raptors and other nesting birds would be potentially significant. However, with the implementation of **Mitigation Measure BIO-7**, which would require preconstruction nesting bird surveys during the breeding season and protective buffers around nests, impacts to raptors, special-status, and common bird species would be reduced to less than significant. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area, and thus would have a similar potential to result in significant impacts to nesting raptors and other nesting birds. However, implementation of **Mitigation Measure BIO-7**, which would require preconstruction nesting bird surveys during the breeding season and protective buffers around nests, impacts to raptors, special-status, and common bird species would be reduced to less than significant. **(LSM)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative's construction activities occur in areas near the Dublin/Pleasanton Station Area, along the portion of the I-580 Corridor Area, and Laughlin Road Area. The Laughlin Road Area could support nesting raptors or other protected avian species. During the avian nesting season, common but protected birds such as mourning dove, house finch, and American robin, among others, may nest in or near the study area. The Laughlin Road Area additionally supports numerous trees that could support nesting raptors such as Cooper's hawk, sharp-shinned hawk, red-tailed hawk, and red-shouldered hawk, among others.

If nesting birds are present at the time of construction, construction activities associated with the Express Bus/BRT Alternative could result in direct mortality of nesting birds. Indirect impacts from construction noise, vibrations, and increased human presence could disturb adult birds, causing nest abandonment, death of young, or loss of reproductive potential at active nests near the footprint of the Express Bus/BRT Alternative. Therefore, construction of the Express Bus/BRT Alternative could result in potentially significant direct or indirect impacts to nesting birds. However, implementation of **Mitigation Measure BIO-7**, which would require preconstruction nesting bird surveys during the breeding season and protective buffers around nests, impacts to raptors, special-status, and common bird species would be reduced to less than significant. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Although these areas are developed, street trees provide habitat for common nesting birds. During the avian nesting season, common but protected birds such as mourning dove, house finch, and American robin, among others, may nest on buildings, within signage, or in trees in the urbanized construction area. The Enhanced Bus Alternative could inadvertently take raptors or other protected bird species. Therefore, impacts to nesting birds would be potentially significant. However, implementation of **Mitigation Measure BIO-7**, which would require preconstruction nesting bird surveys during the breeding season and protective buffers around nests, impacts to raptors, special-status, and common bird species would be reduced to less than significant. **(LSM)**

Mitigation Measures. As described above, the Proposed Project and Build Alternatives would have potentially significant impacts on nesting raptors and other nesting birds. However with implementation of **Mitigation Measure BIO-7**, which would require preconstruction nesting bird surveys during the breeding season and protective buffers around nests, potential impacts would be reduced to a less-than-significant level.

Mitigation Measure BIO-7: Identify and Avoid Active Nesting Birds during Nesting Season (Conventional BART Project, DMU Alternative/EMU Option, Express Bus/BRT Alternative, and Enhanced Bus Alternative).

If construction activities are scheduled to occur during the avian breeding season (February 1 through August 31), BART or its contractor shall implement the following measures to avoid potential adverse effects to nesting raptors and other common and special-status nesting birds.

1. No more than two weeks prior to construction, a qualified biologist shall perform preconstruction surveys for nesting birds within 500 feet of construction areas, where access is available. If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required.
2. If active nests are detected during preconstruction surveys, BART shall create a no-disturbance buffer around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that young birds have fledged. Buffers shall be at least 250 feet for raptors and at least 150 feet for other nesting birds. Nests initiated within the active construction area may have reduced buffer sizes due to the increased tolerance of disturbance. Reductions to nest buffer distances may be allowed on a case-by-case basis in coordination with the CDFW based on site-specific factors such as the existing disturbance levels, the species of nesting bird, and the magnitude of the proposed disturbance.

Impact BIO-8: Adversely affect special-status bats, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of special-status bats. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project

Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to special-status bats during construction. **(NI)**

Conventional BART Project. It is possible that breeding and nonbreeding bats could roost in the large eucalyptus trees on the Isabel South Area, and in trees and structures in other areas. Crevices in highway bridge structures beneath I-580 could provide roosting habitat for pallid bat. Based on their known range and available habitat in the project corridor, the pallid bat is the only special-status bat species that could be impacted by the Proposed Project. Construction activities that cause the displacement of a pallid bat maternity roost, or bat eviction from roosts during winter months could result in mortality of individual bats. Indirect impacts from construction noise and vibrations could disturb pallid bats, causing roost abandonment, death of young, or loss of reproductive potential at roosts near the footprint of the Proposed Project. Therefore, impacts to the pallid bat would be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to these species, and **Mitigation Measure BIO-8**, which would require preconstruction surveys and avoidance measures for the bat. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and some differences in the Cayetano Creek Area. Thus, this alternative would result in the same potentially significant impacts to the pallid bat as described for the Proposed Project. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to these species, and **Mitigation Measure BIO-8**, which would entail preconstruction surveys and avoidance measures for the bat. **(LSM)**

Express Bus/BRT Alternative. Construction activities associated with the Express Bus/BRT Alternative would occur in areas that could support pallid bat. If roosting pallid bats are present at the time of construction, construction activities associated with the Express Bus/BRT Alternative could result in direct mortality of individual bats evicted from active roosts. Indirect impacts from construction noise and vibrations could disturb pallid bats, causing roost abandonment, death of young, or loss of reproductive potential at roosts near the footprint of the Express Bus/BRT Alternative. Therefore, construction of the Express Bus/BRT Alternative could result in potentially significant direct or indirect impacts to pallid bat. This impact would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to these species, and **Mitigation Measure BIO-8**, which would entail preconstruction surveys and avoidance measures for the bat. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support the pallid bat or their habitat. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to these species, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts on pallid bat habitat. However, with implementation of **Mitigation Measure BIO-3.C** above, which provides general protection measures that would apply to these species, and **Mitigation Measure BIO-8**, which requires preconstruction surveys and avoidance measures if bat species are present, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts on this species; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-8: Preconstruction Surveys and Avoidance Measures for Pallid Bat (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

1. Prior to construction activities (i.e., ground clearing and grading, including tree removal) within 200 feet of bat habitat, a qualified biologist shall survey for special-status bats. If no evidence of bats (e.g., direct observation, guano, staining, or strong odors) is observed, no further mitigation shall be required.
2. If evidence of bats is observed, BART and its contractors shall implement the following measures to avoid potential impacts on breeding populations:
 - a. A no-disturbance buffer of 200 feet shall be created around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals is prohibited.
 - b. Construction activities near features showing evidence of active bat activity shall occur during the period least likely to affect bats, as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and human activity adjacent, bat exclusion activities (e.g., installation of netting to block roost entrances) shall also be conducted during these periods. BART shall coordinate any relocation or bat exclusion efforts in advance with the CDFW.

Impact BIO-9: Adversely affect American badger, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of American badger. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to American badger during construction. **(NI)**

Conventional BART Project. American badgers are a non-listed species that occur sporadically in the region. While they are not documented in the study area, undeveloped grasslands are generally suitable habitat for this species. Potential habitat is available in and near grasslands north of the I-580 Corridor Area and within the Cayetano Creek Area. If present, American badgers could be directly affected during construction, resulting in mortalities. Furthermore, construction disturbances, including noise and dust and the movement of equipment and personnel could reduce local habitat quality for badgers in grasslands located adjacent to work areas. Therefore, impacts to the American badger would be potentially significant. This impact would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures for the species, and **Mitigation Measure BIO-9**, which would require preconstruction surveys and avoidance measures if badgers are present. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area. Thus, this alternative would result in the same potentially significant impacts to American badger as described for the Proposed Project. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-3.C**, which provides general protection measures for the species, and **Mitigation Measure BIO-9**,

which would require preconstruction surveys and avoidance measures if badgers are present. **(LSM)**

Express Bus/BRT Alternative. Based on the findings of the reconnaissance survey, the local species' distribution, and surrounding development, the American badger is not expected in annual grasslands or ruderal areas at the Dublin/Pleasanton Station Area. Similarly, due to already existing urban development at the Laughlin Road Area, it is unlikely that American badger would be encountered in this area. Therefore, no impacts are expected to the American badger from the Express Bus/BRT Alternative. **(NI)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support American badger or their habitat. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements would result in a minor amount of ground disturbance, all of which would be within developed areas. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to these species, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and DMU Alternative would have potentially significant impacts on American badger habitat. However, with implementation of **Mitigation Measure BIO-3.C** above, which provides general protection measures that would apply to these species, and **Mitigation Measure BIO-9**, which would require surveys and avoidance measures for the American badger, potential impacts would be reduced to a less-than-significant level.

As described above, the Express Bus/BRT Alternative and Enhanced Bus Alternative would not have significant construction-related impacts to badger habitat; therefore, no mitigation measures are required for these alternatives.

Mitigation Measure BIO-9: Preconstruction Surveys and Avoidance Measures for American Badger (Conventional BART Project and DMU Alternative/EMU Option).

BART or its contractor shall minimize impacts on badgers through a combination of worker training, preconstruction surveys, and passive animal relocation, if required. BART shall implement the following measures to avoid potential impacts to American badgers:

1. Concurrent with other required preconstruction wildlife surveys (e.g., SJKF and BUOW), a qualified biologist shall perform a preconstruction survey to identify the presence of American badgers. If this species is not found, no further mitigation shall be required.

2. If badgers are identified, they shall be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials.
3. If badger occupancy is determined at a given site within the work area, the construction manager should be informed that work should be halted. Depending on the den type, reasonable and prudent measures to avoid harming badgers shall be implemented and may include seasonal limitations on construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den a week later to determine species presence or absence.

Impact BIO-10: Adversely affect San Joaquin kit fox, either directly or through habitat modifications during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

Areas of potential direct impacts to SJKF upland habitat are shown in Table 3.I-11. There is potential upland habitat within the Proposed Project and DMU Alternative footprints. However, there is no potential habitat within the footprint of the Express Bus/BRT Alternative and no such habitat would be affected by the Enhanced Bus Alternative, or the feeder bus improvements under the Proposed Project or other Build Alternatives, which would be located within the existing street ROWs. Potential impacts are described below.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect habitat of SJKF. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors'

decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to SJKF during construction. (NI)

TABLE 3.I-11 POTENTIAL DIRECT IMPACTS TO SJKF UPLAND HABITAT

Potential Habitat by Geographic Subarea	Conventional BART Project	DMU Alternative (with EMU Option)	Express Bus/BRT Alternative	Express Bus/BRT Alternative
Dublin/Pleasanton Station Area	--	--	--	--
I-580 Corridor Area	11.32	11.36	--	--
Isabel North Area	--	--	--	--
Isabel South Area	--	--	--	--
Cayetano Creek Area	110.61	62.89	--	--
Laughlin Road Area	--	--	--	--
Total Area	121.93	74.26	0	0

Note: -- = none or not applicable.

There is no SJKF upland habitat within the Express Bus/BRT Alternative footprint and no such habitat would be affected by the Enhanced Bus Alternative, or the feeder bus improvements under the Proposed Project or other Build Alternatives, which would be located within the existing street ROWs.

Source: ESA, 2013a,b,c,d; Arup, 2017.

Conventional BART Project. As listed in Table 3.I-11 and shown on Figures 3.I-4a and 3.I-4a, construction of the Proposed Project would cause the direct and permanent loss of approximately 121.93 acres of annual grasslands within the historical range of the SJKF. Habitat impacts would occur north of the I-580 Corridor Area due to highway relocation (approximately 11.32 acres) and in association with the loss of annual grasslands in the Cayetano Creek Area (approximately 110.61 acres). Based on the data presented in the EACCS, the USFWS and CDFW consider all continuous annual grasslands north of I-580 as potentially suitable SJKF habitat, as these areas historically provided habitat for this species. However, due to variety of reasons, including development trends, an increase in incompatible land uses, and increased traffic in Alameda County, SJKF populations have not been confirmed in the Livermore-Amador Valley for several decades. The loss of potential SJKF habitat would be considered a significant impact.

The loss of grassland habitat under the Proposed Project would not restrict potential SJKF dispersal corridors, which generally occur in Altamont Hills, farther east of the Proposed Project footprint. Thus, the Proposed Project would not have a significant impact on regional SJKF movement.

Although the Isabel North and Isabel South Areas are both currently characterized by annual grasslands, they are isolated from SJKF habitat by urban development. Specifically,

the permanent wildlife exclusion fencing on the northern edge of Portola Road installed for the construction of Shea Homes – Sage Project, approximately 0.2 mile north of the Isabel North Area, eliminates SJKF access to the Isabel North Area. The Isabel South Area is isolated from potential SJKF habitat by I-580.

In summary, the SJKF are not expected to forage, den, or travel through or within the Proposed Project footprint; however, they are presumed present because this species has historically occurred in this area. If they are present at the time of construction, SJKF could be subject to direct impacts that include accidental injury or mortality. Therefore, impacts to SJKF would be potentially significant.

Potential impacts to individual SJKF and their habitat would be reduced to a less-than-significant level with the implementation of the following measures: **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to SJKF such as vehicle speed limits within SJKF habitat, regular removal of trash that may attract predators, and actions to prevent entrapment in open holes and trenches; **Mitigation Measure BIO-10.A**, which requires preconstruction surveys and protection measures to avoid and minimize the take of SJKF during construction; and **Mitigation Measure BIO-10.B**, which provides compensatory habitat to mitigate for the loss and disturbance of SJKF habitat. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and some differences in the Cayetano Creek Area. This alternative would cause the direct and permanent loss of approximately 74.26 acres of annual grasslands within the historical range of the SJKF, as listed in Table 3.1-11 and shown on Figures 3.1-4a and 3.1-4a. Impacts include approximately 11.36 acres of habitat in the north of the I-580 Corridor Area and approximately 62.89 acres of habitat in the Cayetano Creek Area. Within these areas, the DMU Alternative could result in potentially significant direct and indirect impacts to SJKF. Potential impacts to individual SJKF and their habitat would be reduced to a less-than-significant level with the implementation of the following measures: **Mitigation Measure BIO-3.C**, which provides general protection measures that would apply to SJKF such as vehicle speed limits within SJKF habitat, regular removal of trash that may attract predators, and actions to prevent entrapment in open holes and trenches; **Mitigation Measure BIO-10.A**, which requires preconstruction surveys and protection measures to avoid and minimize the take of SJKF during construction; and **Mitigation Measure BIO-10.B**, which provides compensatory habitat to mitigate for the loss and disturbance of SJKF habitat. **(LSM)**

Express Bus/BRT Alternative. SJKF is not expected in annual grasslands or ruderal areas within the Dublin/Pleasanton Station Area or along the portion of the I-580 Corridor Area within the footprint (Hacienda Drive to Tassajara Road/Santa Rita Road due to site

isolation from potential SJKF habitat). In addition, due to existing urban development at the Laughlin Road Area, it is unlikely that SJKF would be encountered at this site. Therefore, the Express Bus/BRT Alternative would result in no impacts to SJKF habitat. Because the Laughlin Road Area is bordered by potential SJKF habitat on three sides, the implementation of **Mitigation Measure BIO-3.C** would avoid impacts to this species by providing training to construction personnel so they can identify potential threats to SJKF, vehicle speed limits, regular removal of trash that may attract predators, and actions to prevent entrapment in open holes and trenches. This measure would reduce potential impacts to SJKF to a less-than-significant level. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs in urban/developed land that does not support SJKF or their habitat, and would require a limited amount of construction activity and ground disturbance. Therefore, the Enhanced Bus Alternative would have no impacts to the SJKF, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and DMU Alternative would have potentially significant impacts to SJKF habitat. However, potential impacts to individual SJKF and their habitat would be reduced to a less-than-significant level with the implementation of the following measures: **Mitigation Measure BIO-3.C** above, which provides general protection measures that would apply to SJKF such as vehicle speed limits within SJKF habitat, regular removal of trash that may attract predators, and actions to prevent entrapment in open holes and trenches; **Mitigation Measure BIO-10.A**, which requires preconstruction surveys and protection measures to avoid and minimize the take of SJKF during construction; and **Mitigation Measure BIO-10.B**, which provides compensatory habitat to mitigate for the loss and disturbance of SJKF habitat.

For the Express Bus/BRT Alternative, due to its location near SJKF habitat, implementation of **Mitigation Measure BIO-3.C** above, which provides general protection measures that would apply to SJKF, would reduce potential impacts to less-than-significant levels.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts to the SJKF; therefore, no mitigation measures are required.

Mitigation Measure BIO-10.A: Preconstruction Surveys and Avoidance Measures for the San Joaquin Kit Fox (Conventional BART Project and DMU Alternative/EMU Option).

1. The following measures, which are intended to reduce direct and indirect construction-related impacts on SJKF, are derived from the USFWS San Joaquin Kit

Fox Survey Protocol for the Northern Range and the USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox.^{80, 81} These measures shall be implemented by BART or its contractor for construction areas in the I-580 Corridor Area (i.e., the grasslands north of I-580, between Fallon Road and Collier Canyon Road), within the Cayetano Creek Area, and in the Laughlin area (identified in Figures 3.I-4a and 3.I-4b). Preconstruction surveys shall be conducted within 200 feet of work areas to identify potential SJKF dens or other refugia in and surrounding work sites. A qualified biologist shall conduct the survey for potential SJKF dens 14 to 30 days before construction begins. All identified potential dens shall be monitored for evidence of SJKF using a tracking medium or an infrared beam camera to determine the current use. If no activity is detected, the den should be destroyed immediately to preclude subsequent use.

2. If SJKF occupancy is determined at a given site, the construction manager should be immediately informed that work should be halted within 200 feet of the den and the USFWS and CDFW contacted. Depending on the den type, reasonable and prudent measures to avoid effects to SJKF could include seasonal limitations on construction at the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den a week later to determine species presence or absence.
3. Nighttime vehicle traffic shall be kept to a minimum on non-maintained roads. Off-road traffic outside the designated work site shall be prohibited in areas of SJKF habitat.

Mitigation Measure BIO-10.B: Provide Compensatory Habitat to Mitigate for the Loss and Disturbance of San Joaquin Kit Fox Habitat (Conventional BART Project and DMU Alternative/EMU Option).

BART shall provide off-site compensatory mitigation for habitat impacts to SJKF consistent with USFWS and/or CDFW permit requirements. The EACCS Biological Opinion, which sets the standard for Livermore Valley habitat compensation requirements, determines the amount of required mitigation lands based on the relative habitat values of impacted lands and mitigation lands. The amount of mitigation land that will be required shall be determined during consultation with the

⁸⁰ United States Fish and Wildlife Service (USFWS), 1999. San Joaquin Kit Fox Survey Protocol for the Northern Range, U.S. Department of the Interior, Fish and Wildlife Service. June.

⁸¹ United States Fish and Wildlife Service (USFWS), 2011. Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance, U.S. Department of the Interior, Fish and Wildlife Service, April.

CDFW and USFWS using standards and procedures defined in the EACCS, which calculates a compensation ratio based on habitat quality and the location of the impact site, and the relative quality and location of mitigation land. It is estimated that compensatory mitigation will be required at an approximately 3-to-1 ratio for SJKF habitat areas that are permanently impacted. The final mitigation area will be calculated using the EACCS standards and procedures described in **Mitigation Measure BIO-3.B** for CTS and CRLF. Habitat compensation ratios determined by the USFWS and CDFW during the FESA and CESA permitting processes shall be based on the assessed functions and values of the impacted lands and those of the approved compensation lands or agency-approved SJKF mitigation site.

Impact BIO-11: Have a substantial adverse effect on State or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) or waters through direct removal, filling, hydrological interruption, or other means during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

An informal wetland assessment identified the general distribution of potentially jurisdictional features in the footprints of the Proposed Project and Build Alternatives, as shown in Figures 3.1-2a and 3.1-2b and summarized in Table 3.1-12. Potential impacts are described below.

TABLE 3.1-12 POTENTIAL DIRECT IMPACTS TO JURISDICTIONAL WETLANDS, OTHER WATERS OF THE U.S. AND WATERS OF THE STATE

Geographic Subarea/ Aquatic Features	Aquatic Features (Acres)		
	Conventional BART Project	DMU Alternative (with EMU Option)	Express Bus/BRT Alternative
Dublin/Pleasanton Station Area			
Line G-1-1 (IC)	--	0.002	0.001
Concrete Channel (FEW)	--	0.028	0.055
Chabot Canal (PC/FEW)	--	--	0.118
Line G-2 (Hewlett Canal) (PC)	--	--	0.366
I-580 Corridor Area			
SW-1 (FEW)	--	0.015	--
Tassajara Creek (IC/FEW)	0.013	0.014	0.0
Pimlico Drive Drainage (FEW)	<0.001	0.000	--

TABLE 3.I-12 POTENTIAL DIRECT IMPACTS TO JURISDICTIONAL WETLANDS, OTHER WATERS OF THE U.S. AND WATERS OF THE STATE

Geographic Subarea/ Aquatic Features	Aquatic Features (Acres)		
	Conventional BART Project	DMU Alternative (with EMU Option)	Express Bus/BRT Alternative
SW-2 (FEW)	0.005	0.005	--
SW-3 (FEW)	0.072	0.071	--
SW-4 (FEW)	0.083	0.083	--
SW-5 (FEW)	0.010	0.010	--
SW-6 (FEW)	0.025	0.025	--
Cottonwood Creek (IC)	0.013	0.013	--
SW-7 (FEW)	0.009	0.009	--
SW-8 (FEW)	0.124	0.124	--
Isabel North Area			
None	--	--	--
Isabel South Area			
Arroyo las Positas (PC)	0.045	0.045	--
Cayetano Creek Area			
Isabel Creek (IC)	0.026	0.023	--
Arroyo las Positas (PC/FEW)	0.083	0.083	--
Cayetano Creek (IC/FEW)	0.137	0.142	--
Cayetano Creek (IC/FEW at Hartman Road)	0.006	--	--
Pond-1 (at Hartman Road)	0.061	--	--
Laughlin Road Area			
None	--	--	--
Summary by Habitat Type			
Freshwater emergent wetland	0.327	0.371	0.055
Perennial creek	0.128	0.129	0.484
Intermittent creek	0.195	0.194	0.001
Pond	0.061	--	--
Total Area	0.711	0.693	0.540

Notes:

FEW = freshwater emergent wetland; IC = intermittent creek; PC = perennial creek; -- = no impact
 This table summarizes the potential waters of the U.S. and State within the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative. The Enhanced Bus Alternative, as well as the bus improvements under the Proposed Project and other Build Alternatives, would be located within the existing street ROWs and would not affect wetlands or waters.

Source: ESA, 2013a,b,c,d; Arup, 2017.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect wetlands, waters of the U.S., and/or waters of the State. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to State or federally protected wetlands or waters during construction. **(NI)**

Conventional BART Project. An informal wetland assessment identified the general distribution of potentially jurisdictional features in the study area, as identified in Figure 3.I-2a and Figure 3.I-2b and summarized in Table 3.I-12; a formal wetland determination has not yet been performed. Potential jurisdictional features in the Proposed Project footprint include Line G-1-1, Chabot Canal, Line G-2, Tassajara Creek, Line G-3, Cottonwood Creek, Collier Canyon Creek, Isabel Creek, Arroyo las Positas, and Cayetano Creek, as well as several smaller aquatic features, as identified in Table 3.I-12 and Figures 3.I-2a and 3.I-2b). Construction of the Proposed Project would result in the fill and/or shading of approximately 0.711 acre in wetlands, waters of the U.S., and/or waters of the State. This estimate is based on the collective footprint, which includes both permanent project facilities and temporary construction staging areas. However, the exact footprint of temporary staging areas has not yet been determined. For purposes of worst-case impact analysis, the total of 0.711 acres is conservatively assumed to represent permanent impacts. In the event that a portion of these acres is not needed following construction, the area would be restored pursuant to **Mitigation Measure BIO-11.B.**

The design of the Proposed Project is intended to avoid and protect water features identified during this initial assessment to the greatest extent feasible, through established setback zones from drainages and seasonal wetlands. Specifically, the proposed tail tracks and storage and maintenance facility in the Cayetano Creek Area have

been sited to avoid a large vernal pool complex that was modeled in the EACCS.⁸² These efforts resulted in the avoidance of vernal pools in the Cayetano Creek Area.

Portions of the Proposed Project footprint support wetlands, waters of the U.S., and/or waters of the State under regulatory jurisdiction of the USACE and RWQCB. Also, the Proposed Project would result in impacts to the streambed and banks under jurisdiction of CDFW. Anticipated impacts include the bridging and filling of wetlands, waters of the U.S., and/or waters of the State that were identified within the project footprint, as identified in Table 3.I-12. This disturbance would affect both areas classified as wetlands and channels that are considered wetlands, waters of the U.S., and/or waters of the State.

This direct loss of wetlands, waters of the U.S., and/or waters of the State would be considered a potentially significant impact. In addition, prior to disturbing any jurisdictional water features, BART would obtain all required permit approvals from the USACE, CDFW, RWQCB, and all other agencies with permitting responsibilities for construction activities within jurisdictional features. Potential impacts would be reduced to a less-than-significant level through the implementation of **Mitigation Measure BIO-11.A**, which avoids and minimizes impacts to wetlands, waters of the U.S., and/or waters of the State to the greatest extent practicable, and **Mitigation Measure BIO-11.B**, which provides compensation for impacts through wetland restoration and/or creation. **(LSM)**

DMU Alternative. Potential impacts to protected wetlands under the DMU Alternative would be similar to those discussed for the Proposed Project; however, this alternative would have additional impacts to jurisdictional wetland habitat at the Dublin/Pleasanton Station Area and I-580 Corridor Area, and fewer impacts to aquatic features in the Cayetano Creek Area, as shown in Table 3.I-12. In total, the construction of the DMU Alternative would result in the fill and/or shading of approximately 0.693 acre of wetlands, waters of the U.S., and/or waters of the State. The direct loss of State or federal jurisdictional wetlands or waters under the Proposed Project would be a significant impact. This estimate is based on the collective footprint, which includes both permanent project facilities and temporary construction staging areas. However, the exact footprint of temporary staging areas has not yet been determined. For purposes of worst-case impact analysis, the total of 0.693 acres is conservatively assumed to represent permanent impacts. In the event that a portion of these acres is not needed following construction, the area would be restored pursuant to **Mitigation Measure BIO-11.B**.

⁸² ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA. [Figure D-6 in Appendix D].

Prior to disturbing any jurisdictional water features, BART would obtain all required permit approvals from the USACE, CDFW, RWQCB, and all other agencies with permitting responsibilities for construction activities within wetlands, waters of the U.S., and/or waters of the State. Potential impacts would be reduced with the implementation of **Mitigation Measure BIO-11.A**, which avoids and minimizes impacts to wetlands and other waters to the greatest extent practicable, and **Mitigation Measure BIO-11.B**, which provides compensation for impacts through wetland restoration and/or creation. **(LSM)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would widen I-580, cantilever a portion of I-580 over Chabot Canal/Line G-2, and require the relocation of a portion of Line G-2, potentially affecting approximately 0.54 acre of wetlands, waters of the U.S., and/or waters of the State in the Dublin/Pleasanton Station Area, as shown in Table 3.I-12. The direct loss of State or federal jurisdictional wetlands or waters is considered a significant impact. This estimate is based on the collective footprint, which includes both permanent project facilities and temporary construction staging areas. However, the exact footprint of temporary staging areas has not yet been determined. For purposes of worst-case impact analysis, the total of 0.54 acres is conservatively assumed to represent permanent impacts. In the event that a portion of these acres is not needed following construction, the area would be restored pursuant to **Mitigation Measure BIO-11.B**.

Prior to disturbing any jurisdictional water features, BART would obtain all required permit approvals from the USACE, CDFW, RWQCB, and all other agencies with permitting responsibilities for construction activities within jurisdictional areas. Potential impacts would be reduced with the implementation of **Mitigation Measure BIO-11.A**, which avoids and minimizes impacts to wetlands and other waters to the greatest extent practicable, and **Mitigation Measure BIO-11.B**, which provides compensation for impacts through wetland restoration and/or creation. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land that does not support wetlands, waters of the U.S., and/or waters of the State. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements would result in a minor amount of ground disturbance within developed areas. The Enhanced Bus Alternative would have no construction impacts to wetlands, waters of the U.S., and/or waters of the State, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts to wetlands, waters of the U.S., and/or waters of the State. However, with implementation of **Mitigation Measure BIO-11.A**, which avoids and minimizes impacts to wetlands and other

waters to the greatest extent practicable, and **Mitigation Measure BIO-11.B**, which provides compensation for impacts through wetland restoration and/or creation, potential impacts would be reduced to a less-than-significant level.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts on this resource, and no mitigation measures are required for this alternative.

Mitigation Measure BIO-11.A: Avoid and Minimize Impacts to Wetlands, Waters of the U.S. and/or Waters of the State (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

Final project design shall avoid and minimize the fill of wetlands, waters of the U.S., and/or waters of the State to the greatest practicable extent based on the delineation required by **Mitigation Measure BIO-12.A** that will delineate wetlands, waters of the U.S., and/or waters of the State within the adopted project footprint. Areas that are avoided shall be subject to best management practices under the National Pollutant Discharge Elimination System Permit Construction General Permit, as described in **Impact HYD-6 (Hydrology and Water Quality)**. The location of wetlands near work areas shall be identified on site plans and wildlife exclusion fencing shall be installed near wetlands to avoid and minimize direct impacts to these areas.

Mitigation Measure BIO-11.B: Compensatory Mitigation for Wetlands, Waters of the U.S. and/or Waters of the State (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

To offset unavoidable temporary and permanent impacts to wetlands, waters of the U.S., and/or waters of the State identified in Table 3.I-12 and to be verified through formal delineation (see **Mitigation Measure BIO-12.A**), restoration and compensatory mitigation shall be provided through the following mechanisms:

1. Purchase or dedicate land to provide wetland preservation, restoration, or creation in a ratio of at least 1-to-1 (i.e., no net loss). Wetland mitigation requirements may be adjusted in the final conditions of the 404 permit, 401 water quality certification, and streambed alteration agreement issued by the USACE, RWQCB, and CDFW, respectively. Where practical and feasible, on-site mitigation shall be implemented. If the use of on-site mitigation is not practical and feasible to meet resource agency-required compensatory mitigation requirements, BART shall satisfy the remaining portions of the obligation through the purchase of mitigation credits through an approved wetland mitigation bank.
2. If on-site mitigation is used, a wetland mitigation and monitoring plan shall be developed by a qualified biologist in coordination with the USACE, CDFW, and/or RWQCB that details mitigation and monitoring obligations for temporary and

permanent impacts to wetlands, waters of the U.S., and/or waters of the State due to construction activities. Enhancement methods such as riparian planting and channel modifications that are proposed within channels that are managed by the Alameda County Zone 7 Water Agency would be subject to review and approval by Zone 7. Such mitigation opportunities are potentially available in Arroyo Mocho and South San Ramon Creek.

3. The wetland mitigation and monitoring plan will provide a basis for the reestablishment of wetlands in identified mitigation areas, such as temporary staging areas following construction. The plan will include at a minimum:
 - a. A summary of wetland impacts based on final project design.
 - b. A description of mitigation areas and monitoring and reporting requirements.
 - c. Mitigation ratios for lost habitat.
 - d. Site preparation requirements.
 - e. Specifications for planting and/or seeding (e.g., what species and how many plantings) to replace impacted plants.
 - f. Seasonal considerations for planting and site maintenance.
 - g. An irrigation strategy.
 - h. A post-restoration monitoring schedule that provides for quarterly review of restoration areas during the first year and biannual inspections in subsequent years up to 5 years.
 - i. Annual success criteria, including annual plant survivorship and vigor, to be determined by counting individuals of each species and comparing the counts to the numbers originally planted for that species. A minimum survival rate of 70 percent of installed plants is required for all years, including at least 2 years post-irrigation.
 - j. Means for controlling invasive species near plantings.
4. The wetland mitigation and monitoring plan shall be submitted to the USACE, CDFW, and RWQCB for review and approval.
5. If monitoring suggests that the performance standards outlined above are not being met, corrective actions shall be implemented. Possible contingency measures include but are not limited to the following:
 - a. Replanting of native trees and shrubs.
 - b. Adjusting the quantity and timing of irrigation to develop a schedule that better meets the characteristics of the site and the needs of the plants.

- c. Installing additional protective wire cages around plants to minimize damage from wildlife or other sources.
- d. Incorporating additional monitoring events in an attempt to address site deficiencies proactively.
- e. Adjusting the weed maintenance methods or schedule to address specific problems that arise.

Impact BIO-12: Have a substantial adverse effect on riparian habitat or sensitive natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

Potential direct impacts to wetlands, waters of the U.S., and/or waters of the State are described in **Impact BIO-11** above and shown in Table 3.I-12. The Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would impact wetlands, waters of the U.S., and/or waters of the State; however, the Enhanced Bus Alternative would not affect such areas. Some of these areas support riparian habitat and sensitive natural communities (e.g., wetlands) that would be subject to impacts during construction, as described below.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed. In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely affect riparian habitat or sensitive natural communities. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to riparian habitat or sensitive natural communities during construction. **(NI)**

Conventional BART Project. Construction of the Proposed Project would require the relocation of I-580 and related freeway overcrossings of several ephemeral and perennial drainages that support riparian vegetation, in addition to construction of new

overcrossings for BART facilities. The preliminary wetland assessment identified a total of approximately 0.711 acre of wetlands, waters of the U.S., and/or waters of the State in the footprint of the Proposed Project where riparian habitat would be encountered (see Table 3.I-12; also discussed in **Impact BIO-11**). The Caltrans ROW widening of I-580, generally by up to 46 feet (typically 23 feet in the westbound and 23 feet in the eastbound direction) would permanently impact woody riparian habitat (e.g., willow-cottonwood habitat) at Tassajara Creek, Cottonwood Creek, and Arroyo las Positas and non-woody riparian habitat (e.g., bulrush-cattail habitat) at these streams.

The Proposed Project may permanently affect up to approximately 0.025 acre of alkali meadow, a CDFW-regulated sensitive natural community, within feature SW-6 located north of I-580 at Croak Road (see Table 3.I-12). Furthermore, for lands in the Cayetano Creek Area that were not surveyed due to limited access to the private property, the extent of sensitive natural communities, including alkali meadow, was characterized by remote techniques; therefore, the actual extent or precise types of sensitive natural communities in these areas could vary.

Impacts described above to CDFW-identified sensitive natural communities would be considered potentially significant. These impacts would be reduced through the implementation of **Mitigation Measure BIO-11.A** above, which would minimize and compensate for impacts to sensitive natural communities associated with wetlands, as well as **Mitigation Measure BIO-12.A** and **Mitigation Measure BIO-12.B**, which includes sensitive resource avoidance, impact minimization, restoration of temporarily disturbed sensitive natural communities, and compensation for permanent, unavoidable losses through restoration, enhancement, creation, and preservation. With implementation of these measures, potential impacts on sensitive riparian plant communities would be reduced to a less-than-significant level. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and some differences in the Cayetano Creek Area. In total, the preliminary wetland assessment identified approximately 0.693 acre of wetlands, waters of the U.S., and/or waters of the State in the DMU Alternative footprint where riparian habitat would be encountered. In addition, to impacts described above for the Proposed Project that would also occur under the DMU Alternative, this Alternative would impact approximately 0.030 acre of freshwater emergent wetland habitat at the Dublin/Pleasanton Station Area that is associated with Line G-1-1 and an unnamed concrete channel north of I-580. Wetlands are regulated by the USACE, RWQCB, CDFW, and their removal would be considered potentially significant. Therefore, impacts on riparian habitat and sensitive natural communities would be potentially significant.

As described for the Proposed Project above, these impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-11.A** above, which would minimize and compensate for impacts to sensitive natural communities associated with wetlands, as well as **Mitigation Measure BIO-12.A** and **Mitigation Measure BIO-12.B**, which includes sensitive resource avoidance, impact minimization, restoration of temporarily disturbed sensitive natural communities, and compensation for permanent, unavoidable losses through restoration, enhancement, creation, and preservation. With implementation of these measures, potential impacts on sensitive riparian plant communities would be reduced to a less-than-significant level. **(LSM)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would relocate portions of I-580 at the Dublin/Pleasanton Station Area and within a portion of the I-580 Corridor Area, and construct the new parking lot at the Laughlin Road Area. Specifically, at the Dublin/Pleasanton Station, approximately 1,400 feet of Chabot Canal would be relocated to the south by approximately 50 to 70 feet, where it would be reconstructed to the same configuration as the existing channel. In total, the preliminary wetland assessment identified approximately 0.540 acre of wetlands, waters of the U.S., and/or waters of the State in the Express Bus/BRT Alternative footprint where riparian habitat occurs, as shown in Table 3.I-12. Impacts to regulated sensitive vegetation communities (riparian habitat) would be considered significant in accordance with USACE and CDFW regulations. However, sensitive upland plant communities do not occur in the footprint of the Express Bus/BRT Alternative and would not be impacted.

Impacts to riparian habitat would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-11.A**, which would avoid, minimize, and compensate for the loss of wetlands and associated sensitive natural communities, and **Mitigation Measure BIO-12.A**, which includes sensitive resource avoidance, impact minimization, restoration of temporarily disturbed sensitive natural communities, and compensation for permanent, unavoidable losses through restoration, enhancement, creation, and preservation. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs in urban/developed land that does not support sensitive natural communities. Therefore, the Enhanced Bus Alternative would have no construction-related impacts to these species, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts to riparian habitat and sensitive natural communities. However, potential impacts would be reduced to a less-than-significant level with implementation of the following measures: **Mitigation Measure BIO-11.A** above, which would minimize and compensate for impacts to wetlands, including both riparian habitat and sensitive natural communities associated with

wetlands, waters of the U.S., and/or waters of the State; **Mitigation Measure BIO-12.A**, which includes sensitive resource avoidance and impact minimization; and **Mitigation Measure BIO-12.B** (applies to Proposed Project and DMU Alternative only), which provides for the restoration of temporarily disturbed sensitive natural communities, and compensation for sensitive natural community losses through restoration, enhancement, creation, and preservation.

As described above, the Enhanced Bus Alternative would not have significant construction-related impacts on this resource; therefore, no mitigation measures are required for this alternative.

Mitigation Measure BIO-12.A: Identify and Avoid Sensitive Natural Communities (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

Prior to submitting permit applications to the USACE, CDFW, and RWQCB, BART shall retain a qualified biologist to conduct a formal wetland delineation survey and identify the distribution of sensitive natural communities within and adjacent to the footprint of the adopted project. Focused wetland and vegetation surveys shall be performed on private lands where surveys could not be performed in the Cayetano Creek Area to describe the presence and distribution of sensitive natural communities that may be avoided by the project, or cannot be avoided and require compensation. The location of CDFW-regulated sensitive natural communities (e.g., alkali meadow and riparian habitat) shall be illustrated on construction specification drawings and labeled for avoidance to help contractors avoid these areas.

Mitigation Measure BIO-12.B: Compensate for Impacts to CDFW-regulated Sensitive Upland Plant Communities (Conventional BART Project and DMU Alternative/EMU Option).

This measure compensates for impacts to CDFW-regulated sensitive natural communities such as alkali meadow that occur within the footprint of the adopted project but outside of wetland habitats (which are addressed in **Mitigation Measure BIO-12.A**). To compensate for impacts to CDFW-regulated sensitive natural communities, BART shall prepare and implement a revegetation plan, further described below, to provide the basis for reestablishing sensitive natural communities.

The revegetation plan shall quantify the total impacted acreage of sensitive vegetation communities and include mitigation ratios for lost habitat of a minimum 1-to-1 based on acreage. The plan will include at a minimum an identification of mitigation areas, site preparation requirements, specifications for planting and/or seeding (e.g., what species and how many plantings), seasonal considerations for planting and site maintenance, the proposed irrigation strategy, performance criteria (e.g., 70 percent

survival of plantings 5 years following installation, and 70 percent of plants exhibiting fair or better condition), any contingency measures that may be anticipated, and a provision for semi-annual monitoring and reporting. The plan shall also include the following:

1. Annual success criteria, including annual plant survivorship and vigor, to be determined by counting individuals of each species and comparing the counts to the numbers originally planted for that species. A minimum survival rate of 70 percent of installed plants is required for all years, including at least 2 years post-irrigation.
2. Means for controlling invasive species near plantings.
3. A description of mitigation areas and monitoring and reporting requirements.
4. The restoration plan shall be submitted to the CDFW for review and approval.
5. If monitoring suggests that the performance standards outlined above are not being met, corrective actions shall be implemented. Possible contingency measures include but are not limited to the following:
 - a. Replanting of restoration areas
 - b. Adjusting the quantity and timing of irrigation to develop a schedule that better meets the characteristics of the site and the needs of the plants
 - c. Installing additional protective wire cages around plants to minimize damage from wildlife or other sources
 - d. Incorporating additional monitoring events in an attempt to address site deficiencies proactively
 - e. Adjusting the weed maintenance methods or schedule to address specific problems that arise

Impact BIO-13: Interfere with the movement of 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 during construction.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the LAVTA would be constructed.

In addition, population and employment increases throughout Alameda County would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could interfere with the movement of resident or migratory fish species or impede the use of native wildlife nursery sites. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to movement of resident or migratory fish species or impediment of native wildlife nursery sites during construction. **(NI)**

Conventional BART Project. Much of the Proposed Project footprint would be along the I-580 corridor, which already serves as a substantial barrier to the north-south movement of wildlife. However, areas of the Proposed Project footprint that cross creeks along I-580—Chabot Canal, Tassajara Creek, Cottonwood Creek, and Arroyo las Positas—serve as wildlife crossings. The animals that currently use these areas are habituated to the lighting, noise, and vibration from I-580 traffic. At these locations, the Proposed Project would use free span bridges and would not alter the configuration of existing box culverts beneath the highway at these crossings, although the length of some culverts may be extended. Deer readily use both Cottonwood Creek and Arroyo las Positas as crossing corridors beneath I-580. Five black-tailed deer were observed during the site assessment, including a doe within the Arroyo las Positas corridor south of I-580 and three bucks beneath a large valley oak on the creek corridor immediately north of I-580. Wildlife tracks beneath I-580 identified in the survey showed that deer and raccoon make extensive use of the wildlife corridor beneath the highway at multiple locations.⁸³ The Proposed Project is not expected to substantially modify or degrade the stream movement corridors to an extent that would preclude use by wildlife during construction.

Numerous wildlife species are expected to use Cayetano Creek and the surrounding lands in the Cayetano Creek Area for movement and dispersal between the creek and surrounding upland habitat. In this area, the Proposed Project has been designed to allow water drainage under the tail tracks, supporting the continued movement of natural water into the vernal pool swales. In addition, the track alignment would be porous to smaller wildlife species such as CTS and CRLF. Smaller terrestrial wildlife species such as California ground squirrel, raccoon, gray fox, and coyote may cross beneath the tail track alignment through culverts that will be constructed to facilitate water passage. The

⁸³ Environmental Science Associates, 2013c. BART to Livermore Extension (BLVX), Consolidated Biological Resources Report, Site 1 [Isabel South], Alameda County, California, Prepared for the San Francisco Bay Area Rapid Transit District. November.

movement of large animals will not be obstructed at Cayetano Creek, as the tail tracks will bridge the creek and allow large animals such as deer to cross under the tracks. The tunnel section will also provide an unobstructed travel corridor over the tracks. The tail tracks and fenced storage yard, which would be about 1.5 miles long, would modify the dispersal opportunities of native non-migratory wildlife species, but the local movement of wildlife within adjoining natural areas would not be blocked. The bridge and tunnel will maintain overland access through corridors both east-west and north-south in the tail tracks area. No established native resident or migratory wildlife movement corridors, migratory fish corridors, or native wildlife nursery sites were identified in the Proposed Project footprint. Therefore, the Proposed Project would have less-than-significant impacts on the movement of resident or migratory fish species or impede the use of native wildlife nursery sites, and no mitigation measures are required. **(LS)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project, with the addition of improvements in the Dublin/Pleasanton Station Area and some differences in the Cayetano Creek Area. The DMU Alternative would have less-than-significant impacts to: the movement of native resident or migratory fish or wildlife species; established native resident or migratory wildlife corridors; movement of fish species; or the use of native wildlife nursery sites. Therefore, and no mitigation measures are required. **(LS)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would relocate I-580 at the Dublin/Pleasanton Station Area, along a portion of I-580 Corridor Area, and construct a parking lot on developed lands at the Laughlin Road Area. No wildlife movement corridors or native wildlife nursery sites were identified in these areas. Therefore, the Express Bus/BRT Alternative would have no impact impacts to: the movement of native resident or migratory fish or wildlife species; established native resident or migratory wildlife corridors; movement of fish species; or the use of native wildlife nursery sites. Therefore, and no mitigation measures are required. **(NI)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land, which does not support established native resident or migratory wildlife corridors. In addition, the limited amount of construction anticipated for installation of bus-related infrastructure improvements would result in a minor amount of ground disturbance, which would all be within developed areas. The Enhanced Bus Alternative would have no construction-related impacts to established native resident or migratory wildlife corridors, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts related to movement of wildlife species, wildlife corridors, or native nursery sites, and no mitigation measures are required.

Impact BIO-14: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan during construction.

(No Project Alternative: NI; Conventional BART Project: NI; DMU Alternative: NI; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses would occur under the No Project Alternative. There are no habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans that cover the study area. Therefore the No Project Alternative is considered to have no impacts related to conflicts with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan during construction. **(NI)**

Conventional BART Project and Build Alternatives. There are no habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans that address areas within the footprints of the Proposed Project and Build Alternatives. The EACCS is not a regulatory document and is not an adopted habitat conservation plan, natural community conservation plan, or otherwise approved habitat conservation plan. However, as a regional planning guidance document, the EACCS provides agency-approved guidance on how to avoid, minimize, and mitigate impacts on selected special-status species and sensitive habitats that occur in the Livermore Valley. BART intends that the adopted project and mitigation measures be consistent with the conservation strategies and mitigation guidance established by EACCS. Therefore, the Proposed Project and Build Alternatives would have no impacts related to conflicts with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts related to conflicts with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan, and no mitigation measures are required.

Impact BIO-15: Result in loss of protected trees identified in local policies or ordinances during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: NI)

BART is exempt under State law from compliance with local land use ordinances, including local tree ordinances that have been established to protect native trees, heritage trees, and street trees. Although not legally required to comply with local ordinances, BART considers the protection of trees a priority and considers that removal of trees that are protected under local ordinances would constitute a significant impact as described below.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could conflict with local policies or ordinances protecting biological resources. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts on local policies or ordinances protecting biological resources during construction. **(NI)**

Conventional BART Project. Potentially protected, landscape trees are present within the I-580 Corridor Area and Isabel South Area and native trees are also located at the Isabel South Area. For example, at the Isabel South Area, the construction of the pedestrian overcrossing and touchdown structures that would span Arroyo las Positas would require removal of a number of native trees, potentially including arroyo willow, narrow leaf willow, valley oak, California walnut, and cottonwood within an approximately 50-foot wide work corridor. Some native coast live oak trees may also be subject to removal. Therefore, the Proposed Project could directly impact protected trees by removing them or could indirectly impact them during construction by compressing their root zones, if construction equipment operates close to the trees. Impacts to protected trees would be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-15**, which would require an inventory of protected trees, protection of trees to remain on the site, and the replacement of trees that are removed, consistent with local guidelines. **(LSM)**

DMU Alternative. The DMU Alternative would generally have a similar footprint to the Proposed Project and would also include construction at the Dublin/Pleasanton Station Area. Thus, the DMU Alternative would have potentially significant impacts to protected trees. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-15**, which would require an inventory of protected trees,

protection of trees to remain on the site, and the replacement of trees that are removed, consistent with local guidelines. **(LSM)**

Express Bus/BRT Alternative. The Express Bus/BRT Alternative would have the potential to impact protected street trees at the Dublin/Pleasanton Station Area, north of I-580 between Hacienda and Tassajara, and in the Laughlin Road Area. This alternative could directly impact protected trees by removing them or could indirectly impact them during construction by compressing their root zones, if construction equipment operates close to the trees. Therefore, impacts to protected trees would be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-15**, which would require an inventory of protected trees, protection of trees to remain on the site, and the replacement of trees that are removed, consistent with local guidelines. **(LSM)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would be constructed along existing street ROWs. Areas where bus improvements would be constructed would be within urban/developed land and would not require the removal of protected trees. Therefore, the Enhanced Bus Alternative would have no direct or indirect construction-related impacts to protected trees, and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have potentially significant impacts to protected trees. However, with implementation of **Mitigation Measure BIO-15**, which would require an inventory of protected trees, protection of trees to remain on the site, and the replacement of trees that are removed, consistent with local guidelines, potential impacts would be reduced to a less-than-significant level.

Mitigation Measure BIO-15: Conduct an Inventory of Protected Trees, Protect Trees that Remain, and Plant Replacement Trees (Conventional BART Project, DMU Alternative/EMU Option, and Express Bus/BRT Alternative).

BART shall retain a certified arborist to identify and evaluate trees within the permanent and temporary construction footprint. A report shall be prepared and submitted to BART to (1) document the number, size, species, and health of trees within the footprint and construction staging areas; and (2) identify which trees will be removed and which will be retained. BART shall then mitigate the loss of trees based on the following or equivalent protective measures depending on the size and health of trees to be removed.

1. Prior to the start of construction, BART shall install exclusion fencing at the dripline of any tree that will not be removed and prohibit any parking or storage of

materials inside the fence. During construction, fencing shall be monitored to ensure continued protection of trees.

2. Mitigation shall be provided by planting replacement trees of the same species for removal of native trees larger than 24 inches in circumference measured at 4 feet, 6 inches above natural grade. For trees within open space, riparian, or habitat area, mitigation shall be provided for any tree with a circumference of 18 inches or more above natural grade.

(b) Construction – Cumulative Analysis

The geographic study area for cumulative impacts is the area within approximately a 2.0-mile radius of the collective footprint, to ensure that the analysis for biological resources considered species-relevant areas and potential associated cumulative projects.

Cumulative projects identified in Section 3.A, Introduction to Environmental Analysis, and Appendix E that are considered in this cumulative analysis are listed in Table 3.1-13. These projects were selected for their potential to contribute to the incremental loss of biological resources and wildlife habitat. Environmental analysis is either underway or completed for many of these projects, and several have recently been constructed. However, potential impacts to biological resources were estimated for the purposes of determining cumulative impacts related to projects for which environmental review has not yet been completed. The temporal period for the analysis of cumulative project impacts to biological resources is based on the project construction periods, during which time most impacts occur, together with longer-term timing of project mitigation requirements.

As described in **Impact BIO-14** above, the Proposed Project and Build Alternatives would have no impact related to conflicts with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. Therefore, the Proposed Project and Build Alternatives would not contribute to cumulative impacts related to these plans.

Impact BIO-16(CU): Adversely affect, either directly or through habitat modifications, species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: SU; DMU Alternative: SU; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: LS)

TABLE 3.I-13 LIST OF CUMULATIVE PROJECTS CONSIDERED IN THE BIOLOGICAL RESOURCES CUMULATIVE ANALYSIS

Project Name/Number	Potential Cumulative Impacts
Kaiser Dublin Medical Center (D7)	Rare Plants, CRLF, BUOW ⁸⁴
Grafton Plaza Mixed Use Development (D6)	CRLF and BUOW (estimated)
IKEA Retail Center/Project Clover (D4)	BUOW (estimated)
Dublin Crossing Specific Plan (D1)	Rare Plants, WPT CRLF, BUOW ⁸⁵ , wetlands
Fallon Gateway (D9)	CTS, CRLF, BUOW (estimated)
Dublin/Pleasanton Station Parking Expansion	Rare Plants, BUOW
The Shoppes (L1)	CRLF, BUOW (estimated)
Crosswinds site (L3)	CRLF, BUOW (estimated)
Sywest site (L4)	CRLF, BUOW (estimated)
Livermore Valley Charter School (L7)	CTS, CRLF, BUOW, SJKF (estimated)
Las Positas College (L13)	CTS, CRLF, BUOW, SJKF (estimated)
Shea Homes – Sage Project (L14)	CTS, CRLF, BUOW, AMBA, SJKF ⁸⁶
Gillig Bus Manufacturing (L12)	BUOW (estimated)
Oaks Business Park (L10)	BUOW (estimated)
Isabel Neighborhood Plan	CTS, CRLF, BUOW, SJKF (estimated)

Note: Project number and name correspond to Table 1 in Appendix E.

Sources: ESA, 2013a,b,c,d; Arup, 2017; City of Dublin, 2016; City of Dublin 2013b; First Carbon Solutions, 2014.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could result in adverse effects to special-status plant or wildlife species. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented. Therefore, the No Project Alternative is considered to have no adverse impacts to special-status plant or wildlife species during construction. **(NI)**

⁸⁴ City of Dublin, 2016. Draft Environmental Impact Report for Kaiser Dublin Medical Center Project. January 28. Available at: <http://dublinca.gov/DocumentCenter/View/12964>.

⁸⁵ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

⁸⁶ First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

Special-status Plants

Conventional BART Project and Build Alternatives. Of the projects identified in Table 3.I-13, those with potential direct impacts populations to special-status or rare plants are the Dublin Crossing Specific Plan and the Kaiser Dublin Medical Center. However, some of the projects listed in Table 3.I-13 may be unsurveyed; hence, the potential exists to encounter additional, unidentified rare plant populations within the cumulative study area. No projects on the cumulative list identify impacts to alkali habitat at the Springtown Alkali Preserve, the regional area where the most sensitive rare plants occur.

The Dublin Crossing Specific Plan EIR proposed a project-level mitigation measure to mitigate potential impacts to the non-listed Congdon's tarplant, which was documented between 1995 and 2000 in disturbed areas at the edge of parking lots and abandoned roads.⁸⁷ The Dublin Crossing Specific Plan EIR relied upon implementation of general project-level measures to protect this species, consistent with CDFW guidance.

For the Kaiser Dublin Medical Center, rare plants were not known from the site prior to publication of the EIR; however, rare plant surveys were not yet completed. The mitigation approach relied upon focused surveys for Congdon's tarplant and San Joaquin spearscale prior to construction (which is underway in 2017), and if found, through the acquisition, protection, and subsequent management of other existing rare plant occurrences to be determined through mitigation planning with the CDFW and the City of Dublin. The CNDDDB reports no rare plant resources on the site; thus, it is not known if this project impacted rare plants.

For the Proposed Project and Build Alternatives, protocol-level in-season botanical surveys have been performed for most of the study area, but remain to be completed within portions of the footprint, as described in **Impact BIO-1**. Potential impacts to rare plants that may occur in areas that could not be surveyed due to access limitations on private property would be reduced to a less-than-significant at the project level with implementation of **Mitigation Measures BIO-1.A** and **BIO-1.B**, which require the completion of focused rare plant surveys and compensation for impacts to rare plant populations through plant salvage, restoration, and habitat enhancement. General measures provided in **Mitigation Measure BIO-3.C** would additionally protect rare plant populations, if identified.

For the list of cumulative projects identified in Table 3.I-13, either the projects were proposed in areas that do not support rare plants, or impacts to plants were minor and

⁸⁷ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

less than significant. With implementation of the above measures, impacts related to special-status plants would be minimized and/or avoided. In addition, each of the cumulative projects is required to comply with federal and State laws that protect rare plants, including the California Native Plant Protection Act and Sections 2062 and 2067 (CESA) of the California Fish and Game Code as rare or endangered species, which will identify, avoid, and mitigate significant impacts to native plants that are considered rare or endangered. Nonetheless, the sensitivity of rare plant resources and the historic and ongoing reduction of potential rare habitat suggest that despite good-faith efforts to curtail their loss and to restore their habitat, the cumulative impact to special-status plants would be potentially significant and unavoidable. **(SU)**

Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp

Conventional BART Project and Build Alternatives. One project was identified, the Dublin Crossing Specific Plan, which discussed potential impacts to LHFS and VPFS (as well as vernal pool tadpole shrimp [*Lepidurus packardii*], which is not expected in the study area). Following focused surveys in 2002, 2003, 2012, and 2013, these species were not identified in the Dublin Crossing Specific Plan planning area.⁸⁸ No other projects were identified with potential impacts to LHFS or VPFS. Potential impacts to VPFS from the Proposed Project and DMU Alternative, estimated at up to approximately 0.025 acre of potential low quality habitat for this species north of Croak Road in feature SW-6, would be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-2**, which requires focused surveys for VPFS and LHFS, avoidance measures for known and potential habitat, and compensation for impacts to occupied habitat, and **Mitigation Measure BIO-3.C**, which provides general protection measures for plants and wildlife. Because the Proposed Project and Build Alternatives projects are the only cumulative projects with potential impacts to LHFS and VPFS, and the relatively minor project-level impacts (approximately 0.025 acre in a single pool) are considered less-than-significant with mitigation, cumulative impacts would also be less than significant for these species. With implementation of these measures, impacts to VPFS and LHFS would be minimized and/or avoided. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to LHFS and VPFS, and no additional mitigation measures are required. **(LS)**

California Tiger Salamander and California Red-legged Frog

Conventional BART Project and Build Alternatives. As identified by ESA biologists and presented in Table 3.I-13, 10 projects are expected to provide potential non-breeding

⁸⁸ Ibid.

upland habitat for CTS and/or CRLF. Of these, upland CRLF habitat is recognized in the Dublin Crossing Specific Plan EIR, Kaiser Dublin Medical Center EIR, and the Shea Homes – Sage Project, which additionally identifies potential upland CTS habitat.^{89, 90, 91} The other projects on the cumulative list occur in close proximity (within approximately 1 mile) of potential CRLF aquatic habitat, or are connected to open space habitat that is considered by the EACCS to support either CTS or CRLF.⁹²

The Dublin Crossing Specific Plan EIR did not identify potential impacts to CTS; however, re-alignment of the ephemeral drainage was considered to potentially impact CRLF and its habitat, a less-than-significant project impact.⁹³ The Kaiser Dublin Medical Center Project CEQA analysis considered that the CTS had been locally extirpated from the area following the extensive grading and development in the area between 2003 and 2011; hence, no impacts were identified to this species. For CRLF, no aquatic features were identified on the Kaiser Dublin Medical Center site that could support this species, though ponds located directly west of the site were documented as potential sources of CRLF.⁹⁴ The EIR identified no barriers to CRLF movement onto the site and mitigation identified exclusion fencing and other preconstruction measures to minimize impacts to this species. The project identified no direct habitat impacts or cumulative impacts to CRLF. The Shea Homes–Sage Project CEQA review concluded that the project would disturb approximately 131.6 acres of non-native grassland habitat that could support special-status species; presumably, including upland habitat for CTS and CRLF. Aquatic breeding or non-breeding habitat for CTS and CRLF was not identified on the site.⁹⁵

The Proposed Project, DMU Alternative, and Express Bus/BRT Alternative identified the potential for project-level impacts to individual CTS and CRLF. As identified in Table 3.1-9, the Proposed Project would impact up to approximately 122.27 acres of potential upland aestivation and dispersal habitat for CTS and approximately 130.79 acres for CRLF that

⁸⁹ Ibid.

⁹⁰ City of Dublin, 2016. Draft Environmental Impact Report for Kaiser Dublin Medical Center Project. January 28. Available at: <http://dublinca.gov/DocumentCenter/View/12964>.

⁹¹ First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

⁹² ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

⁹³ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

⁹⁴ City of Dublin, 2016. Draft Environmental Impact Report for Kaiser Dublin Medical Center Project. January 28. Available at: <http://dublinca.gov/DocumentCenter/View/12964>.

⁹⁵ First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

would occur in annual grasslands located north of I-580 near Croak Road, at the Isabel North Area and at the Cayetano Creek Area (Figure 3.1-4b). The Proposed Project would result in the loss of approximately 0.223 acre of aquatic breeding for CTS and approximately 0.326 acre for the CRLF (see Table 3.1-9). The DMU Alternative would impact up to approximately 74.61 acres of upland CTS habitat and approximately 83.12 acres of CRLF habitat. The DMU Alternative would result in the loss of approximately 0.167 acre of aquatic breeding for CTS and approximately 0.270 acre for the CRLF (see Table 3.1-9). These impacts would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-3.A**, which reduces project-level impacts on CTS and CRLF; **Mitigation Measure BIO-3.B**, which provides habitat compensation and enhancement consistent with USFWS guidance under the EACCS Biological Opinion; and **Mitigation Measure BIO-3.C**, which provides general protection measures for plants and wildlife. While impacts to CTS and CRLF upland habitat were identified in the cumulative impact scenario, no individual or cumulative impacts to CTS or CRLF breeding habitat were identified for projects on the cumulative project list (Table 3.1-13). In addition, each of the cumulative projects is required to comply with federal and State laws that protect CTS and CRLF, including the FESA and CESA, which will identify, avoid, and mitigate significant impacts to these species. Therefore, the loss of habitat for CTS and CRLF from the cumulative projects is collectively less than significant. With implementation of above-identified mitigation measures, potential impacts to CTS and CRLF from the Proposed Project and Build Alternatives would be minimized and mitigated in compliance with federal and State requirements. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to CTS and CRLF, and no additional mitigation measures are required. (LS)

Western Spadefoot

Conventional BART Project and Build Alternatives. No other cumulative projects were identified with potential impacts to western spadefoot; hence, no cumulative scenario impacts were identified for this species. Potential project-level impacts to western spadefoot would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-3.A**, which provides measures during construction that would avoid and minimize the take of special-status amphibians, **Mitigation Measure BIO-3.C**, which provides general protection measures for plants and wildlife, and **Mitigation Measure BIO-4**, which provides specific measures to be implemented prior to construction to avoid and minimize the take of western spadefoot. With implementation of these measures, project-level impacts to western spadefoot would be minimized and/or avoided. The cumulative projects are expected to have no impact to this species. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to western spadefoot, and no additional mitigation measures are required. (LS)

Western Pond Turtle

Conventional BART Project and Build Alternatives. Of the projects identified in Table 3.I-12, only the Dublin Crossing Specific Plan project recognized potential project-level impacts to WPT.⁹⁶ The Dublin Crossing Specific Plan EIR proposed preconstruction surveys that would relocate WPT from active work areas to minimize the potential take of this species. The principal habitat for this species in the Livermore-Amador Valley occurs in drainages and channels that are seldom subject to project-level disturbance. The Proposed Project and Build Alternatives would impact potential aquatic habitat that could support WPT at several stream crossings where the I-580 Corridor Area would be relocated. This would result in small, less-than-significant loss of potential WPT habitat (potential impacts to wetlands, however, would be significant and are considered separately) and potential project-level impacts to individual turtles. Because high-quality habitat for WPT occurs in stream channels throughout the Dublin, Pleasanton, and Livermore areas, and the cumulative projects would not substantially alter or degrade upland or aquatic habitat used by this species, no cumulative-scenario impacts were identified to this species. In addition, each of the cumulative projects is required to comply with State laws that protect WPT, including CEQA protections that apply to species of special concern. Potential project-level impacts to WPT would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-5**, which would require preconstruction surveys for WPT. With implementation of this measure, impacts related to WPT would be minimized and/or avoided. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to WPT, and no additional mitigation measures are required. (LS)

Western Burrowing Owl

Conventional BART Project and Build Alternatives. Among the projects identified in Table 3.I-13, the Dublin Crossing Specific Plan area supports occupied BUOW habitat, the Kaiser Dublin Medical Center EIR acknowledges the potential for BUOW to forage over the site, and 11 others were generally identified during ESA's review that provide potential foraging, nesting, or wintering habitat. The Dublin Crossing Specific Plan is the only site known to support active BUOW activity. BUOW are also generally known from the vicinity of Livermore Airport; hence, nearby projects on undeveloped land, including the Gillig Bus Manufacturing Project and Oaks Business Park Project, may provide potential nesting,

⁹⁶ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

foraging, and wintering opportunities for this species.⁹⁷ It is estimated that many or most of the projects identified in Table 3.I-13 could provide project-level mitigation to avoid and minimize potential impacts to BUOW. Such measures are identified for the Kaiser Dublin Medical Center, Dublin Crossing Specific Plan, and Shea Homes Sage Project.^{98, 99} The Shea Homes Sage Project is the only project in Table 3.I-13 that provides compensatory mitigation to offset the loss of BUOW nesting and foraging habitat.¹⁰⁰ For the projects where a CEQA review was available, none were found to have a significant cumulative impact on BUOW. As identified in **Impact BIO-6** (Burrowing owl), it is estimated that the Proposed Project would result in the direct loss of up to approximately 161.98 acres of grassland habitat, including some areas that could support BUOW nesting, foraging, and/or wintering habitat. Potential project-level impacts to WPT would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-6.A**, which provides measures to avoid and minimize the take of BUOW during construction and **Mitigation Measure BIO-6.B**, which provides habitat compensation and enhancement consistent with CDFW guidance. With implementation of these measures, project-level impacts related to BUOW would be minimized and/or avoided. In addition, each of the cumulative projects is required to comply with federal and State laws that protect BUOW, including the MBTA, Fish and Game Code, and CEQA protections that apply to species of special concern. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to BUOW, and no additional mitigation measures are required. (LS)

Nesting Raptors and Other Nesting Birds

Conventional BART Project and Build Alternatives. The potential for direct and indirect impacts to nesting birds is common to each of the cumulative projects identified in Table 3.I-13. Each of these projects is required to comply with federal and State laws that protect nesting birds, including the Fish and Game code and the MBTA, to avoid direct impacts to nesting raptors and nesting birds. For the Proposed Project and Build Alternatives, proposed activities during the nesting season could cause project-level impacts to raptors, and to special-status and common bird species. Potential project-level impacts to nesting raptors and other nesting birds would be mitigated to a

⁹⁷ California Department of Fish and Wildlife (CDFW), 2016. Rarefind 5. Biogeographic Data Branch, California Natural Diversity Database, August 4.

⁹⁸ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

⁹⁹ City of Dublin, 2016. Draft Environmental Impact Report for Kaiser Dublin Medical Center Project. January 28. Available at: <http://dublinca.gov/DocumentCenter/View/12964>.

¹⁰⁰ First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

less-than-significant level through the implementation of **Mitigation Measure BIO-7**, which would require the identification and avoidance of active nesting birds during nesting season. With implementation of this measure, impacts related to nesting raptors and other nesting birds would be minimized and/or avoided. In addition, each of the cumulative projects is required to comply with federal and State laws that protect nesting raptors and other nesting birds, which will identify, avoid, and mitigate significant impacts to these species. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to nesting raptors and other nesting birds, and no additional mitigation measures are required. (LS)

Pallid Bat and American Badger

Conventional BART Project and Build Alternatives. No other cumulative projects were identified with potential impacts to American badger or special-status bats; hence, no cumulative impacts were identified for these species. Under the Proposed Project and DMU Alternative, potential project-level impacts could occur in the Cayetano Creek Area for the American badger or in association with large eucalyptus trees on the Isabel South Area and in other study area trees and structures for the pallid bat. These species have not been identified from the study area; however, the Draft EIR analysis conservatively considered that they may be encountered based on the availability of potentially suitable habitat. Potential project-level impacts to American badger and special-status bats would be mitigated to less-than-significant levels through the implementation of **Mitigation Measure BIO-8**, which would require preconstruction surveys for pallid bat and **Mitigation Measure BIO-9**, which would require preconstruction surveys and avoidance measures for American badger. With implementation of these measures, project-level impacts related to pallid bat and American badger would be minimized and/or avoided. In addition, each of the cumulative projects is required to comply with State laws that protect WPT, including CEQA protections that apply to species of special concern. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to pallid bat and American badger, and no additional mitigation measures are required. (LS)

San Joaquin Kit Fox

Conventional BART Project and Build Alternatives. None of the cumulative projects identified in Table 3.1-13 report potential impacts to SJKF or their habitat. Upon ESA's review of the project list, three projects occur in or near areas where potential SJKF habitat

was reported by the EACCS.¹⁰¹ These include the Livermore Valley Charter School, Las Positas College, and Shea Homes – Sage Project. The Livermore Valley Charter School involved a 19-acre grassland site in an area that is dominated by similar development. While grasslands were present on this site, surrounding development makes it unlikely that SJKF would utilize this site. Similarly, Las Positas College improvements include eight new buildings, demolition of 15 buildings and temporary structures, and other improvements that are internal to the existing college footprint and are located adjacent to areas that are considered potential SJKF habitat. Direct impacts to SJKF or SJKF habitat loss are not expected from these actions. The Shea Homes – Sage Project, which is under construction, is located within historic SJKF habitat; however, potential direct impacts to SJKF and their habitat were not identified during the CEQA review.¹⁰² Potential project-level impacts to SJKF would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-10.A**, which provides measures to avoid and minimize the take of SJKF during construction and **Mitigation Measure BIO-10.B**, which provides habitat compensation and enhancement consistent with CDFW guidance under the EACCS. With implementation of this measure, project-level impacts related to SJKF would be minimized and/or avoided. Therefore, the Proposed Project and Build Alternatives, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to SJKF, and no additional mitigation measures are required. (LS)

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to special-status plants or wildlife during construction, and no additional mitigation measures, beyond those identified for the project impacts (Proposed Project and Build Alternatives) would be required.

Impact BIO-17(CU): Have a substantial adverse effect on State or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) or waters of the U.S. and/or waters of the State through direct removal, filling, hydrological interruption, or other means during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: NI)

¹⁰¹ ICF International, 2010. East Alameda County Conservation Strategy. Final Draft. October. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA.

¹⁰² First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

No Project Alternative. As described in **Impact BIO-11**, the No Project Alternative would have no impacts related to wetlands, waters of the U.S., and/or waters of the State during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project, DMU Alternative, and Express Bus/BRT Alternative. Most of the cumulative projects have no impacts on wetlands, waters of the U.S., and/or waters of the State as defined by Section 404 of the CWA. The Dublin Crossing Specific Plan Project proposed to realign portions of a stream channel; however, it did not identify the extent of jurisdictional wetlands that would be affected by the proposed project.¹⁰³ All of the other projects identified in Table 3.I-13 appear to occur in upland habitats that do not support wetlands, waters of the U.S., and/or waters of the State. Construction of the Proposed Project would result in the permanent fill and/or shading of an estimated 0.711 acre of wetlands, waters of the U.S., and/or waters of the State, approximately 0.693 acre under the DMU Alternative, or 0.540 acre under the Express Bus/BRT Alternative. Potential project-level impacts to wetlands, waters of the U.S., and/or waters of the State would be mitigated to a less-than-significant level through the implementation of both **Mitigation Measures BIO-11.A**, which would require wetlands and other waters avoidance and minimization of impacts and **Mitigation Measure BIO-11.B**, which would require compensatory mitigation for wetlands and other waters. With implementation of the above measures, project-level impacts to jurisdictional wetlands would be minimized and/or avoided by the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative. In addition, each of the cumulative projects is required to comply with federal and State laws that protect wetlands, waters of the U.S., and/or waters of the State, including the federal and State CWAs, Sections 1600–1607 of the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act. Impacts to wetlands, waters of the U.S., and/or waters of the State are closely regulated and require comprehensive mitigation from the USACE, CDFW, and RWQCB. In addition, the majority of the cumulative projects occur in upland areas that do not support wetlands, waters of the U.S., and/or waters of the State; hence, the magnitude of the impact on wetlands/waters within the Livermore-Amador Valley from these projects is considered minor. Compliance with federal and State laws protecting these resources will ensure that the cumulative projects adequately avoid and mitigate significant impacts. As a result of the required federal and State permitting, impacts to wetlands, waters of the U.S., and/or waters of the State from cumulative projects are collectively less than significant. Within the context of these limited, fully mitigated impacts to wetlands, waters of the U.S., and/or waters of the State, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, in combination with past, present, and probable future projects, would result in less-than-significant

¹⁰³ City of Dublin, 2013b. Dublin Crossing Specific Plan Draft Environmental Impact Report. June. Available at: <http://www.ci.dublin.ca.us/DocumentCenter/View/4739>

cumulative impacts to wetlands, waters of the U.S., and/or waters of the State, and no additional mitigation measures are required. (LS)

Enhanced Bus Alternative. As described in **Impact BIO-3** above, the Enhanced Bus Alternative would have no impacts on State or federally protected wetlands or waters during construction. Therefore, the Enhanced Bus Alternative would not contribute to cumulative impacts. (NI)

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to wetlands, waters of the U.S., and/or waters of the State during construction, and no additional mitigation measures, beyond those identified for the project impacts (Proposed Project, DMU Alternative, and Express Bus/BRT Alternative) would be required.

Impact BIO-18(CU): Have a substantial adverse effect on riparian habitat or sensitive natural communities identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: NI)

No Project Alternative. As described in **Impact BIO-12**, the No Project Alternative would have no impacts related to riparian habitat or sensitive natural communities during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. (NI)

Conventional BART Project, DMU Alternative, and Express Bus/BRT Alternative. For most cumulative projects in Table 3.I-13, no impacts were identified to riparian habitat or sensitive natural communities. The Dublin Crossing Specific Plan Project proposes to realign portions of a stream channel that may support emergent vegetation; however, the DEIR did not identify impacts to any riparian habitat or sensitive natural communities.¹⁰⁴ All of the other projects identified in Table 3.I-12 appear to occur in upland, non-riparian habitats that do not support sensitive natural communities. The Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would each impact riparian habitat in named and unnamed drainages to varying degrees, and there is potential that unsurveyed portions of the Proposed Project and DMU Alternative sites could support a small amount of unidentified sensitive natural communities. Potential impacts to sensitive natural

¹⁰⁴ Ibid.

communities appear to be unique to the Proposed Project and Build Alternatives and were not identified for other cumulative projects. Potential project-level impacts to sensitive natural communities would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-12.A**, which requires measures during construction to avoid and minimize the loss of sensitive natural communities, and **Mitigation Measure BIO-12.B**, which requires measures to minimize and compensate for impacts to sensitive natural communities.

In addition, each of the cumulative projects is required to comply with federal and State laws that protect sensitive natural communities, including the federal and State CWAs (for wetland-associated plant communities) and protections afforded to CDFW-recognized special-status natural communities under CEQA. Impacts to sensitive natural communities that occur in aquatic environments are closely regulated and require comprehensive mitigation from the USACE, CDFW, and RWQCB. Most of the cumulative projects occur in areas that do not support sensitive natural communities; hence, the magnitude of the impact on these resources within the Livermore-Amador Valley from these projects is considered limited. Compliance with federal and State laws protecting these resources will ensure that the cumulative projects adequately avoid and mitigate significant impacts. As a result of the required federal and State permitting, impacts to sensitive natural communities from cumulative projects are collectively less than significant. Within this context of relatively limited, mitigated impacts to sensitive natural communities, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative would have a limited contribution to cumulative impacts that would be fully mitigated through implementation of a comprehensive mitigation and monitoring plans that would be subject to USACE, CDFW, and RWQCB review and approval. With implementation of these measures, impacts related to sensitive natural communities would be minimized and fully mitigated. Therefore, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, in combination with past, present, and future projects, would have less-than-significant cumulative impacts to riparian habitat and sensitive natural communities, and additional mitigation measures are not required. **(LS)**

Enhanced Bus Alternative. As described in **Impact BIO-12** above, the Enhanced Bus Alternative would have no impacts on riparian habitats or sensitive natural communities during construction. Therefore, the Enhanced Bus Alternative would not contribute to cumulative impacts. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to riparian habitats or sensitive natural communities during construction, and no additional mitigation measures, beyond those identified for the project impacts (Proposed Project, DMU Alternative, and Express Bus/BRT Alternative) would be required.

Impact BIO-19(CU): Interfere with the movement of 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 during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. As described in **Impact BIO-13**, the No Project Alternative would have no impacts related to the movement of resident or migratory fish species or use of native wildlife nursery sites during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and DMU Alternative. Of those projects identified in Table 3.I-13, only the Shea Homes Sage Project CEQA analysis identified potential impacts on the movement of native resident or migratory fish or wildlife species. The EIR prepared for that project concluded that such interference would be less than significant following the dedication of conservation easements for on-site drainages and funding of open space preservation and management.¹⁰⁵ The analysis found that the Shea Homes Sage Project area is not a wildlife movement corridor, as this site is surrounded by Isabel Avenue to the west, Portola Avenue to the north and east, and I-580 to the south, which serve as formidable barriers to wildlife movement. Additionally the existing Arroyo las Positas wildlife movement corridor would not be modified by the project. Hence, the Proposed Project would not reduce wildlife movement opportunities when considered in conjunction with the Shea Homes – Sage Project.¹⁰⁶

Among the other projects considered in Table 3.I-13, no other projects were identified with impacts to the movement of native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or that would impede the use of native wildlife nursery sites. In combination with these projects, neither the Proposed Project nor DMU Alternative would substantially modify or reduce fish or wildlife movement opportunities, or interfere with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites beyond those identified at the project-level analysis. Therefore, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to movement of native resident or migratory fish or wildlife species, established native resident or migratory wildlife

¹⁰⁵ First Carbon Solutions, 2014. Shea Homes Sage Project Modified Initial Study/Addendum City of Livermore, Alameda County, California. May 9. Available at: <http://laserfiche.cityoflivermore.net/WebLink8/0/doc/201662/Page1.aspx>.

¹⁰⁶ Ibid.

corridors, movement of fish species, or the use of native wildlife nursery sites, and no additional mitigation measures are required. (LS)

Express Bus/BRT Alternative and Enhanced Bus Alternative. As described in **Impact BIO-13** above, the Express Bus/BRT Alternative and the Enhanced Bus Alternative would have no impacts to movement of native resident or migratory fish or wildlife species, established native resident or migratory wildlife corridors, movement of fish species, or the use of native wildlife nursery sites during construction. Therefore, the Express Bus/BRT Alternative and the Enhanced Bus Alternative would not contribute to cumulative impacts. (NI)

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to wildlife movement impacts, and therefore, no mitigation measures are required.

Impact BIO-20(CU): Result in loss of protected trees identified in local policies or ordinances during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: LS; Enhanced Bus Alternative: NI)

No Project Alternative. As described in **Impact BIO-15**, the No Project Alternative would have no impacts related to any local policies or ordinances protecting biological resources during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. (NI)

Conventional BART Project, DMU Alternative, and Express Bus/BRT Alternative. As described in **Impact BIO-15** above, BART is exempt under State law from compliance with local land use ordinances, including local tree ordinances that have been established to protect native trees, heritage trees, and street trees. Although not legally required to comply with local ordinances, BART considers the protection of trees a priority and considers that removal of trees that are protected under local ordinances would constitute a significant impact.

Among the other projects considered in Table 3.I-13, no other projects were identified with significant impacts to protected trees. The Proposed Project would have a minor impact on protected trees, with impacts mostly limited to ornamental trees and street trees that would be replaced consistent with local tree protection ordinances. Potential project-level impacts to protected trees would be mitigated to a less-than-significant level through the implementation of **Mitigation Measure BIO-15**, which provides that trees within the construction footprint that are protected by local ordinances shall be enumerated and protected, if to be retained, or replaced. While the Proposed Project, DMU

Alternative, and Express Bus/BRT Alternative would be subject to the above mitigation measure, other future development would also be subject to the same local ordinances and policies in the cities of Dublin, Pleasanton, and Livermore, and in Alameda County, and measures similar to those identified below would be implemented, should a potentially significant impact to trees occur. Therefore, the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, in combination with past, present, and probable future projects, would result in less-than-significant cumulative impacts to protected trees and heritage trees, and no additional mitigation measures are required. **(LS)**

Enhanced Bus Alternative. The Enhanced Bus Alternative would have no impacts on protected trees as described in **Impact BIO-15** above. Therefore, this alternative would not contribute to cumulative impacts to trees, heritage trees, or tree preservation. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to protected tree impacts during construction, and no additional mitigation measures, beyond those identified for the project impacts (Proposed Project, DMU Alternative, and Express Bus/BRT Alternative) would be required.

(2) Operational Impacts

Potential impacts related to project operations are described below, followed by cumulative operations impacts.

(a) Operations – Project Analysis

Impact BIO-21: Have a substantial adverse effect on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with the Proposed Project or any of the Build Alternatives. The planned and programmed transportation improvements and continued land use development under the No Project Alternative could adversely impact biological resources during operations. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to

adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to biological resources during operations. **(NI)**

Conventional BART Project and DMU Alternative. Operation of the Proposed Project or DMU Alternative would not result in direct or indirect impacts to biological resources, beyond those described below for construction activities, as operations would not result in additional ground disturbing activities. While the Proposed Project or DMU Alternative would introduce new permanent facilities/structures and operation of trains, buses, and other sources of disturbance associated with human activity and transit use—such as traffic and noises—most of this activity would occur in areas that are already urbanized and would not create additional impacts to sensitive or regulated wildlife, botanical, or wetland resources. No other cumulative projects were identified that would interfere with the movement of 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.

However, under the Proposed Project and DMU Alternative, operational activities at the storage and maintenance facility would occur in a less-urbanized area—in the Cayetano Creek Area. Maintenance activities would typically occur within buildings or structures at the storage and maintenance facility. Train activity would also occur within the fenced storage yard and on the tail tracks throughout the day, and particularly in the morning and evening hours when many animals are active. Maintenance activities and train operations would not influence the behavior of smaller animals such as amphibians and small mammals, which are largely unmindful of such activities. However, such activities, which would be a change from the existing conditions that have little or no human activity in the area, would be detectable to larger, mobile wildlife such as grassland birds, raccoon, gray fox, coyote, deer, and similar species. While some species, possibly including deer, could avoid the edge of facilities during periods of active train movement, it is anticipated that these wildlife species would continue using the grasslands and open space around the tail tracks and fenced storage and maintenance facility, as they would become habituated to these operations. Therefore, during operation, the Proposed Project and DMU Alternative would have less-than-significant impacts to biological resources, and no mitigation measures are required. **(LS)**

Express Bus/BRT Alternative and Enhanced Bus Alternative. Similar to the operation of the Proposed Project described above, the Express Bus/BRT Alternative and Enhanced Bus Alternative would not result in direct or indirect impacts to biological resources, beyond those described below for construction activities, as operations would not result in additional ground disturbing activities. In addition, while these alternatives would introduce new permanent facilities/structures and operation of trains, buses, and other sources of disturbance associated with human activity and transit use—such as traffic and noises—this activity would occur in areas that are already urbanized and would not create

additional impacts to sensitive or regulated wildlife, botanical, or wetland resources. Furthermore, no other cumulative projects were identified that would interfere with the movement of 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. Therefore, during operation, the Express Bus/BRT Alternative and Enhanced Bus Alternative would have no impacts to biological resources, and no additional mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not result in significant impacts to biological resources during operations, and therefore, no mitigation measures are required.

(b) Operations – Cumulative Analysis

The geographic study area for cumulative impacts is the area within approximately a 2.0-mile radius of the collective footprint, to ensure that the analysis for biological resources considered species-relevant areas and potential associated cumulative projects.

Cumulative projects identified in Section 3.A, Introduction to Environmental Analysis, and Appendix E that are considered in this cumulative analysis are listed in Table 3.1-13.

Impact BIO-22(CU): Have a substantial adverse effect on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: LS; DMU Alternative: LS; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. As described in **Impact BIO-21**, the No Project Alternative would have no impacts related to adverse effects on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and DMU Alternative. As described in **Impact BIO-21** above, the Proposed Project and DMU Alternative would have a less-than-significant impact on biological resources during operations. In addition, the cumulative projects considered in Table 3.1-13, would have no operational impacts to plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees. Therefore, the Proposed Project and DMU Alternative, in combination with past, present, and probable future projects, would result

in less-than-significant cumulative impacts to biological resources, and no additional mitigation measures are required. **(LS)**

Express Bus/BRT Alternative and Enhanced Bus Alternative. As described in **Impact BIO-21**, the Express Bus/BRT Alternative and Enhanced Bus Alternative would have no impacts related to adverse effects on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations. Therefore, the Express Bus/BRT Alternative and Enhanced Bus Alternative would not contribute to cumulative impacts. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives, in combination with past, present, or probable future projects, would not result in significant cumulative impacts to on plant or wildlife species, riparian habitat or other sensitive natural community, protected wetlands or waters, migratory wildlife corridors, or protected trees during operations, and therefore, no mitigation measures are required.

